

# **A SCOPING REPORT ON THE ENVIRONMENTAL IMPACT ASSESSMENT FOR MINERAL EXPLORATION ACTIVITIES ON EPL 8114, CENTRAL NAMIBIA**

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# ENVIRONMENTAL ASSESSMENT FOR MINERAL EXPLORATION ON EPL 8114, CENTRAL NAMIBIA

## EXECUTIVE SUMMARY

### 1. Introduction

#### 1.1 Overview

The proponent, Mangetti Mining Investment CC, was granted an exclusive prospecting licence (EPL) by the Ministry of Mines and Energy. The licence holder intends to explore for Dimension Stones. Impala Environmental Consulting was appointed by the proponent to undertake an Environmental Assessment (EA) and Environmental Management Plan (EMP) for the mineral exploration project.

#### 1.2 Location

The license area is located about 27 km southwest of Karibib, accessible along the C32 road. The coordinates for the centre of the licence are -22.176111 and 15.74.

#### 1.3 Environmental Assessment Requirements

The Environmental Regulations procedure (GN 30 of 2012) stipulates that no mining and mineral exploration activities may be undertaken without an environmental clearance certificate. As such, an environmental clearance certificate must be applied for in accordance with regulation 6 of the 2012 environmental regulations. It is imperative that the environmental proponent must conduct a public consultation process in accordance with regulation 21 of the 2012 environmental procedure, produce an environmental scoping report and submit an Environmental Management Plan for the proposed mineral exploration activities.

#### 1.4 Project Alternatives

An alternative to the proposed mineral exploration activity would be to allocate the land-usage to other income generating activities tourism activities. The proposed project will strictly employ locals from nearby towns and settlements.

# ENVIRONMENTAL ASSESSMENT FOR MINERAL EXPLORATION ON EPL 8114, CENTRAL NAMIBIA

## FINAL SCOPING REPORT

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## 1. Introduction

### 1.1 Project Background

The proponent, Mangetti Mining Investment CC, was granted an exclusive prospecting licence (EPL) by the Ministry of Mines and Energy. The licence holder intends to explore for Dimension Stones. An outline of the area is shown in the image below.

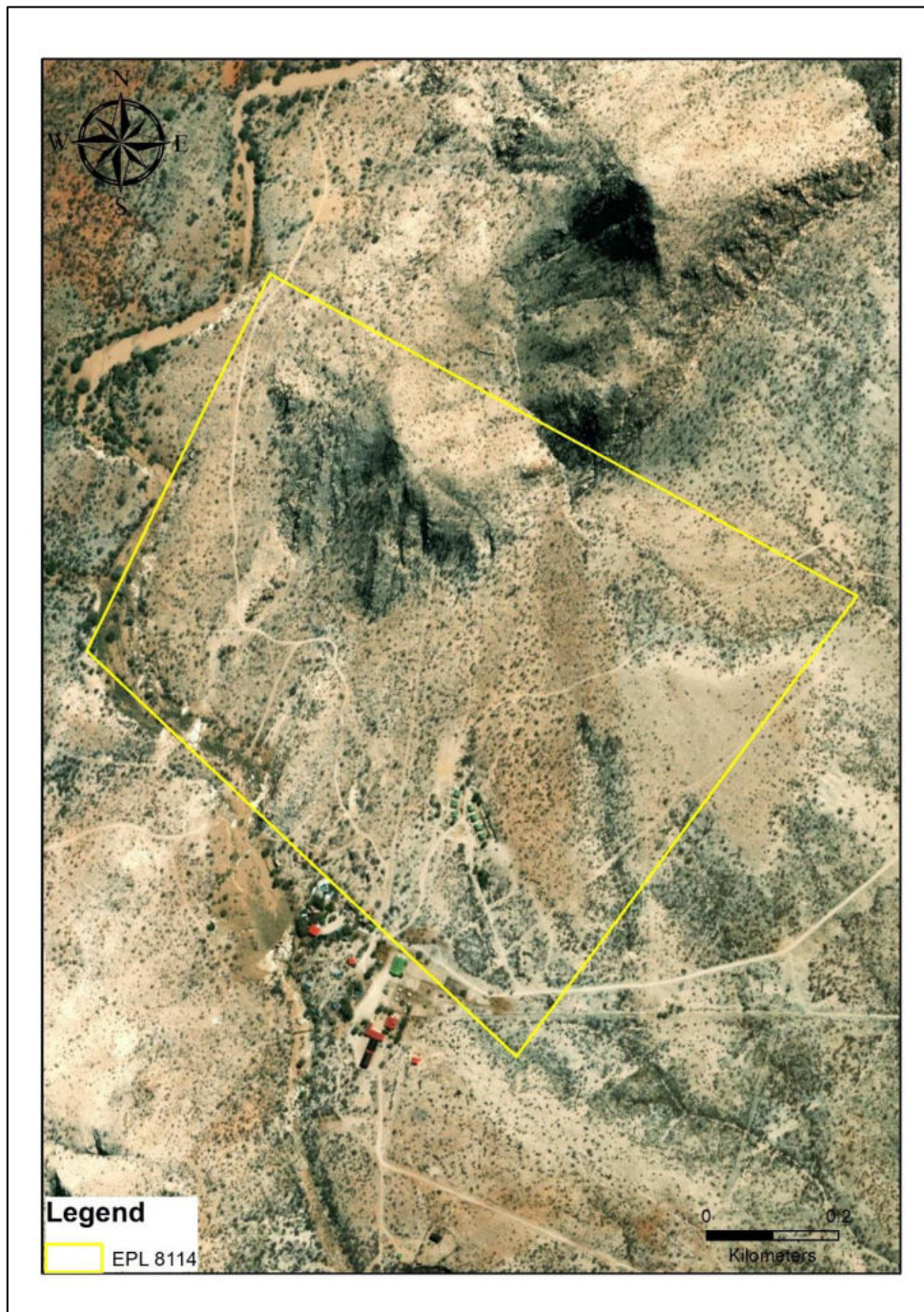


Figure 1 A satellite imagery showing the orientation of the mineral exploration licence.



Figure 2 shows the surrounding farms of the project area. The licence falls within a traditional authority area.

### 1.1.1 Mineral Licence Tenure

The exclusive prospecting number is 14/2/1/4/2/8114. The mineral licence is issued to Mangetti Mining Investment CC.

The size of the mineral licence is **70.7869 Hectares**. It is granted for Dimension Stone commodities.

### 1.1.2 Environmental Consultant

Impala Environmental Consulting cc was appointed by the proponent to undertake an Environmental Assessment (EA) and Environmental Management Plan (EMP) for the mineral exploration project. Impala does not have any interest, be it business, financial, personal or other, in the proposed activity, application or appeal, other than fair remuneration for work performed on this project. The public participation process and report writing was overseen by Mr. Ndaluka Amutenya as the EAP. CV's of various role players are annexed to the appendix section of this report.

### 1.1.3 Proponent of the Proposed Project

The Exclusive Prospecting Licence belongs to Mangetti Mining Investment CC.

Licence Holder	Postal Address	Email Address	Contact
Mangetti Mining Investment CC	P O Box 29532, Windhoek, Namibia		0813684888



**ETUSIS**

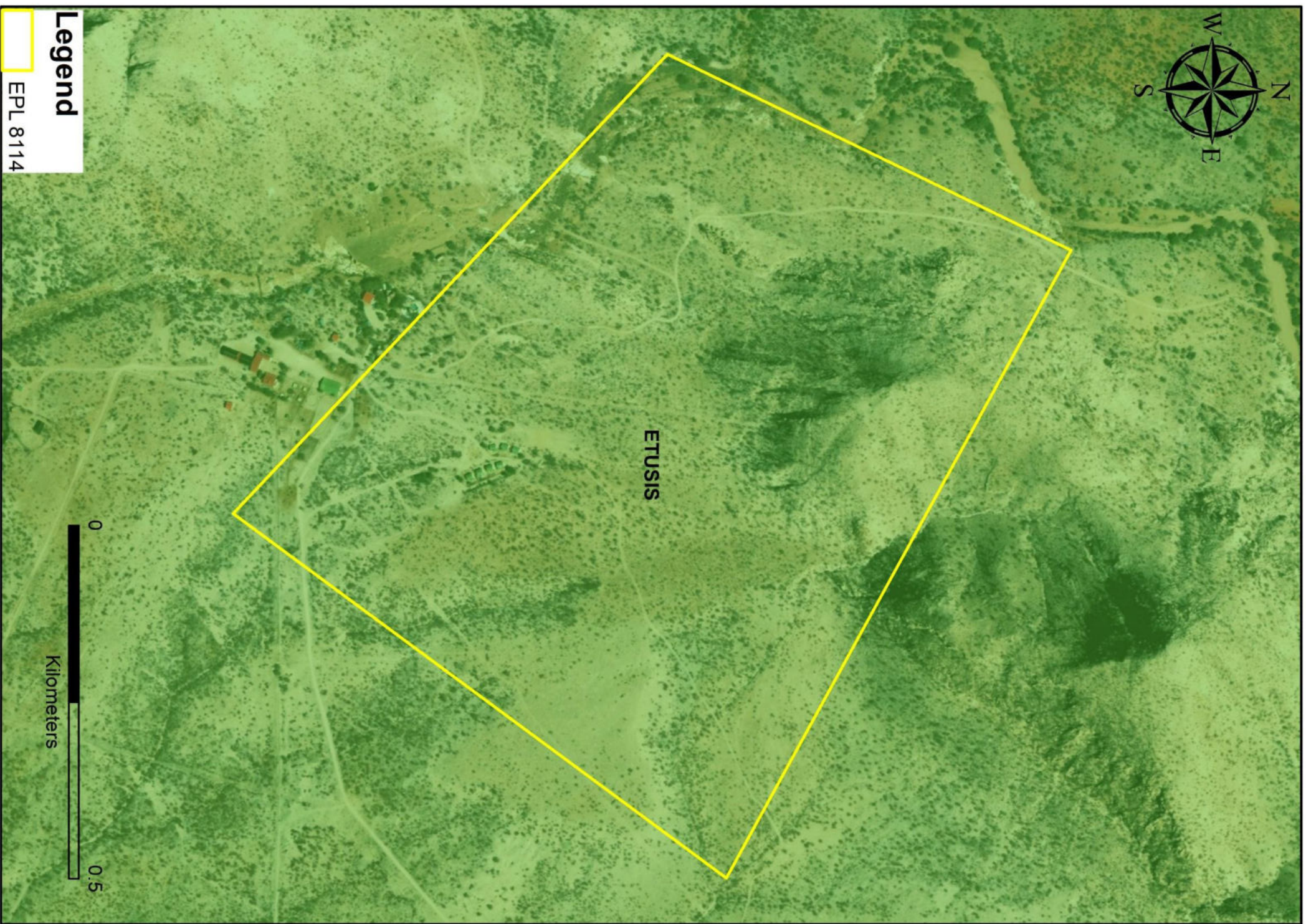
**Legend**

EPL 8114

Kilometers

0

0.5



## 1.2 Project Location

The mineral license is located about 27 km southwest of Karibib, accessible along the C32 road. The coordinates for the centre of the licence are -22.176111 and 15.74.

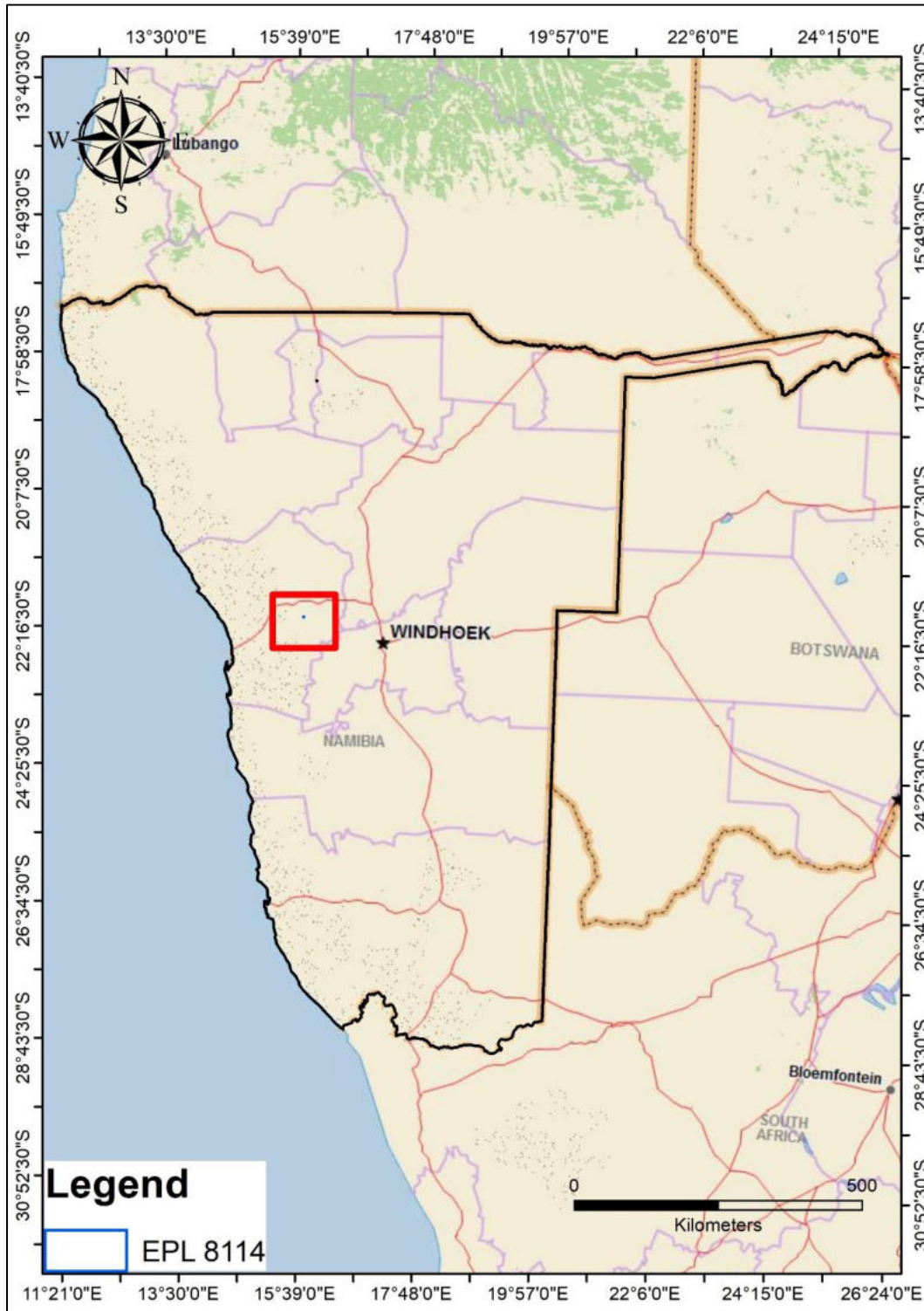


Figure 3 Locality map of the exclusive prospecting licence area

## **1.3 Infrastructure and Services**

### **1.3.1 Electricity**

At this stage, electricity requirements for the project are minimal. The bulk of the power supply to the exploration site will be sourced from the proponent's own generator. The power requirements for the proposed project will be minimal as power will only be required for the following activities:

- Emergency lighting.
- Powering small machinery during the mineral exploration process.
- Power supply for temporary office block or container if necessary.

### **1.3.2 Water Supply**

The water requirements for the project are minimal. Water containers will be brought on site and utilised whenever necessary. The water will mostly be used for general consumption and cleaning. The water used for drilling will be recycled.

### **1.3.3 Refuse and Waste Removal**

The proponent will negotiate directly with all suppliers of consumables such as grease, oil etc. to remove these materials for disposal once they have been used and need to be discarded. The proponent will provide adequate temporary sanitary facilities and such facilities must be maintained in a hygienic condition. Sewerage will be disposed of in a manner not polluting the environment. The proponent will remove all refuse pertaining to the proponent's activities, domestic or otherwise, from the property. The Miner will undertake environmental rehabilitation, both during and at the conclusion of the mineral exploration operations.

### **1.3.4 IT Systems and Communication**

If drilling commences, provision will be made for two-way radios to enable the drill rig operators and the on-site staff to communicate effectively.

### **1.3.5 Security and Fencing**

No provision has been made for fencing although strict access to and from the exploration site will be facilitated by personnel.

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### 1.3.6 Buildings

At this stage, no exploration camp will be set up and so provision will be made for prefabricated containers.

### 1.3.7 Roads

Access to the mineral exploration sites is limited as there are currently no convenient roads, except for 4x4 tracks.

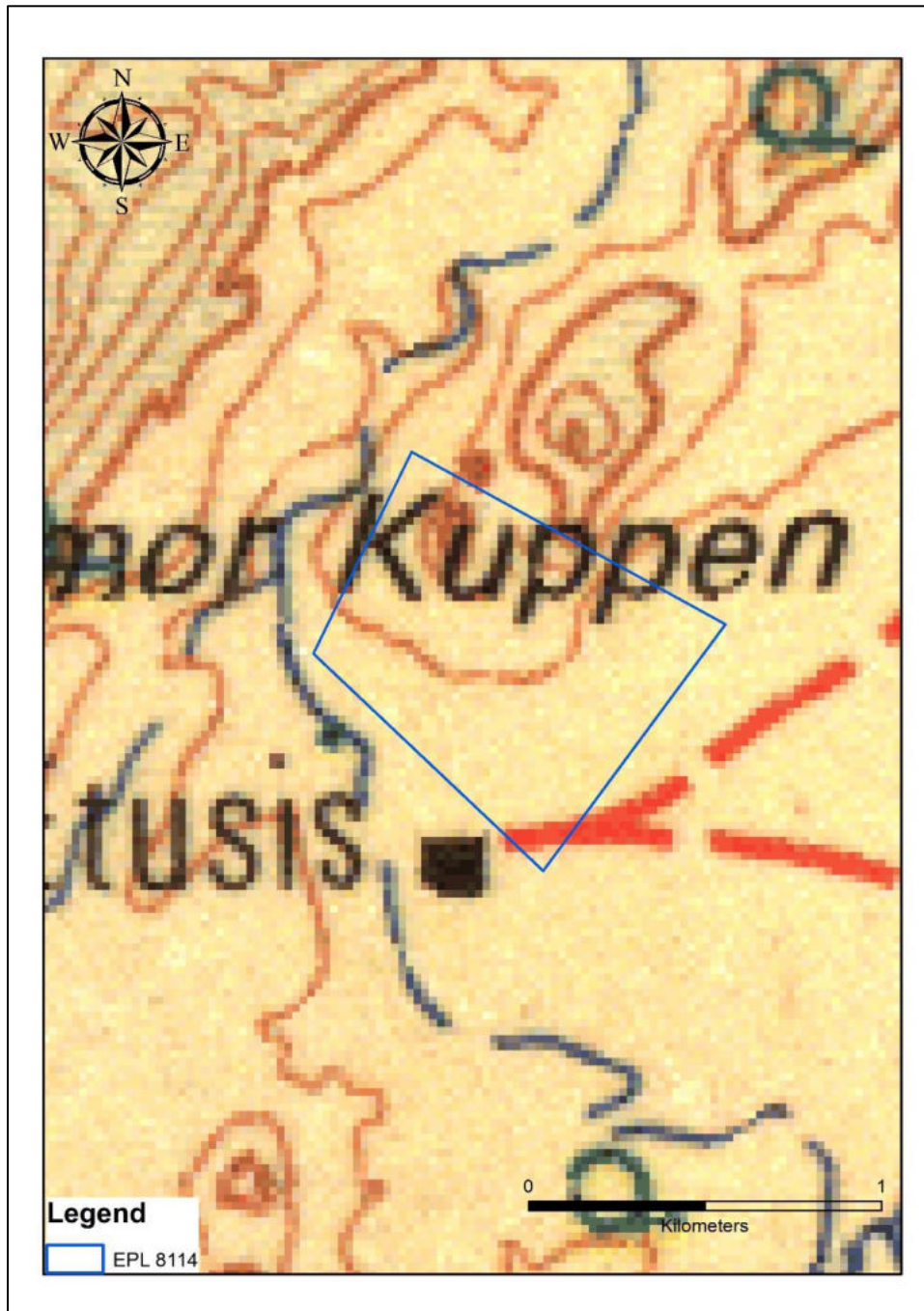


Figure 4 Topographic map showing the existing road network within the licence area.

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### **1.3.8 Mobile Equipment**

The proponent's vehicle fleet will be optimised during the next project phase. Provision will be made 4x4 vehicles and a drill rig.

### **1.3.9 Fuel Distribution, storage and supply**

During the drilling phase, diesel will be delivered to the by road transport and offloaded into the vehicles by offloading pumps.

### **1.3.10 Storage of Lubrication and consumables**

During the drilling phase, consumables and lubricants will be stored in a designated area within a container. These substances will only be used for mechanical purposes and are assumed to be non-hazardous.

### **1.3.11 Fire Fighting Provision**

Portable fire-extinguishers will be fitted, as required, in vehicles and, as well as in the mobile containers where possible.

## **1.4 Environmental Impact Assessment Requirements**

The Environmental Regulations procedure (GN 30 of 2012) stipulates that no mineral exploration activities may be undertaken without an environmental clearance certificate. As such, an environmental clearance certificate must be applied for in accordance with regulation 6 of the 2012 environmental regulations. It is imperative that the environmental proponent must conduct a public consultation process in accordance with regulation 21 of the 2012 environmental procedure, produce an environmental scoping report and submit an Environmental Management Plan for the proposed mineral exploration activities.

## **1.5 Purpose of the Scoping Report**

The scoping report is prepared for the Environmental Impact Assessment for mineral exploration on an area which is located about 27 km southwest of Karibib, accessible along the C32 road. Environmental scoping is a critical step in the preparation of an EIA for the proposed mineral exploration activities. The scoping process identifies the issues that are likely to be most important during the EIA and eliminates those that are

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of little concern. The scoping process shall be concluded with the establishment of terms of reference for the preparation of an EIA, as set out by the Ministry of Environment and tourism. The purpose of this scoping report is to:

- Identify any important environmental issues to be considered before commencing with mineral exploration activities on the proposed mineral exploration sites.
- To identify appropriate time and space boundaries of the EIA study.
- To identify information required for decision-making.

As such, the key objectives of this scoping study are to:

- Inform the public about the proposed mineral exploration activities.
- Identify the main stakeholders, their comments and concerns.
- Define reasonable and practical alternatives to the proposal.
- To establish the terms of reference for an EIA study.

## **1.6 Terms of Reference**

The approach and methodology taken was guided by the Environmental Regulations of 2012 and the Terms of Reference (ToR) which were provided by the proponent:

- Identify all legislation and guidelines that have reference to the proposed project.
- Identify existing environmental (both bio-physical and socio-economic) conditions of the area in order to determine their environmental sensitivity.
- Inform Interested and Affected Parties (I&APs) and relevant authorities of the details of the proposed development and provide them with a reasonable opportunity to participate during the process.
- Consider the potential environmental and social impacts of the development and assess the significance of the identified impacts.
- Compile a Scoping Report detailing all identified issues and possible impacts, stipulating the way forward and identifying specialist investigations, if required.

- Outline management and mitigation measures in an Environmental Management Plan (EMP) to minimize and/or mitigate potentially negative impacts.
- Submit the final scoping report to the competent authority and the Environmental Commissioner.



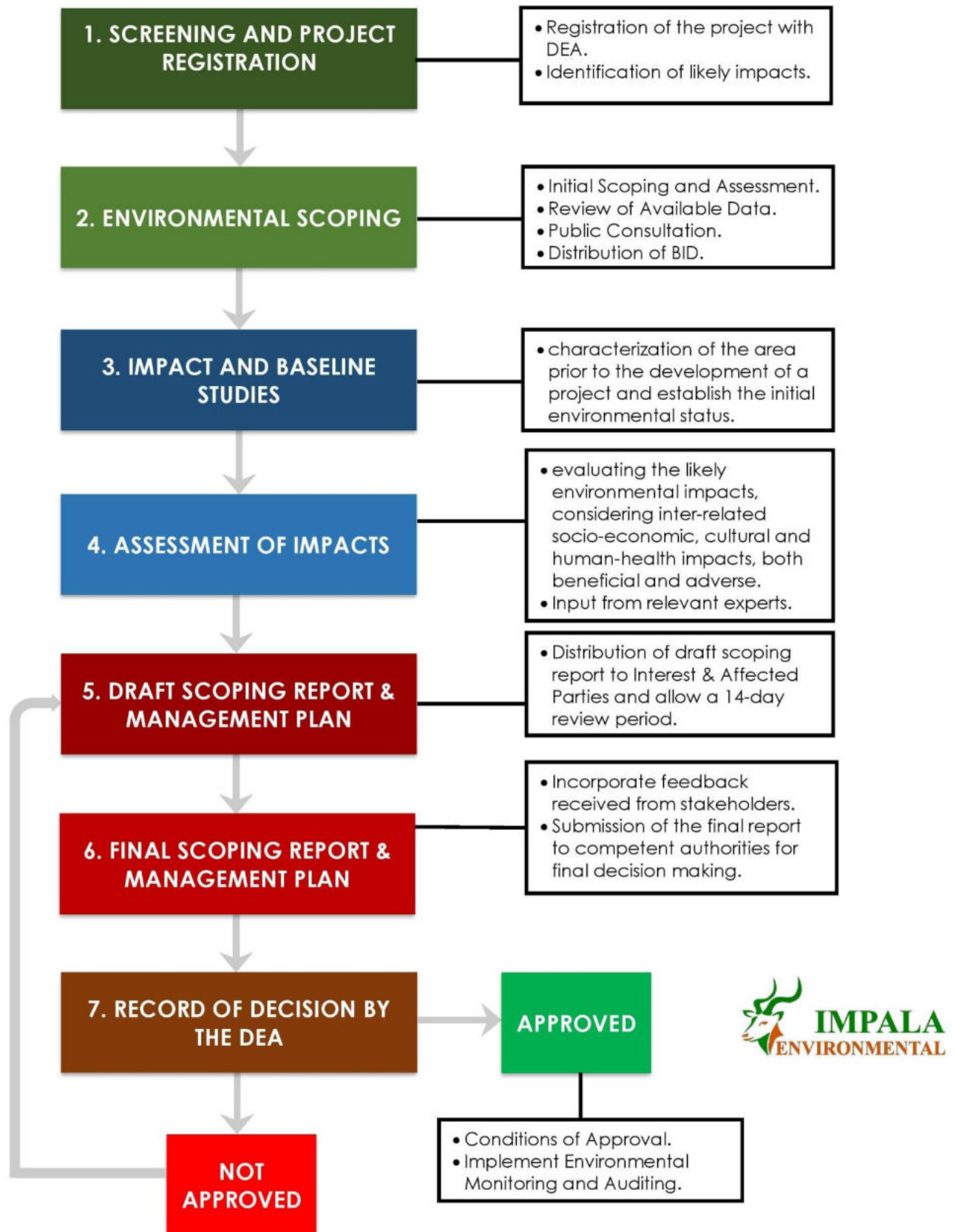


Figure 5 Flowchart of the Environmental Impact Assessment process followed in Namibia.

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### 1.6.1 Environmental Assessment Approach and Methodology

Environmental assessment process in Namibia is governed by the Environmental Impact Assessment (EIA) Regulations No. 30 of 2012 gazetted under the Environmental Management Act, (EMA), 2007, (Act No. 7 of 2007) and in line with the provisions of the Cabinet approved Environmental Assessment Policy for Sustainable Development and Environmental Conservation of 1995.

This report has taken into consideration all the requirements for preparation of all the supporting documents and application for an Environmental Clearance Certificate and lodgement of such application to the Environmental Commissioner (EC), Department of Environmental Affairs (DEA) in the Ministry of Environment and Tourism (MET).

The purpose of the Scoping Phase was to communicate the scope of the proposed project to Interested and Affected Parties (I&APs), to consider project alternatives, to identify the environmental (and social) aspects and potential impacts for further investigation and assessment, and to develop the terms of reference for specialist studies to be conducted in the Impact Assessment Phase if necessary. The steps undertaken during the Scoping Phase are summarised below.

#### 1.6.1.1 Project Initiation and Screening

The project registered on the online ECC portal ([eia.met.gov.na](http://eia.met.gov.na)) in order to provide notification of the commencement of the EIA process and to obtain clarity on the process to be followed.

#### 1.6.1.2 Initial Scoping Public Participation Process

The objective of the public scoping process was to ensure that interested and affected parties (I&APs) were notified about the proposed project, given a reasonable opportunity to register on the project database and to provide initial comments. Steps that were undertaken during this phase are summarised below:

- **I&AP identification:** A preliminary I&AP database was compiled using the farmer's contact details that were obtained from the Ministry of Lands and contact details of other interested and affected parties that were provided by the proponent. Additional I&AP's were added to the database based on

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responses to the advertisements and notification letters, as well as attendees to the various meetings.

- **Notification letter and Background Information Document (BID):** A notification letter and Background Information Document was distributed for review and comment for a period of 3-4 weeks after commencement of the project.
- **Advertisements and site notice:** Advertisements announcing the proposed project, the availability of the BID, public meetings and the I&AP registration / comment period were placed in two widely distributed newspapers for two consecutive weeks. Site notices were placed on the boundaries of farm fences and on the notice boards of the Regional Council.

Over and above the issues raised were incorporated into the scoping report. These submissions were collated and responded to as indicated in the public participation section of the scoping report.

#### **1.6.1.3 Compilation and Review of Draft Scoping Report (DSR)**

The DSR was prepared in compliance with Section 8 of the EIA Regulations of 2012 and incorporated with comments received during the initial Public Participation Process. The DSR was distributed for a 14-day review and comment period.

#### **1.6.1.4 Final Scoping Report and Completion of the Scoping Phase**

The Final Scoping Report (FSR) summarises the following: the legal and policy framework; approach to the EIA and process methodology; the project's need and desirability; proposed project activities; key characteristics of the receiving environment; and key issues of concern that will be further investigated and assessed in the next phase of the EIA.

The FSR complies with Section 8 of the EIA Regulations 2012. All written submissions received during the DSR review and comment period will be collated and responded to. The FSR was submitted to the competent authority. In terms of Section 32 of the Environmental Management Act, 2007 (No. 7 of 2007), the competent authority is then required to make a recommendation on the acceptance or rejection of the report to Ministry of Environment and Tourism (MET): Department of Environmental Affairs (DEA), who will make the final decision.

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## 1.6.2 List of Specialist Studies Undertaken

Section 9(a) of the Environmental Regulations of 2012 requires a disclosure of all the tasks to be undertaken as part of the assessment process, including any specialist to be included if necessary.

The mineral exploration project has not commenced yet. This means that the proponent has not conducted any surface exploration activities (i.e. geophysical survey, geological mapping and geochemical sampling) to find anomalies and determine suitable targets which can be tested with drilling. As such, no field specific specialist studies were commissioned by the proponent as no specific target area has been delineated yet. Although specialist studies were deemed unnecessary for this environmental impact assessment due to low intensity and extent of the exploration activities at this stage, a heritage impact assessment study was undertaken for this project. Specialist studies conducted in the area, in previous years, have been reviewed as part of the scoping and assessment process of this project.

After the proponent successfully drills a delineated target, undertakes a feasibility study and confidently decides to proceed with mining, a full environmental impact assessment will be carried out with appropriate site-specific specialist studies on groundwater, air-quality, fauna, flora, archaeology and avifauna.

## 1.7 Need and Desirability

### 1.7.1 Need of the Exploration Project

Mineral exploration companies play an important role in the development of a country's mineral resources. When minerals are mined, the company selling the product must pay a royalty to the government). The royalties are set by the government at a level that will encourage others to risk their capital in finding and developing these minerals, rather than the government risking taxpayer's money. This way the country can share in benefit of mineral resources without risking funds required for key everyday services to the community.

Namibia has a long tradition of mining. In 2018, mining contributed 14% of GDP and expanded 28%. In 2019, the mining industry contributed over 300 million dollars to government revenue. The whole industry contributed around 2.2 billion dollars to the national economy in the same period. However, a drop in diamond and uranium

production caused a contraction of 11,1%. Lower mineral commodity prices led to the declining expenditure on exploration. In 2019, the mining industry paid over 300 million dollars in wages and salaries and provided 16 324 direct jobs with 9 027 permanent employees. Temporary jobs figured out 800, while 6 515 were contractor jobs.

The exploration project may assist in helping Namibia attain some of the goals set out in National Development Plans such as the Fifth National Development Plan (NDP5) and the Harambee Prosperity Plan (HPP). During the exploration phase, the project will provide employment to at least 15 people from the surrounding towns and settlements. If the exploration project leads to the discovery of an economically viable mineral deposit, this may subsequently lead to the development of a mine within the area. A mine can significantly contribute to social-economic development around the surrounding community.

### **1.7.2 Alternatives**

During the application of the exploration licence, no alternative sites were considered. The proposed exploration site has shown the potential to host an orogenic gold deposit.

#### **1.7.2.1 Exploration Method Alternatives**

Geochemical sampling and geological mapping methods will be used during the initial exploration period until a target is delineated. Thereafter, reverse circulation and diamond drilling methods will be employed to test the depth and extent of the mineralised rock units. If more modern, effective, and environmentally friendly exploration methods than the preferred ones are developed, such methods will be assessed and or considered.

#### **1.7.2.2 No-Go Alternatives**

The no-go alternative will mean that the current land activities such as farming and important vegetation species will not be disturbed, that is, there will not be disturbance of the flora and fauna.

No-go alternative will result in the non-exploration of minerals and bring beneficinations to the receiving environment. However, the no-go alternative is not considered since it will lead to negative socio-economic impacts.

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## 2 Summary of applicable legislation

All mineral rights, related to mineral exploration activities in Namibia, are regulated by the Ministry of Mines and Energy whereas the environmental regulations are regulated by the Ministry of Environment and Tourism. The acts that affect the implementation, operation and management of mineral exploration activities in Namibia are shown below.

### 2.1 Environmental Management Act of 2007

**Line Ministry:** Ministry of Environment and Tourism

The regulations that accompany this act lists several activities that may not be undertaken without an environmental clearance certificate issued in terms of the Act. The act further states that any clearance certificate issued before the commencement of the act (6 February 2012) remains in force for one year. If a person wishes to continue with activities covered by the act, he or she must apply for a new certificate in terms of the Environmental Management Act.

### 2.2 The Minerals Prospecting and Mining Act of 1992

**Line Ministry:** Ministry of Mines and Energy

The Minerals Prospecting and Mining Act No.33 of 1992 approves and regulates mineral rights in relation to exploration, reconnaissance, prospecting, small scale mining, mineral exploration, large-scale mining and transfers of mineral licences.

### 2.3 Water Resources Management Act of 2004

**Line Ministry:** Ministry of Agriculture, Water and Forestry

The act provides for the management, protection, development, usage and conservation of water resources; to provide for the regulation and monitoring of water resources and to provide for incidental matters.

### 2.4 Nature conservation ordinance, ordinance No. 4 of 1975

**Line Ministry:** Ministry of Environment and Tourism

The Nature Ordinance 4 of 1975 covers game parks and nature reserves, the hunting and protection of wild animals (including reptiles and wild birds), problem animals, fish,

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and the protection of indigenous plants. It also establishes a nature conservation board. The basic set of regulations under the ordinance is contained in GN 240/1976 (OG 3556). The topics covered in the regulations include tariffs (game parks), regulations relating to game parks, swimming baths, use of boats in game parks, inland fisheries, keeping game and other wild animals in capturing. In addition, the ordinance also regulates game dealers, game skins, protected plants, birds kept in cages, trophy hunting of hunt-able game, hunting at night, export of game and game meat, sea birds, private game parks, nature reserves, regulations of wildlife associations and registers for coyote getters.

## **2.5 National Heritage Act, 2004 (Act No. 27 of 2004)**

**Line Ministry/Body:** National Heritage Council

The National Heritage Act provides for the protection and conservation of places and objects of heritage significance and the registration of such places and objects; to establish a National Heritage Council; to establish a National Heritage Register; and to provide for incidental matters.

## **2.6 Petroleum Products and Energy Act No. 13 of 1990**

**Line Ministry/Body:** Ministry of Mines and Energy

The act regulates the importation and usage of petroleum products. The act reads as “To provide measures for the saving of petroleum products and an economy in the cost of the distribution thereof, and for the maintenance of a price thereof; for control of the furnishing of certain information regarding petroleum products; and for the rendering of services of a particular kind, or services of a particular standard; in connection with motor vehicles; for the establishment of the National Energy Fund and for the utilization thereof; for the establishment of the National Energy Council and the functions thereof; for the imposition of levies on fuel; and to provide for matters incidental thereof”.

## **2.7 Forest Act, No. 12 of 2001**

**Line Ministry/Body:** Ministry of Agriculture, Water and Forestry

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The act regulates the cutting down of trees and reads as follows “To provide for the establishment of a Forestry Council and the appointment of certain officials; to consolidate the laws relating to the management and use of forests and forest produce; to provide for the protection of the environment and control and management of forest trees; to repeal the preservation of Bees and Honey proclamation 1923, preservation of Trees and Forests Ordinance, 1952 and the Forest Act, 1968; and to deal with incidental matters”.

The constitution defines the function of the Ombudsman and commits the government to sustainable utilization of Namibia’s natural resources for the benefit of all Namibians and describes the duty to investigate complaints concerning the over-utilization of living natural resources for the benefit of all Namibians and describes the duties to investigate complaints concerning the over-utilization of living natural resources, the irrational exploitation of non-renewable resources, the degradation and the destruction of ecosystem and failure to protect the beauty and character of Namibia. Article 95 states that “*the state shall actively promote and maintain the welfare of the people by adopting; inter-alia policies aimed at maintenance of ecosystems, essential ecological processes and biological diversity of Namibia and utilization of natural resources on a sustainable basis for the benefit of all Namibians both present and future*”.

## **2.8 Atmospheric Pollution Prevention Ordinance 11 of 1976**

**Line Ministry/Body:** Ministry of Health and Social Services

This ordinance provides for the prevention of air pollution and is affected by the Health Act 21 of 1988. Under this ordinance, the entire area of Namibia, with the exception of East Caprivi, is proclaimed as a controlled area for the purposes of section 4(1) (a) of the ordinance.

## **2.9 Hazardous Substance Ordinance, No. 14 of 1974**

**Line Ministry/Body:** Ministry of Safety and Security

The ordinance provides for the control of toxic substances. It covers manufacture, sale, use, disposal and dumping as well as import and export. Although the



environmental aspects are not explicitly stated, the ordinance provides for the importing, storage and handling.

## **2.10 Namibian Water Corporation (Act 12 of 1997)**

**Line Ministry/Body:** Namibian Water Corporation

The act caters for water rehabilitation of prospecting and mineral exploration areas, environmental impact assessments and for minimising or preventing pollution.

## **2.11 Public and Environmental Health Act, 2015**

**Line Ministry/Body:** Ministry of Health and Social Services

provide a framework for a structured uniform public and environmental health system in Namibia; and to provide for incidental matters.

## **2.12 Agricultural (Commercial) Land Reform Act 6 of 1995**

**Line Ministry/Body:** Ministry of Lands, Resettlement and Rehabilitation

To provide for the acquisition of agricultural land by the State for the purposes of land reform and for the allocation of such land to Namibian citizens who do not own or otherwise have the use of any or of adequate agricultural land, and foremost to those Namibian citizens who have been socially, economically or educationally disadvantaged by past discriminatory laws or practices; to vest in the State a preferent right to purchase agricultural land for the purposes of the Act; to provide for the compulsory acquisition of certain agricultural land by the State for the purposes of the Act; to regulate the acquisition of agricultural land by foreign nationals; to establish a Lands Tribunal and determine its jurisdiction; and to provide for matters connected therewith.

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## **3 Description of Proposed Mineral exploration Project**

### **3.1 Introduction**

Dimension stone can be defined as natural rock material quarried for the purpose of obtaining blocks or slabs that meet specifications as to size (width, length, and thickness) and shape. Color, grain texture and pattern, and surface finish of the stone are normal requirements. Durability (essentially based on mineral composition and hardness and past performance), strength, and the ability of the stone to take a polish are other important selection criteria.

Dimension stone is an important building material used worldwide, and therefore a valuable natural resource. Namibia has numerous deposits of good quality dimension stone displaying a variety of attractive colors, patterns and textures. The main rock types quarried are marble, granite, dolerite, conglomerate, and sodalite.

### **3.2 Techniques for Mineral Exploration**

#### **3.2.1 Target Generation**

Target generation involves certain stages, such as mapping, geochemical survey and remote sensing. Mapping includes development of the geological, topographical (base), geochemical, and structural maps. Geological map focuses on identifying and mapping outcrops, describing mineralization and alteration zones, and making geological cross sections. In other words, it relies on the identification of rocks and minerals and the understanding of the environment in which they form. It aims to find what rock types occur at or close to the surface and how these rock types are related to each other, e.g., by defining their boundaries, ages, and structure. Topographical map, which is a base map, depicts the topographical features (contour, hill, stream, etc.). Geochemical map includes surface sample locations and results, including analyses of rock, silt, and soil samples. Geophysical map depicts the geology and results obtained from geophysical survey. Structural map shows the orientation data (strike, dip, type, etc.) of bedding planes, faults, folds, joints and other structural features. They are all gathered to be used for the interpretation in copper mineral exploration (Mentes, 2012).

### **3.2.1.1 Geochemical Survey**

Geochemical survey is a kind of sampling method in mineral exploration and results in 'Assay' after laboratory works. Exploration geochemistry has evolved from its early origins using the chemistry of the environment surrounding a deposit in order to locate it. In mineral exploration studies, geochemical methods involve the geochemical analysis of geological materials, including rock, soil, and stream sediment or silt sediment. In addition to these surface samples, any materials obtained from drilling can be analyzed for the evaluation. This survey provides physical results to be worked on for the further interpretation and is used for identifying geochemical anomalies, which are used for geochemical mapping (Mentes, 2012). During the first phase, the type of sampling methods that will be applied are bulk sampling.

### **3.2.1.2 Remote Sensing**

Remote Sensing is the collection of information about an object or area without being in physical contact with it. Data gathering systems used in remote sensing are photographs obtained from manned space flights or airborne cameras, and electronic scanner or sensors such as multispectral scanners in satellites or airplanes and TV cameras, all of which record data digitally. Aerial photography and satellites allow people to work with modern techniques. Aerial photography is used to sense the amount (quantity) of mineral in a particular area. The mineral exploration team collects information such as tracks, roads, fences, and habitation, as well as maps of outcrops, regolith, and vegetation cover across a region. Landsat image (satellite imagery) is used both for the visible light spectrum over mineral exploration (Mentes, 2012).

### **3.2.2 Target Drilling**

Target drilling is the process whereby rigs or some operated tools are used to make boreholes to intercept a rock unit. It can be done by contractors with more experienced operators. This method is used to obtain very detailed information about rock types, mineral content, and rock fabric, and the relationships between rock layers close to the surface and those at depth. Then, subsurface geology in an area is evaluated after the results are obtained. That indicates if the potentially economic resources are present or not.

### **3.2.3 Resource Evaluation**

It is an evaluation of tonnage (volume) and grade (concentration or weight percent) of the ore body. The volume is determined by using drill data to outline the deposit in the subsurface, and by using geometric models to calculate the volume. The grade is the average concentration determined from numerous assays of drill samples. The purpose of the resource evaluation is to understand the possibility to expand the known size of the deposit and mineralization. This step should give an information or idea about proceeding of mineral exploration activities. Resources at this work are determined during exploration and do not provide certain results of grade and tonnage. In order to get an exact size, quality of the commercial mineral, 'reserve definition', which is next step of mineral exploration studies, is used (Mentes, 2012).

### **3.2.4 Resource Definition**

Reserve definition is important to transform a mineral resource into an economic asset, which is an ore reserve and find the answer if it is valuable or not. 'Reserve' is more intensive, technical, and well characterized term with its exact quality and size relative to 'Resource'. Also, reserve estimation may be changed over time because of the assessments during and after the mining. The main purpose of this stage is the making decision on the techniques just before extraction as a result of the results. It includes technical, economic evaluation, geotechnical assessment, and engineering studies of the rocks surrounding the deposit to determine the potential parameters of proposed open pit or underground mining methods. At the end of this process, a feasibility study is published, and the deposit is supposed to either be uneconomic or economic.

## **3.3 Labour Requirements**

The proponent intends to employ about 5-15 personnel, including 3 management staff for the first phase of the project. The employees will be sourced from the local community including people from Karibib. All employees will undergo a safety induction, first aid training course and wildlife awareness program. The Labour Act of 2007 will always be adhered to.

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## 4 Description of the Current Environment

### 4.1 Introduction

This section aims to document the present state of the environment, the likely impact of changes being planned and the regular monitoring to attempt to detect changes in the environment. As such, this area represents a high fauna diversity.

Namibia has four very large and arid regions which set them apart in various ways from the rest of the country; Kunene and Erongo region in the west and Karas and Hardap in the south (Mendelsohn, et al., 2002). Kunene Region occupies the north-west corner of Namibia. The Skeleton Coast Park forms its entire western boundary with the Atlantic Ocean. The Kunene River with its Epupa Falls forms an international boundary with Angola to the north. Nationally, Kunene is bordered by Omusati Region and the western boundary of Etosha National Park. In the south it forms the southern boundary of most of Etosha National Park and borders Erongo and Erongo regions. The region is home to the Skeleton Coast Park and many conservancies. Erongo is one of the central regions in Namibia with a size of 105,185 square kilometres, with vegetation ranging from open savanna around Karibib, to lush vegetation and massive bright red sandstone cliffs.

There is generally an absence of fences in most parts of the Erongo Region. This makes livestock farming easier which means that both wild and domestic animals can move widely in many places, migrating from areas of poor grazing to other places with more abundant pastures.

### 4.2 Climatic Conditions

#### 4.2.1 Temperature

In the proposed area, the hot season lasts for 5 months, from September to January, with an average daily high temperature above 30°C. The hottest month of the year in Karibib is November. The cool season lasts for 2 months, from June to July, with an average daily high temperature below 20°C. The coldest month of the year in Karibib is July.

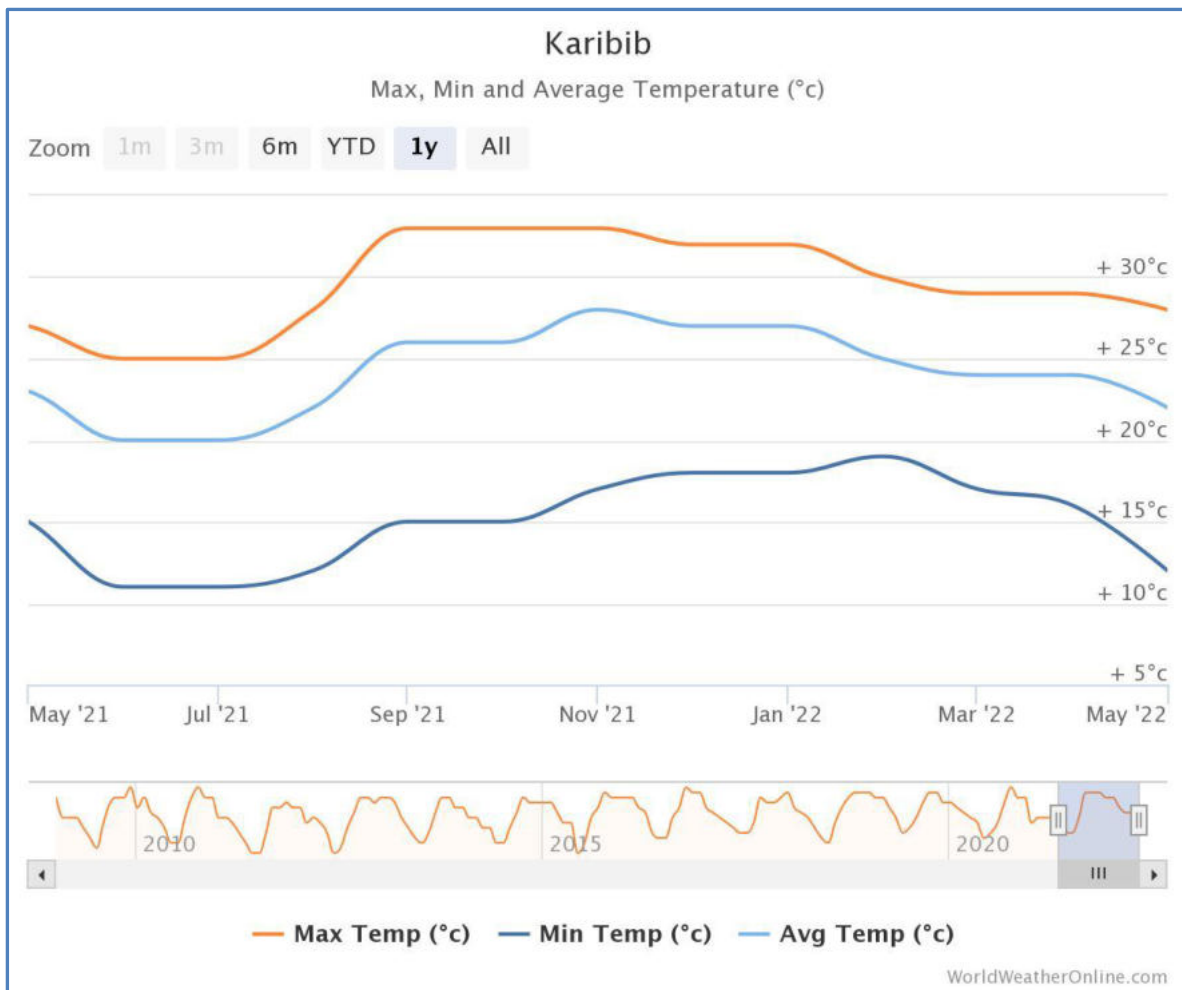


Figure 6 A graph showing the temperature patterns in Karibib, from [www.worldweatheronline.com](http://www.worldweatheronline.com)

#### 4.2.2 Precipitation

In the proposed area the rainy period of the year lasts for 5 months, from December to April. The highest rainfall is usually experienced in February which may reach 50 mm with average rainfall days of 7. In January months, rain-fall may reach about 35 mm with average rainfall days. The graph below shows the rainfall patterns in the area.

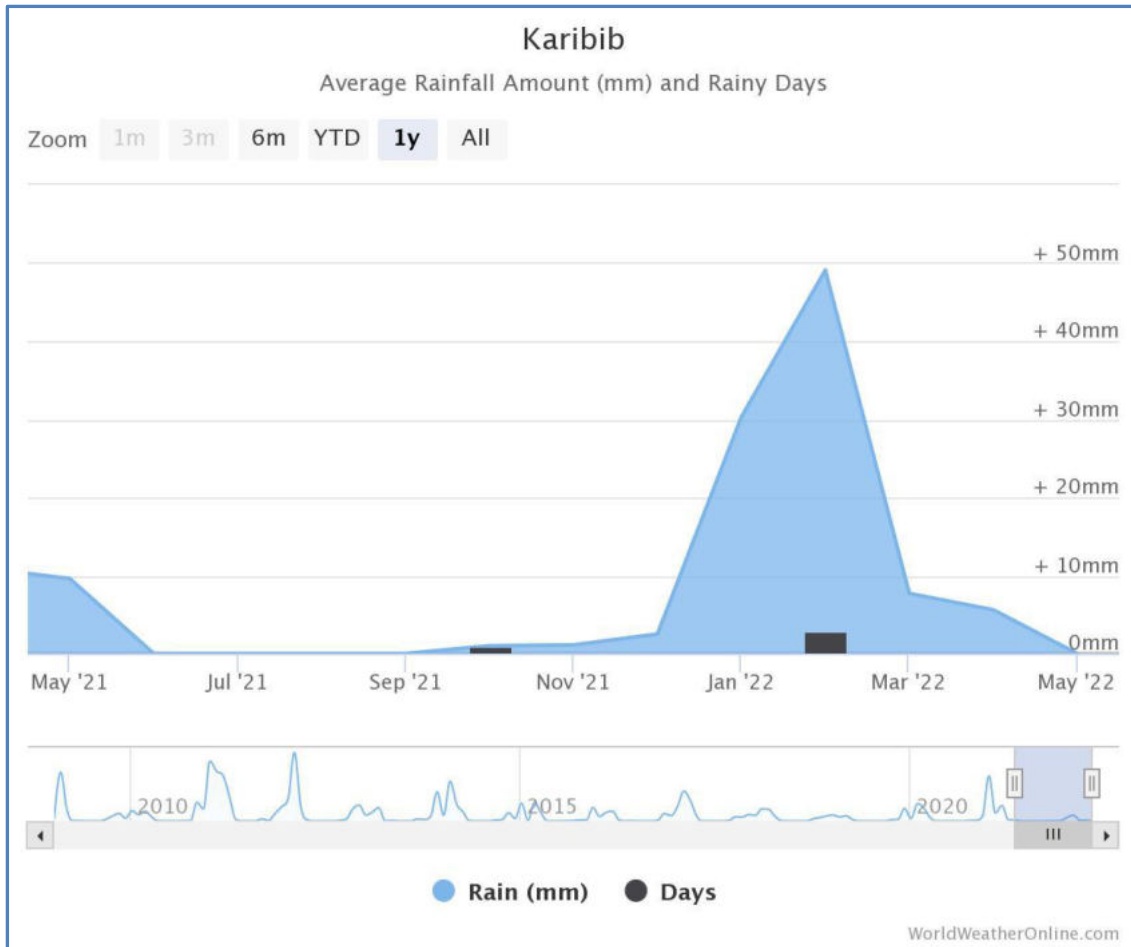


Figure 7 A graph showing rainfall patterns in Karibib, from [www.worldweatheronline.com](http://www.worldweatheronline.com)

#### 4.2.3 Wind

Predominantly south easterly. Southerly, easterly and northerly airflow is common. The highest wind speeds are experienced in October (+/- 25 km/h).

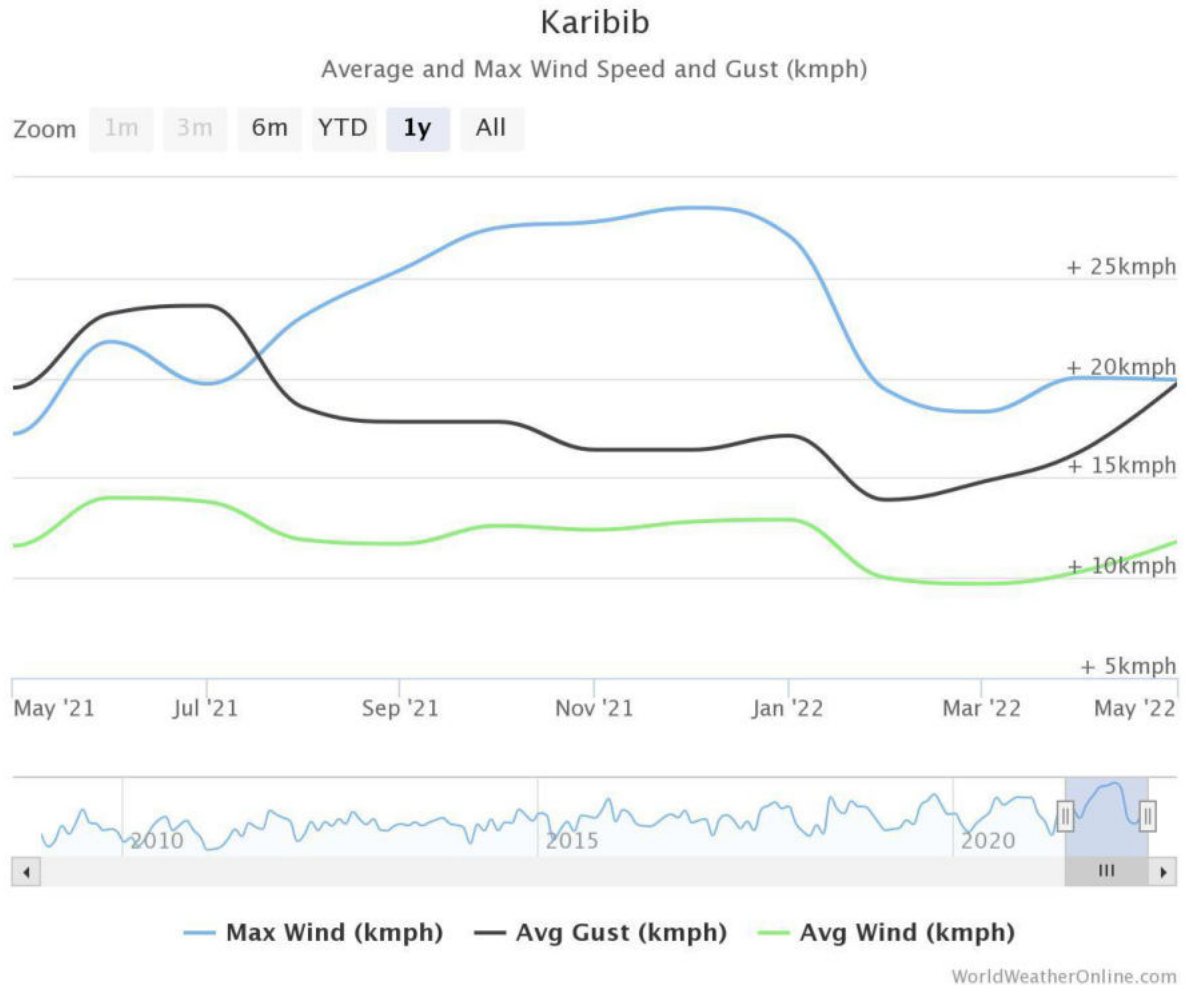


Figure 8 A graph showing windspeed patterns in Karibib, from [www.worldweatheronline.com](http://www.worldweatheronline.com)

#### 4.2.4 Humidity

The relative humidity during the least humid month of the year, i.e. September, is around 16-18% and the most humid month is February with 55-60% humidity. Namibia has a low humidity in general, and the lack of moisture in the air has a major impact on its climate by reducing cloud cover and rain and increases the rate of evaporation.



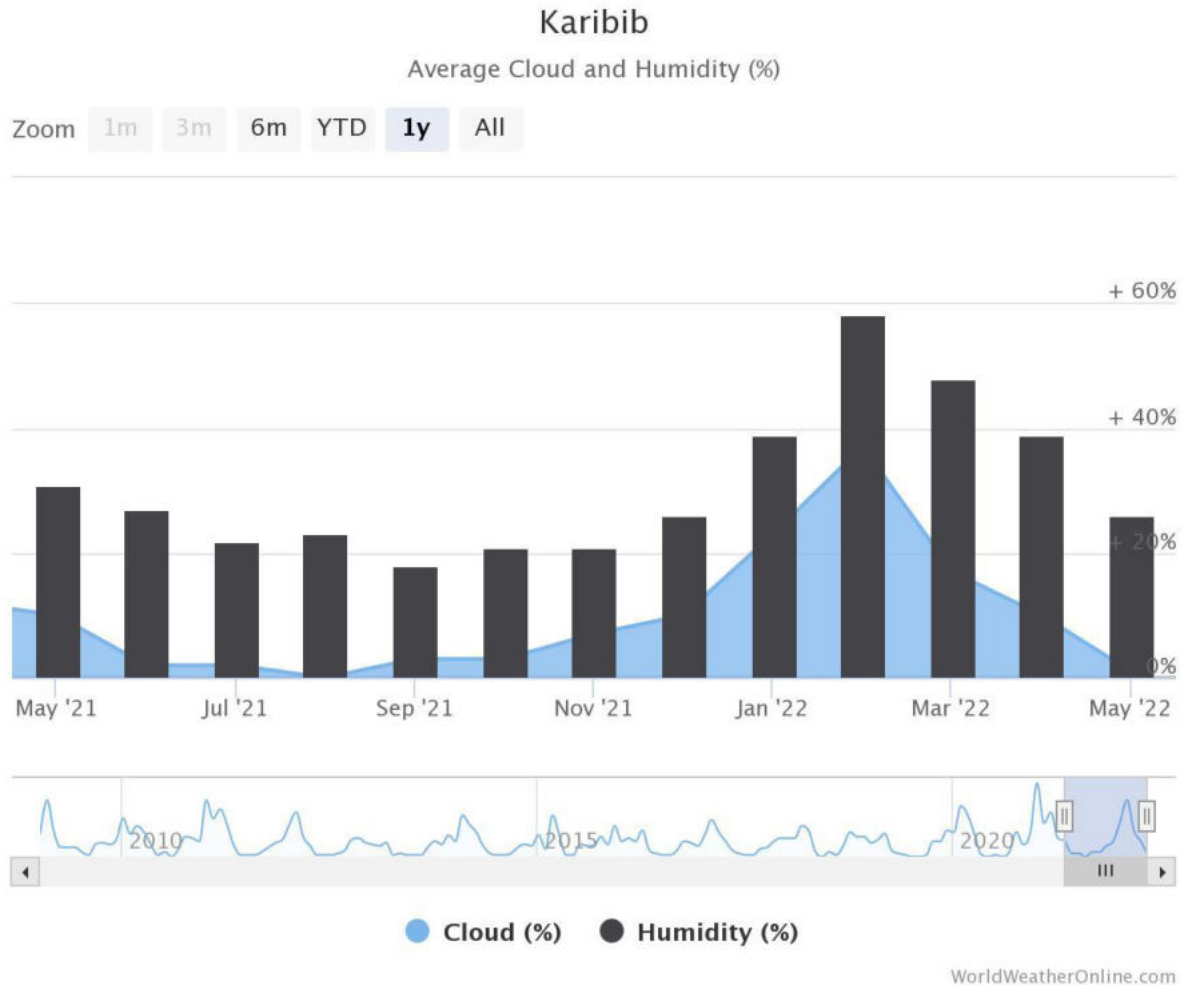


Figure 9 A graph showing the humidity patterns in Karibib, from [www.worldweatheronline.com](http://www.worldweatheronline.com)

## 4.2 Air Quality

Activities around the exploration licence area mainly consist of tourism and small-scale livestock farming. Besides other exploration activities, there are no other industries or operating mines in the area or mines in the area. Probable sources of air pollution in the area are emissions and dust from vehicles travelling on gravel roads, dust generated by cattle grazing and wind erosion from the exposed areas.

PM<sub>10</sub> describes all particulate matter in the atmosphere with a diameter equal to or less than 10 µm and are generally emitted from motor vehicles (diesel engines) and burning of wood. PM<sub>2.5</sub> describes all particulate matter in the atmosphere with a diameter equal to or less than 2.5 µm and are mostly related to combustion. NO<sub>2</sub> and nitric oxide (NO) are formed simultaneously in combustion processes and other high temperature operations such as blast furnaces. Sources of SO<sub>2</sub> include fossil fuel

combustion from industry and power plants. SO<sub>2</sub> is emitted when coal or other biomass fuels are burnt for energy.

Data from accuweather.com shows that the air quality in the area is generally excellent with an air quality index of 20 AQI. The ground-level ozone (O<sub>3</sub>) is about 20 µg/m<sup>3</sup> which is fair. The fine particle matter levels (PM<sub>2.5</sub>) are about 9 µg/m<sup>3</sup>. The particle matter (PM<sub>10</sub>) is about 8 µg/m<sup>3</sup>. The nitrogen dioxide (NO<sub>2</sub>), carbon monoxide (CO), and sulphur dioxide (SO<sub>2</sub>) levels in the area are recorded to be 1 µg/m<sup>3</sup>.

## 4.3 Geology

### 4.3.1 Geological setting

The mineral licence is hosted by rocks within the Southern Central Zone of the Damara Orogen. This terrane comprises mid Proterozoic granitic basement inliers, overlain by metamorphosed late Proterozoic arkoses, shelf carbonates, turbidites and minor volcanic rocks that have been intruded by numerous granites and pegmatites.

Most of the project area is underlain by meta-sedimentary rocks of the Nosib Group meta-arkoses (Etusis Formation) or the stratigraphically younger Swakop Group marine carbonates and meta-turbidites comprising the Arandis Formation (biotite schist, minor quartz schist calc-silicate rock and amphibolite), the Uis Formation (dominantly dolomitic and calcitic marbles with minor calc-silicate) and the overlying Kuiseb Formation (schistose quartz feldspar mica meta-greywacke and meta-pelite). Glaciogenic mixtites of the Chuos and Ghaub Formations have limited exposure in the project area. The Swakop Group sediments have been intruded by a series of syn-, late-syn- and post-tectonic granite and pegmatite bodies.

The project is straddled by the magnetically defined regional scale Abbabis Lineaments. These lineaments are interpreted to be important tectono-stratigraphic boundaries associated with changes in sedimentology, structure and type of granitic intrusion observed in the Damara Orogen and have known association and control with uranium and other forms of mineralization. The structural setting of the Project area is complex with sediments deformed during poly-phase deformation and metamorphosed to upper greenschist-amphibolite facies.

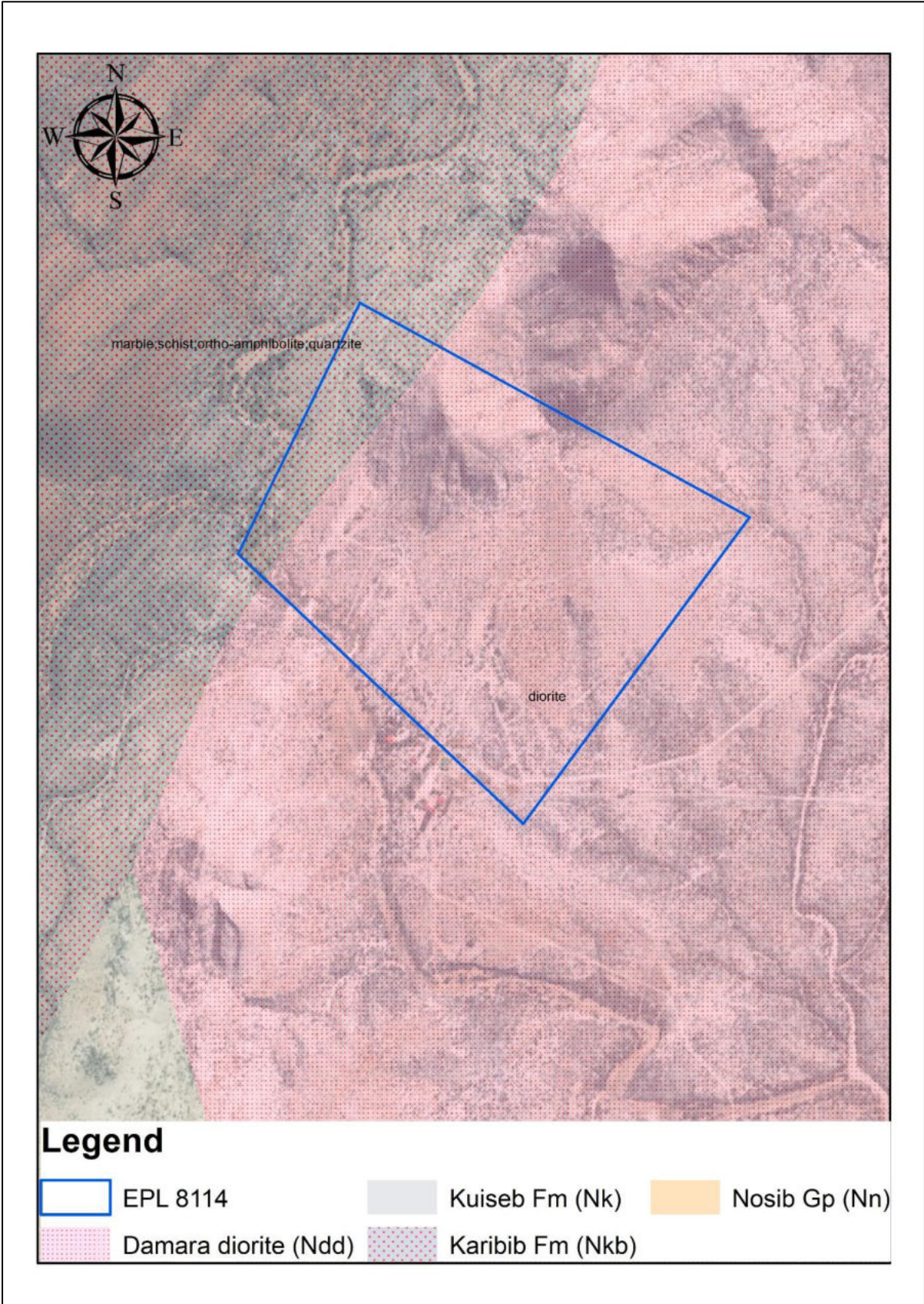
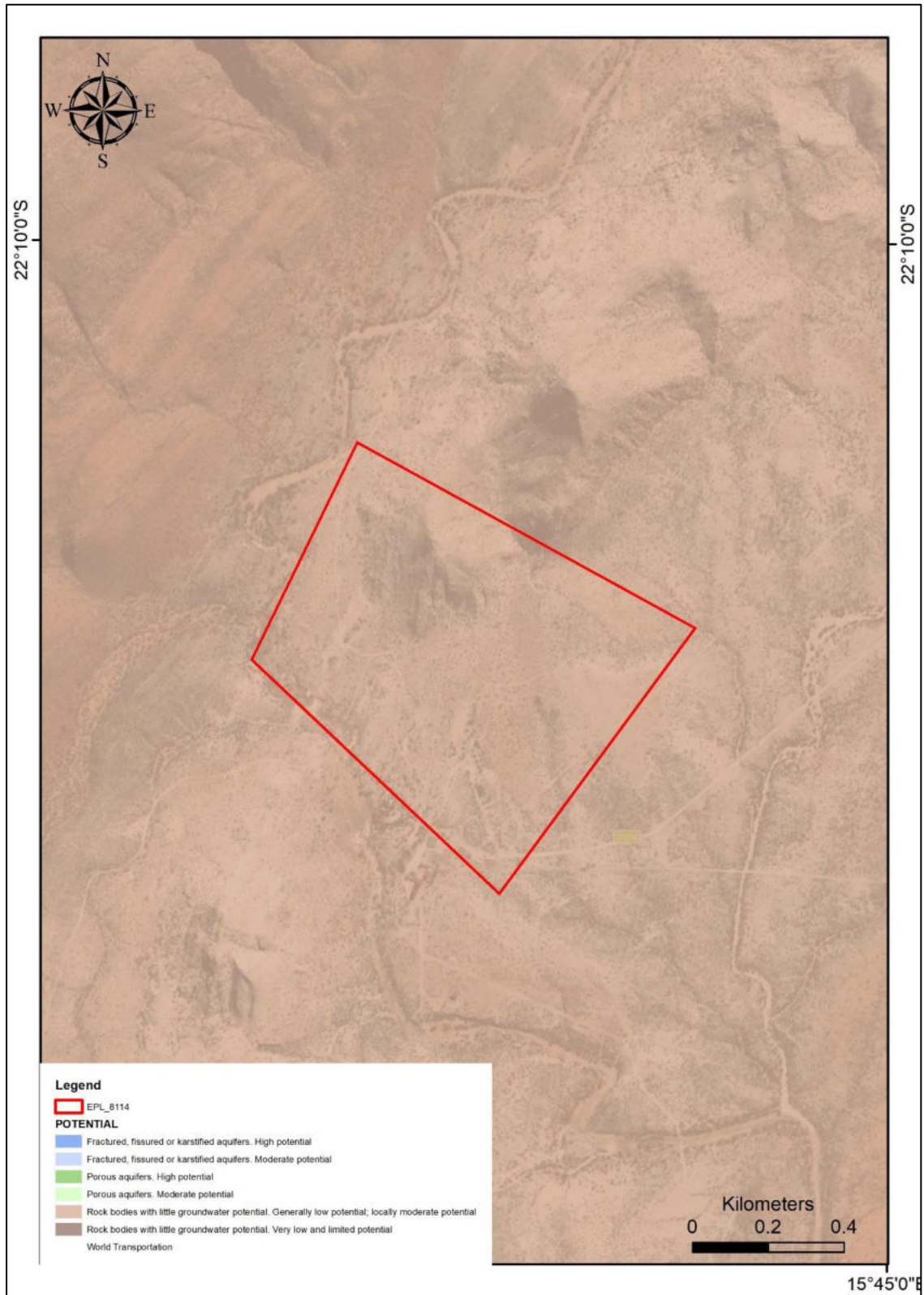


Figure 10 A geological map of the area

### 4.4 Hydrogeology and Water Resources

The area is underlain by rocks with little groundwater potential.



## 4.5 Flora

Rainfall in the Erongo Region is usually both low and extremely variable which means that years of abundant rain often followed by extreme dry conditions (Mendelsohn, et al., 2002). In form, vegetation is generally sparse, with few trees and a thin variety of grass. Plant cover varies in relation to rainfall and so the eastern parts of Erongo have more grass and trees than the Western, coastal areas (Christian, 2005). The surrounding area is characterised by high botanical diversity. Based on the literature review, all the vegetation that are found within the vicinity of the area are of “medium” to “high” sensitivity against external conditions. The growing season is very short due to the semi-arid climate.

Grass is dependable on rainfall, which in-turn causes livestock and other animals to suffer during periods of minimal rainfall (Burke, 2003). The mineral exploration area, which is semi-arid, contains diverse vegetation species which include a number of species endemic to Namibia. Table 1 below lists the different plant species which are most likely to occur within the project area.

**Table 1 A table showing plant species which are likely to occur in the area**

SCIENTIFIC NAME	COMMON NAME	STATUS IN NAMIBIA
<i>Acacia erioloba</i>	Camel thorn	Protected
<i>Acacia mellifera</i>	Black thorn	Secure
<i>Acacia reficiens</i>	False umbrella thorn	Secure
<i>Acacia haematoxylon</i>	Grey camel thorn	Protected
<i>Acacia erubescens</i>	Blue thorn	Secure
<i>Acacia karroo</i>	Sweet thorn	Secure
<i>Acacia tortolis</i>	Umbrella thorn	Secure
<i>Acacia hereroensis</i>	False hook-thorn	Secure
<i>Commiphora tenuipetiolata</i>	White-stem corkwood	Secure
<i>Aloe littoralis</i>		Protected
<i>Ozoroa crassinervia</i>	Namibian resin tree	Near endemic, protected
<i>Boscia albitrunca</i>	Shepherd's tree	Protected
<i>Albizia anthelmintica</i>	Worm-bark false-thorn	Protected
<i>Ziziphus mucronata</i>	Buffalo-thorn	Protected
<i>Catophractes alexandri</i>	Trumpet thorn	Secure
<i>Combretum apiculatum</i>	Red bush willow	Secure
<i>Commiphora dinteri</i>		Endemic
<i>Commiphora glandulosa</i>	Tall common corkwood	Secure
<i>Commiphora glaucescens</i>	Blue-leaved corkwood	Nearendemic
<i>Croton gratissimus</i>	Lavender fever-berry	Secure
<i>Cyphostemma bainesii</i>		Endemic, protected

<i>Dichrostachys cinerea</i>	Sickle bush	Secure
<i>Diospyros lycioides</i>	Blue bush	Secure
<i>Dombeya rotundifolia</i>	Common wild pear	Endemic
<i>Ehretia alba</i>		Secure
<i>Elephantorrhiza suffruticosa</i>		Secure
<i>Euclea pseudebenus</i>	Ebony tree	Protected
<i>Euclea undulata</i>	Common guarri	Secure
<i>Euphorbia guerichiana</i>	Western woody milk bush	Secure
<i>Euphorbia virosa</i>		Secure
<i>Ficus cordata</i>	Namaqua fig	Protected
<i>Ficus ilicina</i>	Laurel fig	Secure
<i>Ficus sycomorus</i>	Common cluster fig	Protected
<i>Grewia bicolor</i>	White raisin	Secure
<i>Grewia flava</i>	Velvet raisin	Secure
<i>Grewia flavescens</i>	Sand paper raisin	Secure
<i>Gymnosporia senegalensis</i>	Red spike-thorn	Secure
<i>Ipomoea adenioides</i>		Secure
<i>Lycium bosciifolium</i>		Secure
<i>Lycium cinereum</i>		Secure
<i>Lycium eenii</i>		Secure
<i>Lycium hirsutum</i>		Secure
<i>Lycium villosum</i>		Secure
<i>Maerua juncea</i>		Secure
<i>Maerua schinzii</i>	Ringwood tree	Protected
<i>Manuleopsis dinteri</i>		Endemic
<i>Melianthus comosus</i>		Secure
<i>Obetia carruthersiana</i>		Near endemic
<i>Pechuel-Loeschea leubnitziae</i>		Secure
<i>Sterculia africana</i>	African star-chestnut	Protected
<i>Tarchonanthus camphoratus</i>		Secure
<i>Tetragonia schenckii</i>		Secure
<i>Vernonia cinerascens</i>		Secure
<i>Searsia (Rhus) ciliata</i>		Secure
<i>Searsia (Rhus) lancea</i>	Karree	Protected
<i>Searsia (Rhus) marlothii</i>		Secure

The density of vegetation in the vicinity of the mineral exploration site is sparse. Every effort will be made to protect the existing trees and shrubs, as these are very important to the ambience and visual appeal of the mineral exploration site. A vegetation expert will be consulted throughout the lifecycle of the mineral exploration program. The protected plant species in the project area are shown in the table below.

Table 2 Table of plant species which are protected under the Forestry Act and likely to occur in the area.

SCIENTIFIC NAME	COMMON NAME
<i>Acacia erioloba</i>	Camel thorn
<i>Acacia haematoxylon</i>	Grey camel thorn
<i>Albizia anthelmintica</i>	Worm-bark false-thorn
<i>Boscia albitrunca</i>	Shepherd's tree
<i>Euclea pseudebenus</i>	Ebony tree
<i>Ficus cordata</i>	Namaqua fig
<i>Ficus sycomorus</i>	Common cluster fig
<i>Maerua schinzii</i>	Ringwood tree
<i>Ozoroa crassinervia</i>	Namibian resin tree
<i>Searsia (Rhus lancea)</i>	Karree
<i>Sterculia Africana</i>	African star-chestnut

## 4.6 Fauna

### 4.6.1 Introduction

The information is based on a detailed literature review and a site visit which was carried out. The purpose of the Fauna literature review is to identify all potential amphibians, reptiles, and mammals expected on the project area and the surrounding farms in the vicinity of the mineral exploration area. The proposed mineral exploration area supports numerous faunal species but there are no species that are exclusive to the study area.

Larger types of animals such as zebras, giraffes, lions and elephants are rare in this area. There are no species which are exclusively endemic to the exploration area. Based on literature review, development of a mineral exploration project in the area will not have a negative impact on any of the species in the project area.

### 4.6.2 Amphibians

Based on the literature review, there are generally 14 types of amphibian species that occur in project area. Nine of these amphibian species occur abundantly, two occur rarely and six of them occur uncommonly. Griffin (1998) highlighted that amphibian species are declining throughout the world due to various factors such as climate

change and habitat destruction. There are approximately 4000 species of amphibians worldwide of which over 200 species are present in Southern Africa and 57 in Namibia (Griffin, 1998). However, this low figure may be due to the lack of detailed studies carried out on amphibians. The table below shows the different amphibian species that are likely to occur within the study area.

**Table 3 A list of amphibian species which may occur in the project area**

SCIENTIFIC NAME	COMMON NAME	STATUS	OCCURRENCE	REFERENCE
<b>PLATANNAS</b>				
<i>Xenopus laevis</i>	COMMON PLATANNA	<b>SECURE</b>	ABUNDANTLY	(Daudin, 1802)
<b>TOADS</b>				
<i>Breviceps adpersus</i>	BUSHVELD RAIN FROG	<b>SECURE</b>	ABUNDANTLY	Peters, 1882
<i>Bufo dombensis</i>	DOMBE DWARF TOAD	<b>ENDEMIC &amp; INADEQUETLY KNOWN</b>	ABUNDANTLY	Bocage, 1895
<i>Bufo poweri</i>	MOTTLED TOAD	<b>SECURE</b>	ABUNDANTLY	Hewitt, 1935
<b>FOSSORIAL FROGS</b>				
<i>Phrynomantis affinis</i>	SPOTTED RUBBER FROG	<b>AMBIGUOUS (RARE?)</b>	RARELY	(Boulenger, 1901)
<i>Phrynomantis bifasciatus</i>	BANDED RUBBER FROG	<b>SECURE</b>	ABUNDANTLY	(Smith, 1848)
<b>SAND FROGS, BULLFROGS, RIDGED FROGS, CACOS, PUDDLE FROGS etc.</b>				
<i>Cacosternum boettgeri</i>	COMMON CACO	<b>SECURE</b>	ABUNDANTLY	(Boulenger, 1882)
<i>Hildebrandtia ornata</i>	ORNATE FROG	<b>SECURE</b>	UNCOMMONLY	(Peters, 1878)
<i>Phrynobatrachus mababiensis</i>	MABABE PUDDLE FROG	<b>SECURE</b>	UNCOMMONLY	FitzSimons, 1932
<i>Phrynobatrachus natalensis</i>	SNORING PUDDLE FROG	<b>SECURE</b>	UNCOMMONLY	(A. Smith, 1849)
<i>Pyxicephalus adpersus</i>	GIANT BULLFROG	<b>SECURE</b>	ABUNDANTLY	Tschudi, 1838
<i>Tomopterna krugerensis</i>	KNOCKING SAND FROG	<b>SECURE</b>	RARELY	Passmore et al, 1975
<i>Tomopterna tandyi</i>	TANDY'S SAND FROG-	<b>SECURE</b>	ABUNDANTLY	Channing et al, 1996



TREE FROGS, REED FROGS & KASSINAS				
<i>Kassina senegalensis</i>	BUBBLING KASSINA	<b>SECURE</b>	ABUNDANTLY	(Dumèril et al, 1841)

### 4.6.3 Mammals

Based on the literature review, there are generally about 68 species of mammals expected to occur within the immediate area. There are generally 25 species which rarely occur, 2 species that occur seasonally, 4 that occur occasionally, and 33 that occur abundantly within the project area. Considering the relative size of the mineral exploration area, the mammal fauna will not be affected by the mineral exploration activities of the proponent. Namibia is seemingly well endowed with mammal diversity with around 250 species known to be present within the country (Griffin, 1998). There are currently 14 mammal species which are considered to be endemic to Namibia, including 11 species of rodents and small carnivores which are not well known. Griffin (1998), points out that most of these endemic mammals are associated with the Namib and Escarpment with 60% of these appearing to be rock-dwelling species. The author, Griffin (1998) further highlights that the endemic mammal fauna is best characterized by the endemic rodent family *Petromuridae* (Dassie rat) and the rodent genera *Gerbillurus* and *Petromyscus*. The table below shows the mammal species which are likely to occur within the study area. A full list, of mammal species that are likely to occur within the area, is in the appendix section at the end.

**Table 4 Mammal species which are likely to occur within the project area.**

SCIENTIFIC NAME	COMMON NAME
<i>Acinonyx jubatus</i>	Cheetah
<i>Antidorcas marsupialis</i>	Springbok
<i>Atelerix frontalis angolae</i>	Southern African Hedgehog
<i>Canis mesomelas</i>	Black-backed Jackal
<i>Caracal caracal</i>	Caracal
<i>Crocuta crocuta</i>	Spotted Hyena
<i>Cynictis penicillata</i>	Yellow Mongoose
<i>Equus zebra hartmannae</i>	Hartmann's Mountain Zebra
<i>Felis nigripes</i>	Black-footed Cat
<i>Felis silvestris/lybica</i>	African Wild Cat
<i>Galerella sanguinea</i>	Slender Mongoose
<i>Genetta genetta</i>	Small Spotted Genet
<i>Ictonyx striatus</i>	Striped Polecat
<i>Lepus capensis</i>	Cape Hare Secure

<i>Lepus saxatilis</i>	Scrub Hare
<i>Manis temminckii</i>	Ground Pangolin
<i>Mellivora capensis</i>	Honey Badger/Ratel
<i>Oreotragus oreotragus</i>	Klipspringer
<i>Oryx gazella</i>	Gemsbok
<i>Otocyon megalotis</i>	Bat-eared Fox
<i>Panthera pardus</i>	Leopard
<i>Parahyaena (Hyaena) brunnea</i>	Brown Hyena
<i>Phacochoerus africanus</i>	Common Warthog
<i>Proteles cristatus</i>	Aardwolf
<i>Raphicerus campestris</i>	Steenbok
<i>Suricata suricatta marjoriae</i>	Suricate
<i>Sylvicapra grimmia</i>	Common Duiker
<i>Tragelaphus strepsiceros</i>	Greater Kudu
<i>Vulpes chama</i>	Cape Fox

#### 4.6.4 Reptiles

The literature review showed that there are approximately 60 reptile species that are expected to occur in the site area. According to the Namibia Conservation Ordinance of 1975, there are four reptile species protected, namely:

**Table 5 Protected reptile species in the project area**

SCIENTIFIC NAME	COMMON NAME	STATUS
<i>Psammobates Oculiferus</i>	Kalahari Tent Tortoise	Protected
<i>Python Natalis</i>	Southern African Python	Protected
<i>Geochelone Pardalis</i>	Leopard Tortoise	Protected
<i>Varanus Albigularis</i>	Veld Leguaan	Protected

Griffin (1998) highlighted the presence of 261 species of reptiles which are present in Namibia. These reptiles make up 30% of the reptile species found on the continent. 55 species of Namibian Lizards are classified as endemic (Griffin, 1998). The author, Griffin (1998), describes that more than 60% of the reptiles found in Namibia are protected by the conservation Ordinance. Although mineral exploration activities do affect reptile habitat, the project will not have any significant impact on the reptile species within the proposed mineral exploration area. Namibia, with 129 species of lizards, has one of the continent's richest lizard Fauna. The table in the appendix shows the reptile species which are likely to occur within the vicinity of the mineral exploration area.

## 4.7 Avifauna (Birds)

Simmons et al (2003) points that although Namibia's Avifauna is comparatively sparse compared to the high rainfall equatorial areas elsewhere in Africa, approximately 658 species have already been recorded with a diverse unique group of arid endemics. There are approximately 650 species of birds that have been recorded in Namibia, although the country's avifauna is comparatively sparse compared to the high rainfall equatorial areas in Africa (Brown & Lawson, 1989). Brown et al (1989) mentions that 14 species of birds are endemic or near endemic to Namibia with the majority of Namibian endemics occurring in the Savannah of which ten species occur in a north-south belt of dry Savannah in Central Namibia. Simmons (2003) recorded 63 species of birds within the vicinity of the project area. 650 bird species are recorded in Namibia, of which 160 species are present in area, especially after good rains fall (Christian, 2005). These birds consist of raptors, chats, larks and karoid species. Christian (2005) recorded the presence of the following bird species in the vicinity of the area, which include:

Table 6 Bird species which are likely to occur within the site area.

SCIENTIFIC NAME	COMMON NAME
Agapornis roseicollis	Rosy-faced Lovebird
Eupodotis rueppellii	Rüppell's Korhaan
Lanioturdus torquatus	White-tailed Shrike
Parus carpi	Carp's Tit
Phoeniculus damarensis	Violet Wood-Hoopoe
Poicephalus rueppellii	Rüppell's Parrot
Pternistis hartlaubi	Hartlaub's Spurfowl
Tockus damarensis	Damara Hornbil
Tockus monteiri	Monteiro's Hornbill

A full list of bird species within the area is shown in the appendix.

## 4.8 Archaeology and Heritage Sites

A separate archaeological study is attached to this report.

## **4.9 Socio-Economic Environment**

### **4.9.1 Demographics of Karibib**

Karibib is a town situated in the Erongo Region of Namibia. It is located in the western parts of the country and has a total population of approximately 4 000 inhabitants. This town is situated on the Khan River halfway between Windhoek and Swakopmund. The town of Karibib was established in 1909.

This town is well-known for its aragonite marble quarries and gold mining activities. In 2008 the Karibib Airport was used as a base for the Namibian Air Force and the town is connected to the TransNamib Railway Network.

### **4.9.2 Social Economic Impact**

Although a few people (including farmers) and animals might be negatively affected by dust and noise, the explorer will ensure that these aspects are properly mitigated. With the potential employment of 15 people, this means that 15 families will benefit from the project during the exploration phase. The project has great potential to improve livelihoods and contribute to sustainable development within the surrounding community. Community meetings will be held from time to time by the proponent wherever possible, with the purpose of effectively communicating with the local community and to avoid any unexpected social impacts.

## 5. Assessment of Impacts

The purpose of this assessments of impacts section is to identify and consider the most pertinent environmental impacts and to provide possible mitigation measures that are expected from the mineral exploration activities on EPL 8114. Two different phases are associated with the proposed development. Firstly, the target generation (mapping and sampling) phase, and secondly the drilling phase are being covered by this assessment. Should the mineral exploration activities cease in the future, an EIA will need to be conducted to deal with the associated changes to environment. Mitigation measures for the identified impacts are also provided in this Section.

The following assessment methodology was used to examine each impact identified:

**Table 7 Assessment methodology used to examine the impacts identified**

Evaluation Criteria	Symbol	Significance of Rating
<b>Nature of impact:</b>	<b>P or N</b>	Effect the proposed activity would have on the affected environment which is positive ( <b>P</b> ) or negative ( <b>N</b> )
<b>Extent of impact:</b>	<b>O</b>	<b>On-Site</b> (the site and it's immediate surrounds)
	<b>L</b>	<b>Local</b> (Mineral exploration Area)
	<b>R</b>	<b>Regional</b> (Erongo Region)
	<b>N</b>	<b>National</b> (Namibia)
	<b>I</b>	<b>International</b>
<b>Duration of impact:</b>	<b>SD</b>	Short Duration (0 to 5 years)
	<b>MD</b>	Medium Duration (5 to 15 years)
	<b>LD</b>	Long Duration (lifetime of the development)
<b>Intensity of impact:</b>	<b>L</b>	<b>Low</b> intensity where the natural, cultural and social functions and processes are not affected.
	<b>M</b>	<b>Medium</b> intensity where the affected environment is altered but natural, cultural and social functions and processes can continue.
	<b>H</b>	<b>High</b> intensity where the affected environment is altered to the extent that natural, cultural and social functions and processes will temporarily or permanently cease.
<b>Probability of impact:</b>	<b>LP</b>	<b>Low probability</b> is when the possibility of the impact occurring is low.
	<b>P</b>	<b>Probable</b> is when there is a distinct possibility that it will occur.
	<b>HP</b>	<b>Highly probable</b> is when the impact is most likely to occur.
	<b>D</b>	<b>Definite</b> where the impact will occur.
<b>Significance of Impact:</b> Further subdivided into impacts with mitigation (MM) measures and impacts with no mitigation measures (NMM).	<b>L</b>	<b>Low Significance</b> is when natural, cultural, social and economic functions and processes are not affected. If the impacts are adverse, mitigation is either easily achieved or little will be required, or both. If impacts are beneficial, alternative means of achieving this benefit are likely to be easier, cheaper, more effective and less time-consuming

	<b>M</b>	<b>Medium Significance</b> is when the affected environment is altered but natural, cultural, social and economic functions and processes can continue. An impact exists but is not substantial in relation to other impacts that might take effect within the bounds of those that could occur. In the case of beneficial impacts, other means of achieving this benefit are about equal in time, cost and effort.
	<b>H</b>	<b>High Significance</b> is when the affected environment is altered to the extent that natural, cultural, social and economic functions and processes will temporarily or permanently cease. If impacts are adverse, there is no possible mitigation that could offset the impact, or mitigation is difficult, expensive, time consuming or a combination of these. In the case of beneficial impacts, the impact is of a Substantial order within the bounds of impacts that could occur.

## 5.1. Overall socio-economic benefits and issues

### 5.1.1. Socio-economic benefits

With the potential employment of 15 people, this means that 15 families will benefit from the project during the exploration phase. The project has great potential to improve livelihoods and contribute to sustainable development within the surrounding community. Community meetings will be held from time to time by the proponent wherever possible, with the purpose of effectively communicating with the local community and to avoid any unexpected social impacts.

#### 5.1.1.1. Potential Direct Benefits

**Direct capital investment:** The mineral exploration project will require a significant capital investment of at least N\$ 10 million. This will be used for mapping, sampling and drilling.

**Stimulation of skills transfer:** Due to the nature of mineral exploration projects, the proponent will implement ad-hoc training programme for some of its staff members. Training programmes will be well structured and staff members will permanently benefit from these training programmes.

**Job creation:** With the potential employment of 15 people, this means that 10 families will benefit from the project during the on-going phase. The project has a great potential to improve livelihoods and contribute to sustainable development within the surrounding community.

### 5.1.1.2. Potential Indirect Benefits

- The data generated from the exploration programme will be made available to the Ministry of Mines and Energy for future research purposes.
- General enhancement of the health conditions and quality of life for a few people in the surrounding settlements.
- Of significance is the prospect of diversification of the surrounding economy, which is presently mainly focussed on small-scale farming and small-scale mining of semi-precious stones.

### 5.1.1.3. General socio-economic concerns

Notwithstanding the above benefits there are a few concerns that could reduce or counteract the above benefits related to the project, as follows:

- As the movement of staff and contractors to and from the area increases, the risk of spread of HIV/AIDS increases.
- Increased influx of people to the area as people come in search of job opportunities during the target generation and drilling phase of the mineral exploration project; and
- Increased informal settlement and associated problems.

**Table 8 Impact evaluation for socio-economy**

Identified Impact	Significance		Duration	Extent	Intensity	Probability
	NMM	MM				
Increased spread of HIV/AIDS	M	L	LD	N	M	LP
Increased influx of people to the area	L	L	SD	L	L	P
Increased informal settlement in the area	M	L	MD	L	L	LP

## 5.2. Mineral Exploration phases and associated issues

### 5.2.1. Mapping and Geochemical Sampling Phase of the Project

The following potential effects on the environment during the target generation phase of the mineral exploration project have been identified:

### 5.2.1.1. Dust

Dust may be generated during this phase and might be aggravated during the winter months when strong winds occur. Dust will be generated by the vehicles moving in the area. Fall out dust settling on vegetation is likely to cause local disruptions in herbivorous and predatory complexes and should be minimised as far as possible.

### 5.2.1.2. Noise

Noise will most likely be generated by vehicles during the target generation phase. It is recommended that vehicle movement be limited to normal daytime hours to allow nocturnal animals to roam freely at night.

### 5.2.1.3. Safety and Security

During mapping and sampling, small tools and equipment will be used on site. This increases the possibility of injuries and the responsible manager must ensure that all staff members are briefed about the potential risks of injuries on site. The manager is further advised to ensure that adequate emergency facilities, including first aid kits, are available on site. All Health and Safety standards specified in the Labour Act should be complied with.

Should a camp be necessary at a later stage, it should be in such a way that it does not pose a risk to the community members and wildlife that roam the area.

### 5.2.1.4. Visual

The proposed exploration area is situated more than 1 km from any main road. As such, any visual impact that might be caused by the exploration team are minimal. In some parts of the area, the topography of the mineral exploration site is slightly elevated.

**Table 9 Impact evaluation for the target generation phase of the project**

Identified	Significance		Duration	Extent	Intensity	Probability
	NMM	MM				
Impact						
<b>Dust</b>	L	L	SD	L	L	P
<b>Noise</b>	M	L	SD	L	M	D
<b>Safety &amp; Security</b>	L	L	SD	O	L	P
<b>Visual</b>	L	L	MD	O	L	LP



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## 5.2.2. Drilling Phase of the Project

During the operation phase of the project, a few holes will be drilled into the orebody. To conveniently refuelling company vehicles without driving long distances, a small portable fuel storage tank will be brought on site.

### 5.2.2.1. Air Quality

In terms of air quality, emissions will be given off by 4x4 vehicles and the drill rig but not to an extent that warrants concern. Dust will also be produced by the drill rig and the movement of vehicles in the area.

### 5.2.2.2. Fire and Explosion Hazard

Hydrocarbons are volatile under certain conditions and their vapours in specific concentrations are flammable. If precautions are not taken to prevent their ignition, fire and subsequent safety risks may arise.

All fuel storage and handling facilities in Namibia must however comply with strict safety distances as prescribed by SANS 10089. SANS 10089 is adopted by the Ministry of Mines and Energy as the national standard.

It must further be assured that enough water is available for fire firefighting purposes. In addition to this, all personnel must be sensitised about responsible fire protection measures and good housekeeping such as the removal of flammable materials including rubbish, dry vegetation, and hydrocarbon-soaked soil from the vicinity of the exploration area. Regular inspections should be carried out to inspect and test firefighting equipment and pollution control materials at the drilling site.

All fire precautions and fire control at the site must be in accordance with SANS 10089-1:1999, or better. A holistic fire protection and prevention plan is needed.

Experience has shown that the best chance to rapidly put out a major fire, is in the first 5 minutes. It is important to recognise that a responsive fire prevention plan does not solely include the availability of firefighting equipment, but more importantly, it involves premeditated measures and activities to timeously prevent, curb and avoid conditions that may result in fires. An integrated fire prevention plan should be drafted before drilling.

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### **5.2.2.3. Generation of Waste**

Solid waste be generated from contractors, staff members and other visitors to the area. Care should be taken when handling waste material.

The types of waste that could be generated during operation include hazardous industrial waste (e.g. lubricants), general industrial waste (e.g. scrap material), and domestic waste (e.g. packaging). The waste will be temporarily handled and stored on site before being removed for final disposal at permitted waste disposal facilities. A registered Waste Management Company would be contracted to remove all hazardous waste from the exploration site. Ablution facilities will use chemical toilets and/or sealed septic tanks and the sewerage taken to the Karibib periodically. No waste will be discharged on site.

### **5.2.2.4. Health and Safety**

The drilling programme operations can cause serious health and safety risks to workers on site. Occupational exposures are normally related to the dermal contact with fuels and inhalation of fuel vapours during handling of such products. For this reason, adequate measures must be brought in place to ensure safety of staff on site, and includes:

- Proper training of operators;
- First aid treatment;
- Medical assistance;
- Emergency treatment;
- Prevention of inhalation of fumes;
- Protective clothing, footwear, gloves and belts; safety goggles and shields;
- Manuals and training regarding the correct handling of materials and packages should be in place and updated as new or updated material safety data sheets becomes available;
- And Monitoring should be carried out on a regular basis, including accident reports.

### **5.2.2.5. Fauna**

Mineral exploration activities may have minor disturbances on the habitat of a few

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species but no significant impacts on the animals are expected. The proponent shall ensure that no animal shall be captured, killed or harmed by any of the employees in any way. Wildlife poaching will strongly be avoided as this is an offence and anyone caught infringing in this regard will face suspension from the project and will be liable for prosecution.

#### **5.2.2.6. Vegetation**

The natural vegetation is seemingly undisturbed in the project area except for grasses, which have been grazed by livestock and wild animals. Some vegetation species in the area may be adversely impacted by the project. The type of vegetation that might be affected by the project are:

- Bushes
- Ephemeral grasses
- Small trees

Some of the sensitive vegetation types in the area include:

- Shallow drainage line vegetation
- Scrublands surrounding the mineral exploration area

Certain species regarded as particularly important for conservation may yet be identified and made known via an Addendum to this report. If particularly important species are found, they will be located by GPS and their locations communicated to the Ministry of Environment and Tourism. Such locations will then be demarcated and completely avoided.

#### **5.2.2.7. Avifauna**

Birds or Nest sites will not be disturbed by any employee, tourist or contractor. Should the employees observe any bird nesting sites for vultures, they will be reported to the Ministry of Environment and Tourism and the site will be avoided.

#### **5.2.2.8. Alien Invasive Plants**

Disturbance to the natural environment often encourages the establishment of alien

invasive weed species. Some of the plant species that could become invasive in the area are listed below:

- *Prosopis glandulosa*
- *Lantana camara*
- *Cyperus esculentus*
- *Opuntia imbricate*
- *Cereus jamacara*
- *Melia azedarach*

There are numerous ways in which invasive species can be introduced deliberately or unintentionally.

#### 5.2.2.9 Heritage Impacts

Although no archaeological sites have been identified yet in the project area, appropriate measures will be undertaken upon discovering any new archaeological sites. All archaeological remains are protected under the National Heritage Act (2004) and will not be destroyed, disturbed or removed. The Act also requires that any archaeological finds be reported to the Heritage Council Windhoek.

**Table 10 Impact evaluation for the operational phase of the project**

Identified Impact	Significance		Duration	Extent	Intensity	Probability
	NMM	MM				
Air Quality	M	L	LD	L	M	HP
Fire & Explosion Hazard	H	M	SD	O	M	LP
Generation of waste	M	L	LD	O	L	D
Health and Safety	H	M	MD	N	L	P
Fauna	M	L	MD	L	M	D
Vegetation	M	L	MD	L	M	D
Avifauna	M	L	MD	L	M	LP
Alien Invasive Plants	M	L	MD	L	M	P
Heritage	M	L	LD	O	H	LP

#### 5.2.2.10 Groundwater Impacts

Mineral exploration activities may affect the availability of water and the quality thereof. exploration works may affect the water availability for deep rooted trees in riverbeds. Surface water for animals may be affected by mineral exploration activities. In rare

instances, the quality of the groundwater for water consumption may be compromised by mineral exploration activities.

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## 6. Environmental Management Plan

### 6.1 Overview

This Environmental Management Plan is intended to give effect to the recommendations of the Environmental Impact Assessment. To achieve this goal, it is essential that all personnel involved on the mineral exploration are fully aware of the environmental issues and the means to avoid or minimize the potential impacts of activities on site. The proposed mineral exploration activities are summarized in Section 3 of the scoping report above. Legal and policy requirements are well known and understood by the proponent, its employees and contractors and will be strictly enforced by its management team. A general description of the environment is contained in Section 4, and more site-specific information on particularly sensitive areas is contained in Section 4 as well. Issues and concerns identified in the EIA will form a set of environmental specifications that will be implemented on site. It is the intention that these environmental specifications should form the basis for an agreement between the proponent and the Ministry of Environment and Tourism. By virtue of that agreement, these specifications will become binding on the proponent.

Environmental management requires a joint effort on the part of all parties involved. The proponent has assigned certain roles to ensure that all players fulfil their responsibilities in this regard.

### 6.2 Environmental Management Principles

The proponent will ensure that all parties involved in the project uphold the following broad aims:

1. All persons will be required to conduct all their activities in a manner that is environmentally and socially responsible. This includes all consultants, contractors, and sub-contractors, transport drivers, guests and anyone entering the exploration areas in connection with the mineral exploration project.
2. Health, Safety and Social Well Being
  - Safeguard the health and safety of project personnel and the public against potential impacts of the project. This includes issues of road safety, precautions against natural dangers on site, and radiation hazards; and,

- Promote good relationships with the local authorities and their staff.

### 3. Biophysical Environment

- Wise use and conservation of environmental resources, giving due consideration to the use of resources by present and future generations.
- Prevent or minimise environmental impacts.
- Prevent air, water, and soil pollution, Biodiversity conservation and Due respect for the purpose and sanctity of the area.

To achieve these aims, the following principles need to be upheld.

#### **A. Commitment and Accountability:**

The proponent's senior executives and line managers will be held responsible and accountable for:

Health and safety of site personnel while on duty, including while travelling to and from site in company vehicles and environmental impacts caused by mineral exploration activities or by personnel engaged in the mineral exploration activities, including any recreational activities carried out by personnel in the area.

#### **B. Competence**

The proponent will ensure a competent work force through appropriate selection, training, and awareness in all safety, health and environmental matters.

#### **C. Risk Assessment, Prevention and Control**

Identify, assess and prioritise potential environmental risks. Prevent or minimize priority risks through careful planning and design, allocation of financial resources, management and workplace procedures. Intervene promptly in the event of adverse impacts arising.

#### **D. Performance and Evaluation**

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Set appropriate objectives and performance indicators. Comply with all laws, regulations, policies and the environmental specifications. Implement regular monitoring and reporting of compliance with these requirements.

#### **E. Stakeholder Consultation**

Create and maintain opportunities for constructive consultations with employees, authorities, other interested or affected parties. Seek to achieve open exchange of information and mutual understanding in matters of common concern.

#### **F. Continual Improvement**

Through continual evaluation, feedbacks, and innovation, seek to improve performance about social health and well-being and environmental management throughout the lifespan of the mineral exploration project.

#### **G. Financial Provisions for Mineral exploration**

In line with Namibia's environmental rehabilitation policy, the proponent will make the necessary financial provision for compliance with the EMP.

### **6.3 Impacts on the Bio-physical Environment**

#### **6.3.1 Impacts on Archaeological Sites**

The **nature of impact** is outlined below:

- Potential damage to archaeological sites as a result of vehicle tracks, footprints and actions of contractors, employees and visitors of the mineral exploration site.
- As the mitigation measures below are fully enforced, any impact will be significantly reduced compared to with present situation.

**Mitigation Measures** to be enforced:

- Buffer zones will be created around the sites.
- Adhere to practical guidelines provided by an archaeologist to reduce the archaeological impact of mineral exploration activities.



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- All archaeological sites to be identified and protected before further exploration commences.
  - Notices/information boards will be placed on sites.
  - Training employees regarding the protection of these sites.

**Methods for monitoring:**

- An archaeologist will inspect any identified archaeological sites before commencing with the mineral exploration activities.

**6.3.2 Impacts on Fauna**

The **nature of impact** is outlined below:

- Movement of vehicles in and out of the site.
- Noise produced by moving earth-moving equipment.

**Mitigation Measures** to be enforced:

- Some habitat areas such as trees of the riverbeds and tunnels outcrops will be avoided wherever possible.
- A fauna survey will be conducted to determine the effect of fragmented habitat on game species should the need arise.
- No animals shall be killed, captured or harmed in any way.
- No foodstuff will be left lying around as these will attract animals which might result in human-animal conflict.
- Care will be taken to ensure that no litter is lying around as these may end up being ingested by wild animals
- No animals shall be fed. This allows animals to lose their natural fear of humans, which may result in dangerous encounters.

**Methods for monitoring:**

- Regular monitoring of any unusual signs of animal habitat.

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### 6.3.3 Impacts on Avifauna

Birds or Nest sites will not be disturbed by any employee, visitor or contractor.

### 6.3.4 Impact on Vegetation

The **nature of impact** is outlined below:

- Negative impacts on plants from trenching, compacting and removal of plants.
- Negative Impact from movement of vehicles and the movement of people around the site.
- Negative impacts from land-clearing and mineral exploration operations.

**Mitigation Measures** to be enforced:

- Environmental considerations will always be adhered to before clearing roads, trenching and excavating.
- Paths and roads will be aligned to avoid root zones. Permeable materials will be used wherever possible.
- The movement of vehicles in riverbeds, rocky outcrops and vegetation sensitive areas will be avoided.
- The movement of vehicles will be restricted to certain tracks only.
- Areas with species of concern will be avoided.
- Ministry of Environment and Tourism will be informed of any protected species which will be transplanted in consultation with MET.

### 6.3.5 Impacts of Alien invasive Plants

The **nature of impact** is outlined below:

- Plant or seed material may adhere to car tyres or animals
- Seed or plant material may be imported to site in building materials if the source is contaminated.
- Seeds may blow from debris removed at sites.

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**Mitigation Measures** to be enforced:

- The explorer will ensure that debris is properly disposed of.
- Vehicle tyre inspections can be carried out although this may not be a practical mitigation measure.
- Eradicating alien plants by using an Area Management Plan

**Methods for monitoring:**

- Regular monitoring of any unusual signs of alien species.

**6.3.6 Impacts on Socio-Economic**

The **nature of impact** is outlined below:

- Impact from loss of grazing for domestic livestock in “exclusive use zone”
- Impacts on cultural and spiritual values.
- Demographic factors: Attraction of additional population that cannot benefit from the project.
- Perception of Health and Safety risks associated with mineral exploration.

**Mitigation Measures** to be enforced:

- The population change can be mitigated by employing people from the local community and encouraging the contractors to employ local individuals.
- The perception of risks will be mitigated by putting up safety signs wherever possible and ensuring that all employees and visitors to the site undergo a safety induction course.

**Methods for monitoring:**

- Public meetings will be held by the proponent whenever necessary.

**6.3.7 Visual Impacts**

The **nature of impact** is outlined below:

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- Tracks and damaged vegetation caused by the mineral exploration vehicles.

**Mitigation Measures** to be enforced:

- Environmental considerations will be adhered to at all times before clearing roads, trenching and excavating.

**Methods for monitoring:**

- Employees will be trained on the importance of minimising visual impacts.

### **6.3.8 Use of Natural Resources**

Water and electricity are very scarce in Namibia. During the exploration, best international practices will be considered as a minimum standard for operation. The bulk of the power supply to the exploration site will be sourced from the proponent's own generator. The proponent will maximise water recycling opportunities wherever possible.

### **6.3.9 Generation of Solid Waste**

Correct management of solid waste will involve a commitment to the full waste life cycle by all the employees and contractors of the site. The Proponent's goal is to avoid the generation of solid waste in the first place and if not possible, to minimise the volumes generated by looking at technologies that promote longevity and recycling of products. Ideally, the proponent should transport solid waste to a registered site for disposal. However, it is not certain if such facilities are available in the area or if they have the capacity to handle large increases in volume. Appropriate on-site facilities will be designed to store large volumes of waste.

### **6.3.10 Noise**

The **nature of impact** is outlined below:

- Movement of people, and vehicles.
- Noise may be generated from an airborne geophysical survey which may be carried out at a later stage.

**Mitigation Measures** to be enforced:

- Disturbance to fauna that roam the area will be minimized by training the employees on ways to minimise noise.

### 6.3.11 Air Quality

The **nature of impact** is outlined below:

- Dust from movement of people, vehicles and earth-moving machinery. Emissions from vehicles and drill rigs as well.

**Mitigation Measures** to be enforced:

- All staff on should be equipped with dosimeters that measure exposure levels to radiation.
- All staff must be made aware of the health risk and obliged to wear dust masks.

## 6.4 Summary of Environmental Management Plan during construction, operation and decommissioning phases

Construction/Initial Phase			
Environmental Impact	Proposed mitigation measures	Responsibility	Monitoring plan
<b>Air pollution</b>	<ul style="list-style-type: none"> <li>• Control speed and operation of construction vehicles.</li> <li>• Prohibit idling of vehicles.</li> <li>• Maintenance of vehicles and equipment.</li> <li>• Sensitize field exploration workers and contractors.</li> <li>• Workers should be provided with dust masks if working in sensitive areas.</li> </ul>	<ul style="list-style-type: none"> <li>• Contractor</li> <li>• Site Manager</li> </ul>	<ul style="list-style-type: none"> <li>• Amount of dust produced.</li> <li>• Level of Landscaping carried out.</li> </ul>
<b>Noise pollution</b>	<ul style="list-style-type: none"> <li>• Maintain equipment and vehicles.</li> <li>• Field work should only be carried out only during daytime i.e. 08h00 to 17h00.</li> <li>• Workers should wear earmuffs if working in noisy section.</li> <li>• Management to ensure that noise is kept within reasonable levels.</li> </ul>	<ul style="list-style-type: none"> <li>• Contractor</li> <li>• Management</li> </ul>	Amount of noise
<b>Solid waste</b>	<ul style="list-style-type: none"> <li>• Any debris should be collected by a waste collection company</li> <li>• If trenches are dug, waste should be re-used or backfilled.</li> <li>• The site should have waste receptacles with bulk storage facilities at convenient points to prevent littering during exploration.</li> </ul>	<ul style="list-style-type: none"> <li>• Management</li> </ul>	Presence of well-Maintained receptacles and central collection point.

<b>Oil leaks and spills</b>	<ul style="list-style-type: none"> <li>• Vehicles and equipment should be well maintained to prevent oil leaks.</li> <li>• Contractor should have a designated area where maintenance is carried out and that is protected from rainwater.</li> <li>• All oil products should be handled carefully.</li> </ul>	<ul style="list-style-type: none"> <li>• Contractor</li> </ul>	No oil spills and leaks on the site
<b>First aid</b>	<ul style="list-style-type: none"> <li>• A well-stocked first aid kit shall be maintained by qualified personnel</li> </ul>	<ul style="list-style-type: none"> <li>• Management</li> </ul>	Contents of the first aid kit.
<b>Visual</b>	<ul style="list-style-type: none"> <li>• Environmental considerations will be adhered to at all times before clearing roads, trenching and excavating.</li> </ul>	<ul style="list-style-type: none"> <li>• Management</li> </ul>	<ul style="list-style-type: none"> <li>• Employees will be trained on the importance of minimising visual impacts.</li> </ul>
<b>Archaeological Sites</b>	<ul style="list-style-type: none"> <li>• Buffer zones will be created around the sites.</li> <li>• Adhere to practical guidelines provided by an archaeologist to reduce the archaeological impact of mineral exploration activities.</li> <li>• All archaeological sites to be identified and protected before further exploration commences.</li> </ul>	<ul style="list-style-type: none"> <li>• Management</li> </ul>	<ul style="list-style-type: none"> <li>• Register of all archaeological sites identified.</li> </ul>
<b>Occupational Health and Safety</b>	<ul style="list-style-type: none"> <li>• Provide Personal Protective Equipment</li> <li>• Train workers on personal safety and how to handle equipment and machines.</li> <li>• A well-stocked first aid kit shall be maintained by qualified personnel.</li> <li>• Report any accidents / incidences and treat and compensate affected workers.</li> <li>• Provide sufficient and suitable sanitary conveniences which should be kept clean.</li> </ul>	<ul style="list-style-type: none"> <li>• Contractor</li> <li>• Management</li> </ul>	<ul style="list-style-type: none"> <li>• Workers using Protective Equipment.</li> <li>• Presence of Well stocked First Aid Box.</li> <li>• Clean sanitary facilities.</li> </ul>
<b>Fauna</b>	<ul style="list-style-type: none"> <li>• Some habitat areas such as trees of the riverbeds and tunnels outcrops will be avoided wherever possible.</li> <li>• A fauna survey will be conducted to determine the effect of fragmented habitat on game species should the need arise.</li> <li>• No animals shall be killed, captured or harmed in any way.</li> <li>• No foodstuff will be left lying around as these will attract animals which might result in human-animal conflict.</li> </ul>	<ul style="list-style-type: none"> <li>• Management</li> </ul>	<ul style="list-style-type: none"> <li>• Regular monitoring of any unusual signs of animal habitat.</li> </ul>
<b>Alien Invasive Plants</b>	<ul style="list-style-type: none"> <li>• The explorer will ensure that debris is properly disposed off.</li> <li>• Vehicle tyre inspections can be carried out although this may not be a practical mitigation measure.</li> <li>• Eradicating alien plants by using an Area Management Plan</li> </ul>	<ul style="list-style-type: none"> <li>• Management</li> <li>• Contractor</li> </ul>	<ul style="list-style-type: none"> <li>• Regular monitoring of any unusual signs of alien species.</li> </ul>
<b>Loss of vegetation</b>	<ul style="list-style-type: none"> <li>• Environmental considerations will be adhered to at all times before clearing roads, trenching and excavating.</li> <li>• Paths and roads will be aligned to avoid root zones. Permeable materials will be used wherever possible.</li> <li>• The movement of vehicles in riverbeds, rocky outcrops and vegetation sensitive areas will be avoided.</li> <li>• The movement of vehicles will be restricted to certain tracks only.</li> </ul>	<ul style="list-style-type: none"> <li>• Contractor</li> <li>• Management</li> </ul>	<ul style="list-style-type: none"> <li>• Warning signs on site</li> <li>• restored vegetation</li> </ul>
<b>Operational Phase</b>			

Environmental/ Social Impact	Proposed mitigation measures	Responsibility	Monitoring plan
<b>Noise pollution</b>	<ul style="list-style-type: none"> <li>Maintain vehicles and drilling equipment.</li> <li>Exploration drilling should be carried out only during daytime.</li> <li>Workers to wear earmuffs if working in noisy section</li> <li>Management to ensure that noise is kept within reasonable levels.</li> </ul>	<ul style="list-style-type: none"> <li>Contractor</li> <li>Management</li> </ul>	<ul style="list-style-type: none"> <li>Amount of noise</li> </ul>
<b>Visual</b>	<ul style="list-style-type: none"> <li>Environmental considerations will be adhered to at all times before clearing roads, trenching and excavating.</li> </ul>	<ul style="list-style-type: none"> <li>Management</li> </ul>	<ul style="list-style-type: none"> <li>Employees will be trained on the importance of minimising visual impacts.</li> </ul>
<b>Fauna</b>	<ul style="list-style-type: none"> <li>Some habitat areas such as trees of the riverbeds and tunnels outcrops will be avoided wherever possible.</li> <li>A fauna survey will be conducted to determine the effect of fragmented habitat on game species should the need arise.</li> <li>No animals shall be killed, captured or harmed in any way.</li> <li>No foodstuff will be left lying around as these will attract animals which might result in human-animal conflict.</li> </ul>	<ul style="list-style-type: none"> <li>Management</li> </ul>	<ul style="list-style-type: none"> <li>Regular monitoring of any unusual signs of animal habitat.</li> </ul>
<b>Alien Invasive Plants</b>	<ul style="list-style-type: none"> <li>The explorer will ensure that debris is properly disposed of.</li> <li>Vehicle tyre inspections can be carried out although this may not be a practical mitigation measure.</li> <li>Eradicating alien plants by using an Area Management Plan</li> </ul>	<ul style="list-style-type: none"> <li>Management</li> <li>Contractor</li> </ul>	<ul style="list-style-type: none"> <li>Regular monitoring of any unusual signs of alien species.</li> </ul>
<b>Loss of vegetation</b>	<ul style="list-style-type: none"> <li>Environmental considerations will be adhered to at all times before clearing roads, trenching and excavating.</li> <li>Paths and roads will be aligned to avoid root zones. Permeable materials will be used wherever possible.</li> <li>The movement of vehicles in riverbeds, rocky outcrops and vegetation sensitive areas will be avoided.</li> <li>The movement of vehicles will be restricted to certain tracks only.</li> </ul>	<ul style="list-style-type: none"> <li>Contractor</li> <li>Management</li> </ul>	<ul style="list-style-type: none"> <li>Warning signs on site</li> <li>restored vegetation</li> </ul>
<b>Solid waste</b>	<ul style="list-style-type: none"> <li>Minimize solid waste generated on site.</li> <li>Recycle waste especially waste from trenching.</li> <li>Debris should be collected by waste collection company.</li> <li>Excavation waste should be re-used or backfilled.</li> </ul>	<ul style="list-style-type: none"> <li>Contractor</li> <li>Management</li> </ul>	<ul style="list-style-type: none"> <li>Amount of waste on Site</li> <li>Presence of well-Maintained receptacles and central collection point.</li> </ul>
<b>Oil leaks and spills</b>	<ul style="list-style-type: none"> <li>Machinery should be well maintained to prevent oil leaks.</li> <li>Contractor should have a designated area where maintenance is carried out and that is protected from rainwater.</li> <li>All oil products should be stored in a site store and handled carefully.</li> </ul>	<ul style="list-style-type: none"> <li>Contractor</li> </ul>	<ul style="list-style-type: none"> <li>No oil spills and leaks on the site.</li> </ul>

<b>Archaeological Sites</b>	<ul style="list-style-type: none"> <li>• Buffer zones will be created around the sites.</li> <li>• Adhere to practical guidelines provided by an archaeologist to reduce the archaeological impact of mineral exploration activities.</li> <li>• All archaeological sites to be identified and protected before further exploration commences.</li> </ul>	<ul style="list-style-type: none"> <li>• Management</li> </ul>	<ul style="list-style-type: none"> <li>• Update Register of all archaeological sites identified.</li> </ul>
<b>First aid</b>	<ul style="list-style-type: none"> <li>• A well-stocked first aid kit shall be maintained by qualified personnel</li> </ul>	<ul style="list-style-type: none"> <li>• Management</li> </ul>	<ul style="list-style-type: none"> <li>• Contents of the first aid kit.</li> </ul>
<b>Fire preparedness</b>	<ul style="list-style-type: none"> <li>• Firefighting drills carried out regularly.</li> <li>• Firefighting emergency response plan.</li> <li>• Ensure all firefighting equipment are regularly maintained, serviced and inspected.</li> <li>• Fire hazard signs and directions to emergency exit, route to follow and assembly point in case of any fire incidence.</li> </ul>	<ul style="list-style-type: none"> <li>• Management</li> </ul>	<ul style="list-style-type: none"> <li>• Number of fire drills carried.</li> <li>• Proof of inspection on firefighting equipment.</li> <li>• Fire Signs put up in strategic places.</li> <li>• Availability of firefighting equipment.</li> </ul>
<b>Environment Health and Safety</b>	<ul style="list-style-type: none"> <li>• Train workers on personal safety and disaster preparedness.</li> <li>• A well-stocked first aid kit shall be maintained by qualified personnel.</li> <li>• Report any accidents / incidences and treat and compensate affected workers.</li> <li>• Provide sufficient and suitable sanitary conveniences which should be kept clean.</li> <li>• Conduct Annual Health and Safety Audits.</li> </ul>	<ul style="list-style-type: none"> <li>• Management</li> </ul>	<ul style="list-style-type: none"> <li>• Provide sanitary facilities.</li> <li>• Copies of Annual Audit</li> </ul>
<b>Decommissioning Phase</b>			
<b>Environmental/Social Impact</b>	<b>Proposed mitigation measures</b>	<b>Responsibility</b>	<b>Monitoring plan/indicator</b>
<b>Noise &amp; Air pollution</b>	<ul style="list-style-type: none"> <li>• Maintain plant equipment.</li> <li>• Decommissioning works to be carried out only during daytime.</li> <li>• Workers working in noisy section to wear earmuffs.</li> <li>• Workers should be provided with dust masks.</li> </ul>	<ul style="list-style-type: none"> <li>• Contractor</li> <li>• Management</li> </ul>	<ul style="list-style-type: none"> <li>• Amount of noise</li> </ul>
<b>Disturbed Physical environment</b>	<ul style="list-style-type: none"> <li>• Undertake a complete environmental restoration programme and introducing appropriate vegetation</li> </ul>	<ul style="list-style-type: none"> <li>• Management</li> </ul>	
<b>Solid waste</b>	<ul style="list-style-type: none"> <li>• Solid waste should be collected by a contracted waste collection company</li> <li>• Excavation waste should be re-used or backfilled.</li> </ul>	<ul style="list-style-type: none"> <li>• Contractor</li> <li>• Management</li> </ul>	<ul style="list-style-type: none"> <li>• Amount of waste on Site.</li> <li>• Presence of well-maintained receptacles and central collection point.</li> </ul>



<b>Occupational Health and Safety</b>	<ul style="list-style-type: none"> <li>• Provide Personal Protective Equipment.</li> <li>• Train workers on personal safety and how to handle equipment and machines.</li> <li>• A well-stocked first aid kit shall be maintained by qualified personnel.</li> <li>• Demarcate area under decommissioning.</li> </ul>	<ul style="list-style-type: none"> <li>• Contractor</li> </ul>	<ul style="list-style-type: none"> <li>• Workers using Protective Equipment.</li> <li>• Presence of a First Aid Box.</li> </ul>
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## 6.5 Monitoring, Auditing and Reporting

### 6.5.1 Inspections and Audits

During the life of the project, performance against the EMP commitments will need to be monitored, and corrective action taken where necessary, in order to ensure compliance with the EMP and relevant enviro-legal requirements.

#### 6.5.1.1 Internal Inspections/Audits

The following internal compliance monitoring programme will be implemented:

1. Project kick-off and close-out audits will be conducted on all contractors. This applies to all phases, including drilling contract work during operations:
  - Prior to a contractor beginning work, an audit will be conducted by the applicable phase site manager to ensure that the EMP commitments are included in Contractors' standard operating procedures (SOPs) and method statements.
  - Following completion of a Contractors work, a final close-out audit of the contractor's performance against the EMP commitments will be conducted by the applicable phase site manager.
2. Monthly internal EMP performance audits will be conducted during the construction/initial and decommissioning phases.
3. Ad hoc internal inspections can be implemented by the applicable phase exploration manager at his/her discretion, or in follow-up to recommendations from previous inspection/audit findings.

#### 6.5.1.2 External Audits

- At the close of each project phase, and annually during the operational phase, an independently conducted audit of EMP performance will be conducted.

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- Specialist monitoring/auditing may be required where specialist expertise are required or in order to respond to grievances or authorities directives.
  - Officials from the DEA may at any time conduct a compliance and/or performance inspection of mineral exploration operations. The proponent will be provided with a written report of the findings of the inspection. These audits assist with the continual improvement of the exploration project and the proponent will use such feedback to help improve its overall operations.

#### **6.5.1.3 Documentation**

Records of all inspections/audits and monitoring reports will be kept in line with legislation. Actions will be issued on inspection/audit findings. These will be tracked and closed out.

#### **6.5.1.4 Reporting**

Environmental compliance reports will be submitted to the Ministry of Environment and Tourism on a bi-annual basis.

### **6.5.2 Environmental Management System Framework**

In order implement Environmental Management Practices, an Environmental Management System (EMS) will be established and implemented by the proponent and their Contractors. This subchapter establishes the framework for the compilation of a project EMS. The applicable exploration manager will maintain a paper based and/or electronic system of all environmental management documentation. These will be divided into the following main categories:

#### **6.5.2.1 Policy and Performance Standards**

A draft environmental policy and associated objective, goals and commitments has been included in the EMP. The mineral explorer may adapt these as necessary.

#### **6.5.2.2 Enviro-Legal Documentation**

A copy of the approved environmental assessment and EMP documentation will always be available by the proponent. Copies of the Environment Clearance Certificate and all other associated authorisations and permits will also be kept with

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the exploration team. In addition, a register of the legislation and regulations applicable to the project will be maintained and updated as necessary.

### **6.5.2.3 Impact Aspect Register**

A register of all project aspects that could impact the environment, including an assessment of these impacts and relevant management measures, is to be maintained. This Draft EMP identifies the foreseeable project aspects and related potential impacts of the proposed project, and as such forms the basis for the Aspect-Impact Register; with the Project Activity. It is however noted that during the life of the project additional project aspects and related impacts may arise which would need to be captured in the Aspect-Impact Register. In this regard, the impact identification principles set forth in the scoping report can be used to update the Register. This method can be modified as required by the applicable exploration manager as necessary during the life of the project.

### **6.5.2.3 Procedures and Method Statements**

In order to affect the commitments contained in this EMP, procedures and method statements will be drafted by the relevant responsible mineral exploration staff and Contractors. These include, but may not be limited:

- Standard operating procedures for environmental action plan and management programme execution.
- Incident and emergency response procedures.
- Auditing, monitoring and reporting procedures, and
- Method statements for EMP compliance for ad hoc activities not directly addressed in the EMP action plans.

All procedures are to be version controlled and signed off by the applicable exploration manager. In addition, knowledge of procedures by relevant staff responsible for the execution thereof must be demonstrable and training records maintained.

### **6.5.2.4 Register of Roles and Responsibilities**

During project planning and risk assessments, relevant roles and responsibilities will be determined. These must be documented in a register of all environmental

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commitment roles and responsibilities. The register is to include relevant contact details and must be updated as required.

#### **6.5.2.5 Site Map**

An up to date map of the exploration site indicating all project activities is to be maintained. In addition to the project layout, the following detail must be depicted:

- Materials handling and storage;
- Waste management areas (collection, storage, transfer, etc.);
- Sensitive areas;
- Incident and emergency equipment locations; and Location of responsible parties.

#### **6.5.2.6 Environmental Management Schedule**

A schedule of environmental management actions is to be maintained by the applicable phase site managers and/or relevant Contractors. A master schedule of all such activities is to be kept up to date by the exploration manager. Scheduled environmental actions can include, but are not limited to:

- Environmental risk assessment;
- Environmental management meetings;
- Soil handling, management and rehabilitation;
- Waste collection
- Incident and emergency response equipment evaluations and maintenance
- Environmental training;
- Stakeholder engagement; Environmental inspections; and
- Auditing, monitoring and reporting.

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### 6.5.2.7 Change Management

The EMS must have a procedure in place for change management. In this regard, updating and revision of environmental documentation, of procedures and method statements, actions plants etc. will be conducted as necessary in order to account for the following scenarios:

- Changes to standard operating procedures (SOPs);
- Changes in scope;
- Ad hoc actions;
- Changes in project phase; and
- Changes in responsibilities or roles

All documentation will be version controlled and require sign off by the applicable phase site managers.

## 6.6 Closure Plan

The closure vision for the proposed project is to establish a safe, stable and non-polluting post-prospecting landscape that can facilitate integrated, self-sustaining and value generating opportunities, thereby leave a lasting positive legacy. The aim of the closure plan is to:

- Creating a safe, physically stable rehabilitated landscape that limits long-term erosion potential and environmental degradation.
- Sustaining long term catchment yield and water quality.
- Focusing on establishing a functional post-prospecting landscape that enables self-sustaining agricultural practices where possible.
- To encourage, where appropriate, the re-instatement of terrestrial and aquatic wetland biodiversity

### 6.6.1 Alternatives Considered

Considering that this is an exploration project, the proposed project is not complex, and the risks associated with prospecting are understood and can be mitigated at

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closure. Alternative options for closure are limited. There are only two options that have been considered as activity alternatives for the closure plan:

- **Preferred Alternative:** Closure or Backfill of boreholes with overburden removed during drilling.
- **Alternative 2:** To Leave boreholes open, in-order to allow for groundwater recharge by surface run-off.

### 6.6.2 Preferred Alternative: Rehabilitation/ Backfill of boreholes

Rehabilitation is the restoration of a disturbed area that has been degraded as a result of activities such as mining, road construction or waste disposal, to a land use in conformity with the original land use before the activity started. This also includes aesthetical considerations, so that a disturbed area will not be visibly different to the natural environment. This also involves maintaining physical, chemical and biological ecosystem processes in degraded environments, hence the preferred option of backfilling the boreholes with the overburden removed during development and cover with growth medium to establish vegetation. This option has several advantages as discussed below:

#### **Advantages:**

- The site will be aesthetically acceptable;
- The site will blend in with the environment;
- The site will be a suitable habitat for fauna and flora again.
- The site will be safe and pollution free;
- Revegetating the site will ensure that the site is non-erodible.

Opting for alternative 1, which is to leave boreholes without backfilling poses a risk in that, these boreholes may fill in with water, which may become attractive to wildlife and communities leading to drowning and the risk of being trapped in the declines. To mitigate these risks, it is necessary to backfill. Treatment technologies should be used to prevent decanting.

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### 6.6.3 Closure Assumptions

This closure plan has been developed based on limited available information including environmental data. Some of the information currently available may need to be supplemented during the operational period. Therefore, several assumptions were made about general conditions, and closure and rehabilitation of the facilities at the site to develop the proposed closure actions. As additional information is collected during operations, these assumptions will be reviewed and revised as appropriate.

The assumptions used to prepare this plan include the following:

- The closure period will commence once the last planned weight of minerals has been extracted from the site for laboratory testing.
- The proposed prospecting sites will be adhered to minimise the potential impacts.
- Vegetation establishment will be in line with a project area's indigenous vegetation.
- Water management infrastructure developed for the operational phase will be retained for closure /end of the life of the project as necessary.
- There are limited opportunities for any infrastructure to be built on site and if any infrastructure is built, it will be of limited benefit to the community. Therefore, all buildings will be demolished.
- All hazardous and domestic waste will be transported offsite for disposal in licensed landfills.
- No roads are anticipated to be constructed to access the site; existing roads will be used as far as possible. Where access tracks have been developed in cases where there are no roads, these will be rehabilitated and closed as part of normal closure actions.

### 6.6.4 Closure and Rehabilitation Activities

The rehabilitation actions intended to be undertaken at the end of the life of the proposed prospecting activities are described below.

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#### **6.6.4.1 Infrastructure**

All infrastructures will be decommissioned, and the footprints rehabilitated for the establishment of vegetation. Material inventories will be managed near the end of prospecting activities to minimize any surplus materials at closure. Where practicable, equipment and materials with value not needed for post-closure operations will be sold and or removed from the site. Equipment with scrap or salvage value will be removed from the site and sold to recyclers.

A soil contamination investigation will be conducted on completion of demolition activities. The purpose of this is to identify areas of possible contamination and design and implement appropriate remedial measures to ensure that the soil contaminants are removed. Closure actions will include:

- All power and water services to be disconnected and certified as safe prior to commencement of any decommissioning works;
- All remaining inert equipment and decommissioning waste will be disposed to the nearest licensed general waste disposal facility;
- Salvageable equipment will be removed and transported offsite prior and during decommissioning;
- All tanks, pipes and sumps containing hydrocarbons to be flushed or emptied prior to removal to ensure no hydrocarbon/chemical residue remains;

#### **6.6.4.2 Boreholes**

Closure of boreholes will entail backfilling with overburden stripped ahead of prospecting activities. All overburden should be replaced into the void and the final surface reshaped to simulate surrounding topography while ensuring that the surface is free draining.

Once backfilling is complete a growth medium cover will be placed, and vegetation will be established. There may be a requirement to include sacrificial erosion protection measures on the surface while vegetation is being established.



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### 6.6.4.3 Roads

Existing roads will be used as far as possible. Closure actions concerning roads and parking areas will include:

- Removal of all signage, fencing, shade structures, traffic barriers, etc.
- All 'hard top' surfaces to be ripped along with any concrete structures.
- All potentially contaminated soils are to be identified and demarcated for later remediation; and
- All haul routes that have been treated with saline dust suppression water need to be treated, with the upper surface ripped and removed to designated contaminant disposal areas.

### 6.6.4.4 Remediation of Contaminated Areas

All soil, contaminated with hydrocarbons, will be identified, excavated, if possible, to at least 200 mm below the contaminated zone and then treated.

- All tanks, pipes and sumps containing hydrocarbons will be flushed or emptied.
- Removed soils will be managed as determined by the nature and extent of the contamination.
- Liquid storage tanks will be emptied, the structure removed/demolished and sub-surface holes filled; and
- All equipment in which chemicals have been stored or transported will be cleaned and disposed of in a suitable disposal facility.

### 6.6.4.5 Vegetation

Successful revegetation will help control erosion of soil resources, maintain soil productivity and reduce sediment loading in streams utilizing non-invasive plants that fit the criteria of the habitat (e.g. soils, water availability, slope and other appropriate environmental factors). Invasive species will be avoided, and the area will be managed to control the spread of these species.

To counter the effects of erosion, naturally occurring grassland species will be planted on slopes. These species will provide soil holding capacity and reduce runoff velocity.

The flatter areas will be re-vegetated with the objective of creating a sustainable ecosystem. The occurrence of protected plant species will need to be determined before vegetation is removed and the required permits will be obtained for either destruction or relocation.

#### **6.6.4.6 Waste Management**

Waste management activities will include:

- Hazardous waste will be managed handled, classified and disposed.
- Non-hazardous will be disposed in the nearby licensed landfill site;
- Scrap and waste steel will be sold to recyclers.
- It may be necessary to fence temporary salvage yards for security reasons, particularly where these are located close to public roads.

## 7. Public Participation Process

The public participation process commenced with newspaper advertisements in two widely distributed newspapers for two consecutive weeks as shown in Appendix B.

Known interested and affected parties were notified directly via mail and fax.

The registered interested and affected are indicated in the table below:

**Table 11 Registered IAP's from various organs of state.**

Name	Position	Organization
Teofillus Nghitila	Executive Director	Ministry of Environment and Tourism
Timoteus Mufeti	Environmental Commissioner	Ministry of Environment and Tourism
Maria Amakali	Director: Water Resources Management	Ministry of Agriculture, Water and Land Reform
E. Shivolo	Mining Commissioner	Min. of M&E - Mining Commissioner

### Registered IAP's and Summary of Issues Raised

Name	Farm	email	Tel	Comments	Response
Michael Noelle	Etusis	mnoelle@englinglaw.com.na	064-550826	<p>We as Etusis and Habis is not happy about all the mining as you</p> <p>Are destroying nature and is taking grazing fields away from our wildlife.</p> <p>The papers you send is also not clear for Viewing.</p> <p>For further negotiations please work FRO the next person.</p>	Thank you for your email. Your comments are well received and we will note them.

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## 8. Conclusion

The scoping report is prepared for the Environmental Impact Assessment for mineral exploration on an area which is located about 27 km southwest of Karibib, accessible along the C32 road. Environmental scoping is a critical step in the preparation of an EIA for the proposed mineral exploration activities

Basically, mineral exploration is relatively unsophisticated and rudimentary. The methods that will be employed are mainly target generation, target drilling, resource evaluation and mineral resource definition.

With the potential employment of 15 people, this means that 15 families will benefit from the project during the exploration phase. The project has great potential to improve livelihoods and contribute to sustainable development within the surrounding community.

At this stage, electricity requirements for the project are minimal. The bulk of the power supply to the exploration site will be sourced from the proponent's own generator.

The potential negative impacts associated with the proposed mineral exploration project are expected to be low to medium in significance. Provided that the relevant mitigation measures are successfully implemented by the proponent, there are no environmental reasons why the proposed project should not be approved. The project will have significant positive economic impacts that would benefit the local, regional and national economy of Namibia.

Several other potential impacts have been addressed in Section 5 and 6 of this EIA, and will be managed through the implementation of the EMP.

The EMP contains a set of Environmental Specifications that will form part of all contracts between the proponent and contractors such as lubrication companies. The requirements of the EMP will be enforced on site by the Management team, and periodic environmental audits will be undertaken and submitted to MET.

This EIA has been subject to a few limitations, which are explained as follows: -

- the time available in which to secure an environmental contract with the authorities; and,

The limited botanical work done to date did not raise any concerns but will be monitored on an on-going basis. If any “special” species of plants are found, these will be located by GPS. An addendum will then be added to the EMP to indicate localities that should be avoided, or to implement other appropriate measures about any special plants.

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## Appendix A

SCIENTIFIC NAME	COMMON NAME	STATUS	OCCURRENCE
<i>Eidolon helvum</i>	STRAW-COLORED FRUIT BAT	SECURE	SEASONAL
<i>Nycteris thebaica</i>	COMMON SLIT-FACED BAT	SECURE	ABUNDANTLY
<i>Taphozous mauritanus</i>	TOMB BAT	SECURE	SEASONAL
<i>Rhinolophus fumigatus</i>	RÜPPELL'S HORSESHOE BAT	SECURE	OCCASIONALLY
<i>Rhinolophus darlingi</i>	DARLING'S HORSESHOE BAT	SECURE	OCCASIONALLY
<i>Rhinolophus denti</i>	DENT'S HORSESHOE BAT	SECURE	OCCASIONALLY
<i>Hipposideros commersoni</i>	COMMERSON' S LEAF-NOSED BAT	SECURE	ABUNDANTLY
<i>Hipposideros caffer</i>	SUNDEVALL' S LEAF-NOSED BAT	SECURE	ABUNDANTLY
<i>Chaerephon nigeriae</i>	NIGERIAN FREE-TAILED BAT	SECURE	ABUNDANTLY
<i>Mops midas</i>	MIDAS FREE-TAILED BAT	SECURE	ABUNDANTLY
<i>Tadarida aegyptiaca</i>	EGYPTIAN FREE-TAILED BAT	SECURE	ABUNDANTLY
<i>Miniopterus inflatus</i>	GREATER LONG-FINGERED BAT	SECURE	RARELY
<i>Miniopterus schreibersi</i>	SCHREIBERS' LONG-FINGERED BAT	SECURE	ABUNDANTLY
<i>Neoromicia capensis</i>	CAPE SEROTINE BAT	SECURE	ABUNDANTLY
<i>Neoromicia zuluensis</i>	ALOE SEROTINE BAT	SECURE	RARELY
<i>Nycticeinops schlieffenii</i>	SCHLIEFFEN' S BAT	SECURE	RARELY
<i>Scotophilus dingani</i>	AFRICAN YELLOW BAT	SECURE	ABUNDANTLY
<i>Atelerix frontalis</i>	SOUTHERN AFRICAN HEDGEHOG	UNKNOWN, RARE?	RARELY
<i>Crociodura fuscomurina</i>	TINY MUSK SHREW	SECURE	RARELY
<i>Crociodura hirta</i>	LESSER RED MUSK SHREW	SECURE	ABUNDANTLY
<i>Galago moholi</i>	SOUTHERN AFRICAN BUSHBABY	UNKNOWN, RARE?	ABUNDANTLY
<i>Papio ursinus</i>	CHACMA BABOON	SECURE	ABUNDANTLY
<i>Lepus victoriae</i>		SECURE	ABUNDANTLY
<i>Xerus inaurus</i>	CAPE GROUND SQUIRREL	SECURE	ABUNDANTLY
<i>Funisciurus congicus</i>	STRIPED TREE SQUIRREL	SECURE	RARELY
<i>Saccostomus campestris</i>	POUCHED MOUSE	SECURE	ABUNDANTLY
<i>Tatera leucogaster</i>	BUSHVELD GERBIL	SECURE	ABUNDANTLY
<i>Tatera brantsii</i>	HIGHVELD GERBIL	SECURE	ABUNDANTLY
<i>Desmodillus auricularis</i>	SHORT-TAILED GERBIL	SECURE	RARELY
<i>Gerbillurus paeaba</i>	PYGMY GERBIL	SECURE	ABUNDANTLY
<i>Steatomys pratensis</i>	FAT MOUSE	SECURE	ABUNDANTLY
<i>Malacothrix typica</i>	LARGE-EARED MOUSE	SECURE	RARELY
<i>Mus indutus</i>	KALAHARI PYGMY MOUSE	SECURE	ABUNDANTLY
<i>Lemniscomys rosalia</i>	SINGLE-STRIPED MOUSE	SECURE	RARELY
<i>Rhabdomys pumilio</i>	STRIPED MOUSE	SECURE	ABUNDANTLY
<i>Thallomys paedulcus</i>	TREE RAT	SECURE	ABUNDANTLY
<i>Thallomys nigricauda</i>	BLACK-TAILED TREE RAT	SECURE	ABUNDANTLY
<i>Aethomys namaquensis</i>	NAMAQUA ROCK RAT	SECURE	RARELY
<i>Aethomys chrysophilus</i>	RED VELD RAT	SECURE	ABUNDANTLY
<i>Zelotomys woosnami</i>	WOOSNAM'S DESERT RAT	RARE	RARELY
<i>Mastomys natalensis</i>	NATAL MULTIMAMMATE MOUSE	SECURE	ABUNDANTLY
<i>Mastomys coucha</i>	MULTIMAMMATE MOUSE	SECURE	ABUNDANTLY
<i>Graphiurus murinus</i>	WOODLAND DORMOUSE	SECURE	ABUNDANTLY
<i>Pedetes capensis</i>	SPRINGHARE	SECURE	ABUNDANTLY
<i>Hystrix africae australis</i>	SOUTHERN AFRICAN PORCUPINE	SECURE	ABUNDANTLY
<i>Cryptomys damarensis</i>	DAMARA MOLE RAT	SECURE	ABUNDANTLY
<i>Felis lybica</i>	AFRICAN WILD CAT	ENDANGERED & SUPERFICIAL	RARELY



<i>Felis nigripes</i>	SMALL - SPOTTED CAT	INDETERMINATE; PERIPHERAL; RARE?	RARELY
<i>Leptailurus serval</i>	SERVAL	AMBIGUOUS & SUPERFICIAL	RARELY
<i>Caracal caracal</i>	CARACAL	SECURE	ABUNDANTLY
<i>Panthera pardus</i>	LEOPARD	SECURE? & SUPERFICIAL	RARELY
<i>Panthera leo</i>	LION	AMBIGUOUS(END ANGERED) & SUPERFICIAL	EXTINCT
<i>Acinonyx jubatus</i>	CHEETAH	INADEQUATELY KNOWN (ENDANGERED?) & SUPERFICIAL	ABUNDANTLY
<i>Civettictis civetta</i>	CIVET	AMBIGUOUS, RARE? & SUPERFICIAL	RARELY
<i>Genetta maculata</i>	SMALL-SPOTTED GENET	SECURE – SP (taxonomy)	ABUNDANTLY
<i>Galarella sanguineus</i>	SLENDER MONGOOSE	SECURE	ABUNDANTLY
<i>Helogale parvula</i>	DWARF MONGOOSE	SECURE	ABUNDANTLY
<i>Mungos mungo</i>	BANDED MONGOOSE	SECURE	ABUNDANTLY
<i>Cynictis penicillata</i>	YELLOW MONGOOSE	SECURE	ABUNDANTLY
<i>Crocuta crocuta</i>	SPOTTED HYAENA	SECURE? & SUPERFICIAL	EXTINCT
<i>Parahyaena brunnea</i>	BROWN HYAENA	INADEQUATELY KNOWN (ENDANGERED?) & SUPERFICIAL	OCCASIONALLY
<i>Proteles cristatus</i>	AARDWOLF	INADEQUATELY KNOWN (ENDANGERED?) & SUPERFICIAL	ABUNDANTLY
<i>Canis mesomelas</i>	BLACK-BACKED JACKAL	SECURE	ABUNDANTLY
<i>Lycaon pictus</i>	WILD DOG	ENDANGERED & SUPERFICIAL	EXTINCT
<i>Otocyon megalotis</i>	BAT-EARED FOX	ENDANGERED? & SUPERFICIAL- SP (taxonomy)	RARELY
<i>Vulpes chama</i>	CAPE FOX	ENDANGERED?	RARELY
<i>Ictonyx striatus</i>	STRIPED POLECAT	SECURE	ABUNDANTLY
<i>Mellivora capensis</i>	HONEY BADGER	SECURE	RARELY
<i>Poecilogale albinucha</i>	AFRICAN STRIPED WEASEL	AMBIGUOUS(RAR E?)	RARELY
<i>Manis temminckii</i>	SAVANNA PANGOLIN	ENDANGERED & SUPERFICIAL	RARELY
<i>Phacochoerus africanus</i>	SOUTHERN WARTHOG	SECURE	ABUNDANTLY
<i>Giraffa camelopardalis</i>	GIRAFFE	ENDANGERED? & SUPERFICIAL	EXTINCT
<i>Alcelaphus buselaphus</i>	RED HARTEBEEST	SECURE ?	ABUNDANTLY
<i>Antidorcas marsupialis</i>	SPRINGBOK	SECURE	
<i>Connochaetes taurinus</i>	BLUE WILDEBEEST	INADEQUATELY KNOWN (ENDANGERED?) & SUPERFICIAL	ABUNDANTLY
<i>Hippotragus equinus</i>	ROAN	ENDANGERED & SUPERFICIAL	ABUNDANTLY
<i>Madoqua damarensis</i>	DAMARA DIK-DIK	INADEQUATELY KNOWN	RARELY
<i>Oryx gazella</i>	GEMSBOK	SECURE	ABUNDANTLY
<i>Raphicerus campestris</i>	STEENBOK	SECURE	ABUNDANTLY
<i>Sylvicapra grimmia</i>	COMMON DUIKER	SECURE	ABUNDANTLY
<i>Syncerus caffer</i>	BUFFALO	INSUFFICIENTLY KNOWN & SUPERFICIAL	ABUNDANTLY
<i>Tragelaphus oryx</i>	ELAND	INADEQUATELY KNOWN & SUPERFICIAL	ABUNDANTLY
<i>Tragelaphus strepsiceros</i>	GREATER KUDU	SECURE	ABUNDANTLY

<i>Equus burchelli</i>	PLAINS ZEBRA	INADEQUATELY KNOWN & SUPERFICIAL	EXTINCT
<i>Ceratotherium simum</i>	WHITE RHINOCEROS	EXTINCT & REINTRODUCED (non topotypical stock)	EXTINCT
<i>Diceros bicornis</i>	BLACK RHINOCEROS	ENDANGERED & SUPERFICIAL	EXTINCT
<i>Loxodonta africana</i>	AFRICAN ELEPHANT	ENDANGERED & SUPERFICIAL	EXTINCT
<i>Orycteropus afer</i>	AARDVARK	SECURE ?	ABUNDANTLY
<i>Elephantulus intufi</i>	BUSHVELD SENGI	ENDEMIC AND SECURE	ABUNDANTLY

Reptile species which are likely to occur within the exploration area:

SCIENTIFIC NAME	COMMON NAME	STATUS	OCCURRENCE
<i>Pelomedusa subrufa</i>	HELMETED TERRAPIN	SECURE	ABUNDANTLY
<i>Geochelone pardalis</i>	LEOPARD TORTOISE	ENDANGERED & SUPERFICIAL	ABUNDANTLY
<i>Psammobates oculiferus</i>	KALAHARI TORTOISE	ENDANGERED	ABUNDANTLY
<i>Lygodactylus bradfieldi</i>	NAMIBIAN DWARF GECKO	ENDEMIC & SECURE	ABUNDANTLY
<i>Colopus wahlbergii</i>	KALAHARI GROUND GECKO	SECURE	RARELY
<i>Pachydactylus turneri</i>	TROPICAL BUTTON-SCALE GECKO	SECURE	ABUNDANTLY
<i>Pachydactylus capensis</i>	CAPE GECKO	SECURE	UNCOMMONLY
<i>Pachydactylus punctatus</i>	SPECKLED GECKO	SECURE	ABUNDANTLY
<i>Ptenopus garrulus</i>	COMMON BARKING GECKO	SECURE	ABUNDANTLY
<i>Agama aculeata</i>	COMMON GROUND AGAMA	SECURE	ABUNDANTLY
<i>Chamaeleo dilepis</i>	FLAP-NECK CHAMELEON	SECURE	ABUNDANTLY
<i>Acontias occidentalis</i>	WESTERN LEGLESS SKINK	SECURE	ABUNDANTLY
<i>Lygosoma sundevalli</i>	COMMON WRITHING SKINK	SECURE	ABUNDANTLY
<i>Trachylepis capensis</i>	CAPE SKINK	SECURE	UNCOMMONLY
<i>Trachylepis punctulata</i>	EASTERN VARIEGATED SKINK	SECURE	ABUNDANTLY
<i>Trachylepis wahlbergii</i>	WAHLBERG'S STRIPED SKINK	SECURE	ABUNDANTLY
<i>Trachylepis varia</i>	COMMON VARIABLE SKINK	SECURE	ABUNDANTLY
<i>Heliobolis lugubris</i>	BUSHVELD LIZARD	SECURE	ABUNDANTLY
<i>Ichnotropis capensis</i>	CAPE ROUGH-SCALED LIZARD	SECURE	ABUNDANTLY
<i>Ichnotropis squamulosa</i>	COMMON ROUGH-SCALED LIZARD	SECURE	ABUNDANTLY
<i>Nucras holubi</i>	HOLUB'S SANDVELD LIZARD	SECURE	UNCOMMONLY
<i>Nucras intertexta</i>	SPOTTED SANDVELD LIZARD	SECURE	UNCOMMONLY
<i>Pedioplanis lineocellata</i>	OCELLATED SAND LIZARD	SECURE	ABUNDANTLY
<i>Pedioplanis namaquensis</i>	NAMAQUA SAND LIZARD	SECURE	ABUNDANTLY
<i>Gerrhosaurus auritus</i>	KALAHARI PLATED LIZARD	SECURE	UNCOMMONLY
<i>Gerrhosaurus nigrolineatus</i>	BLACK-LINED PLATED LIZARD	SECURE	ABUNDANTLY
<i>Varanus albigularis</i>	VELD LEGUAAN (MONITOR)	ENDANGERED & SUPERFICIAL	ABUNDANTLY
<i>Dalophia pistillum</i>	BLUNT-TAILED WORM LIZARD	SECURE ?	MARGINALLY
<i>Monopeltis anchietae</i>	ANGOLAN SPADE-SNOUTED WORM LIZARD	SECURE	ABUNDANTLY
<i>Monopeltis infuscata</i>	DUSKY SPADE-SNOUTED WORM LIZARD	SECURE	ABUNDANTLY
<i>Monopeltis leonhardi</i>	KALAHARI SPADE-SNOUTED WORM LIZARD	SECURE	MARGINALLY
<i>Monopeltis mauricei</i>	SLENDER SPADE-SNOUTED WORM LIZARD	SECURE	MARGINALLY
<i>Zygaspis quadrifrons</i>	KALAHARI ROUND-HEADED WORM LIZARD	SECURE	ABUNDANTLY
<i>Leptotyphlops labialis</i>	DAMARA WORM SNAKE	ENDEMIC & SECURE	MARGINALLY
<i>Leptotyphlops scutifrons</i>	PETERS= WORM SNAKE	SECURE	ABUNDANTLY
<i>Rhinotyphlops schlegelii</i>	SCHLEGEL'S BLIND SNAKE	SECURE	ABUNDANTLY
<i>Rhinotyphlops boylei</i>	KALAHARI BLIND SNAKE	SECURE	RARELY

<i>Python natalensis</i>	SOUTHERN AFRICAN PYTHON	<b>ENDANGERED &amp; SUPERFICIAL</b>	ABUNDANTLY
<i>Amblyodipsas polylepis</i>	COMMON PURPLE-GLOSSED SNAKE	<b>INADEQUETLY KNOWN; RARE?</b>	RARELY
<i>Amblyodipsas ventrimaculata</i>	KALAHARI PURPLE-GLOSSED SNAKE	<b>SECURE</b>	MARGINALLY
<i>Aparallactus capensis</i>	CAPE CENTIPEDE EATER	<b>INADEQUETLY KNOWN ; RARE?</b>	RARELY
<i>Atractaspis bibronii</i>	SOUTHERN STILLETTO SNAKE	<b>SECURE</b>	ABUNDANTLY
<i>Xenocalamus bicolor</i>	VARIABLE QUILL-SNOURED SNAKE	<b>SECURE</b>	ABUNDANTLY
<i>Xenocalamus mechowii</i>	ELONGATED QUILL-SNOURED SNAKE	<b>SECURE</b>	MARGINALLY
<i>Crotaphopeltis hotamboeia</i>	WHITE-LIPPED SNAKE	<b>INADEQUETLY KNOWN</b>	RARELY
<i>Dasypeltis scabra</i>	RHOMBIC EGG EATER	<b>SECURE</b>	ABUNDANTLY
<i>Dispholidus typus</i>	BOOMSLANG	<b>SECURE</b>	ABUNDANTLY
<i>Lamprophis fuliginosus</i>	BROWN HOUSE SNAKE	<b>SECURE</b>	ABUNDANTLY
<i>Lycophidion capense</i>	CAPE WOLF SNAKE	<b>SECURE</b>	ABUNDANTLY
<i>Mehelya capensis</i>	CAPE FILE SNAKE	<b>SECURE</b>	UNCOMMONLY
<i>Mehelya nyassae</i>	BLACK FILE SNAKE	<b>INADEQUETLY KNOWN</b>	RARELY
<i>Mehelya vernayi</i>	ANGOLAN FILE SNAKE	<b>INADEQUETLY KNOWN</b>	UNCOMMONLY
<i>Philothamnus angolensis</i>	ANGOLAN GREEN SNAKE	<b>SECURE</b>	UNCOMMONLY
<i>Philothamnus semivariiegatus</i>	SPOTTED BUSH SNAKE	<b>SECURE</b>	ABUNDANTLY
<i>Prosymna angolensis</i>	ANGOLA SHOVEL-SNOOUT	<b>SECURE</b>	MARGINALLY
<i>Prosymna bivittata</i>	TWIN-STRIPED SHOVELSNOOUT	<b>SECURE</b>	MARGINALLY
<i>Psammophis angolensis</i>	DWARF WHIP SNAKE	<b>SECURE</b>	ABUNDANTLY
<i>Psammophis jallae</i>	JALLA'S SAND SNAKE	<b>INADEQUETLY KNOWN</b>	RARELY
<i>Psammophis leopardinus</i>	LEOPARD WHIP SNAKE	<b>ENDEMIC &amp; SECURE</b>	UNCOMMONLY
<i>Psammophis mossambicus</i>	OLIVE WHIP SNAKE	<b>SECURE</b>	ABUNDANTLY
<i>Psammophis notostictus</i>	KAROO WHIP SNAKE	<b>SECURE</b>	MARGINALLY
<i>Psammophis subtaeniatus</i>	WESTERN STRIPED-BELLIED SAND SNAKE	<b>SECURE</b>	ABUNDANTLY
<i>Psammophis trigrammus</i>	WESTERN WHIP SNAKE	<b>ENDEMIC &amp; SECURE</b>	ABUNDANTLY
<i>Psammophis trinasalis</i>	KALAHARI SAND SNAKE	<b>SECURE</b>	UNCOMMONLY
<i>Psammophylax tritaeniatus</i>	STRIPED SKAAPSTEKER	<b>SECURE</b>	ABUNDANTLY
<i>Pseudaspis cana</i>	MOLE SNAKE	<b>SECURE</b>	ABUNDANTLY
<i>Telescopus semiannulatus</i>	SOUTHERN TIGER SNAKE	<b>SECURE</b>	ABUNDANTLY
<i>Thelotornis capensis</i>	VINE SNAKE	<b>SECURE</b>	UNCOMMONLY
<i>Aspidelaps lubricus</i>	CORAL SNAKE	<b>SECURE</b>	UNCOMMONLY
<i>Aspidelaps scutatus</i>	SHIELD-NOSE SNAKE	<b>SECURE</b>	ABUNDANTLY
<i>Dendroaspis polylepis</i>	BLACK MAMBA	<b>SECURE</b>	ABUNDANTLY
<i>Elapsoidea semiannulata</i>	ANGOLA GARTER SNAKE	<b>SECURE</b>	UNCOMMONLY
<i>Elapsoidea sundevallii</i>	KALAHARI GARTER SNAKE	<b>SECURE</b>	UNCOMMONLY
<i>Naja anchietae</i>	ANGOLAN COBRA	<b>SECURE</b>	ABUNDANTLY
<i>Naja mossambica</i>	MOZAMBIQUE SPITTING COBRA	<b>SECURE</b>	RARELY
<i>Naja nigricincta</i>	ZEBRA SNAKE	<b>ENDEMIC &amp; SECURE</b>	ABUNDANTLY
<i>Bitis caudalis</i>	HORNED ADDER	<b>SECURE</b>	UNCOMMONLY
<i>Bitis arietans</i>	PUFF ADDER	<b>SECURE</b>	ABUNDANTLY

Bird species which are likely to occur within the project area:

SCIENTIFIC NAME	COMMON NAME	STATUS IN NAMIBIA
<i>Accipiter badius</i>	Little Banded Goshawk	Secure
<i>Accipiter ovampensis</i>	Ovambo Sparrowhawk	Secure
<i>Actophilornis africanus</i>	African Jacana	Secure
<i>Agapornis roseicollis</i>	Rosy faced Lovebird	Secure
<i>Anastomus lamelligerus</i>	Openbilled Stork	Secure
<i>Anthus cinnamomeus</i>	Richard's Pipit	Secure
<i>Apus affinis</i>	Little Swift	Secure
<i>Apus apus</i>	European Swift	Secure

<i>Apus caffer</i>	Whiterumped Swift	Secure
<i>Apus melba</i>	Alpine Swift	Secure
<i>Aquila nipalensis</i>	Steppe Eagle	Secure -
<i>Aquila rapax</i>	Tawny Eagle	<b>Endangered</b>
<i>Aquila wahlbergi</i>	Wahlberg's Eagle	Secure
<i>Ardeotis kori</i>	Kori Bustard	Secure
<i>Batis molitor</i>	Chinspot Batis	Secure
<i>Batis pririt</i>	Pirit Batis	Secure
<i>Bubalornis niger</i>	Redbilled Buffalo Weaver	Secure
<i>Burhinus capensis</i>	Spotted Dikkop	Secure
<i>Buteo buteo</i>	Steppe Buzzard	Secure -
<i>Calamonastes fasciolatus</i>	Barred Warbler	Secure
<i>Calendulauda sabota</i>	Sabota Lark	Secure
<i>Camaroptera brevicaudata</i>	Greybacked Camaroptera	Secure
<i>Caprimulgus pectoralis</i>	Fierynecked Nightjar	Secure
<i>Caprimulgus rufigena</i>	Rufouscheeked Nightjar	Secure
<i>Ceryle rudis</i>	Pied Kingfisher	Secure
<i>Chrysococcyx caprius</i>	Diederik Cuckoo	Secure
<i>Chrysococcyx klaas</i>	Klaas's Cuckoo	Secure
<i>Ciconia abdimii</i>	Abdim's Stork	Secure
<i>Cinnyris mariquensis</i>	Marico Sunbird	Secure
<i>Circaetus pectoralis</i>	Blackbreasted Snake Eagle	Secure
<i>Cisticola chiniana</i>	Rattling Cisticola	Secure
<i>Cisticola rufilatus</i>	Tinkling Cisticola	Secure
<i>Clamator glandarius</i>	Great Spotted Cuckoo	Secure
<i>Coracias caudata</i>	Lilacbreasted Roller	Secure
<i>Coracias garrulus</i>	European Roller	Secure -
<i>Coracias naevia</i>	Purple Roller	Secure
<i>Corvinella melanoleuca</i>	Longtailed Shrike	Secure
<i>Corvus capensis</i>	Black Crow	Secure
<i>Corythaixoides concolor</i>	Grey Lourie	Secure
<i>Creatophora cinerea</i>	Wattled Starling	Secure
<i>Crithagra flaviventris</i>	Yellow Canary	Secure
<i>Cuculus clamosus</i>	Black Cuckoo	Secure
<i>Cuculus gularis</i>	African Cuckoo	Secure
<i>Cursorius temminckii</i>	Temminck's Courser	Secure
<i>Cypsiurus parvus</i>	Palm Swift	Secure
<i>Delichon urbicum</i>	House Martin	Secure -
<i>Dicrurus adsimilis</i>	Forktailed Drongo	Secure
<i>Elanus caeruleus</i>	Blackshouldered Kite	Secure
<i>Emberiza flaviventris</i>	Goldenbreasted Bunting	Secure
<i>Emberiza tahapisis</i>	Rock Bunting	Secure
<i>Eremomela icteropygialis</i>	Yellowbellied Eremomela	Secure
<i>Eremopterix verticalis</i>	Greybacked Finchlark	Secure
<i>Erythropygia leucophrys</i>	Whitebrowed Robin	Secure
<i>Erythropygia paena</i>	Kalahari Robin	Secure
<i>Estrilda erythronotos</i>	Blackcheeked Waxbill	Secure
<i>Eupodotis afraoides</i>	Whitequilled Korhaan	Secure
<i>Eupodotis ruficrista</i>	Redcrested Korhaan	Secure
<i>Eurocephalus anguitemens</i>	Whitecrowned Shrike	Secure
<i>Falco biarmicus</i>	Lanner Falcon	Secure
<i>Falco chicquera</i>	Rednecked Falcon	Secure
<i>Falco subbuteo</i>	Hobby Falcon	Secure -
<i>Falco tinnunculus</i>	Rock Kestrel	Secure
<i>Falco vespertinus</i>	Western Redfooted Kestrel	Secure
<i>Francolinus adspersus</i>	Redbilled Francolin	Secure
<i>Francolinus sephaena</i>	Crested Francolin	Secure
<i>Francolinus swainsonii</i>	Swainson's Francolin	Secure
<i>Gallinago nigripennis</i>	Ethiopian Snipe	Secure
<i>Gyps africanus</i>	Whitebacked Vulture	<b>Near Threatened</b>
<i>Hieraaetus pennatus</i>	Booted Eagle	<b>Endangered</b>
<i>Hirundo abyssinica</i>	Lesser Striped Swallow	Secure

<i>Hirundo cucullata</i>	Greater Striped Swallow	Secure
<i>Hirundo fuligula</i>	Rock Martin	Secure
<i>Hirundo rustica</i>	European Swallow	Secure -
<i>Hirundo semirufa</i>	Redbreasted Swallow	Secure
<i>Lamprotonis australis</i>	Burchell's Starling	Secure
<i>Lamprotonis nitens</i>	Glossy Starling	Secure
<i>Laniarius atrococcineus</i>	Crimsonbreasted Shrike	Secure
<i>Lanius collaris</i>	Fiscal Shrike	Secure
<i>Lanius collurio</i>	Redbacked Shrike	Secure -
<i>Lanius minor</i>	Lesser Grey Shrike	Secure -
<i>Melaenornis infuscatus</i>	Chat Flycatcher	Secure
<i>Melaenornis mariquensis</i>	Marico Flycatcher	Secure
<i>Melierax canorus</i>	Pale Chanting Goshawk	Secure
<i>Merops apiaster</i>	European Bee-Eater	Secure -
<i>Merops hirundineus</i>	Swallowtailed Bee-Eater	Secure
<i>Micronisus gabar</i>	Gabar Goshawk	Secure
<i>Milvus migrans</i>	Black Kite	Secure -
<i>Milvus parasitus</i>	Yellowbilled Kite	Secure
<i>Mirafra passerina</i>	Monotonous Lark	Secure
<i>Monticola brevipes</i>	Shorttoed Rock Thrush	Secure
<i>Muscicapa striata</i>	Spotted Flycatcher	Secure -
<i>Nectarinia fusca</i>	Dusky Sunbird	Secure
<i>Nectarinia talatala</i>	Whitebellied Sunbird	Secure
<i>Nilaus afer</i>	Brubru	Secure
<i>Numida meleagris</i>	Helmeted Guineafowl	Secure
<i>Oena capensis</i>	Namaqua Dove	Secure
<i>Onychognathus naboroupp</i>	Palewinged Starling	Secure
<i>Parisoma subcaeruleum</i>	Titbabbler	Secure
<i>Parus cinerascens</i>	Ashy Tit	Secure
<i>Passer diffusus</i>	Southern Grey-headed Sparrow	Secure
<i>Passer motitensis</i>	Great Sparrow	Secure
<i>Plocepasser mahali</i>	Whitebrowed Sparrowweaver	Secure
<i>Ploceus velatus</i>	Masked Weaver	Secure
<i>Polemaetus bellicosus</i>	Martial Eagle	<b>Endangered</b>
<i>Polihierax semitorquatus</i>	Pygmy Falcon	Secure
<i>Prinia flavicans</i>	Blackchedsted Prinia	Secure
<i>Psophocichla litsitsirupa</i>	Groundscraper Thrush	Secure
<i>Pterocles bicinctus</i>	Doublebanded Sandgrouse	Secure
<i>Pterocles namaqua</i>	Namaqua Sandgrouse	Secure
<i>Pycnonotus nigricans</i>	Redeyed Bulbul	Secure
<i>Pytilia melba</i>	Melba Finch	Secure
<i>Quelea quelea</i>	Redbilled Quelea	Secure
<i>Rhinopomastus cyanomelas</i>	Scimitar billed Woodhoopoe	Secure
<i>Rhinoptilus chalcopterus</i>	Bronzewinged Courser	Secure
<i>Scopus umbretta</i>	Hamerkop	Secure
<i>Serinus atrogularis</i>	Blackthroated Canary	Secure
<i>Smutsonis africanus</i>	Doublebanded Courser	Secure
<i>Sporopipes squamifrons</i>	Scalyfeathered Finch	Secure
<i>Streptopelia capicola</i>	Cape Turtle Dove	Secure
<i>Streptopelia senegalensis</i>	Laughing Dove	Secure
<i>Struthio camelus</i>	Ostrich	Secure
<i>Sylvietta rufescens</i>	Longbilled Crombec	Secure
<i>Tchagra australis</i>	Threestreaked Tchagra	Secure
<i>Terathopius ecaudatus</i>	Bateleur	<b>Endangered</b>
<i>Thripias namaquus</i>	Bearded Woodpecker	Secure
<i>Tockus erythrorhynchus</i>	Redbilled Hornbill	Secure
<i>Tockus leucomelas</i>	Southern Yellowbilled Hornbill	Secure
<i>Tockus nasutus</i>	Grey Hornbill	Secure
<i>Torgos tracheliotus</i>	Lappetfaced Vulture	<b>Vulnerable</b>
<i>Tricholaema leucomelas</i>	Pied Barbet	Secure
<i>Turdoides bicolor</i>	Pied Babbler	Secure
<i>Turtur chalcospilos</i>	Greenspotted Dove	Secure

<i>Upupa epops</i>	Hoopoe	Secure
<i>Uraeginthus angolensis</i>	Blue Waxbill	Secure
<i>Uraeginthus granatinus</i>	Violeteared Waxbill	Secure
<i>Urocolius indicus</i>	Redfaced Mousebird	Secure
<i>Vanellus armatus</i>	Blacksmith Plover	Secure
<i>Vanellus coronatus</i>	Crowned Plover	Secure
<i>Vanellus senegallus</i>	Wattled Plover	Secure
<i>Vidua regia</i>	Shafttailed Whydah	Secure
<i>Zosterops senegalensis</i>	Yellow White-Eye	Secure

## Appendix B: Proof of Advertisements, Letters and Notices

## Appendix of CV's







## CLASSIFIEDS

**CALL FOR PUBLIC PARTICIPATION****ENVIRONMENTAL IMPACT ASSESSMENT FOR MINERAL EXPLORATION ON EPL 8113 & EPL 8114**

This notice serves to inform all interested and affected parties that an application for the environmental clearance certificate will be launched with the Environmental Commissioner in terms of the Environmental Management Act (No.7 of 2007) and the Environmental Regulations (GN 30 of 2012).

**Project:** The license areas are located about 27 km southwest of Karibib, accessible along the C32 roads. The proponent intends to explore for Dimension stone.

**Proponents:** Coutada Granite Mining cc & Mangetti Mining Investment cc

All interested and affected parties are hereby invited to register and submit their comments regarding the proposed project on or before **09/06/2022**. Contact details for registration and further information:

**Impala Environmental Consulting**

**Mr. S. Andjamba**

**Email:** eia@impalac.com, **Tel:** 0856630598

**CALL FOR PUBLIC PARTICIPATION****ENVIRONMENTAL IMPACT ASSESSMENT FOR MINERAL EXPLORATION ON EPL 8489 & EPL 8491**

This notice serves to inform all interested and affected parties that an application for the environmental clearance certificate will be launched with the Environmental Commissioner in terms of the Environmental Management Act (No.7 of 2007) and the Environmental Regulations (GN 30 of 2012).

**Project:** The licenses are located about 100-120 km northwest of Bethanie, accessible along the C27 road. The proponent intends to explore for Base and Rare Metals. Exploration methods may include geological mapping, geophysical surveys, sampling, and drilling.

**Proponent:** Gaya Investments CC

All interested and affected parties are hereby invited to register and submit their comments regarding the proposed project on or before **10/06/2022**. Contact details for registration and further information:

**Impala Environmental Consulting**

**Mr. S. Andjamba**

**Email:** eia@impalac.com, **Tel:** 0856630598

**CALL FOR PUBLIC PARTICIPATION****ENVIRONMENTAL IMPACT ASSESSMENT FOR MINERAL EXPLORATION ON EPL 8264**

This notice serves to inform all interested and affected parties that an application for the environmental clearance certificate will be launched with the Environmental Commissioner in terms of the Environmental Management Act (No.7 of 2007) and the Environmental Regulations (GN 30 of 2012).

**Project:** The license area is located about 74 km northwest of Omaruru, accessible along the C32 roads. The proponent intends to explore for Dimension stone.

**Proponent:** Mangetti Mining Investment cc

All interested and affected parties are hereby invited to register and submit their comments regarding the proposed project on or before **09/06/2022**. Contact details for registration and further information:

**Impala Environmental Consulting**

**Mr. S. Andjamba**

**Email:** eia@impalac.com, **Tel:** 0856630598

**NOTICE FOR ENVIRONMENTAL IMPACT ASSESSMENT**

Healthy Earth Environmental Consultants CC (HEEC) hereby gives notice to all potentially Interested and Affected Parties (I&APs) that an application will be made to the Environmental Commissioner in terms of the Environmental Management Act (No 7 of 2007) and Environmental Impact Assessment Regulations (GN 30 of 6 February 2012) for the following:

**PROJECT NAMES:**

- Environmental Impact Assessment (EIA) for the establishment and operation of a borrow pit at Ondangwa Number 1 to obtain raw materials for the bitumen standard road construction activities at Extension 26 within the Ondangwa Townland boundaries.
- Environmental Impact Assessment (EIA) for the establishment and operation of a borrow pit near north of the cemetery at Ondangwa Number 1 to obtain raw materials for the bitumen standard road construction activities at Extension 26 within the Ondangwa Townland boundaries.

**PROJECTS LOCATION:**

- The proposed borrow pit will be situated at Ondangwa Number 1, Ondangwa, (GPS: S17°50'43.70" / E15°56'12.20"), in Oshana Region
- The proposed borrow pit will be situated near north of the cemetery at Ondangwa Number 1, Ondangwa (GPS: S17°54'23.16" / E15°56'42.42"), in Oshana Region.

**PROJECT DESCRIPTION:**

- The project involves conducting an Environmental Impact Assessments (EIAs) for the establishment and operation of a borrow pit at Ondangwa No.1 to obtain raw materials for the bitumen standard road construction activities at Extension 26 within the Ondangwa Townlands.
- The project involves conducting an Environmental Impact Assessment (EIA) for the establishment and operation of a borrow pit near north of the cemetery at Ondangwa No.1 to obtain raw materials for the bitumen standard road construction activities at Extension 26 within the Ondangwa Townlands.

**PROJECT INVOLVEMENT:**

**Proponent:** Ondangwa Town Council

**Environmental Assessment Practitioner (EAP):** Healthy Earth Environmental Consultants CC (HEEC)

**REGISTRATION OF I&APs AND SUBMISSION OF COMMENTS:** In line with Namibia's Environmental Management Act (No. 7 of 2007) and EIA regulations (GN 30 of 6 February 2012), all I&APs are hereby invited to register and submit their comments, concerns or questions in writing via: Email: [askheec@gmail.com](mailto:askheec@gmail.com) on or before **Tuesday 31<sup>st</sup> May 2022**.

**Public meeting will be held as follows:**

**Date:** Friday, 27<sup>th</sup> May 2022

**Meeting venue:** Ondangwa No.1 Meeting place

**Time:** 10h00 a.m.

**Mobile:** 0815720258



**CALL FOR PUBLIC PARTICIPATION**  
**ENVIRONMENTAL IMPACT ASSESSMENT FOR**  
**MINERAL EXPLORATION ON EPL 8113 & EPL**  
**8114**


This notice serves to inform all interested and affected parties that an application for the environmental clearance certificate will be launched with the Environmental Commissioner in terms of the Environmental Management Act (No.7 of 2007) and the Environmental Regulations (GN 30 of 2012).

**Project:** The license areas are located about 27 km southwest of Karibib, accessible along the C32 roads. The proponent intends to explore for Dimension stone.

**Proponents:** Coutada Granite Mining cc & Mangetti Mining Investment cc

All interested and affected parties are hereby invited to register and submit their comments regarding the proposed project on or before **09/06/2022**. Contact details for registration and further information:

**Impala Environmental Consulting**  
**Mr. S. Andjamba**  
**Email: eia@impalac.com, Tel: 0856630598**



**CALL FOR PUBLIC PARTICIPATION**  
**ENVIRONMENTAL IMPACT ASSESSMENT**  
**FOR MINERAL EXPLORATION ON EPL**  
**8264**

This notice serves to inform all interested and affected parties that an application for the environmental clearance certificate will be launched with the Environmental Commissioner in terms of the Environmental Management Act (No.7 of 2007) and the Environmental Regulations (GN 30 of 2012).

**Project:** The license area is located about 74 km northwest of Omaruru, accessible along the C32 roads. The proponent intends to explore for Dimension stone.

**Proponent:** Mangetti Mining Investment cc

All interested and affected parties are hereby invited to register and submit their comments regarding the proposed project on or before **09/06/2022**. Contact details for registration and further information:

**Impala Environmental Consulting**  
**Mr. S. Andjamba**  
**Email: eia@impalac.com, Tel: 0856630598**



**CALL FOR PUBLIC PARTICIPATION**  
**ENVIRONMENTAL IMPACT ASSESSMENT FOR**  
**MINERAL EXPLORATION ON EPL 8489 & EPL 8491**


This notice serves to inform all interested and affected parties that an application for the environmental clearance certificate will be launched with the Environmental Commissioner in terms of the Environmental Management Act (No.7 of 2007) and the Environmental Regulations (GN 30 of 2012).

**Project:** The licenses are located about 100-120 km northwest of Bethanie, accessible along the C27 road. The proponent intends to explore for Base and Rare Metals. Exploration methods may include geological mapping, geophysical surveys, sampling, and drilling.

**Proponent:** Gaya Investments CC

All interested and affected parties are hereby invited to register and submit their comments regarding the proposed project on or before **10/06/2022**. Contact details for registration and further information:

**Impala Environmental Consulting**  
**Mr. S. Andjamba**  
**Email: eia@impalac.com, Tel: 0856630598**



**NOTICE FOR**  
**ENVIRONMENTAL IMPACT ASSESSMENT**

Healthy Earth Environmental Consultants CC (HEEC) hereby gives notice to all potentially interested and affected parties (I&APs) that an application will be made to the Environmental Commissioner in terms of the Environmental Management Act (No 7 of 2007) and Environmental Impact Assessment Regulations (GN 30 of 6 February 2012) for the following:

**PROJECT NAMES:**

- (a) Environmental Impact Assessment (EIA) for the establishment and operation of a borrow pit at Ondangwa Number 1 to obtain raw materials for the bitumen standard road construction activities at Extension 26 within the Ondangwa Townland boundaries.
- (b) Environmental Impact Assessment (EIA) for the establishment and operation of a borrow pit near north of the cemetery at Ondangwa Number 1 to obtain raw materials for the bitumen standard road construction activities at Extension 26 within the Ondangwa Townland boundaries.

**PROJECTS LOCATION:**

- (a) The proposed borrow pit will be situated at Ondangwa Number 1, Ondangwa, (GPS: S17°50'43.70" / E15°56'12.20"), in Oshana Region
- (b) The proposed borrow pit will be situated near north of the cemetery at Ondangwa Number 1, Ondangwa (GPS: S17°54'23.16" / E15°56'42.42"), in Oshana Region.

**PROJECT DESCRIPTION:**

- a) The project involves conducting an Environmental Impact Assessments (EIAs) for the establishment and operation of a borrow pit at Ondangwa No.1 to obtain raw materials for the bitumen standard road construction activities at Extension 26 within the Ondangwa Townlands.
- b) The project involves conducting an Environmental Impact Assessment (EIA) for the establishment and operation of a borrow pit near north of the cemetery at Ondangwa No.1 to obtain raw materials for the bitumen standard road construction activities at Extension 26 within the Ondangwa Townlands.


**PROJECT INVOLVEMENT:**

Proponent: Ondangwa Town Council

Environmental Assessment Practitioner (EAP): Healthy Earth Environmental Consultants CC (HEEC)

**REGISTRATION OF I&APs AND SUBMISSION OF COMMENTS:** In line with Namibia's Environmental Management Act (No. 7 of 2007) and EIA regulations (GN 30 of 6 February 2012), all I&APs are hereby invited to register and submit their comments, concerns or questions in writing via: Email: [askheec@gmail.com](mailto:askheec@gmail.com) on or before **Tuesday 31<sup>st</sup> May 2022**.

**Public meeting will be held as follows:**  
 Date: Friday, 27<sup>th</sup> May 2022  
 Meeting venue: Ondangwa No.1 Meeting place  
 Time: 10h00 a.m.  
 Mobile: 0815720258



# HERITAGE IMPACT ASSESSMENT

For Mineral Exploration (Marble) on EPL 8113 and 8114

**Client:** Mangetti Mining Investment cc

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## 1. Executive Summary

The dimension stone exploration project was assessed for sites of archaeological significance. No significant archaeological features or artefacts older than 50 years were identified in the EPLs footprint.

There are no fatal flaws in terms of the archaeological component to the project; however, management measures as made in section 8 of this report would need to be considered to avoid damage to the local heritage.

If during exploration any possible finds such as stone tool scatters, artefacts or bone and fossil remains are made, the operations must be stopped, and an archaeologist must be contacted for an assessment of the find.

## 2. Background Information

<b><i>Kind of study</i></b>	Specialist Heritage Impact Assessment
<b><i>Type of development</i></b>	Mineral Exploration for Marble on EPLs 8113 & 8114 (133 Ha in total)
<b><i>Client:</i></b>	Mangetti Mining Investment cc
<b><i>Environmental Coordinator:</i></b>	Impala Environmental Consulting

The report forms part of the Heritage Impact Assessment (HIA) for the dimension stone exploration project.

The aim of the study is to identify archaeological sites, document, and assess their importance within local, regional and national context. It serves to assess the impact of the project on non-renewable heritage resources, and to submit appropriate recommendations about the responsible cultural resources management measures that might be required to assist the company in managing the discovered heritage resources in a responsible manner. It is also conducted to protect, preserve, and develop such resources within the framework provided by the National Heritage Act (Act 27 of 2004).



The report outlines the approach and methodology utilized before and during the field survey, which includes: Phase 1, a desktop study that includes collection from various sources and consultations; Phase 2, the physical surveying of the area on foot; Phase 3, reporting the outcome of the study.

During the survey, no heritage sites were identified within the area. Possible impacts were identified, and mitigation measures are proposed in the following report.

## **2.1 Terms of Reference**

### **Desktop study**

Conducting a brief desktop study where information on the area is collected to provide a background setting of the archaeology that can be expected in the area. Literature was gathered from the Namibia Scientific Society library, the National Museum, the University of Namibia's library and online documents.

### **Field study**

Conduct a field study to a) systematically survey the proposed project area to locate, identify, record, photograph and describe sites of archaeological, historical or cultural interest; b) record GPS points identified as significant areas; c) determine the levels of significance of the various types of heritage resources recorded in the project area.

### **Reporting**

Report on the identification of anticipated and cumulative impacts the operational units of the proposed project activity may have on the identified heritage resources for all 3 phases of the project, i.e., commencement, operation and decommissioning phases. Alternatives have been considered, should any significant sites be impacted adversely by the proposed project. Ensure that all studies and results comply with Heritage legislation.

To assist the company in managing the discovered heritage resources in a responsible manner, and to protect, preserve, and develop them within the framework provided by the National Heritage Act (Act 27 of 2004).

## **2.2 Archaeological Legislation and Best Practice**

The overall purpose of a heritage specialist input is to:

- » Identify any heritage resources, which may be affected;
- » Assess the nature and degree of significance of such resources;
- » Establish heritage informants/constraints to guide the development process through establishing thresholds of impact significance;
- » Assess the negative and positive impact of the development on these resources;
- » Make recommendations for the appropriate heritage management of these impacts.

The HIA, as a specialist sub-section of the EIA, is required under Sections 54(7) and 54(8) of the National Heritage Act (Act 27 of 2004).

**Phase 1** HIAs are primarily concerned with the location and identification of sites situated within a proposed development area. Identified sites should be assessed according to their significance. Relevant conservation or **Phase 2** mitigation recommendations should be made.

Conservation or **Phase 2** mitigation recommendations are to be used as guidelines in the developer's decision-making process.

**Phase 2** archaeological projects are primarily based on salvage/mitigation excavations preceding development destruction or impact on a site. **Phase 2** excavations can only be conducted with consent given by the NHC.

Human remains older than 50 years are protected by the Act, with reference to Section 1(a). Rock art older than 50 years, in the form of paintings, engravings, or other representations on rocks, are also represented by section 1(a) of the act.

## **2.3 Description of Study Area**

### **2.3.1 Location Data**

The license areas are located about 27 km southwest of Karibib, accessible along the C32 roads. The coordinates for the centre of one of the EPLs are 15°44'14.767"E and 22°10'39.333"S. The project area is located within the Central-western Plains. The licence is contained within a semi-arid climatic region whereby days are mostly warm with very hot days during the summer months, while nights are generally cool.

### 2.3.2 Location Maps



Figure 1 Locality map showing the EPLs

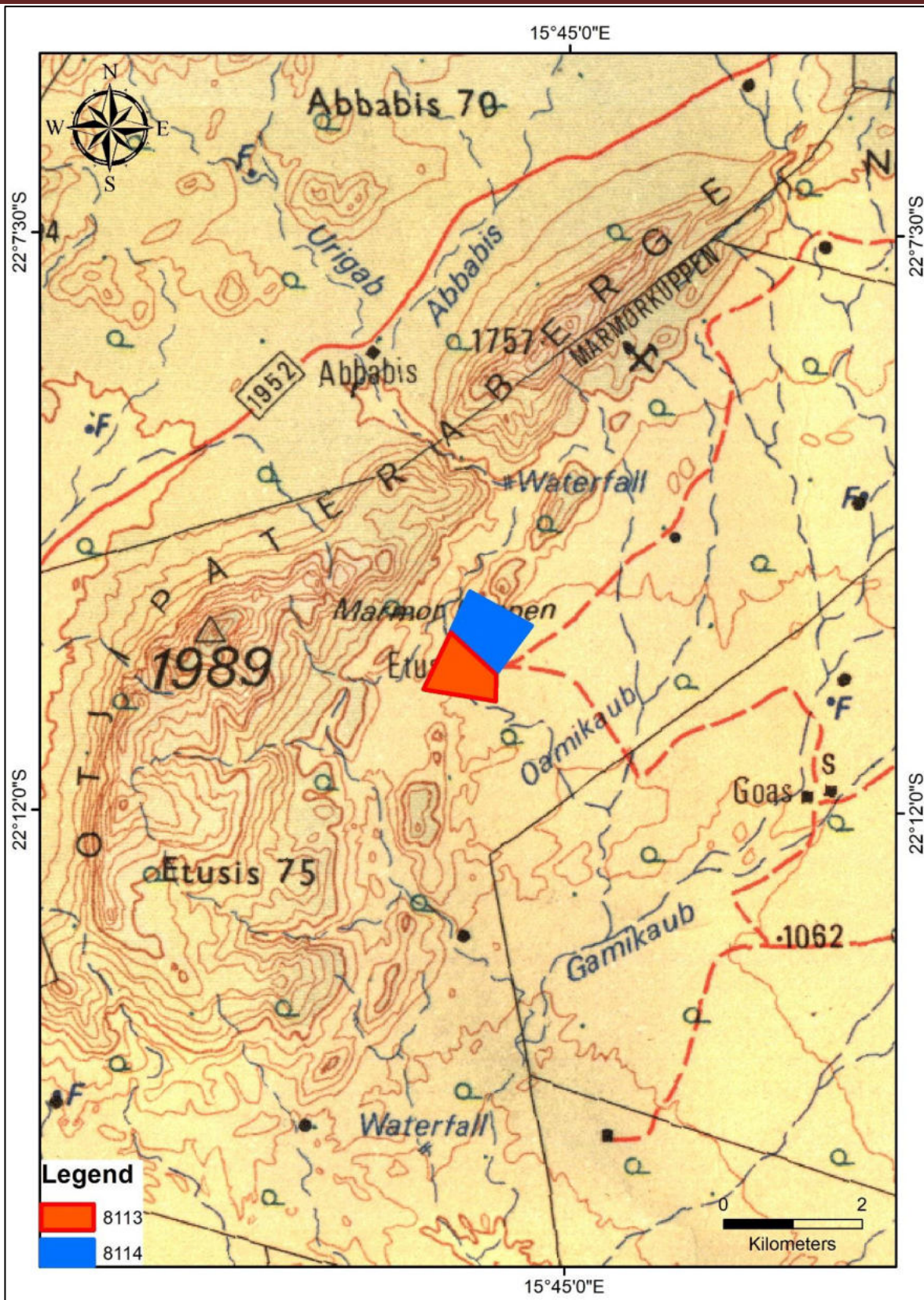


Figure 2 Locality map showing the EPLs (red).

### **3. Approach and Methodology**

The aim of the study is to cover archaeological databases to compile a background of the archaeology that can be expected in the study area followed by field verification; this was accomplished by means of the following phases.

#### **3.1 Phase 1 – Desktop Study**

The first phase comprised a desktop study scanning of existing records for archaeological sites, historical sites, graves, architecture (structures older than 50 years) of the area.

##### **3.1.1 Literature Search**

Utilising information from the museum, library at the Geological Survey of Namibia and previous archaeological reports done in the area. The aim of this is to extract data and information on the area in question.

##### **3.1.2 Consultation**

The EIA Public Participation process was conducted by the EAP, in line with the procedure outlined in the Environmental Impact Assessments Regulations of 2012. The EIA Public Participation Process invited comments from the affected farmer and any registered bodies on any matter related to the project including heritage concerns that may arise as a result of the project. The farm belongs to a German Citizen but the farm owner indicated that there are small rock paintings on the northern part of the farm which is 12 km away from the project area.

##### **3.1.3 Google Earth and Mapping Survey**

Google Earth and 1:50 000 maps of the area were utilised to identify possible places where sites of heritage significance might be located.

#### **3.2 Phase 2 – Physical Surveying**

Due to the nature of cultural remains, the majority of which occurs below surface, a field survey of the study area was conducted. The study area was surveyed by means of a foot survey by the author. Although sites of interest were inspected around the EPLs, no sites were discovered inside the proposed project area.

#### **3.3 Restrictions**

Since most cultural remains may occur below surface, the possibility exists that some features or artefacts may not have been discovered/ recorded during the survey. The

varied ground visibility of parts of the study area is due to high vegetation, and the possible occurrence of unmarked graves and other cultural material cannot be excluded. Only the surface footprint area was surveyed and not the entire farms. Although the heritage team surveyed the area as thoroughly as possible, it is incumbent upon the developer to stop operations and inform the relevant heritage agency should further culturally remains, such as stone tool scatters, artefacts, bones or fossils, be exposed during the process of development.

#### **4. Nature of the Development**

The exploration method of the project that will be adopted by the explorer, comprises a diamond wire saw and drilling method. The operation's cycle is composed of primary cuts to isolate a large block from the main rock mass, secondary cuts to produce slices which are then tilted into a horizontal position for final cutting into individual blocks as detailed below. The exploration scheme is described below:

- Horizontal cutting by a diamond wire saw;
- Vertical stringing hole drilled by a vertical hole drill;
- Two vertical planes sawed with a diamond wire saw;
- A cushion layer (made up of the crushed stone and soil formed by a front-end loader on the working bench);
- Tilting down of the rectangular stone by a hydraulic jack and cushion;
- Rough blocks cut by a diamond wire saw;
- Separating and reshaping with a diamond wire saw;
- Loading of rough blocks by a large capacity fork loader; and
- Cleaning conducted by a front-end loader at the working surface.

#### **5. Historical and Archaeological Background**

Namibia has four clusters of sensitive historical and archaeological landscapes, namely: Inselbergens and Outcrops, Saddles, Drainage and Coastlines, and Pans (Nankela, 2017). The exploration area lies within the Inselbergens cluster. This Cluster is made up of prominent geological features such as faults, shearzones, anticlines, antiforms, and homogeneous rock formations.

Modern humans and their ancestors have lived in Namibia for more than one million years, and there are fossil remains of lineal hominin ancestors as early as the Miocene Epoch. Namibia has a relatively complete sequence covering the mid-Pleistocene to Recent Holocene period, represented by thousands of archaeological sites mainly concentrated in the central highlands, escarpment, and Namib Desert. The Recent Holocene archaeological sequence in Namibia, i.e., the last 5 000 years, is of particular importance because it provides the background evidence for the development and recent history of the indigenous peoples of Namibia before the advent of written historical records during the colonial era (Kinahan, 2017).

Archaeological record with evidence of human occupation which dates to 8 000 years ago in the Erongo Region. The Erongo Region has an archaeological record spanning more than one million years, including evidence of significant human evolutionary and technological advances, as well as specific adaptations to extreme aridity and environmental uncertainty. While the late Pleistocene component of the archaeological record is much reduced as a result of natural processes of deterioration, the Holocene evidence (post-dating the Last Glacial Maximum) presents an extremely comprehensive and well-preserved record.

## **6. Heritage Site Significance and Mitigation Measures**

The presence and distribution of heritage resources define a 'heritage landscape'. In this landscape, every site is relevant. In addition, because heritage resources are non-renewable, heritage surveys need to investigate an entire project area, or a representative sample, depending on the nature of the project. In the case of the dimension stone exploration project, the local extent of its impact necessitates a representative sample and only the footprint of the areas demarcated for development were surveyed. In all initial investigations, however, the specialists are responsible only for the identification of resources visible on the surface. This section describes the evaluation criteria used for determining the significance of archaeological and heritage sites. The following criteria were used to establish site significance:

- The unique nature of a site;

- The integrity of the archaeological/cultural heritage deposits;
- The wider historic, archaeological and geographic context of the site;
- The location of the site in relation to other similar sites or features;
- The depth of the archaeological deposit (when it can be determined/is known);
- The preservation condition of the sites;

## **6.1 Field Rating of Sites**

The author has followed the method developed by Quaternary Research Services (QRS). QRS has adopted the practice of identifying the specific research value of archaeological sites documented during field surveys. This means that the evaluation is focused on the likely research benefits of more detailed investigations on sites of high significance, or local site clusters of potential research importance (Kinahan, 2011). The immediate benefits in terms of sequence resolution or yield of comparative material and present this in the form of an expected research dividend are evaluated. Similarly, the consequences of damage or destruction are also evaluated as an expected loss of research dividend. These estimates form part of the proposal for mitigation of impacts.

### **6.1.1 Vulnerability and Significance Ranking of Archaeological Finds**

The evaluation and ranking of site significance and vulnerability is an essential component of archaeological impact assessment. QRS has developed an approach to significance and vulnerability estimation that combines accepted international practice with the results of more than 100 field surveys carried out in Namibia and elsewhere (Kinahan, 2011). Standard procedure involves an estimate of the archaeological value and the risk of damage, using ordinal scales of zero to five (Kinahan, 2011). These separate values can be combined as a significance and vulnerability index, e.g. 3/2, 4/0. The same data are used in the preparation of archaeological sensitivity maps and predictive models which form the empirical basis of our time and cost estimates for archaeological field surveys.

It is important to realize however, that such estimates have a degree of subjectivity. For this reason, the estimate significance with specific reference to the value of the site as a component of the Namibian archaeological record, while the estimation of



vulnerability refers primarily to the potential consequences of the development project under consideration.

### 6.1.2 Significance Ranking

The following is the summary of the significance ranking used:

Significance	Description
0	No archaeological significance
1	Disturbed or secondary context, without diagnostic material
2	Isolated minor finds in undisturbed primary context, with diagnostic material
3	Archaeological site forming part of an identifiable local distribution or group
4	Multi-component site, or central site with high research potential
5	Major archaeological site containing unique evidence of high regional significance.

### 6.1.3 Vulnerability

The following is the summary of the vulnerability ranking used:

Significance	Description
0	Not vulnerable.
1	No threat posed by current or proposed development activities.
2	Low or indirect threat from possible consequences of development (e.g. soil erosion.
3	Probable threat from inadvertent disturbance due to proximity of development.
4	High likelihood of partial disturbance or destruction due to proximity of development.
5	Direct and certain threat of major disturbance or total destruction.

## 7. Assessment – Description of Sites

It is important to note that the entire farm was not surveyed but only the sites where dimension stone exploration is likely to take place. During the survey no sites of heritage significance were identified inside the project area, but some features of archaeological significance have been identified. The study area varies in topography with rocky marble hills ranging in elevation.

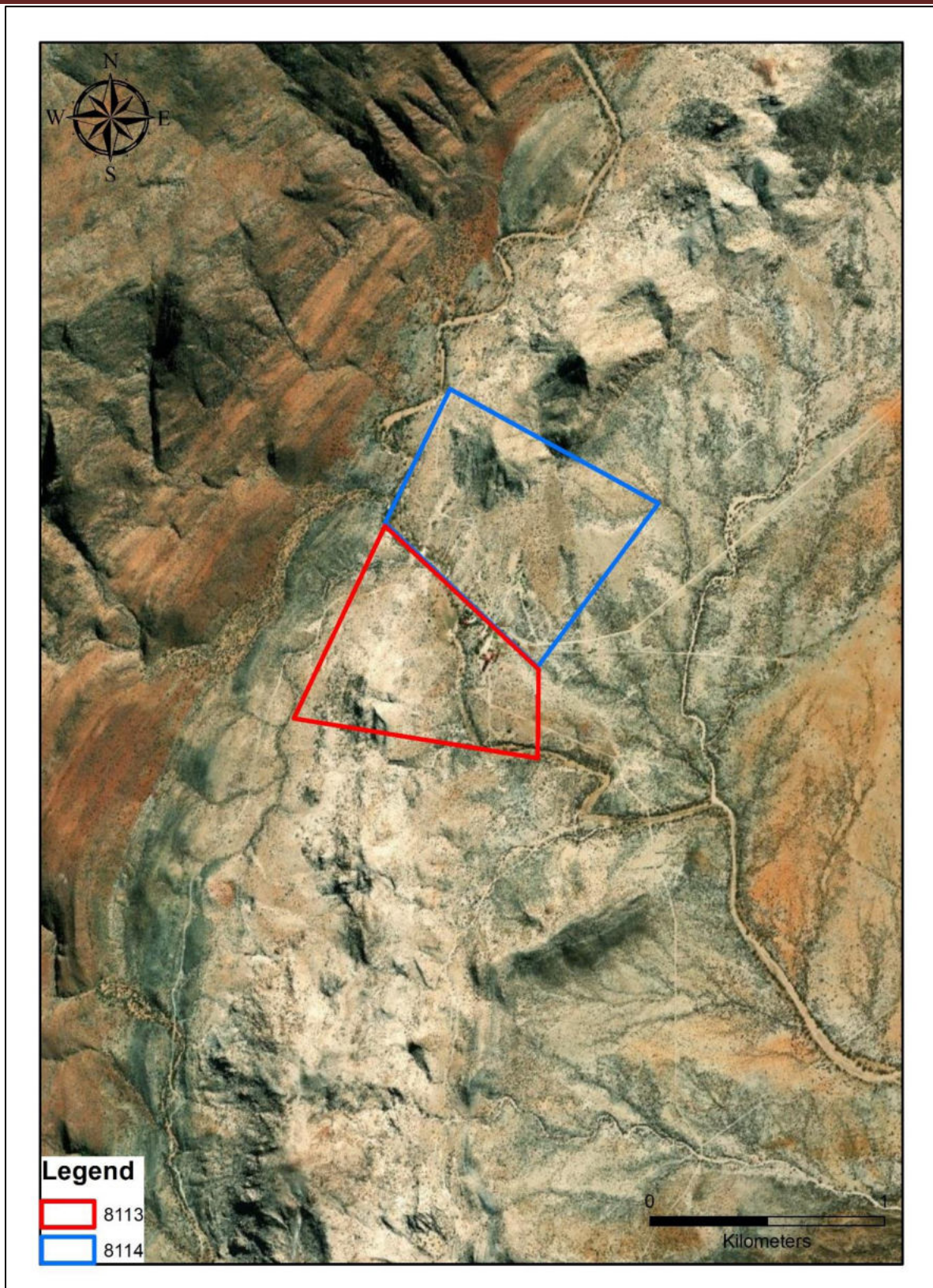


Figure 3 A map showing the topography of the area. The red and blue areas outline the project sites.

1.

**Site Location:** 15°39'6.077"E and 22°14'24.468"S

**Landscape:** Rocky Marble Hills

**Significance:** 4

**Vulnerability:** 2

**Description:** An old, abandoned marble quarry is located 4 km away from the exploration sites. Although quite recent, the marble quarry started in 1978 with the establishment of a quarry face. During the first year 10 000 t of marble blocks, ranging from 17 to 20 t in weight, were quarried using the diamond wire-saw technique.



2.

**Site Location:** 15°44'15.179"E and 22°10'32.876"S.

**Landscape:** Rocky Mountain Hill

**Significance:** 3

**Vulnerability:** 1

**Description:** On the edge of a rocky marble hill, there is some stone chipping features prevalent. This may be signs of prehistoric activities.



## 8. Chance Find Procedure

An Archaeological Chance Find Procedure (CFP) is a tool for the protection of previously unidentified cultural heritage resources during mining. The main purpose of a CFP is to raise awareness of all mine workers and management on site regarding the potential for accidental discovery of cultural heritage resources and establish a procedure for the protection of these resources. Chance Finds are defined as potential cultural heritage (or paleontological) objects, features, or sites that are identified outside of or after Heritage Impact studies, normally as a result of monitoring. Chance Finds may be made by any member of the project team who may not necessarily be an archaeologist or even visitors. Appropriate application of a CFP on development projects has led to discovery of cultural

heritage resources that were not identified during archaeological and heritage impact assessments.

The following procedure is to be executed if archaeological material is discovered:

- All construction/clearance activity in the vicinity of the accidental find/feature/site must cease immediately to avoid further damage to the find site.
- Briefly note the type of archaeological materials encountered, and their location, including, if possible, the depth below surface of the find
- Report the discovery to the supervisor or if they are unavailable, report to the project environmental officer who will provide further instructions.
- If the supervisor is not available, notify the Environmental Control Officer immediately. The Environmental Control Officer will then report the find to the Site Manager who will promptly notify the project archaeologist and NHC.
- Delineate the discovered find/ feature/ site and provide 25m buffer zone from all sides of the find.
- Record the find GPS location, if able.
- All remains are to be stabilised *in situ*.
- Secure the area to prevent any damage or loss of removable objects.
- Photograph the exposed materials, preferably with a scale (a yellow plastic field binder will suffice).
- The project archaeologist will undertake the inspection process in accordance with all project health and safety protocols under direction of the Health and Safety Officer.
- **Finds rescue strategy:** All investigation of archaeological soils will be undertaken by hand, all finds, remains and samples will be kept and submitted to a Museum as required by the heritage legislation. If any artefacts need to be conserved, the relevant permit will be sought from the NHC.
- An on-site office and finds storage area will be provided, allowing storage of any artefacts or other archaeological material recovered during the monitoring process.
- In the case of human remains, in addition to the above, the NHC and the relevant authorities will be contacted and the guidelines for the treatment of human remains will be adhered to. If skeletal remains are identified, an archaeologist will be available to examine the remains.

- The project archaeologist will complete a report on the findings as part of the permit application process.
- Once authorisation has been given by NHC, the Applicant will be informed when mining activities can resume.

Heritage Impact Assessment for Mineral Exploration (Marble) on EPL 8113 and 8114

Table 1 Heritage Management Plan for the Project

Objective						
<ul style="list-style-type: none"> <li>Protection of archaeological sites and land considered to be of cultural value;</li> <li>Protection of known physical cultural property sites against vandalism, destruction and theft; and</li> <li>The preservation and appropriate management of new archaeological finds should these be discovered during mining.</li> </ul>						
No.	Activity	Mitigation Measures	Duration	Frequency	Responsibility	Accountable
Pre-Construction Phase						
1	Planning	Ensure all known sites of cultural, archaeological, and historical significance are demarcated on the site layout plan and marked as no-go areas.	Throughout Project	Weekly Inspection	Contractor	Project Manager
Construction Phase						
1	Emergency Response	Should any archaeological or physical cultural property heritage resources be exposed during excavation for the purpose of mining, construction in the vicinity of the finding must be stopped until heritage authority has cleared the development to continue.	N/A	Throughout	Contractor	Project Manager
		Should any archaeological, cultural property heritage resources be exposed during excavation or be found on development site, a heritage specialist or NHC official must be called to site for inspection.		Throughout	Contractor	Project Manager
		Under no circumstances may any archaeological, historical or any physical cultural property heritage material be destroyed or removed from site;		Throughout	Contractor	Project Manager
		Should remains and/or artefacts be discovered on the development site during earthworks, all work will cease in the area affected and the Contractor will immediately inform the Mine Manager who in turn will inform NHC.		When necessary	Contractor	Project Manager
		Should any remains be found on site that is potentially human remains, the NHC and the Police Service should be contacted.		When necessary	Contractor	Project Manager
Rehabilitation Phase						
		Same as mining phase.				
Operational Phase						
		Same as mining phase.				

## 9. Recommendations and Conclusions

1. From a heritage perspective supported by the findings of this study, the proposed dimension stone exploration project and associated developments are feasible. However, the proposed development should be approved to proceed as planned under observation that the development dimensions do not extend beyond the proposed sites.
2. Should any unmarked burials be exposed during mining, affected people must be trekked and consulted, relevant rescue/ relocation permits must be obtained from NHC before any grave relocation can take place. Furthermore, an archaeologist must be retained to oversee the relocation process in accordance with the National Heritage Act 27 of 2004.
3. Should chance archaeological materials or human burials remains be exposed during mining work on any section of the proposed mining development laydown sites, work should cease on the affected area and the discovery must be reported to the heritage authorities immediately so that an investigation and evaluation of the finds can be made. The overriding objective, where remedial action is warranted, is to minimize disruption in mining scheduling while recovering archaeological and any affected cultural heritage data as stipulated by the act.
4. Future community engagement should ensure that any cultural heritage related matters for this project are given due attention whenever they arise and are communicated to NHC throughout the proposed project development. This form of extended community involvement would pre-empt any potential disruptions that may arise from previously unknown cultural heritage matter that may have escaped the attention of this study.
5. Subject to the recommendations herein made and the implementation of the mitigation measures and adoption of the project EMP there are no other significant cultural heritage resources barriers to the proposed development.



## 10. References

Deacon, Janette (2002), Southern African Rock Art Sites. Accessed from [www.icomos.org](http://www.icomos.org)

Hollmann, Jeremy and Steyn Willem (2003), A report on the rock paintings in the Erongo Mountain, Erongo Region: Karibib, Omaruru District, Namibia.

Kinahan, J., 2011. Archaeological Specialist Study for Uranium Exploration on EPL 3602 - Zhonghe Resources, Windhoek: Quaternary Research Services (QRS).

Lenssen-Erz, Tilman (1997), "Metaphors of Intactness of Environments of Rock Art Paintings of Namibia" in P. Faulstich (ed.), Rock-art as visual ecology: 42-53 Tucson, AZ: American.

Nankela, A., 2017. Archaeology Specialist Report: National Environmental Assessment for the MTC, Windhoek: GCS.

Sandelowsky BH (1983) Archeology in Namibia. Am.Sci. 71:606-615

Willcox, A. Fl. (1963), The rock art of Southern Africa. New York: Nelson.

## Appendix



Figure 4 Image showing the general landscape of the area.



## National Heritage Council of Namibia

52 Robert Mugabe Avenue, Windhoek  
Private Bag 12043, Ausspansplatz, Windhoek, Namibia  
Tel: (061) 244 375 • Fax: (061) 246 872 •  
E-mail: [info@nhc-nam.org](mailto:info@nhc-nam.org)

### CONSENT

(Section 55(9) of the National Heritage Act, 2004 (Act No. 27 of 2004)) Consent is hereby given to:

09 August 2022

**Consent Number No:** 122/2022

**Name of applicant:** Mangetti Mining Investment Mining Cc

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*(Title and full name of the applicant)*

**Address of applicant:** P.O.Box 29532

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*(Address of the applicant and of the applying institution (if applicable))*

**For:** Exploration Prospecting License (EPL) 8113 & 8114 for the exploration of Dimension Stone

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*(Type of Activity applied for)*

**Of:** No Heritage resources located

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*(Description of Heritage Resources)*

**From:** EPL is Located about 27 km southwest of Karibib region.

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*(Description of the site, location as in the application)*

*EV*

**In accordance with:** Exploration Prospecting License Mining License (EPL) 8114 & 8115 for the exploration of Dimension stones, located 27 km southwest of Karibib in the Erongo region.

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*(Specify relevant documentation and Permit application date)*

*The following conditions (imposed in terms of section 55(9) of the Act.) apply to this permit:*

- a) That as per section 55 (9) (a) the activity authorised by this consent be supervised by a person with appropriate professional qualifications or experience in the identification and conservation of heritage.
- b) That any archaeological or palaeontological object or meteorite found in the course of the activity authorised by the consent must be recorded, conserved and dealt with as per the manual on Chance Find Procedures of heritage resources; and
- c) that Namibian citizens, especially members of the local community in and around the project area, be engaged in the activity authorised by the consent for the purpose of identification of heritage resources in the project area as well as of receiving professional training;
- d) That the consent holder reports back to the National Heritage Council every six (6) months on compliance with the conditions of this consent.
- e) This Consent does not exempt the holder from any conditions that may be imposed by owners, hosts or any other relevant authorities in consultation with NHC who have a stake in the project area.
- f) NHC shall not be liable for any losses, damages or injuries to persons or properties as a result of any activities related to this permit.
- g) This Consent is subject to the provisions of the National Heritage Act (Act 27 of 2004). Should any of the conditions contained herein conflict with the Act; the provisions of the Act as per section 55 (10) shall prevail.
- h) Adopt the Chance Find Procedures.

*TA*


- i) This consent is renewable, upon submission of an application at least two months before the current permit lapses

---

(List any conditions that the Council may see fit to impose in terms of section 55 (9) of the act.

This Consent will be valid from 09<sup>th</sup> August 2022 to 08<sup>th</sup> August 2023

Director: National Heritage Council



---

**National Heritage Council of Namibia**



**CALL FOR PUBLIC PARTICIPATION  
ENVIRONMENTAL IMPACT ASSESSMENT FOR  
MINERAL EXPLORATION ON EPL 8113 & EPL  
8114**

This notice serves to inform all interested and affected parties that an application for the environmental clearance certificate will be launched with the Environmental Commissioner in terms of the Environmental Management Act (No.7 of 2007) and the Environmental Regulations (GN 30 of 2012).

**Project:** The license areas are located about 27 km southwest of Karibib, accessible along the C32 roads. The proponent intends to explore for Dimension stone.

**Proponents:** Coutada Granite Mining cc & Mangetti Mining Investment cc

All interested and affected parties are hereby invited to register and submit their comments regarding the proposed project on or before **09/06/2022**. Contact details for registration and further information:

**Impala Environmental Consulting**  
**Mr. S. Andjamba**  
Email: [eia@impalac.com](mailto:eia@impalac.com), Tel: 0856630598



## Mr. Ndaluka Amutenya

---

1. **Proposed Position:** Environmental Coordinator
2. **Name of Firm:** Impala Environmental Consulting
3. **Name of Staff:** Ndaluka Amutenya
4. **Nationality:** Namibian
5. **Education:** - Bachelor of Technology, Chemical Engineering, University of South Africa, 2020  
 - Bachelor of Science, Chemistry Major and Geology Minor, University of Namibia, 2012  
 - Namibia Senior Secondary Certificate (NSSC), Otjikoto Senior Secondary School, 2008
6. **Membership of Professional Associations:**  
 - None
7. **Other Training:** - None.
8. **Countries of Work Experience:** Namibia
9. **Languages:**

	<i>Speaking</i>	<i>Reading</i>	<i>Writing</i>
English	Excellent	Excellent	Excellent
Afrikaans	Excellent	Good	Good
Oshiwambo	Excellent	Excellent	Excellent
10. **Employment Record:**

From: 2019 to Present	
Employer:	Impala Environmental Consulting
Positions held:	Environmental Assessment Practitioner
From: 2015 to 2018	
Employer:	Tschudi Copper Mine
Positions held:	Chemist
From: 2013 to 2015	
Employer:	Heat Exchange Products (Water Treatment)
Positions held:	Water Treatment Specialist

11. Detailed Tasks Assigned	12. Past Projects Undertaken
<ul style="list-style-type: none"> <li>Project Local Consultant</li> <li>Client Liaison</li> </ul>	<p><b>Name of assignment or project:</b> Catchment Management Plan for the swakoppoort dam namibia</p> <p><b>Year:</b> 2020</p> <p><b>Location:</b> Okahandja, Namibia.</p> <p><b>Client:</b> Namwater</p>

<ul style="list-style-type: none"> <li>• Water Sampling and Reporting</li> <li>• Project Management</li> <li>• Project Supervision</li> </ul>	<p><b>Main project features:</b> Catchment Management Plan for the Swakoppoort Dam.</p> <p><b>Positions held:</b> Local Consultant</p> <p><b>Activities performed:</b> Water Sampling, logistics, site inspections and report writing.</p>
<ul style="list-style-type: none"> <li>• Project Leader</li> <li>• Client Liaison</li> <li>• Public Participation</li> <li>• Report Writing</li> <li>• Project Management</li> <li>• Project Supervision</li> </ul>	<p><b>Name of assignment or project:</b> Environmental Impact Assessment for the Development of a Tantalite Mine, Southern Namibia.</p> <p><b>Year:</b> 2020</p> <p><b>Location:</b> Warmbad, Karas Region</p> <p><b>Client:</b> Orange River Pegmatite (Pty) Ltd</p> <p><b>Main project features:</b> Environmental Management</p> <p><b>Positions held:</b> Lead Consultant</p> <p><b>Activities performed:</b> Project Management, Report Writing, Public Participation, Site Inspections, Stakeholder Engagement, Specialist Study Inputs and Map production.</p>
<ul style="list-style-type: none"> <li>• Project Leader</li> <li>• Client Liaison</li> <li>• Public Participation</li> <li>• Report Writing</li> <li>• Project Management</li> <li>• Project Supervision</li> </ul>	<p><b>Name of assignment or project:</b> Environmental Impact Assessment for Proposed Development of A Medical Tourism University Hospital In Henties Bay</p> <p><b>Year:</b> 2020</p> <p><b>Location:</b> Henties Bay, Erongo Region</p> <p><b>Client:</b> Franco Civil Engineering Cc</p> <p><b>Main project features:</b> Environmental Impact Assessment.</p> <p><b>Positions held:</b> Lead Consultant</p> <p><b>Activities performed:</b> Project Management, Report Writing, Public Meetings, Site Inspections, Stakeholder Engagement, Specialist Study Inputs and Map production.</p>
<ul style="list-style-type: none"> <li>• Project Leader</li> <li>• Client Liaison</li> <li>• Public Participation</li> <li>• Report Writing</li> <li>• Project Management</li> <li>• Project Supervision</li> </ul>	<p><b>Name of assignment or project:</b> Environmental Impact Assessment for the Development of a Marble Mine.</p> <p><b>Year:</b> 2020</p> <p><b>Location:</b> 10 km north of Karibib</p> <p><b>Client:</b> Sunsand Investments (Pty) Ltd</p> <p><b>Main project features:</b> Environmental Impact Assessment.</p> <p><b>Positions held:</b> Lead Consultant</p> <p><b>Activities performed:</b> Project Management, Report Writing, Public Meetings, Site Inspections, Stakeholder Engagement, Specialist Study Inputs and Map production.</p>
<ul style="list-style-type: none"> <li>• Project Leader</li> <li>• Client Liaison</li> <li>• Public Participation</li> <li>• Report Writing</li> <li>• Project Management</li> <li>• Project Supervision</li> </ul>	<p><b>Name of assignment or project:</b> Environmental Impact Assessment for Dimension Stone Quarrying Activities on Mining Claims 71816, 71817, 71818, 71819, 71820, 71821, 71822, 71823, 71824, And 71825.</p> <p><b>Year:</b> 2020</p> <p><b>Location:</b> 40 km northwest of Arandis</p> <p><b>Client:</b> Rockstar Mining cc</p> <p><b>Main project features:</b> Environmental Impact Assessment.</p> <p><b>Positions held:</b> Lead Consultant</p> <p><b>Activities performed:</b> Project Management, Report Writing, Public Meetings, Site Inspections, Stakeholder Engagement, Specialist Study Inputs and Map production.</p>



<ul style="list-style-type: none"> <li>• Project Leader</li> <li>• Client Liaison</li> <li>• Public Participation</li> <li>• Report Writing</li> <li>• Project Management</li> <li>• Project Supervision</li> </ul>	<p><b>Name of assignment or project:</b> Environmental Impact Assessment for Sand Mining Activities on Mining Claim 72027  <b>Year:</b> 2020  <b>Location:</b> 30 km North of Ongwediva  <b>Client:</b> Comitx Investments Group CC  <b>Main project features:</b> Environmental Impact Assessment.  <b>Positions held:</b> Lead Consultant  <b>Activities performed:</b> Project Management, Report Writing, Public Meetings, Site Inspections, Stakeholder Engagement, Specialist Study Inputs and Map production.</p>
<ul style="list-style-type: none"> <li>• Project Leader</li> <li>• Client Liaison</li> <li>• Public Participation</li> <li>• Report Writing</li> <li>• Project Management</li> <li>• Project Supervision</li> </ul>	<p><b>Name of assignment or project:</b> Environmental Impact Assessment for Mineral Exploration Activities on EPL 6408  <b>Year:</b> 2020  <b>Location:</b> 5 km south of Karibib  <b>Client:</b> Antler Gold Inc  <b>Main project features:</b> Environmental Impact Assessment.  <b>Positions held:</b> Lead Consultant  <b>Activities performed:</b> Project Management, Report Writing, Public Meetings, Site Inspections, Stakeholder Engagement, Specialist Study Inputs and Map production.</p>
<ul style="list-style-type: none"> <li>• Project Leader</li> <li>• Client Liaison</li> <li>• Public Participation</li> <li>• Report Writing</li> <li>• Project Management</li> <li>• Project Supervision</li> </ul>	<p><b>Name of assignment or project:</b> Environmental Impact Assessment for Dimension Stone Quarrying Activities on Mining Claims 71896-71900  <b>Year:</b> 2020  <b>Location:</b> 15 km north of Karibib  <b>Client:</b> Triple Tas Trading cc  <b>Main project features:</b> Environmental Impact Assessment.  <b>Positions held:</b> Lead Consultant  <b>Activities performed:</b> Project Management, Report Writing, Public Meetings, Site Inspections, Stakeholder Engagement, Specialist Study Inputs and Map production.</p>
<ul style="list-style-type: none"> <li>• Project Leader</li> <li>• Client Liaison</li> <li>• Public Participation</li> <li>• Report Writing</li> <li>• Project Management</li> <li>• Project Supervision</li> </ul>	<p><b>Name of assignment or project:</b> Environmental Impact Assessment for Mineral Exploration on EPL 7930  <b>Year:</b> 2020  <b>Location:</b> 40 km northwest of Karibib  <b>Client:</b> Antler Gold Inc  <b>Main project features:</b> Environmental Impact Assessment.  <b>Positions held:</b> Lead Consultant  <b>Activities performed:</b> Project Management, Report Writing, Public Meetings, Site Inspections, Stakeholder Engagement, Specialist Study Inputs and Map production.</p>
<ul style="list-style-type: none"> <li>• Project Leader</li> <li>• Client Liaison</li> <li>• Public Participation</li> </ul>	<p><b>Name of assignment or project:</b> Environmental Impact Assessment for Dimension Stone Quarrying Activities on</p>

<ul style="list-style-type: none"> <li>• Report Writing</li> <li>• Project Management</li> <li>• Project Supervision</li> </ul>	<p>Mining Claims 72100, 72101, 72102, 72103, 72104, 72105 And 72106  <b>Year:</b> 2020  <b>Location:</b> 40 km northeast of Arandis  <b>Client:</b> Tala Mining cc  <b>Main project features:</b> Environmental Impact Assessment.  <b>Positions held:</b> Lead Consultant  <b>Activities performed:</b> Project Management, Report Writing, Public Meetings, Site Inspections, Stakeholder Engagement, Specialist Study Inputs and Map production.</p>
<ul style="list-style-type: none"> <li>• Project Leader</li> <li>• Client Liaison</li> <li>• Public Participation</li> <li>• Report Writing</li> <li>• Project Management</li> <li>• Project Supervision</li> </ul>	<p><b>Name of assignment or project:</b> Environmental Impact Assessment for Mineral Exploration on EPL 5702  <b>Year:</b> 2020  <b>Location:</b> 30 km South of Kamanjab  <b>Client:</b> Emor Mining (Pty) Ltd  <b>Main project features:</b> Environmental Impact Assessment.  <b>Positions held:</b> Lead Consultant  <b>Activities performed:</b> Project Management, Report Writing, Public Meetings, Site Inspections, Stakeholder Engagement, Specialist Study Inputs and Map production.</p>
<ul style="list-style-type: none"> <li>• Project Leader</li> <li>• Client Liaison</li> <li>• Public Participation</li> <li>• Report Writing</li> <li>• Project Management</li> <li>• Project Supervision</li> </ul>	<p><b>Name of assignment or project:</b> Environmental Impact Assessment for the Development of a Lodge in the Daures Conservancy Area.  <b>Year:</b> 2019  <b>Location:</b> 50-80 km northwest of UIS  <b>Client:</b> !U-#Gab Ams Investment cc  <b>Main project features:</b> Environmental Impact Assessment.  <b>Positions held:</b> Lead Consultant  <b>Activities performed:</b> Project Management, Report Writing, Public Meetings, Site Inspections, Stakeholder Engagement, Specialist Study Inputs and Map production.</p>
<ul style="list-style-type: none"> <li>• Project Leader</li> <li>• Client Liaison</li> <li>• Public Participation</li> <li>• Report Writing</li> <li>• Project Management</li> <li>• Project Supervision</li> </ul>	<p><b>Name of assignment or project:</b> Eia For the Proposed Establishment of a Service Station on Erf 4121, Khorixas  <b>Year:</b> 2019  <b>Location:</b> Khorixas  <b>Client:</b> Noabeb's Trading Enterprises cc  <b>Main project features:</b> Environmental Impact Assessment.  <b>Positions held:</b> Lead Consultant  <b>Activities performed:</b> Project Management, Report Writing, Public Meetings, Site Inspections, Stakeholder Engagement, Specialist Study Inputs and Map production.</p>
<ul style="list-style-type: none"> <li>• Project Leader</li> <li>• Client Liaison</li> <li>• Public Participation</li> <li>• Report Writing</li> <li>• Project Management</li> <li>• Project Supervision</li> </ul>	<p><b>Name of assignment or project:</b> Environmental Impact Assessment on dimension stone and industrial mineral quarrying activities on mining claims 71227 and 71228.  <b>Year:</b> 2019  <b>Location:</b> 10 km south of Omaruru  <b>Client:</b> Hiku Poultry and Trading CC  <b>Main project features:</b> Environmental Impact Assessment.</p>

	<p><b>Positions held:</b> Lead Consultant  <b>Activities performed:</b> Project Management, Report Writing, Public Meetings, Site Inspections, Stakeholder Engagement, Specialist Study Inputs and Map production.</p>
<ul style="list-style-type: none"> <li>• Project Leader</li> <li>• Client Liaison</li> <li>• Public Participation</li> <li>• Report Writing</li> <li>• Project Management</li> <li>• Project Supervision</li> </ul>	<p><b>Name of assignment or project:</b> Environmental Impact Assessment for Mineral Exploration Activities on Epl 5818, Central Namibia  <b>Year:</b> 2019  <b>Location:</b> 40 km east of Khorixas  <b>Client:</b> Gravity Empire Investments (Pty) Ltd  <b>Main project features:</b> Environmental Impact Assessment.  <b>Positions held:</b> Lead Consultant  <b>Activities performed:</b> Project Management, Report Writing, Public Meetings, Site Inspections, Stakeholder Engagement, Specialist Study Inputs and Map production.</p>
<ul style="list-style-type: none"> <li>• Project Leader</li> <li>• Client Liaison</li> <li>• Public Participation</li> <li>• Report Writing</li> <li>• Project Management</li> <li>• Project Supervision</li> </ul>	<p><b>Name of assignment or project:</b> Environmental Impact Assessment for Mineral Exploration on Epl 6374  <b>Year:</b> 2019  <b>Location:</b> 50 km South of Opuwo  <b>Client:</b> Nami Geological Techniques (Pty)  <b>Main project features:</b> Environmental Impact Assessment.  <b>Positions held:</b> Lead Consultant  <b>Activities performed:</b> Project Management, Report Writing, Public Meetings, Site Inspections, Stakeholder Engagement, Specialist Study Inputs and Map production.</p>



## National Heritage Council of Namibia

52 Robert Mugabe Avenue, Windhoek  
Private Bag 12043, Ausspansplatz, Windhoek, Namibia  
Tel: (061) 244 375 • Fax: (061) 246 872 •  
E-mail: [info@nhc-nam.org](mailto:info@nhc-nam.org)

### CONSENT

(Section 55(9) of the National Heritage Act, 2004 (Act No. 27 of 2004)) Consent is hereby given to:

09 August 2022

**Consent Number No:** 122/2022

**Name of applicant:** Mangetti Mining Investment Mining Cc

*(Title and full name of the applicant)*

**Address of applicant:** P.O.Box 29532

*(Address of the applicant and of the applying institution (if applicable))*

**For:** Exploration Prospecting License (EPL) 8113 & 8114 for the exploration of Dimension Stone

*(Type of Activity applied for)*

**Of:** No Heritage resources located

*(Description of Heritage Resources)*

**From:** EPL is Located about 27 km southwest of Karibib region.

*(Description of the site, location as in the application)*

*EV*

**In accordance with:** Exploration Prospecting License Mining License (EPL) 8114 & 8115 for the exploration of Dimension stones, located 27 km southwest of Karibib in the Erongo region.

---

*(Specify relevant documentation and Permit application date)*

*The following conditions (imposed in terms of section 55(9) of the Act.) apply to this permit:*

- a) That as per section 55 (9) (a) the activity authorised by this consent be supervised by a person with appropriate professional qualifications or experience in the identification and conservation of heritage.
- b) That any archaeological or palaeontological object or meteorite found in the course of the activity authorised by the consent must be recorded, conserved and dealt with as per the manual on Chance Find Procedures of heritage resources; and
- c) that Namibian citizens, especially members of the local community in and around the project area, be engaged in the activity authorised by the consent for the purpose of identification of heritage resources in the project area as well as of receiving professional training;
- d) That the consent holder reports back to the National Heritage Council every six (6) months on compliance with the conditions of this consent.
- e) This Consent does not exempt the holder from any conditions that may be imposed by owners, hosts or any other relevant authorities in consultation with NHC who have a stake in the project area.
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- h) Adopt the Chance Find Procedures.

*TA*

- i) This consent is renewable, upon submission of an application at least two months before the current permit lapses

---

(List any conditions that the Council may see fit to impose in terms of section 55 (9) of the act.

This Consent will be valid from 09<sup>th</sup> August 2022 to 08<sup>th</sup> August 2023

Director: National Heritage Council



---

**National Heritage Council of Namibia**



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