



**Application No: 250224005417**

**Environmental Impact Assessment for the Proposed Exploration Activities of Base & Rare Metals, Dimension Stone, Industrial Minerals, Precious Metals on Exclusive Prospecting License 9547 at Opuwo Area in Kunene Region**

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## **I. ACRONYMS**

<b>DEA</b>	Department of Environmental Affairs
<b>EA</b>	Environmental Assessment
<b>EAP</b>	Environmental Assessment Practitioner
<b>EC</b>	Environmental Commissioner
<b>ECC</b>	Environmental Clearance Certificate
<b>ECO</b>	Environmental Compliance Officer
<b>EIA</b>	Environmental Impact Assessment
<b>EM</b>	Epangelo Mining
<b>EMA</b>	Environmental Management Act (No. 7 of 2007)
<b>EMP</b>	Environmental Management Plan
<b>EPL</b>	Exclusive Prospecting License
<b>I&amp;APs</b>	Interested and Affected Parties
<b>MEFT</b>	Ministry of Environment, Forestry and Tourism
<b>NSA</b>	Namibia Statistic Agency
<b>PPE</b>	Personal Protective Equipment
<b>RC</b>	Reverse Circulation
<b>RD</b>	Red-Dune Consulting CC
<b>TORs</b>	Terms of Reference

## **II. EXECUTIVE SUMMARY**

JG Investments Three (Pty) Ltd, a subsidiary of Epangelo Mining Company (Pty) Ltd, is the proponent for proposed mineral exploration activities within Exclusive Prospecting License (EPL) 9547, which covers an area of 39,090.759 hectares between Opuwo and Omakange area, in Kunene Region. The history of mineral exploration is extensive and has undergone significant evolution over the years. With advancements in technology, modern exploration methods have become increasingly environmentally sustainable, utilizing non-invasive techniques that minimize impacts on the bio-physical environment.

The proposed exploration activities aim to assess the potential for base metals, rare metals, precious metals, and industrial minerals, including dimension stone. These activities will primarily utilize non-invasive methods, such as geological field mapping and geophysical ground mapping, to identify key target points for further investigation. Geochemical soil sampling will follow, with traditional techniques like shallow pitting and trenching employed for surface-level investigations. For deeper targets, Reverse Circulation drilling will be used.

A key commitment of JG Investments Three (Pty) Ltd is to ensure that all drilled holes are rehabilitated fully unless they serve a beneficial purpose for the community, such as water boreholes. In such cases, the company will collaborate with the local community to ensure the long-term utility of these resources and that all necessary permits are acquired.

Exploration activities, when conducted with care, are generally not harmful to the environment. Particular attention will be paid during line cutting operations to avoid mature and protected trees, ensuring minimal disturbance to the local flora. If these exploration activities lead to the establishment of a mine in the future, a comprehensive Environmental Impact Assessment (EIA) will be need to conduct to assess potential environmental impacts to guide the development of appropriate mitigation measures to ensure sustainable and environmentally responsible mining operations.

In summary, the company aims to unlock the potential mineral resource in the region while ensuring socio-environmental sustainability and dedicate itself to continuous community engagement to ensure inclusivity at all phases of the project. Furthermore, the company is dedicated to ensuring that any potential impacts on the environment are minimized through responsible planning, monitoring, and rehabilitation.

# **1 INTRODUCTION**

JG Investment Three Pty Ltd. holds Exclusive Prospecting License (EPL) Number 9547, in accordance with the Minerals (Prospecting and Mining) Act of 1992. This license legally grants the company the right to conduct exploration for a variety of minerals, including base metals, rare metals, precious metals, Dimension Stone and industrial minerals.

As part of the exploration process, the company will engage in several scientific and technical activities aimed at identifying and assessing mineral resources within the EPL area. These activities will include reconnaissance field mapping, which involves detailed on-site surveys to gather geological information, and geochemical soil sampling, a technique used to analyze soil samples for the presence of mineral traces. Geophysical ground surveys, including magnetics, electromagnetics, and gravity surveys, will also be conducted to generate targets that indicate potential mineral deposits.

Additionally, trenching and reverse circulation (RC) drilling will be employed as part of the geochemical sampling process. Trenching allows for the collection of samples from deeper layers of soil, while RC drilling provides more extensive sampling by extracting material from even greater depths.

## **1.1 Regulatory Requirements**

The protection of the environment in Namibia is firmly established under Article 95(i) of the Namibian Constitution, which mandates the State to actively promote and maintain the welfare of the people by adopting policies aimed at maintaining ecosystems, essential ecological processes, and biological diversity, as well as utilizing living natural resources on a sustainable basis for the benefit of all Namibians, both present and future. This constitutional commitment is further reinforced by the Environmental Management Act of 2007 (Act No. 7 of 2007), which provides a comprehensive framework for sustainable environmental management and the use of natural resources.

In accordance with the Environmental Impact Assessment Regulations published in the Government Gazette of 6 February 2012 (No. 4878) under the Environmental Management Act, 2007, the proposed exploration activity is classified as a listed activity. Consequently, it may not be undertaken without obtaining an Environmental Clearance Certificate (ECC), as outlined in Table 1. This regulatory requirement ensures that all exploration activities are conducted in a manner that minimizes environmental impact and aligns with Namibia's commitment to sustainable development.

**Table 1.** Identified listed activities concerning the proposed project.

Activity	Applicability
3.1 The construction of facilities for any process or activities which requires a license, right or other form of authorization, and the renewal of a license, right or other form of authorization, in terms of the Minerals (Prospecting and Mining Act), 1992.	The projects shall include the prospecting of Mineral
3.2 Other forms of mining or extraction of any natural resources whether regulated by law or not.	Mining activities shall involve, drilling and digging to extract natural resource.
3.3 Resource extraction, manipulation, conservation and related activities.	The project shall extract resource sample for manipulations / analysis.

In compliance with the statutory requirements outlined in the Environmental Management Act, 2007, and the Environmental Impact Assessment Regulations, JG Investment three Pty Ltd has appointed Red-Dune Consulting CC (RDC) to undertake an environmental impact assessment for the proposed exploration activities. This appointment aligns with the legal mandate that requires an EIA to be conducted before such activities can proceed.

## 1.2 The Need and Desirability of the Project

In many developing countries, particularly in Africa, the economy is heavily reliant on the mineral extraction industry. These industries play a pivotal role in contributing to national economies and providing essential employment opportunities, which are crucial for economic growth and stability. The process of mineral extraction begins with exploration activities, which are designed to map mineralization patterns and identify potential mining areas. The successful discovery of economically viable deposits through exploration activities paves the way for mining operations, which are a key driver of economic activity in Namibia. As a result, this project is important to Namibia's socio-economic landscape, as it aligns with the country's broader goals of economic diversification, sustainable development, and improving the quality of life for its citizens by creating jobs, stimulating local economies, and contributing to national development.

### **1.3 Terms of Reference**

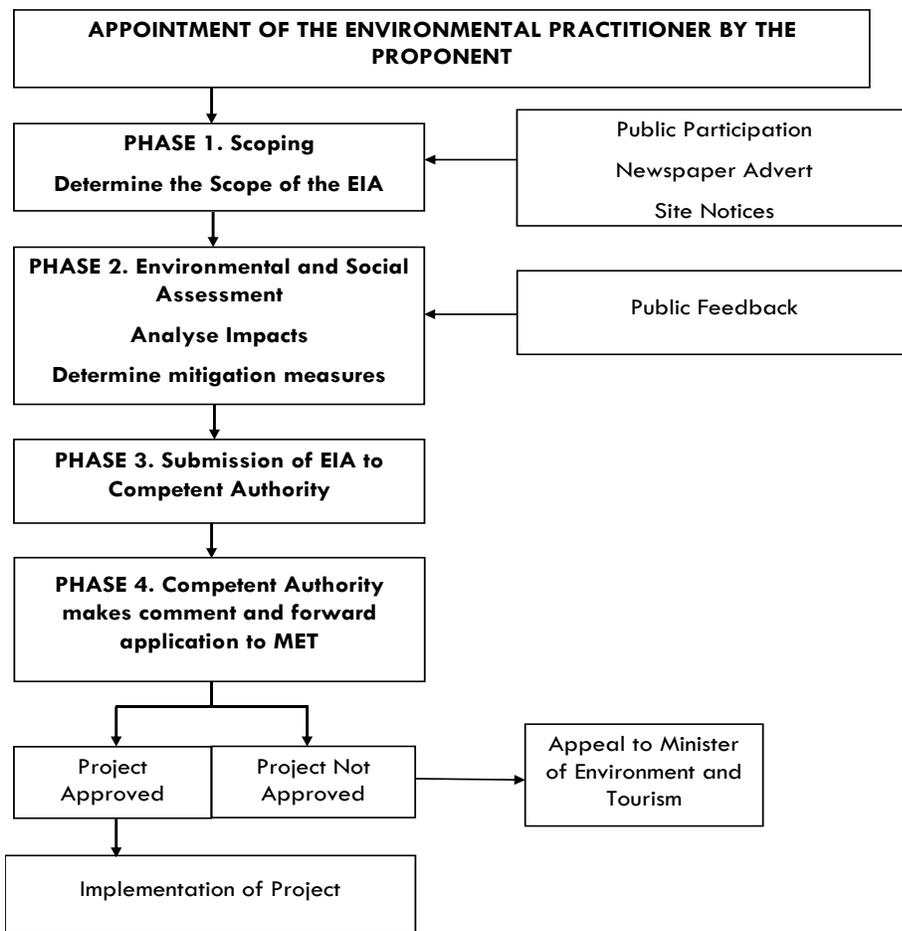
The Terms of Reference (TORs) for this Environmental Impact Assessment (EIA) is in accordance with the EMA and its EIA Regulation Section 9 (a-b). It considers other relevant local, national and international laws. These guidelines are aimed to focus on issues of greater environmental concerns and to develop mitigation measures for effective environmental management. Eventually, this EIA is aimed at obtaining the ECC for the project and to ensure environmental sustainability. The TORs of this project include but not limited to the following.

- Provide a comprehensive description of the proposed Project.
- Identify relevant legislation and guidelines for the project.
- Identify potential environmental (physical, biological and social) conditions of the project location and conduct risk assessment.
- Inform Interested and Affected Parties (I&APs) and relevant authorities about the proposed project to enable their participation and contribution.
- Develop an Environmental Management (EMP) that would be a legal guideline for the environmental protection by the project

## 1.4 Scope of the EIA

The scope of this project is guided by the EIA Regulations 2012, which follows the process as shown in figure 1. The scope aims at identifying possible impacts, assessing the impact and formulate the optimum, practical mitigation measure to minimize the impacts.

Red-Dune (RD) believes that the developed Environmental Management Plan (EMP) provides practical mitigation measure which shall ensure environmental sustainability. Further, RD believes that the information provided is adequate and sufficient to enable the Environmental Commissioner (EC) to make an informed decision and issue the Environmental Clearance Certificate for the project.



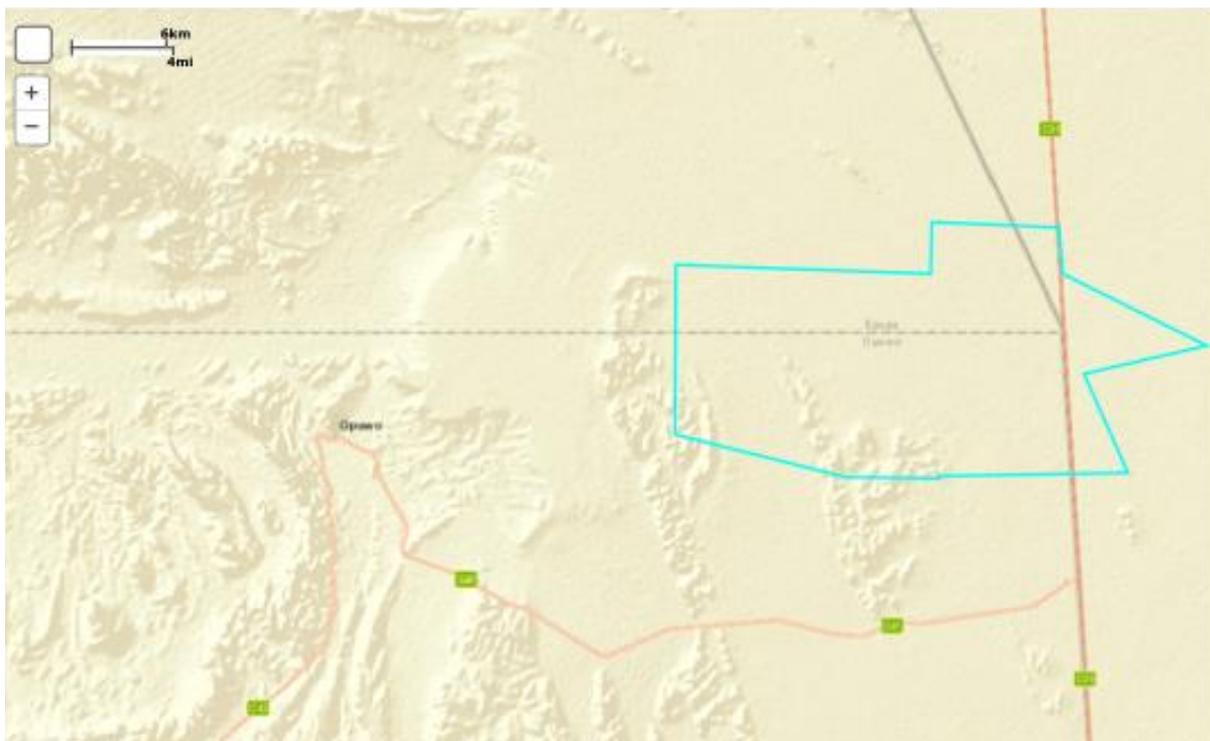
**Figure 1** The EIA Process in Namibia

## 2 PROJECT DESCRIPTION

### 2.1 Location

The EPL 9547 is located between the Opuwo and Omakange areas in the Kunene Region of Namibia, with geographic coordinates of approximately  $-18.017000^{\circ}\text{S}$  latitude and  $14.1808333^{\circ}\text{E}$  longitude.

The area is well-connected by road, with the EPL lying along the C41 and C35 roads, two primary transport routes that provide access to the area. These roads will be key to transport movement of goods and services, ensuring that exploration activities can be carried out using existing roads and avoid construction of new roads (see Figure 2).



**Figure 2.** Location of EPL 9547

## 2.2 Project Activities

The proposed exploration will adopt various prospecting methods for base rare and precious metals as follows.

- Reconnaissance field mapping
- Geochemical soil sampling and target generation
- Geophysical ground surveys (magnetics, electromagnetics, gravity)
  - Diamond/RC Drilling of geophysical target

The above proposed activities will be undertaken in phases as explained below.

### 2.2.1 Phase 1. Non-Invasive Exploration

The initial phase of mineral prospecting and exploration primarily involves non-invasive activities designed to avoid causing any physical damage to the environment. These activities include detailed geological studies and field mapping, during which historical data, existing geological maps, and their interpretations are carefully analysed. This process helps identify and generate geophysical targets for more focused and advanced exploration in subsequent phases.

**Geological studies and field mapping** play a pivotal role in the initial phase of mineral exploration. During this stage, a wide range of geological data is collected from various sources to thoroughly analyse and assess the available information about the area. This process includes examining aerial photographs to pinpoint target locations for geochemical soil sampling. These study are essential for gaining a comprehensive understanding of the geological context and identifying areas with potential mineralization.

**Soil surveys** involve the classification of soil types and the assessment of various soil properties within the target area, which is essential for geo-encoding. This process also includes gathering information about the substrata through non-invasive sensors such as radar, magnetic, and electromagnetic methods, allowing for the detection of mineralization while minimizing environmental impact. Soil sampling traverses are conducted on foot within designated areas,

where samples are collected from small pits (approximately 30x30x30 cm) using a hand-held shovel. To further reduce disturbance, these pits are backfilled immediately after sampling.

**Geophysical surveys** utilize a range of methods to gather valuable geological information, including magnetic and electromagnetic techniques. Magnetic surveying measures the characteristics of the local magnetic field to detect minerals that respond to magnetic fields, offering insights into subsurface conditions without physically disturbing the ground. This method is effective for identifying metal ore located beneath the surface and can be conducted both on the ground and from the air. Ground surveys involve carrying a magnetometer to collect data, while aerial surveys employ helicopters or fixed-wing airplanes equipped with magnetometers, particularly useful for traversing challenging or expansive terrains. Although these activities generally have minimal environmental impact, they may produce noise from aircraft operations.

### ***2.2.2 Phase 2. Evasive Exploration***

The second phase of exploration involves the collection of geochemical samples from targeted sites. During this phase, geochemical samples will be obtained from boreholes less than 1 meter deep, along with drilling activities. Given that some target sites may be inaccessible via existing roads, new access roads may need to be established. Typically designed for light vehicles, these roads can be at risk of damage from exploration vehicles; therefore, proper road maintenance must be implemented to ensure they remain in good condition.

If it becomes necessary to clear trees or shrubs to access a target site, special care must be taken to avoid protected tree species. Additionally, recommendations from the vegetation study conducted for the area should be followed to promote sustainable conservation practices.

**Drilling** is conducted in the final stage of exploration to assess mineral prospects and determine the feasibility of mining operations. Drill rods are employed to collect geological samples from the earth's subsurface, with drill targets generated based on data obtained from mapping and sampling programs. The target grid patterns can vary, typically ranging from 200x50 meters to 100x50 meters, and in some cases, detailed sampling may utilize a 50x20 meter grid spacing.

Exploration activities primarily utilize two types of drilling methods: Reverse Circulation (RC) and Diamond Core drilling. Reverse Circulation drilling has gained popularity due to its effectiveness and water conservation benefits, making it a preferred choice in many exploration scenarios.

**Reverse Circulation** drilling often referred to as ‘RC’ drilling uses rods (shafts) with inner and outer tubes with drill bit attached to an air-filled interchanging piston known as a hammer. The hammer produces drill cuttings that are returned to the surface inside the rods. RC drills are carried on drill rigs, which are mostly powerful heavy truck. RC drilling is the most preferred method because it is less costly and produces liable materials that are free from contamination. In an arid place like Namibia, RC Drilling would be advantageous because it does not require water for rock drilling unlike Diamond core drilling that requires water for lubrication. Once the proposed exploration has been concluded, the impacted sites must be rehabilitated as provided for by the Environmental Management Plan.

When necessary, a **base camp** for accommodation maybe be set up. This must first be agreed with landowners. In an event where a base camp is set up, waste management provisions must be implemented which include a garbage dump and pit toilet must be established where no hazardous waste shall be dumped, an impermeable skip container must be on site for collecting hazardous waste. At the end of exploration, toilet pits and garbage dump must be dump filled before leaving the site. Alternatively, the use of the mobile toilets is recommended where waste should be disposed at an approved area. To ensure environmental protection from oil, fuel, and lubricants, servicing of vehicles and equipment must take place at a designated area. In event where the landowner does not allow servicing of the vehicles or machineries, such activities must take place at designated area.

## 2.3 Equipment

### 2.3.1 Vehicles

Pickup vehicles, commonly referred to as bakkies, will be utilized during the exploration phase (Figure 2). In most instances, excavations conducted as part of trenching and soil sampling programs will be performed manually (Figure 4). Water supply will be facilitated by water trucks. To ensure safety, night driving, reckless driving, and speeding are strictly prohibited. Additionally, a bulldozer may be employed for constructing or maintaining access roads, provided that prior agreement is obtained from the landowners / communities.



**Figure 2.** Exploration vehicles (For illustration purposes)

### 2.3.2 Drilling

A 4X4 Lorries and skid mounted drill rig may be used to carry the drill on target sites (figure 3).



**Figure 3.** A truck mounted RC drill rig and a skid mounted drill rig (For illustration purposes)



**Figure 4.** An illustration of a hand dug trench (For illustration purposes)

### 2.3.3 *Airborne Geophysical survey*

Arial photo will be taken with a fixed wing Cessna plane (Figure 5).



**Figure 5.** An illustration of a fixed wing Cessna

## **3 DESCRIPTION OF THE AFFECTED ENVIRONMENT**

### **3.1 Physical Environment**

#### **3.1.1 Climate**

Opuwo serves as the administrative capital of the Kunene Region, situated in the north-western part of Namibia. The region is characterized by a dry climate, with Opuwo and its surroundings frequently experiencing droughts. The western part of the region borders the Namib Desert, which stretches towards the Atlantic Ocean.

The rainfall season typically occurs between February and April, although precipitation is highly sporadic. Annual rainfall varies significantly across the region, ranging from as little as 50 mm in the west to up to 400 mm in the east. This gradient reflects the region's diverse climatic zones, with rainfall increasing from the arid western areas to the more humid eastern parts.

Temperatures in the Kunene Region are generally high, with average maximum temperatures often reaching between 35°C and minimum temperatures around 14°C. The region experiences a mid-latitude desert climate, like other parts of Namibia, with low humidity and significant diurnal temperature variations.

#### **3.1.2 Geology**

Generally, the geology of Namibia includes rocks of Paleoproterozoic, Mesoproterozoic and Neoproterozoic and Paleozoic to Cenozoic age, which are millions of years old. The regional geology of Kunene comprises of Paleoproterozoic basement exposure and inlier outcrop surrounded by Neoproterozoic rocks. The inlier is made up of Paleoproterozoic deformed and metamorphosed rocks during the Damara Orogeny, which comprises of volcanic and inlier sedimentary rocks of the Damara Sequence. The Neoproterozoic Damara Sequence is composed of out crop of siliciclastic and carbonate rocks. The Damara sequence is known to comprise the Nosib and Otavi / Swakop. The Nosib group is correlated with the copper bearing roan group in

the Central African Copperbelt, which makes it a potential discovery for the copper. Copper mineralization occurs within the quartzite and conglomerate unit at the base of the Nosib Group.

Studies indicate that the mineralization at Opuwo is hosted in the Neoproterozoic sediments of the Kaoko Belt. The Kaoko Belt form part of the Damara Orogen group. The Kaoko Belt consists of three parallel structural zones. The Eastern Kaoko Zone (EKZ) comprises sub-greenschist facies shelf carbonates that have been uprightly folded, the Central Kaoko Zone (CKZ) contains a slope and deep basin facies succession that has experienced intense deformation, including pervasive reworking of basement into large-scale east-vergent nappes, the Western Kaoko Zone (WKZ) is predominantly deep basin facies of high metamorphic grade intruded by numerous granites. It has experienced intense wrench-style deformation with formation of upright isoclinal and steep, crustal-scale shear zones <sup>1</sup>.

The important elements of the geological setting and mineral potential of the Kaoko Belt is similarity of its tectonic history, stratigraphy, stratigraphic position and style of known mineralization and alteration assemblages to the Zambian Copperbelt and with mineralization in the Democratic Republic of Congo.

### ***3.1.3 Mining in the Kunene Region***

The Kunene region of Namibia is rapidly gaining attention as a significant hub for mining, thanks to its vast untapped mineral resources and growing interest from both local and international investors. This remote and rugged region is particularly known for its deposits of uranium and cobalt, which have become the focus of exploration in recent years. One of the most notable projects is the Engo Valley Uranium Project, spearheaded by Snow Lake Energy. This project spans a massive area in the Opuwo District, strategically located near the Skeleton Coast. The company has plans to conduct extensive drilling and geological surveys to assess the potential of these uranium reserves, which could position Kunene as a key player in Namibia's growing uranium industry. Beyond uranium, the region is also home to valuable cobalt deposits, with Gecko Opuwo Cobalt leading efforts to develop these resources. Recent studies have further highlighted

Kunene's mineral wealth, revealing that it could also host significant deposits of copper, rare earth metals, iron ore, and even platinum group elements, making it one of Namibia's most promising mining frontiers.

However, as mining activities intensify, there are critical considerations regarding the impact on local communities and the environment. Much of Kunene is communal land, home to indigenous groups who rely on it for their livelihoods. To address this, discussions around communal mining practices have gained traction. These practices aim to ensure that mining activities benefit local communities by creating jobs and improving infrastructure while safeguarding their rights and minimizing environmental damage. This balance between economic development and sustainability is vital for maintaining harmony between stakeholders as mining expands in the region.

Looking ahead, the future of mining in Kunene appears highly promising. With increasing exploration efforts and substantial investments from companies eager to tap into its mineral wealth, the region could play a pivotal role in boosting Namibia's economy. The potential for job creation and improved living standards for local communities further adds to the optimism surrounding Kunene's mining prospects. As companies continue to explore and develop this resource-rich region, Kunene could soon become one of Namibia's most important contributors to the country's mining sector.

#### ***3.1.4 Topography and Drainage***

The Kunene Region in north-western Namibia is characterized by a diverse landscape, featuring both flat areas and undulating terrains formed by hills and mountains. This topography is typical of the region, with elevations ranging from as low as -7 feet to as high as 7,867 feet. The rugged Kaokoveld Hills and the mountainous terrain in the north are particularly notable, with the landscape sloping down towards the Kunene River.

Exploration activities in the region often focus on rocky areas, where geological formations are more accessible for mineral exploration. The drainage system in the Kunene Region is generally

from catchments into water streams, although this is limited due to the region's low and variable rainfall, which averages between 0 mm along the coast and 340 mm in the east. As a result, water streams are often ephemeral, and the drainage system is not significantly impacted by exploration activities. Moreover, the proposed exploration activities are not expected to have a substantial impact on the existing drainage system, given the arid conditions and limited water flow in the area.



**Figure 6.** Topography of Omakange (*Source: Red Dune Consulting*)

### **3.1.5 Ecology**

#### **a. Flora**

This section provides an overview of the vegetation structure and environmental conditions that will interact with the proposed project. The information presented is based on observations made during a site visit and a thorough desk study of existing literature from previous research conducted in the area. This integrated approach ensures a well-rounded understanding of the local ecosystem and its potential interactions with the project.

The baseline flora of the Exclusive Prospecting License in the Omakange area, is characterized by a mix of savanna and woodland ecosystems. The dominant vegetation types include mopane savannas, with *Colophospermum mopane* being a prominent species, and mixed woodlands

featuring trees such as *Acacia*, *Commiphora*, and *Terminalia*. Additionally, grass species like Bushman grass and *Stipagrostis spp.* are common in the area.

The region's environmental conditions, including low and variable rainfall, influence the types of vegetation that thrive, with soils generally being sandy to loamy sand with low organic matter content. This baseline assessment is crucial for understanding the potential impacts of development on the local flora and for developing effective mitigation strategies to protect biodiversity and ensure sustainable land use practices.

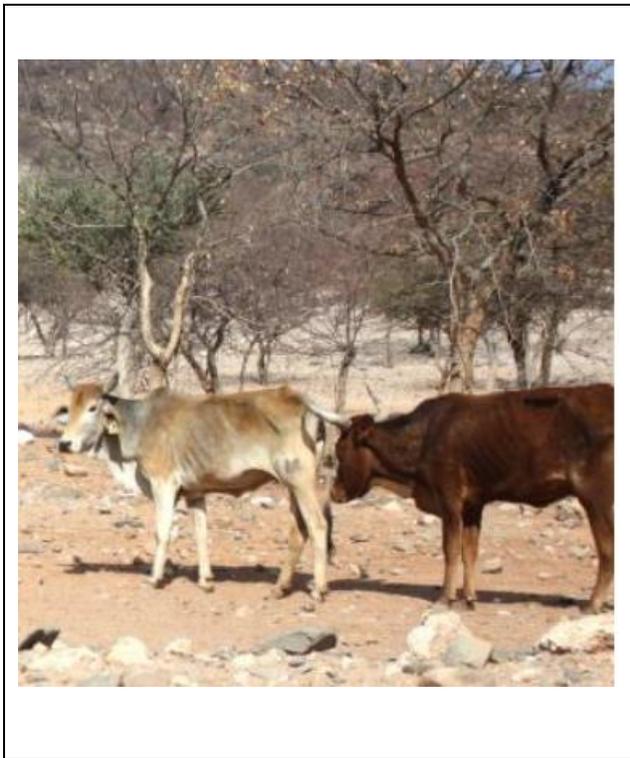


**Figure 7.** Baseline vegetation observed on EPL 9547

#### b. Fauna

Omakange Village, in Namibia's Kunene Region, is home to a mix of domestic and occasional wild animals. The most seen animals are cattle and goats, as livestock farming is central to the livelihoods of the local community. Wildlife is less frequent but not entirely absent. Elephants are

known to pass through the area, especially during droughts, often causing damage to crop like mahangu fields and leading to conflicts with local farmers. Reptiles such as the Many-Horned Adder are also part of the region's fauna, while birdlife, though not extensively documented, likely includes species typical of northern Namibia. Overall, the fauna in Omakange reflects a balance between human activity and the natural environment, with domestic animals dominating but occasional wildlife interactions adding complexity to the ecosystem.



**Figure 8.** Fauna observed on EPL 9547 during Site visit

### ***3.1.6 Ecological Impact Assessment***

**Impact on flora:** The anticipated impact on vegetation is minimal. If clearing is necessary for access to the target site, mature and protected trees will be avoided to preserve ecological integrity. However, should exploration yield promising data that lead to mining operations, some tree loss may be unavoidable. In such cases, a comprehensive vegetation study will be conducted to assess biodiversity and ecosystem health, allowing for targeted mitigation strategies to minimize environmental impacts while balancing operational needs with sustainability.

**Impact on fauna:** Exploration activities in the Omakange area could impact local wildlife by disrupting habitats and altering animal behaviours due to increased noise and human presence. This may lead to stress, displacement, and changes in migration patterns or feeding habits. Additionally, if not managed properly, exploration could heighten the risk of human-wildlife conflict. However, these impacts can be mitigated through effective management strategies, such as enforcing strict controls against poaching and adhering to environmental regulations. Engaging local communities in wildlife conservation efforts can also promote coexistence and reduce potential conflicts, ensuring a more harmonious relationship between humans and wildlife in the area.

### ***3.1.7 Socio-Economic Environment***

Exploration activities do not create significant employment opportunities, as they primarily involve specialized technical work conducted by experts. However, there may be limited local involvement in fieldwork and logistical support, resulting in a minimal socio-economic impact during this phase. If exploration leads to the establishment of a mine, the benefits for surrounding communities and towns like Opuwo can be substantial, including job creation and stimulation of local businesses.

It is essential to recognize that much of the Kunene region consists of communal land, where access must be negotiated with local traditional authorities, such as chiefs, to avoid conflicts. Engaging with these leaders and ensuring transparent communication can foster trust and secure a social license to operate, ultimately creating mutually beneficial partnerships that prioritize both economic development and community well-being.

### ***3.1.8 Land Use***

The proposed exploration activities on EPL 9547, located near Omakange in the Opuwo area (-18.017000 S, 14.1808333 E), take place within a landscape primarily used for communal purposes. This land is vital for local communities, supporting subsistence farming, livestock grazing, and

traditional practices that are central to their way of life. Given the communal land tenure system in this region, access to the site must be negotiated with local chiefs and community leaders to ensure that their rights and interests are respected. While the exploration phase is expected to have minimal impact on existing land use due to its temporary nature, it is crucial to maintain open communication with the community to avoid any disruptions to their agricultural or cultural activities.

If exploration leads to the establishment of a mine, there could be significant changes in land use, potentially providing economic benefits such as job creation and improved infrastructure. However, this would also require careful planning and consideration of the long-term effects on the local community and environment.

### ***3.1.9 Heritage and Archaeology Material***

The Kunene region in Namibia is a unique cultural and historical hub, home to indigenous ethnic groups such as the Ovahimba, Ovaherero, and Ovazemba. Despite centuries of colonialism, these communities have managed to preserve their traditional lifestyle, values, and culture, making the region distinct. This cultural resilience underscores the importance of incorporating the preservation of these cultural values into the region's developmental agenda.

The region is also rich in archaeological evidence, featuring widespread surface scatters of mid-to-late Pleistocene stone artifacts and localized Holocene stone artifacts, as well as evidence of pastoral occupation dating back at least 1,000 years. To ensure that cultural and historical sites are respected and preserved, local communities have been encouraged to identify important heritage sites, such as significant trees, grave areas, and other culturally sensitive locations. It is crucial for exploration teams to consult with local communities before undertaking any physical activities like trenching or drilling and adopting a chance find as outlined below.

### *3.1.9.1 Chance find*

A chance find is an important aspect towards the protection and conservation of archaeological materials. It provides awareness to all people involved in the development of the project to ensure that such materials are not destroyed. The proponent must implement a chance find procedure for the project as follows;

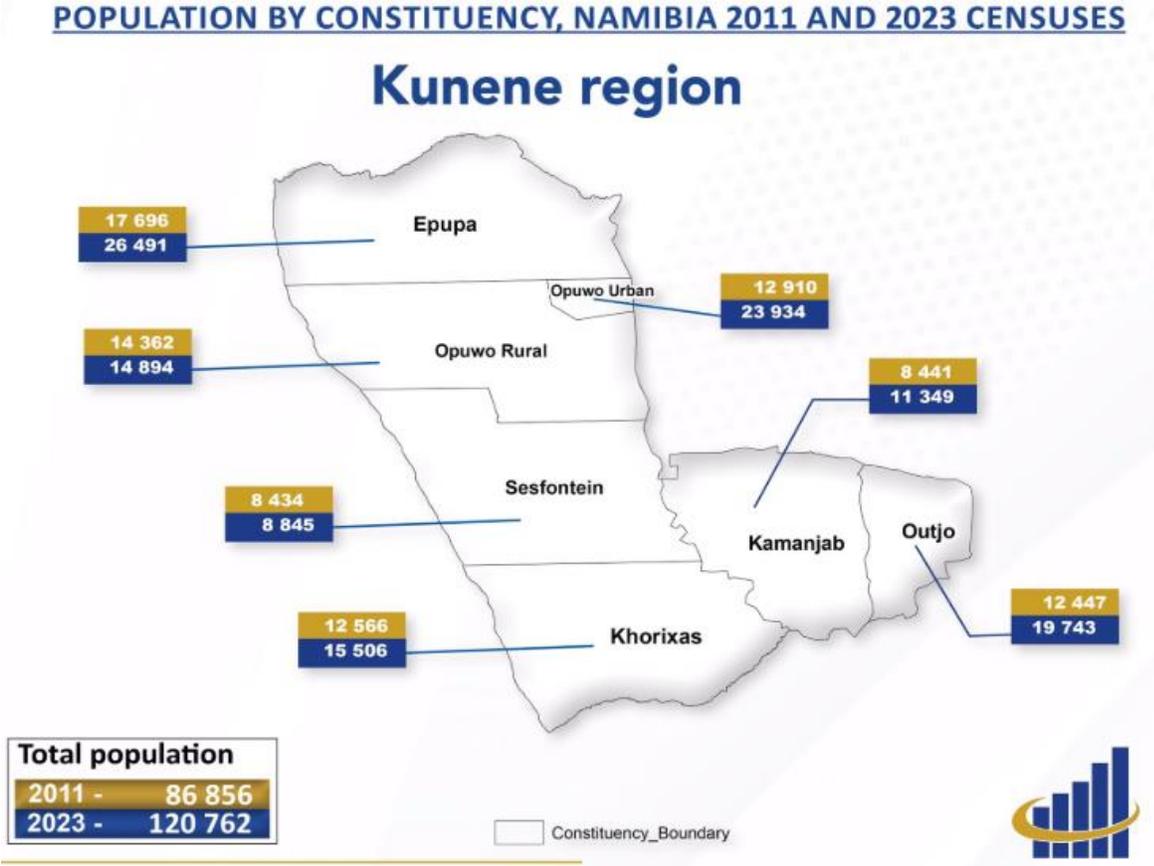
1. All employees / contractors must be trained on the possible find of archaeological materials before the commencement of the project to create awareness. The training must be provided by an expert to ensure adequate understating of archaeological materials.
2. The proponent / employees / contractors must implement steps to be taken for archaeological material finding (Heritage (rock painting and drawings), human remains or artefacts) are unearthed through the following procedures;
  - i. Stopping the activity immediately
  - ii. Informing the operational manager or supervisor
  - iii. Cordoned of the area with a danger tape and manager to take appropriated pictures.
  - iv. Manager/supervisor must report the finding to the following competent authorities, National Heritage Council of Namibia (061 244 375) National Museum (+264 61 276800) or the National Forensic Laboratory (+264 61 240461).

Archaeological material must NOT be touched. Tempering with the materials is an offence under the National Heritage Act and punishable upon conviction by the law

### *3.1.10 Population Demography*

The Kunene Region, covering an area of 115,293 km<sup>2</sup>, is the second-largest region in Namibia, following the //Karas Region. According to the 2023 Census, Namibia's total population has reached 3,022,401, reflecting a growth from previous estimates. The Kunene Region's population stands at 120,762, comprising 60,189 women and 60,573 men, which accounts for approximately 4.0% of the national population. It remains one of five regions in Namibia with populations under 150,000 (See Figure 9).

The population growth rate in Kunene is currently 2.7%, with a population density of 1.0 persons per square kilometre, one of the lowest in the country. Notably, about 66.3% of its inhabitants live in rural areas. The region's literacy rate is reported at 63.8%, with even lower rates in rural communities; approximately 37.6% of individuals aged six and above in these areas have never attended school. Furthermore, only 6.0% of the population has completed tertiary education.



**Figure 9.** Kunene Region Constituencies Demarcation (Source: NSA 2023)

## 4 PROJECT ALTERNATIVES

The provision of EMA requires an EIA to explore various project alternative which aims to ensure that a chosen project component does not have significant impact to the environment. Project alternatives range from not implementing the project (the "No-Go" alternative) when environmental impacts are severe or there is a high degree of uncertainty, to considering alternatives related to the project site, technology, and equipment to be used. A description of these alternatives is provided in Table 2 below. Exploration activities follow the mineralization of minerals, and as such, there is no specific site. However, all activities will avoid protected sites and minimize environmental damage to the greatest extent possible.

**Table 2.** Project alternatives

<b>Alternative</b>	<b>Description</b>	<b>Advantages</b>	<b>Disadvantage</b>	<b>Chosen Option</b>
<b>No Project</b>	This alternative would keep a status quo	<p>There would be NO environmental threats such as.</p> <ul style="list-style-type: none"> <li>• Waste Generation with potential Surface and Ground Water Pollution</li> <li>• Habitat destruction / Land degradation by Construction / upgrading of access roads</li> <li>• Drilling of holes</li> </ul>	<p>The following benefits would be lost if the project does go ahead.</p> <ul style="list-style-type: none"> <li>• Prospective of a new mining project that culminates in loss of income</li> <li>• Compromise on government development goals of manufacturing and industrialization</li> </ul>	NO

Alternative	Description	Advantages	Disadvantage	Chosen Option
		<ul style="list-style-type: none"> <li>• Social effect on Human Health and Safety Risk</li> </ul>	<ul style="list-style-type: none"> <li>• Increase in poverty reduction through loss of employment opportunity</li> </ul>	
<b>Project Site</b>	Exploration activity follows mineralization of mineral. Hence there is no specific site. However, activities should avoid protected sites and minimize environmental damage.			
<b>Implement project</b>	This entails the implementation and operation of the project	<ul style="list-style-type: none"> <li>• Enhancing development</li> <li>• Enhance skill and capacity building</li> <li>• Improved technology transfer</li> </ul> <p>Increase chances of establishing of a new mine</p>	The natural environment may be disturbed, but with adequate implementation of the Environmental Management Plan, environmental sustainability shall be achieved.	Yes
<b>Drilling Type:</b>	Cost effective	<ul style="list-style-type: none"> <li>• RC drilling: This type of drilling is ideal as it does not require water for lubrication and cooling, hence it conserves water compared to diamond drilling</li> </ul>	No significant disadvantage to the environment	RC Drilling
<ul style="list-style-type: none"> <li>• <b>RC vs Diamond</b></li> </ul>	Does not require water for lubrication compared to Diamond drilling			

## **5 POLICY AND LEGAL FRAMEWORK**

Namibia has developed a comprehensive set of policies, regulatory frameworks, and institutions designed to ensure the conservation, sustainable use, and equitable sharing of natural resources, biodiversity, and ecosystems (*Table 1*). These efforts are in alignment with both international conventions and national legislation. In addition to its domestic policies, Namibia is a signatory to several international treaties, conventions, and multilateral agreements, which further guide its environmental governance.

The country actively participates in various international standards, such as the United Nations Development Programme's Social and Environmental Standards (UNDP's SES) and engages in reviews and processes that are critical to the sustainable management of natural resources and the protection of basic rights, including access to a clean and healthy environment.

**Table 3.** Policy and Legal framework

<b>Legislation</b>	<b>Summary</b>	<b>Applicability to Assessment</b>
<b>The Namibian Constitution</b>	The State shall actively promote and maintain the welfare of the people by adopting policies aimed at the maintenance of ecosystems, essential ecological processes and biological diversity of Namibia and utilization of living natural resources on a sustainable basis for the benefit of all Namibians, both present and future	Protection of the environment and biodiversity. Ensures that these principles are enshrined in the EIA documentation
<b>Environmental Management Act No. 7 of 2007</b>	To promote sustainable management of the environment and the use of natural resources and to provides for a process of assessment and control of activities which may have significant effects on the environment; and to provide for incidental matters	The Act provides a list of activities that may not be undertake without an environmental clearance certificate to prevent environmental damages.
<b>Mineral Resource Act, Act 1992.</b>	Prospecting and Mining of Mineral in Namibia and Issuance of all Permits.	Issuance of Mining permits
<b>Draft Pollution Control and Waste Management Bill</b>	This Bill serves to regulate and prevent the discharge of pollutants to air and water as well as providing for general waste management.	To protect the Environment from possible hydrocarbons and oil leaks from the machinery, trucks and vehicles.
<b>Environmental Policy framework (1995)</b>	This policy subjects all developments and project to environmental assessment and provides guideline for the Environmental Assessment.	Consideration of all possible impacts and incorporate them in the development stages

Legislation	Summary	Applicability to Assessment
<b>Regulations Related to the Health and Safety of Employees at Work. Reg No. 156</b>	Promotes the Safety and Health of employees at the workplace	To ensure employees health and safety at work
<b>Public Health Act No. 36 of 1919</b>	To Protect the public from nuisance and states that no person shall cause a nuisance or shall suffer to exist on any land or premises owned or occupied by him or of which he is in charge any nuisance or other condition liable to be injurious or dangerous to health.	To ensure that the project is not a nuisance to landowners and the public at large
<b>Labour Act No. 11 of 2007</b>	This Act outlines the labour laws which encompass protection and safety of employees at work.	Fair labour practises to be observed regarding this act
<b>Water Act No, 54 of 1956</b>	All water resources belong to the State. It prevents pollution and promotes the sustainable utilization of the resource	Prevention of discharging contaminated water at unauthorised places
<b>Soil Conservation Act No. 76 of 1969</b>	To promotes the conservation and compacting of soil erosion	Uncontrolled movement of heavy vehicles and truck at areas surrounding the site may cause land degradation

Legislation	Summary	Applicability to Assessment
<b>Water Resource Management Act No.11 of 2011</b>	The Act stipulates the prevention of pollution for Surface and Ground water sources.	Oil spillage coming from machinery requires proper monitoring.
<b>Public Health Act no. 36 of 1919</b>	The Act gives provision for the protection for the health of all people.	The noise and dust level emanating from the project could affect the surrounding community and vegetation in the vicinity.
<b>National Heritage Act No.27 of 2004</b>	The Act gives provision of the protection and conservation of places and objects with heritage significance.	The chance find of Human Remains due to colonial history or crime, Artefacts, and or heritage materials within the EPL
<b>Minerals (Prospecting and Mining) Act No 33 of 1992</b>	Section 50 (i) requires “an environmental impact assessment indicating the extent of any pollution of the environment before any prospecting operations or mining operations are being carried out and an estimate of any pollution, if any, likely to be caused by such prospecting operations or mining operations”	The proposed activity is prospecting for minerals; hence it requires an EIA to be carried out and adhere to the act’s provisions.

## **6 PUBLIC CONSULTATION**

The Environmental Management Act (EMA) mandates that the Environmental Impact Assessment (EIA) process includes a robust and thorough public consultation. This process is crucial because it allows members of the public, particularly Interested and Affected Parties (IAPs), to provide comments and raise concerns about potential socio-economic or environmental impacts resulting from the project. Additionally, public consultation solicits valuable local knowledge that may not be readily available to the Environmental Assessment Practitioner, thereby enhancing the accuracy and relevance of the assessment.

The public consultation began by consulting with the regional council through the office of the Chief Regional Officer (CRO). The CRO advised that consultation must be done with affected communities. As a result, two Traditional Authority, Vita Royal House and Uukwaluudhi TA which are affected by the EPL were consulted. Mr. Ben Kapi a representative for Vita Royal House, assisted with organizing meeting with the Chiefs in preparation of wider community consultations.

### **6.1 Approach to stakeholder consultation**

Cognizant of the EIA regulation's guidance on stakeholder consultation (i.e., newspaper adverts) and drawing from experience in the Opuwo landscape, Red Dune adopted an adaptive consultative approach to engage with local communities, as advised by the CRO. As a result, a two-phase interactive approach was implemented.

In the first phase, several face-to-face meetings were held with community chiefs and senior members of the community to brief them about the proposed exploration. These initial meetings helped determine the dates and locations for wider community consultations. In the second phase, a series of meetings were conducted in various villages for broader community consultation. This approach ensured a comprehensive and extensive consultation process, particularly considering the remoteness of the area and limited access to newspapers and cellphone communication. The meetings were conducted in both Otjiherero and English, with the latter being translated.

This approach reflects Red Dune Consulting's commitment to inclusive participation by considering both regulatory requirements and local circumstances. While their face-to-face engagement and public participation efforts were valuable, balancing these initiatives with compliance to EMA requirements remains critical for ensuring transparency and accountability throughout the EIA process.

## **6.2 Phase 1. Community Consultation**

A series of public meetings were held with the communities of Omakange and surrounding areas of EPL 9547. These meetings aimed to inform and engage local communities regarding the proposed activities anticipated in their region. Furthermore, they served as a preparatory step for a larger public meeting, where Red Dune Consulting would present to a wider audience of stakeholders (see figure 10 below).

The first meeting was held on 10<sup>th</sup> December 2025 at, Otjtombo, Omakange, Okorosave and Okokopare villages (See attendance register on Appendix 2). The meetings were attended by villages leaders and several residents, providing a platform for discussions about the proposed activities. The meeting agreed that a wider community consultation ne held on 21<sup>st</sup> December 2025 at Omakange village. Red-Dune organised to hire transport for villages that were farm from Omakange.

## **6.3 Phase II. Wider Communtiy consultation**

A wider community consultation meeting was successfully convened on December 21, 2024 at Omakange village offering an effective forum for community engagement and discussion (see Figure 10).



**Figure 10.** Public Participation at Omakange (Source: Red-Dune Consulting CC)

### **6.3.1 Introduction**

As is customary in all public meetings, Red-Dune Consulting provided a clear and concise explanation of what exploration entails, detailing the specific activities involved, their potential impact and mitigation measure were presented

### **6.3.2 Environmental Impact Assessment (EIA) process**

Red-Dune Consulting provided an overview of the mineral exploration process and the environmental impact assessment (EIA) process, as mandated by the Environmental Management Act 2007 (Act No. 7 of 2007). The presentation also outlined the scope of the project. The community was informed of their crucial role in participating in the EIA process to ensure that critical environmental issues, including social values such as culturally significant sites like cemeteries, are thoroughly considered and addressed.

### **6.3.3 MEFT project Approval**

The community was informed that, upon approval by the Ministry of Environment, Forestry and Tourism (MEFT), the Environmental Management Plan (EMP) becomes a legally binding guide

for JG Investments Three Pty Ltd to conduct the exploration process. The company will be obligated to rehabilitate any physical exploration impacts in the area. Failure to comply with this requirement may result in liability under the Environmental Management Act (EMA). Nonetheless, the company will be required to consult further with the community for commencement with exploration activities.

#### 6.3.4 Comment / Questions and Response

The following comments emanated from the series of meeting held with the communities (see table 4). See appendix 1 for village specific comments and inputs.

**Table 4.** Comment, Concerns and Response Table

No.	Comment / Concern / Input	Section where comment is addressed	How it is addressed
1.	Our community if faced with high unemployment amongst the youth. What is your plan when it comes to employment opportunities?	EMP	General work that do not require expertise shall be reserved for local. Only specialised skills will be brought it from outside.
2.	How do you know where your EPL start and ends?	Scoping Report Map	The EPL has a map with coordinates. It is the coordinates that guides the boundary of the EPL.
3.	What if in your EPL I have found minerals that I want to mine or have keen interest in.	Scoping	Right now, it is Epangelo Mining that has right to explore over the EPL area. These rights are given by the Ministry of Mines and Energy through an application process. However, if you discover some minerals, you are urged to come to Epangelo Mining for a possible

No.	Comment / Concern / Input	Section where comment is addressed	How it is addressed
			agreement on mining. Epangelo Mining will be in position to assist with machinery. The important thing is that, Epangelo Mining will be willing to work together with the communities.
4.	Will you need local people to guide you when coming to undertake exploration	EMP	Yes, we will first consult the Chief and request him to provide us local people to guide us through the area
5.	What will you do with the Mineral that you are looking for?	Scoping	Copper is used electrical wires, while cobalt is used in car batteries. Epangelo Mining will not produce the final products but will export raw material to be turned into product.
6.	What will be the Benefit of community	Scoping / EMP	The community will mainly benefit from Employment opportunities that will be created as well as through the company's cooperate social responsibilities. Such as support of vulnerable groups and support of projects such as a garden. Furthermore, the community will benefit from the upgrading of infrastructures such as roads and increase in business opportunities in the area.
7.	What if in your EPL I have found minerals that I want to mine or have keen interest in.	Se point 3 above	Se point 3 above
8.	EPL boundaries	Se point 2 above	Se point 2 above

No.	Comment / Concern / Input	Section where comment is addressed	How it is addressed
9.	How will the Community conservancy benefit from the proposed activities	Scoping	The Conservancy will benefit through co-operate social responsibility of the company. Example through donation of vehicle.
10.	What happens if I found copper and you are also prospecting for Copper?	Scoping	Legally, you will not be allowed to prospect for the minerals that Epangelo Mining is prospecting. However, you will need to communicate your find to Epangelo Mining so that you can reach an agreement.
11.	The Traditional Authority acknowledge the effort for Epangelo Mining to consult all affected communities as it avoids conflicts.		Comment noted
12.	The two Traditional Authorities urged Epangelo Mining to be transparent in working with Communities for the benefit of all parties.		Comment noted
13.	The Traditional Authorities welcomes the development and hopes that an economical deposit may be found to provide much socio-economic benefit to region		Comment noted
14.	The community encouraged good transparent and for		Comment noted

No.	Comment / Concern / Input	Section where comment is addressed	How it is addressed
	Epangelo mining to stick to their promise of mutual benefits.		
15.	How does one measure the EPL and how do you know the names of our villages	General	The EPL map is drawn using an equipment called the Global Positioning System (GPS). All the shape files for Namibia villages are available that is why we know the village names.

# 7 ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT

## 7.1 Introduction

This chapter outlines the potential impacts (negative and positive) associated with mineral explorational activities. The identified impacts are categorized into three components: impacts on the biophysical environment; Impacts on the health and safety; and impacts on socio-economic. It further provide the criteria used for impact assessment. The developed Environmental Social Management Plan (ESMP) for the project is a living document. Hence, impacts that maybe be identified will require an amendment to the ESMP.

## 7.2 Impact Identification

Potential impacts were identified in accordance with the key Environmental Social Indicators (ESI)<sup>2</sup> and using literature review, site assessment and public participation process and experience for Red-Dune Consulting (*see Table 5*). Please note that the following identified impact apply to all phases of exploration.

**Table 5.** Impact identification

Component	Impact	Description	Impact Type
<b>EXPLORATION PHASES</b>			
<b>Bio-Physical Environment</b>	Loss of habitat and Biodiversity	The clearing of land for site preparation and the occupation of the site itself can result in the direct loss of habitat for local flora and fauna. This may lead to a reduction in biodiversity, as species that depend on the specific habitat may be forced to relocate or face potential extinction.	<b>Negative</b>

<sup>2</sup> Guidance Note UNDP Social and Environmental Standards Social and Environmental Assessment and Management July 2022

		Furthermore, the presence of construction activities and increased human activities can inadvertently create opportunities for poaching of high valuable species such as Rhinos.	
Dust emission		Land clearing, digging and excavation of trenches, movement of vehicles and heavy machinery on project sites may create fugitive dust. Uncoordinated / reckless driving on gravels roads could cause low visibility to other road users.  Dust from drilling can not only pose health risks to workers, leading to respiratory issues, but it can also affect nearby communities and vegetation, reducing air quality and the overall environment's health.	Negative
Land degradation / Soil erosion		Site preparation activities, such as excavation and the movement of heavy machinery, can result in soil disturbance and degradation. This includes compaction, erosion, and loss of soil fertility. The removal of vegetation during site clearing can also leave the soil vulnerable to erosion, reducing the land's ability to support future vegetation growth and impacting local ecosystems.	Negative
Noise and vibration		The operation of heavy machinery, drilling equipment and exploration aeroplanes, can produce significant noise, which may disturb both wildlife and nearby communities. Prolonged exposure to high noise levels can have detrimental effects on the health of workers and the surrounding population, including hearing loss and increased stress levels. Furthermore, noise pollution can disrupt animal behaviours, particularly in sensitive species, leading to displacement or changes in habitat use.	Negative

	Traffic emission	The operation of vehicles and machinery, as well as drilling activities, can contribute to air pollution through the emission of exhaust gases of SO <sub>2</sub> , CO <sub>2</sub> , CO, NO <sub>x</sub> and particulates.	Negative
	Waste generation	Construction produce significant amount of solid waste including, plastic, used containers and parts of worn-out equipment.	Negative
	Household waste	The generation of domestic solid waste from workers and operations on-site can lead to pollution if not properly managed. Improper disposal of waste, such as plastics, food scraps, and other materials, can contaminate the local environment and pose a risk to both wildlife and human health.	Negative
	Soil and water pollution	The use of heavy vehicles and drilling equipment involves the use of oils, grease, and lubricants that, if not properly managed, can leak into the ground and contaminate groundwater sources.	Negative
	Aquifer Disturbance	Kunene Region is relatively dry and dependant on underground water. Hence careful drilling will be required to ensure the aquifer are not disturbed.	
<b>Health and Safety</b>	Safety risk	Accidents from collision of construction vehicles, in appropriated use of heavy machineries could result into occupational injuries.	Negative
	Health risks	Risks of hearing impairment from excessive noise, respiratory risks from dust inhalation. New social relationships are often a recipe for spreading of communicable diseases and sexually transmitted diseases such as HIV/AIDS. Furthermore, alcohol and drug use could be prevalent during construction and workers are susceptible to vector diseases such as malaria.	Negative

		Furthermore, the bush working environment makes workers to be prone to venomous insect and snake bites which may lead to fatalities.	
	Hazardous Impact	Heavy vehicles consume significant amounts of oil, and the handling of hydrocarbons will occur on-site. The area where grease, oils, lubricants, and fuel are managed must be properly designed to prevent soil contamination, which could potentially affect both the soil and underground water.	Negative
<b>Social Environment</b>	Visual impacts	Poor housing keeping on site, disturbance of surrounding view by the height of the hospital, uncoordinated painting.	Negative
	Employment creation	Namibia is facing high unemployment, particularly among the youth. Every employment, mainly short-term during exploration will contribute to socio-economic upliftment of the community.	Positive
	Increase in local economy	Exploration provides an opportunity for local people, especially women to sell their produce (food) to exploration workers.	Positive
	Heritage and Archaeological Resource	Digging and excavation have the potential to uncover archaeological materials. Therefore, raising awareness about the possibility of chance finds is necessary to prevent potential damage.	Negative

### 7.3 Criterial for impact assessment

The criteria used to assess the impacts and the method for determining their significance are outlined in Table 6 below. This process aligns with international best practices and adheres to the Environmental Impact Assessment (EIA) Regulations under the Environmental Management Act of 2007 (Government Gazette No. 4878).

The core principle of the impact assessment follows a mitigation hierarchy, which aims to first avoid negative impacts through preventative measures, then minimize those impacts to acceptable levels, and, if neither of these options is feasible, to remedy or compensate for the impact.

**Table 6.** Criteria for Impact Assessment

<b>Risk Event</b>	<b>Rating</b>		<b>Description of the risk that may lead to an Impact</b>
<b>Probability</b>	The probability that an impact may occur under the following analysis		
	1		Improbable (Low likelihood)
	2		Low probability
	3		Probable (Likely to occur)
	4		Highly Probable (Most likely)
	5		Definite (Impact will occur irrespective of the applied mitigation measure)
<b>Confidence level</b>	The confidence level of occurrence in the prediction, based on available knowledge		
	L		Low = limited information
	M		Medium = moderate information
	H		High = sufficient information
<b>Significance</b>	<b>Severity</b>	<b>Rating</b>	None (Based on the available information, the potential impact is found to not have a significant impact)
	Negligible	1	
	Low	2	Low (The presence of the impact's magnitude is expected to be temporal or localized, that may not require alteration to the operation of the project)
	Medium	3	Medium (This impact is probable, limited in scale, expected to be of short term / temporary, can be avoided, managed and or mitigated with simple mitigation measures.)

Risk Event	Rating		Description of the risk that may lead to an Impact
	High	4	High (The impact is definite, mostly predictable, temporal, can be local, regional or national and in long term and reversible. These are impacts that may affect human rights, lands, natural resources, traditional livelihood, critical ecosystem services. The severity of these impact are more limited than sever impacts.)
	Severe	5	<b>Severe</b> (The impact is definite, it has significant adverse impacts on human population and or / the environment which are of large-scale magnitude and or spatial extend such as large geographic area, large number of people or transboundary nature. The impact duration is long term, permanent and often irreversible. Impacts include displacement of human, destruction of critical ecological systems and or cultural and heritage sites etc. The impact could have a no-go implication unless the project is re-designed or proper mitigation can practically be applied.)
<b>Duration</b>	Time duration of the impacts		
	1	Immediate	
	2	Short-term (0-5 years)	
	3	Medium-term (5-15 years)	
	4	Long-term (more than 15 years)	
	5	Permanent	
<b>Scale</b>	The geographical scale of the impact		
	1	Site specific	
	2	Local	
	3	Regional	
	4	National	

Risk Event	Rating	Description of the risk that may lead to an Impact
	5	International

## 7.4 Risk Assessment

The significance of the impact was determined using a risk matrix, as shown in Table 7. A five-by-five matrix was applied, where the severity of the impact was categorized and assigned scores ranging from 1 to 5: Improbable (1), Low (2), Medium (3), High (4), and Severe (5). Similarly, the likelihood of the impact occurring was assigned scores as follows: Improbable (1), Low Likely (2), Probable (3), High Probability (4), and Definite (5). The overall impact rating was then calculated by multiplying the scores for impact severity and likelihood.

**Table 7.** Risk assessment matrix<sup>3</sup>

<b>LIKELIHOOD</b>	<b>5</b> Definite	5 Low	10 Medium	15 High	20 Severe	25 Severe
	<b>4</b> High Probability	4 Low	8 Medium	12 High	16 High	20 Severe
	<b>3</b> Probable	3 Low	6 Medium	9 Medium	12 High	15 High
	<b>2</b> Low	2 Low	4 Low	6 Medium	8 Medium	10 Medium
	<b>1</b> Improbable	1 Negligible	2 Low	3 Low	4 Low	5 Low
	1 Negligible	2 Minor	3 Medium	4 High	5 Severe	
	<b>IMPACT SEVERITY / CONSEQUENCE</b>					
	Negligible	Low	Medium	High	Severe	

## 7.5 Mitigation Hierarchy

Best practises call for mitigation measures to follow a mitigation hierarchy that favours (i) avoidance of potential adverse impacts, and where avoidance is not possible, then (ii) minimization and reduction; where adverse residual impacts remain, then (iii) mitigation measures need to be applied, and, as a last resort, (iv) measures to offset impacts that cannot be appropriately mitigated (*see Figure 11 below*).

<sup>3</sup> Risk Management Guideline for the BC Public Sector (Province of British Columbia Risk Management Branch and Government Security Office 2012)

According to EIS regulations, the objectives mitigations are to;

- Find environmental ways of doing thing
- Promote environmental benefits of the project
- Avoid, Minimise or remedy negative impacts and
- Ensure that residual negative impacts are within acceptable levels,

Furthermore, during consideration of the mitigation measure, the following mitigation hierarchy was followed.

- Avoid the negative impact through preventative means,
- Minimise the negative impacts to acceptable low levels and,
- If the above two are not possible, remedy or compensate the impact.

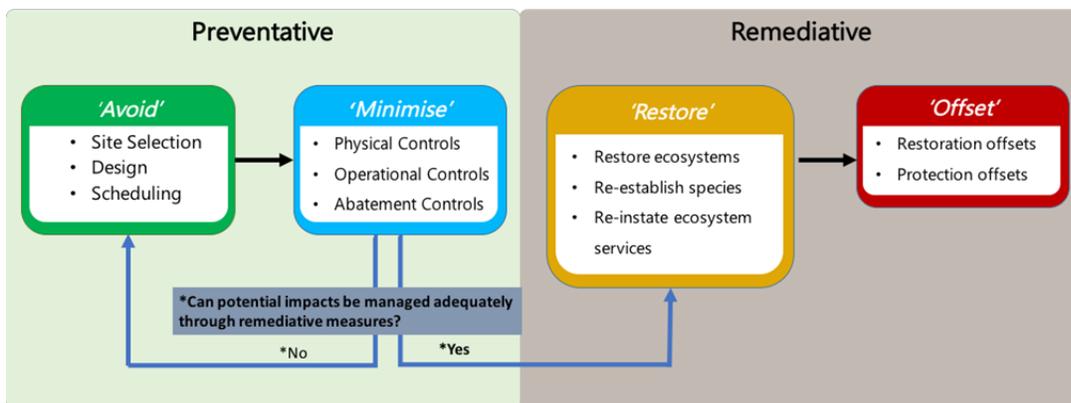


Figure 11. Mitigation Hierarchy Source <sup>4</sup>

<sup>4</sup> Cross-Sector Biodiversity Initiative (CSBI). (2015). A Cross-sector Guide for Implementing the Mitigation Hierarchy (p.9)

## **7.6 Risks Assessment**

### ***7.6.1 Planning Phase***

To foster community acceptance and mitigate potential conflicts, community consultations were held, engaging local communities and traditional authorities. These inclusive discussions resulted in strong support for the project, creating a collaborative environment that promoted mutual understanding and stakeholder engagement.

### ***7.6.2 Exploration Phase***

Drilling is the primary and most significant environmental threat of mineral exploration phase. This stage involves the mobilization and transportation of drilling equipment to the drilling site. Trenching and soil sampling also do not cause significant harm to the environment. If necessary, a campsite may be set up at the drilling site, complete with supporting infrastructure such as ablution facilities, and provisions for managing household and other solid waste.

During this phase, various occupational health and safety risks arise, including injuries from operating machinery, bites from insects (such as mosquitoes), snake bites, and the potential for oil contamination. The tables below outlines the assessment of potential impacts and the proposed mitigation measures for the drilling phase.

### 7.6.3 Social Environment: Impact Assessment

**Table 8.** Social Environment: Impact Assessment

Project-Environment Interaction	Description	Mitigation Measures	Impact type	Likelihood occurrence	Severity	Impact Rating	Geographical Extend	Duration	Reversibility (R)	Significance	Confidence Level
<b>Site Access</b>	Access to site must be communicated to the Village chiefs to avoid conflict	<ol style="list-style-type: none"> <li>1. Inform Chiefs well in advance before your planned activities</li> <li>2. Do not enter the area without owners' consent</li> </ol>	-ve	1	1	1	Regional	Life of project	n/a	Low	High
<b>Employment / Socio-Economic advancement of local</b>	Possible exclusion of local communities from job opportunities and unfair compensation of workers. It is not anticipated that a significant number of jobs will be created	<ol style="list-style-type: none"> <li>1. Ensure that all general work is reserved for local people, unless specialized skills are required.</li> <li>2. Follow fair compensation practices and</li> </ol>	+ve	2	2	4	Regional	Life of project	n/a	Low	High

Project-Environment Interaction	Description	Mitigation Measures	Impact type	Likelihood occurrence	Severity	Impact Rating	Geographical Extend	Duration	Reversibility (R)	Significance	Confidence Level
	during the drilling phase.	<p>adhere to Namibian Labour Laws.</p> <p>3. Facilitate skill transfer to local workers.</p> <p>4. Use local suppliers for goods and services where possible.</p>									

Project-Environment Interaction	Description	Mitigation Measures	Impact type	Likelihood occurrence	Severity	Impact Rating	Geographical Extend	Duration	Reversibility (R)	Significance	Confidence Level
<b>Health and Safety for Employees and the General Public</b>	Job opportunities can lead to new social relationships that may contribute to the spread of diseases, particularly pandemics such as HIV/AIDS, and substance abuse. Hiring unlicensed employees to operate vehicles and machinery poses safety risks to themselves, co-workers, and the public. Additionally, employees are exposed to dust, noise pollution, and other occupational health and safety hazards	<ol style="list-style-type: none"> <li>1. Raise awareness among employees about the dangers of HIV/AIDS, alcohol, and drug abuse.</li> <li>2. Provide condoms on-site.</li> <li>3. Develop a comprehensive safety plan.</li> <li>4. Ensure all employees undergo an induction course on health and safety.</li> <li>5. All drivers must possess</li> </ol>	-ve	2	2	4	Site Specific and Local	Project Duration	n/a	Low	High

Project- Environment Interaction	Description	Mitigation Measures	Impact type	Likelihood occurrence	Severity	Impact Rating	Geographical Extend	Duration	Reversibility (R)	Significance	Confidence Level
		<p>appropriate driver's licenses.</p> <p>6. Install adequate safety signage at designated areas.</p> <p>7. Provide personal protective equipment (PPE) such as overalls, safety boots, safety eyewear, gloves, and hard hats.</p> <p>8. Adhere to the Labour Act, ensuring non-toxic dust exposure levels do not exceed</p>									

Project-Environment Interaction	Description	Mitigation Measures	Impact type	Likelihood occurrence	Severity	Impact Rating	Geographical Extend	Duration	Reversibility (R)	Significance	Confidence Level
		<p>5mg/m<sup>3</sup> for respiratory dust and 15mg/m<sup>3</sup> for total dust.</p> <p>9. Ensure noise levels do not exceed 85dB(A) over an 8-hour period.</p> <p>10. Comply with the Occupational Health and Safety Act of Namibia and other international labor standards (e.g., ILO).</p> <p>11. Ensure first aid kits are available</p>									

Project-Environment Interaction	Description	Mitigation Measures	Impact type	Likelihood occurrence	Severity	Impact Rating	Geographical Extend	Duration	Reversibility (R)	Significance	Confidence Level
		<p>on-site, including supplies for insect and snake bites.</p> <p>12. Train supervisors in occupational health and first aid.</p> <p>13. Supply clean drinking water, such as portable water tanks.</p> <p>14. Use gendered mobile toilets.</p> <p>15. Provide insect repellent, mosquito nets, and, if necessary, immunization to prevent diseases</p>									

<b>Project-Environment Interaction</b>	<b>Description</b>	<b>Mitigation Measures</b>	<b>Impact type</b>	<b>Likelihood occurrence</b>	<b>Severity</b>	<b>Impact Rating</b>	<b>Geographical Extend</b>	<b>Duration</b>	<b>Reversibility (R)</b>	<b>Significance</b>	<b>Confidence Level</b>
		like malaria.									
<b>Heritage and Archaeology</b>	Potential unearthing of archaeological material or damaging heritage resources	1. Employee must be trained on the possible find of heritage and	-ve	2	2	4	Site Specific	Construction / Drilling	R	Low	High

Project-Environment Interaction	Description	Mitigation Measures	Impact type	Likelihood occurrence	Severity	Impact Rating	Geographical Extend	Duration	Reversibility (R)	Significance	Confidence Level
		<p>archaeological material in the area;</p> <p>2. Implement a chance find and steps to be taken for heritage and archaeological material finding (Heritage (rock painting and drawings), human remains or artefacts) are unearthed</p> <p>3. Stopping the activity immediately</p> <p>i. Informing the</p>									

Project- Environment Interaction	Description	Mitigation Measures	Impact type	Likelihood occurrence	Severity	Impact Rating	Geographical Extend	Duration	Reversibility (R)	Significance	Confidence Level
		<p>operational manager or supervisor</p> <p>ii. Cordoned off of the area with a danger tape and manager to take appropriated pictures.</p> <p>iii. Manager/supervisor must report the finding to the following competent authorities, National Heritage Council of Namibia (061 244</p>									

Project-Environment Interaction	Description	Mitigation Measures	Impact type	Likelihood occurrence	Severity	Impact Rating	Geographical Extend	Duration	Reversibility (R)	Significance	Confidence Level
		375) National Museum (+264 61 276800) or the National Forensic Laboratory (+264 61 240461).									

#### 7.6.4 Bio-Physical Environment: Impacts Assessment

**Table 9.** Bio-Physical Environment: Impacts Assessment

Project-Environment Interaction	Description	Mitigation Measures	Impact type	Likelihood occurrence	Severity	Impact Rating	Geographical Extend	Duration	Reversibility (R)	Significance	Confidence Level
<b>Biodiversity: Flora</b>	The target areas for drilling and trenching may necessitate the clearing of vegetation. However, unless unavoidable, mature and protected trees should not be cut down.	<ol style="list-style-type: none"> <li>1. Avoid cutting down mature and protected plant species.</li> <li>2. Ensure that access roads are rehabilitated after use to enhance revegetation</li> </ol>	-ve	2	2	4	Site Specific	Construction / Drilling	R	Low	High
<b>Biodiversity: Fauna</b>	The area is home to both domestic and wild animals that are accustomed to human activities, meaning that human presence is unlikely to have a severe impact on them.	<ol style="list-style-type: none"> <li>1. Do not kill animal, unless such animals pose eminent danger to humans</li> <li>2. There must be ZERO tolerance to poaching to ensure this, no weapon and traps are allowed on site;</li> </ol>	-ve	2	2	4	Regional	Construction / Drilling	R	Low	High

<b>Project-Environment Interaction</b>	<b>Description</b>	<b>Mitigation Measures</b>	<b>Impact type</b>	<b>Likelihood occurrence</b>	<b>Severity</b>	<b>Impact Rating</b>	<b>Geographical Extend</b>	<b>Duration</b>	<b>Reversibility (R)</b>	<b>Significance</b>	<b>Confidence Level</b>
	There is however potential for the destruction of animal habitats such as bird nests, poaching, stealing of livestock.										
<b>Surface and Ground Water Pollution</b>	Heavy vehicle and machinery may pollute water sources from leakages of oils, hydraulic fluids, lubricants and greases. These pollutants may reach underground water through seepage. Further surface water may be polluted from surface run off soils that is polluted.	<ol style="list-style-type: none"> <li>1. Fuelling of heavy vehicle on site must be well coordinated at designated places,</li> <li>2. Stationary vehicles must be provided with drip tray to capture oil, lubricants and hydraulic fluids leakages</li> <li>3. All vehicle and machinery must be well service to avoid leakages</li> <li>4. Provide and train on oil spill emergency response</li> </ol>	-ve	2	2	4	Site Specific	Construction / Drilling	R	Low	High

<b>Project-Environment Interaction</b>	<b>Description</b>	<b>Mitigation Measures</b>	<b>Impact type</b>	<b>Likelihood occurrence</b>	<b>Severity</b>	<b>Impact Rating</b>	<b>Geographical Extend</b>	<b>Duration</b>	<b>Reversibility (R)</b>	<b>Significance</b>	<b>Confidence Level</b>
		5. Servicing of vehicles and machinery must take place at designate places									
<b>Ground Water Pollution</b>	Drilling has the potential to disturb underground water resources	6. If an aquifer is encountered during drilling, ensure that the drilling hole is capped immediately after sampling.	-ve	2	2	4	Site Specific	Life of project	R	Low	High
<b>Waste Generation</b>	General household pollution and littering such as used oil cans drums, metals, and household solid and liquid waste	<ol style="list-style-type: none"> <li>1. Provide skip bins to collect waste and be disposed of at an approved disposal site</li> <li>2. Provide labelled household waste drums for household solid waste.</li> <li>3. Do not burry waste on site</li> </ol>	-ve	2	2	4	Site Specific	Life of project	R	Low	High

Project- Environment Interaction	Description	Mitigation Measures	Impact type	Likelihood occurrence	Severity	Impact Rating	Geographical Extend	Duration	Reversibility (R)	Significance	Confidence Level
		<p>4. Excavate a small biodegradable waste site that would be dump filled at the end of the project, alternatively, provide mobile toilets that will be disposed at an approved site and ensure separate ablution facilities for men and women.</p> <p>5. Used oil, grease and lubricants cans must be collected in appropriate drums and disposed of at an approved site</p> <p>6. Maintain good housekeeping on site.</p> <p>7. Do not burry waste on</p>									

<b>Project-Environment Interaction</b>	<b>Description</b>	<b>Mitigation Measures</b>	<b>Impact type</b>	<b>Likelihood occurrence</b>	<b>Severity</b>	<b>Impact Rating</b>	<b>Geographical Extend</b>	<b>Duration</b>	<b>Reversibility (R)</b>	<b>Significance</b>	<b>Confidence Level</b>
		site									
<b>Dust Pollution</b>	Land clearing, digging, excavation of trenches, drilling, movement of vehicles and heavy machinery in site, transportation of material to site, will create fugitive dust which could be a nuisance to the surrounding.	<ol style="list-style-type: none"> <li>1. Movement of heavy vehicles must strictly be restricted on site.</li> <li>2. Adhere to the minimum speed limit of 30 or 40km/hour when on farm roads.</li> <li>3. On site where soil is loosened by vehicle movement, apply dust a suppression method such as water spraying.</li> <li>4. During drilling, use water to suppress the dust</li> </ol>	-ve	2	2	4	Local and Site Specific	Immediate	R	Low	High
<b>Land degradation and pollution</b>	Uncoordinated movement of heavy vehicles and uncoordinated land clearing	<ol style="list-style-type: none"> <li>1. Movement of heavy vehicles must be coordinated and</li> </ol>	-ve	2	2	4	Site Specific	Life of project	R	Low	High

Project- Environment Interaction	Description	Mitigation Measures	Impact type	Likelihood occurrence	Severity	Impact Rating	Geographical Extend	Duration	Reversibility (R)	Significance	Confidence Level
	<p>could lead to soil erosion. Possible spill and leakages of fuel and lubricants from vehicle and machinery could pollute the soil and eventually the ground water resource.</p>	<p>restricted to be on access roads</p> <ol style="list-style-type: none"> <li>2. Normally, public gravel roads are meant for light vehicles drilling vehicles have the potential to damage the access roads. Hence proper road maintenance must be implemented to ensure that the roads are left on good state</li> <li>3. Fuelling of heavy vehicles on site must be well coordinated at designated places</li> <li>4. Servicing of vehicles and machinery must take place at designated sites</li> </ol>									

Project- Environment Interaction	Description	Mitigation Measures	Impact type	Likelihood occurrence	Severity	Impact Rating	Geographical Extend	Duration	Reversibility (R)	Significance	Confidence Level
		5. Stationary vehicles must be provided with drip tray to capture oil, lubricants and hydraulic fluid leakages  6. All vehicles and machinery must be well serviced to avoid leakages  7. Provide and train on oil spill emergency response.									

## **8 DECOMMISSIONING AND REHABILITATION**

The exploration activities do not necessarily culminate in a decommissioning phase but rather transition into a rehabilitation phase. This rehabilitation process is designed to restore the environment by addressing the physical footprints created during exploration, including access roads, trenches, and drilled holes. Additionally, waste dumps containing biodegradable materials must be backfilled to prevent environmental degradation. Any pit latrines constructed during the exploration period should also be properly closed and rehabilitated to ensure that they do not pose health or environmental risks.

To further enhance this process, it is essential to implement strategies for site restoration. This might involve re-vegetation efforts to reintroduce native plant species and stabilize soil structures. Moreover, all infrastructure built for exploration purposes should be dismantled or repurposed where feasible, ensuring that the site returns as closely as possible to its original state.

## **9 CONCLUSIONS AND RECOMMENDATIONS**

### **1.1. Conclusions**

The exploration phase of a project typically does not result in significant environmental damage. Activities such as constructing access roads and drilling exploration holes generally have a minimal impact on the surrounding environment and are not expected to cause irreversible harm. After exploration, trenches, drilled holes, and access roads are rehabilitated, with natural re-vegetation often occurring during the rainy season. These measures help restore the land to its original state, ensuring minimal long-term effects on the ecosystem.

Given these practices, the proposed exploration activities are expected to be conducted in an environmentally sustainable manner. However, if the exploration leads to the establishment of a mine, it will be essential to conduct a comprehensive Environmental Impact Assessment (EIA). This EIA will evaluate potential long-term impacts associated with mining operations and ensure

that appropriate mitigation measures are implemented to safeguard the environment throughout the mine's lifecycle.

## **1.2. Recommendations**

1. **Issuance of the Environmental Clearance Certificate (ECC):** It is recommended that the approving authority proceed with the issuance of the Environmental Clearance Certificate (ECC) for EPL 9547, subject to the implementation of the proposed mitigation measures to ensure environmental protection.
2. The **Proponent** uphold the highest standards of environmental and social protection

# 10 APPENDIXES

## 10.1 Appendix 1. Meeting Minutes

### OMAKANGE COMMUNITY

Meeting minute  
21 December 2024 @ 12h00

#### Opening

The meeting was opened by Omakange Number2 headman Mr. David Tjimuhiva, he explained the importance of community upliftment and the importance of agriculture to the community. Welcoming remarks by Chief Mr. David Tjimuhiva Followed by the staff introduction.

#### Significant personnel present

1. Chief David Tjimuhiva
2. Mr. Jouas Muhimba (head man) Omakange No:1
3. Mr. Vomzyl Tjjjahupa
4. Mr. Gustaf Tjimuhi (head man) Omakange No:2
5. Mr. Mitiri Tjiuma (Principal)
6. Mr. Tomas Nekongo (Epangelo Mining)
7. Ms. Josefina Uupindi (Red-Dunes Consulting cc)
8. Ms. Ndapewa Mundjulu (Red-Dunes consulting cc)
9. Mr. Junia Mumbuu (Traditional authority councilor)
10. Mr. Fares Tjambiru (conservancy chairperson)

#### Overview of the meeting

Josofina Uupindi presented the purpose of the meeting, she outlined the impacts of the project negative and positive impacts. She further highlighted on the importance of the consent letter and who should sign it and why. Distribution of consent letter and attendance Register, taking of pictures by Ndapewa Mundjulu.

Tomas Nekongo, gave the overview of Epangelo mining and why they choose omakange community to explore on finding copper, He explained the sampling process, how they do it, as geologists.

#### Questions from the community

1. During exploration, are you going to need Laborers, so we provide as a community?
2. How are you going to relocate people, say you find copper in a homestead?

#### Notes

Jason Angola Emphasized on the importance of transparency, he said they will be happy if they be informed on all the work being done in their land and the way forward. The community suggested that, Epangelo should try by all means for all the processing of copper to be done at wherever the mine will be located (in the community) to create more jobs for the community and also for experience. They suggested that, in future, the meeting should be done and be given at least a week or two to sign the consent because not all the community members make it to meetings. To avoid conflicts within the community members, the chief asked for two weeks to sit with other members of the community and other chiefs and head men before they sign the consent. The community have a better understanding of the purpose of the meeting, the meeting went well.

#### Closing remarks

The meeting adjourned at 14h00 with the prayer and closing remarks by Chief Mr. David Tjimuhiva.

10.2 Appendix 2. Attendance Registers



STAKEHOLDER CONSULTATION FOR ENVIRONMENTAL SCOPING STUDY AND DEVELOPMENT OF ENVIRONMENTAL MANAGEMENT PLAN(S) FOR EXPLORATION ACTIVITIES IN COMMUNAL CONSERVANCIES OF KUNENE REGION."

Place: Kunene Region, Omwe-village Orakanga no.1

Date: 10 December 2024

Time: 14:00 - 17:00

No	Name	Gender	Organization	Position	Cell	Email	Signature
1	David Timuhiva	M		Chief	0817254439		D. David
2	G. Timuhiva	M		Foremen	0813980095		G. Timuhiva
3	Asser Lucas	M		Foremen	0818966060		LUKAS
4	H. Katapa	M			0813916476		Katapa
5	Ben Kegeri	M	Nik R/H	Secretary	0812632528	ben.kepi@gmail.com	B. Kegeri
6	Yon Zyl Gylabura	M	Orakanga Erapelo Mining	Chief	081716835		Y. Gylabura
7	Tomas Alekanga	M		Geologist	0814401185		T. Alekanga
8							
9							



STAKEHOLDER CONSULTATION FOR ENVIRONMENTAL SCOPING STUDY AND DEVELOPMENT OF ENVIRONMENTAL MANAGEMENT PLAN(S) FOR EXPLORATION ACTIVITIES IN COMMUNAL CONSERVANCIES OF KUNENE REGION.\*

Place: Kunene Region , Ojijombo village

Date: 10 December 2024

Time: 14:00 - 17:00

No	Name	Gender	Organization	Position	Cell	Email	Signature
1	Nyorejo Mhambwa	M		Chair person	0814774233		
2	Kapitako Mhambwa	M		Councilor For chief	081465227		
3	Timbonye P. Muzangwa	M		For chief	0817498448	X081	
4	Kabupire Tumbwa	M					
5	Mureqweqwe Tjirika	M		Community police	0814325507 081575752	NIPetrus Tjirika gandem Tjirika	
6	peronyo Kuvoro	M					
7	netapereje Tjirika	M			081409999		
8	Kawaja Tjirika	M					
9	Zelutino Tjirika	M			0812113692		

\*



STAKEHOLDER CONSULTATION FOR ENVIRONMENTAL SCOPING STUDY AND DEVELOPMENT OF ENVIRONMENTAL MANAGEMENT PLAN(S) FOR EXPLORATION ACTIVITIES IN COMMUNAL CONSERVANCIES OF KUNENE REGION. \*

Place: Kunene Region, Ojitorombe-village

Date: 7 December 2024

No	Name	Gender	Organization	Position	Cell:	Email	Signature
1	Muharukwa Veiwete	M		Chief			
2	Tjijahuro <del>Wetema</del> von Zyl	M		Oralo	081774683		
3	Tjijehuro Tjivend	M		Omukomise			
4	Mukomulwa Vohyevike	M		elawubo rethi			
5	Tjaniara Sletoms	M		elawubo rethi	0817714172		
6	Hepute Zozukalo	M					
7	Kapii Bena	M	Nika R Hunsicker	rethi	0612263525		
8	Thomas Nekango	M	Epangeto Mining	Oralo	0814401185		



STAKEHOLDER CONSULTATION FOR ENVIRONMENTAL SCOPING STUDY AND DEVELOPMENT OF ENVIRONMENTAL MANAGEMENT PLAN(S) FOR EXPLORATION ACTIVITIES IN COMMUNAL CONSERVANCIES OF KUNENE REGION.

Place: Kunene Region, Okorosave village Orolokopere

Date: 10 December 2024

Time: 14:00 - 17:00

No	Name	Gender	Organization	Position	Cell	Email	Signature
1	Faure J. Timbiki	M		Conservancy Chairperson	0817602646		
2	Kammasenzi Mupira	M		Conservancy SCK	0817609941		
3	Ukwenika Mupira	M		T. A. Mupira	0813865347		
4	Yanongwe Mupira	M		T. M. Mupira	0817361104		
5	Kauka Ngobikale	M		T. A. Mumbuyi	0813449041		
6	Detuqmwye Isakura	F		Woman	08134472150		
7	Om 45 Nekompo	M	Epangeto Mining	Geobotanist	0811101145		
8							
9							

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