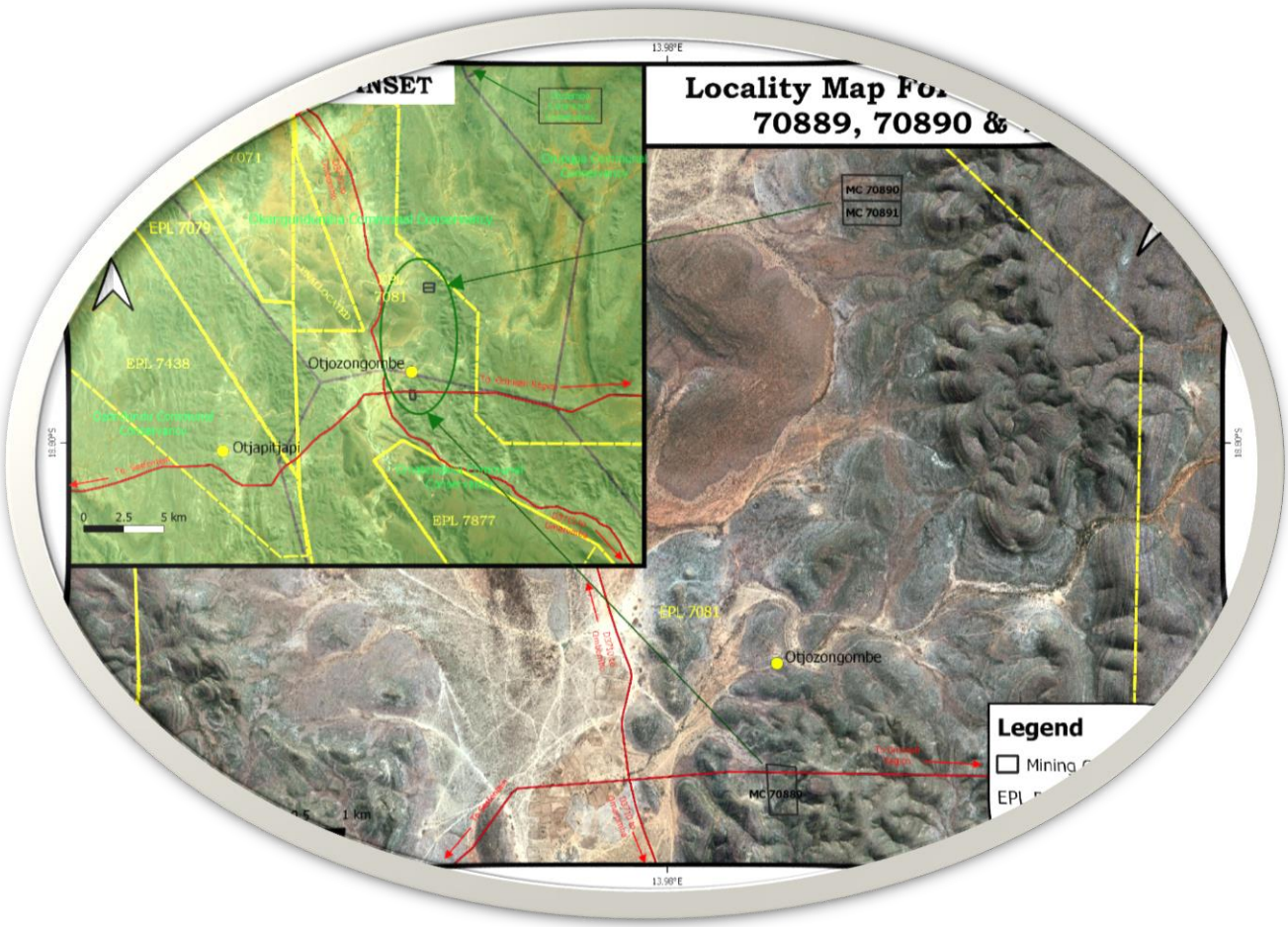
ENVIRONMENTAL IMPACT ASSESSMENT

FOR PROPOSED EXPLORATION ACTIVITIES ON MINING CLAIMS 70889, 70890 & 70891 NEAR OTJAPITJAPI AREA, OPUWO RURAL CONSTITUENCY KUNENE REGION



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DOCUMENT AUTHENTICATION

This Environmental Impact Assessment project report has been prepared by Eco-Wise Environmental Consulting cc in accordance with the Environmental Management Act No 7 of 2007 (EMA) and its regulations of 2012, which requires that every mining related project must have an EIA report prepared for submission to the Ministry of Environment and Tourism-Division of Environmental Affairs. We the undersigned, certify that the particulars in this report are correct and righteous to the best of our knowledge.

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ENVIRONMENTAL AUTHORIZATION INFORMATION

Please note that the environmental clearance certificate should be issued out to the client. All comments and enquiries during the evaluation of this document must be addressed to the Environmental Consultants. Please forward the clearance certificate to the consultant.

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ACRONYM

ACRONYM	MEANING
BID	Background Information Document
EIA	Environmental Impact Assessment
EAP	Environmental Assessment Practitioner
EMP	Environmental Management Plan
EPL	Exclusive Prospecting License
I&APs	Interested and Affected Parties
LTD	Limited Company
MC	Mining Claim
PPP	Public Participation Process
PTY	Proprietary
ToR	Terms of Reference

EXECUTIVE SUMMARY

Proponent

The Proponent being Kaoko Mining Namibia (Pty) Ltd, proposes to conduct exploration activities on mining claims 70889, 70890 & 70891 near Otjapitjapi Settlement, Opuwo Rural Constituency in Kunene Region. Kaoko Mining Namibia (Pty) Ltd is a registered Namibian company. The shareholders of Kaoko Mining Namibia (Pty) Ltd are thirty-three Namibians with other various EPLs and mining claims around Opuwo and Sesfontein area. The shareholders managed to group their licenses together with the objective to study all historical geological data of their EPLs in order to search for new mineral showings and to determine potential areas for exploration. The study area, might have different minerals but the Proponent is mainly aiming to discover, copper of medium to large minable deposits. Given that a discovery of copper deposit is found, it may form an alternative source of concentrate for the Tsumeb smelter.

The Environmental Impact Assessment (EIA) for the proposed exploration was conducted by Eco-Wise Environmental Consulting cc. The study was carried out according to the requirements of the Environmental Management Act (Act No.7 of 2007) and its regulations of 2012.

The Environmental Consultants undertook this Environmental Impact Assessment (EIA) study, to predict the impacts of the proposed activity on the environment and to propose mitigation measures. The EIA covered the following aspects; project description, baseline studies, public participation process, environmental, socio-economic impact assessment and environmental management. All identified impacts were addressed and mitigation measures were brought forward.

The following methodologies were used during the Environmental Impact Assessment study; desktop studies, observations through site visit, public meetings, advertisement, secondary data collection and distribution of questionnaires and letters. Public meetings were open to all stakeholders.

Positive impact associated with the project is that Kaoko Mining Namibia (PTY) LTD is empowering the local shareholders who are in turn also supporting many households and communities. The main findings obtained from the assessment showed that the project will have more positive impacts in future thus during mining phase. If this initiative grows and ultimately develop into an active mine, this will support thousands of Namibians. Positive impacts which will likely happen in future include transfer of skills, employment creation, community development and boosting Namibia’s copper supplies and mineral exports.

However, the project might also have negative impacts on geology, soil, fauna and employees working around the sites.

Generally, the main objective of the study was, to identify environmental and socio-economic impacts associated with exploration activities and to propose mitigation measures.

Specific objectives included:

- To determine the potential environmental impacts derived from exploration activities.
- To establish baseline environmental conditions so that relevant impacts could be projected and sufficient mitigation measures could be designed
- To consult with key, interested and affected stakeholders so that their concerns are considered in the formulation of the EIA report and implementation of the Environmental Management Plan
- To propose alternative measures where it is noticed that adverse effects may occur and to set up an Environmental Management Plan that will govern all activities of the project for the better protection of the environment.

The draft scoping report was made available to the public for commenting. The draft report included all comments raised during the public meetings. All impacts identified through the site visit, professional expertise and comments from the public were incorporated in the report. An Impact Assessment matrix was used to establish the environmental risk of the overall project. In a bid to ensure that the proposed mitigation measures will be implemented, an Environmental Management Plan was developed to guide all activities of the project during all its phases.

The final report was sent to the Proponent, Kunene Regional Council, Ministry of Mines and Energy and Ministry of Environment Forestry and Tourism: DEA for review.

CHAPTER ONE: BACKGROUND

1.1 INTRODUCTION

Kaoko Mining Namibia (Pty) Ltd being the Proponent proposes to conduct exploration activities near Otjapitjapi Settlement, Opuwo Rural Constituency in Kunene Region. Exploration activities will be done on mining claims 70889, 70890 & 70891 and these mining claims (MCs) belong to local individuals who came together with other locals to form Kaoko Mining Namibia (Pty) Ltd. MC 70889, 70890 & 70891 were checked on the Ministry of Mines and Energy portal and were found not to be falling under environmental sensitive areas or withdrawn areas.

Eco-Wise Environmental Consulting being an independent consultant was therefore hired to conduct an EIA for the proposed exploration activity. Eco-Wise Environmental Consulting cc conducted a site visit on 03/11/2019. The consultant was mainly guided by the Environmental Management Act (No. 7 of 2007) and Environmental Impact Assessment Regulations (2012) during the process of the EIA. The Environmental Impact Assessment Regulations (2012) states all the activities, which require an Environmental Impact Assessment and among the listed activities is annexure 3, mining and quarrying activities where this project is classified under. Annexure 3.2 states that other forms of mining or extraction of any natural resources whether regulated by law or not and 3.3 Resource extraction, manipulation, conservation and related activities require and EIA. The competent authority will be, Ministry of Environment Forestry and Tourism.

1.2 NEED FOR THE PROJECT

1.2.1 Promote local empowerment

Kaoko Mining Namibia (Pty) Ltd comprises of thirty-three local shareholders, hence if the project is successful it will result in empowering these local shareholders who are also in turn supporting many households. The company has created a collective agreement amongst all stakeholders to govern this opportunity with the ultimate goal to create value and empower Namibians.

1.2.2 Economic development

The motivation for Namibia to support the project is economic and strategic in nature. Given that, medium to large minable copper deposits are explored, this will boost Namibia's copper supplies and mineral exports thereby adding Namibia's struggling economy. In addition, the Proponent will generate revenue for the government through taxes. Revenue generated through taxes will be used for economic development.

1.2.3 Employment creation

Given that this initiative grows and ultimately develops into active mining, many people will benefit. Job opportunities will be created during the life span of the project. The type of jobs will

range from skilled, semi-skilled and unskilled. During the exploration phase, mainly professionals with the expertise will be hired to explore the area. Casual labour might however be sourced from locals when the need arises. Employment creation will be high in future, thus during mining phase.

1.2.4 Local development

Generally, the area of Opuwo rural is remote hence this project will have a potential to boost the development of the area. If mining is done in future, this might likely lead to upgrading of roads, establishment of infrastructure, increase of people which will have a consequence of increasing demand hence promoting local sells and products.

1.3. HARAMBEE PLAN FOR PROSPERITY

The Harambee Plan for Prosperity [HPP] has been developed to complement the National Development Plans and Vision 2030. One of the aims of the HPP is to promote economic advancement. The HPP states that the most effective way to address poverty is through wealth creation, which in turn is done by growing the economy in a sustainable inclusive manner and through the creation of decent employment opportunities. It is vital to point out that, by promoting the project, we will be promoting the aims for the Harambee Plan for Prosperity.

The HPP further promotes economic empowerment. The HPP states that it will introduce and operationalize economic empowerment legislation, to achieve greater equity in society in general and in particular greater equity in the ownership of productive assets. A spirit of entrepreneurship is encouraged in the plan and the plan assumes that through entrepreneurship there will be increased enterprise development. The proposed activity is being initiated by Namibians and promoting the project will imply promoting the spirit of entrepreneurship and economic empowerment encouraged in the HPP.

1.4 SCOPE OF THE PROJECT

The scope of the study includes carrying out environmental investigations in line with current provisions on environmental legislations. The Environmental Management Act (No 7 of 2007) and its regulations of 2012 were used as guidelines for the EIA study. The report is aimed at identifying and evaluating environmental and socio-economic impacts associated with the project.

1.5 TERMS OF REFERENCE

The approach to undertake the work was guided by the following ToR, which were provided by the Proponent;

- Determine all the possible environmental and socio-economic impacts of the project.
- Conduct a public participation process to gather the views of Interested and Affected Parties.

- Design an Environmental Management Plan with sound and relevant mitigation measures for monitoring purposes.
- Compile an EIA report for submission to Ministry of Environment Forestry and Tourism and Ministry of Mines and Energy.
- Coordinate the whole application process of the Environmental Clearance Certificate until the issuance of the certificate.

1.6 OBJECTIVES

The objectives of the study were derived from the ToR and they are as follows:

1.6.1 General objective

- To determine the potential environmental and socio-economic impacts derived from the exploration activities

1.6.2 Specific Objectives

- To establish baseline environmental conditions so that relevant impacts could be projected and sufficient mitigation measures could be designed
- To identify direct or indirect environmental impacts that may result from the proposed activity.
- To consult with key, interested and affected stakeholders so that their concerns are considered in the formulation and implementation of the Environment Management Plan.
- Comply with Namibia's Environmental Impact Assessment Regulations (2012), Environmental Management Act (No. 7 of 2007) and other relevant laws and regulations.
- To propose alternative measures where it is noticed that adverse effects may occur.
- To set up an Environmental Management Plan that will govern all activities of the project for the better protection of the environment.

1.7 METHODOLOGY USED FOR THE STUDY

a) **Desktop Study**- This involved review of documents and relevant legislatives. Documents containing geological, vegetation, climatic, demographic and hydrological data for Namibia were also reviewed.
b) **Site Visits –**The EIA team visited the sites on 03/11/2019. The field visit was meant for physical inspections of the sites in order to gather information on the state of environment.
c) **Public Participation**-The study also sought public opinion/views through distribution of questionnaires and public meetings. The meetings were held on 02/11 2019 at Otwani Rural District Council at 10:00am, Sesfontein Conservancy at 14:00 and Otjapitjapi at 17:00.

d) **Mapping-**More data was obtained from the maps which were produced by the consultant GIS personal. The maps included vegetation, hydrogeology and location.
e) **Reporting**- all data gathered was used to compile an EIA and EMP report which was submitted to Ministry of Environment Forestry and Tourism and Ministry of Mines and Energy.

1.8 LAND OWNERSHIP

The land is under communal land, see Appendix B consent letters from the traditional authorities. The owners of mining claims were however allocated the mining claims by Ministry of Mine and Energy.

1.9 OVERVIEW OF EIA REPORT

The remaining part of this report has been designated for the following aspects;

- Project Description.
- Legal and Policy Analysis.
- Environmental Baseline.
- Public Consultation.
- Impact Identification and Analysis.
- Environment Management, Monitoring and Evaluation Plan.
- Conclusions and Recommendations.

CHAPTER TWO: PROJECT DESCRIPTION

The following issues will be clarified under project description;

- Project location.
- Project activities.
- Project cost.

2.1 PROJECT LOCATION

Kaoko Mining Namibia (Pty) Ltd proposes to conduct exploration activities on MCs 70889, 70890 & 70891 near Otjapitjapi Settlement, Opuwo Rural Constituency in Kunene Region. All the mining claims are located within EPL 7081, **see figure 1, Location Map** and table 1 for coordinates, area and conservancies around the study area.

Otjapitjapi is a small settlement situated approximately 15km from the mining claims. North of the claims there is Opuwo town which is approximately 80km, south-west there is Otjapitjapi settlement.

Table 1: Coordinates for the mining claims

EXCLUSIVE PROSPECTING LICENCE (EPL)	AREA (HECTARES)	CONSERVANCY	COORDINATES				
			Corner 1	Corner 2	Corner 3	Corner 4	
70889	17.1662	Okangundumba	18° 50' 04" S 13° 59' 09" E	18° 50' 06" S 13° 59' 19" E	18° 50' 24" S 13° 59' 20" E	18° 50' 23" S 13° 59' 11" E	18° 50′ 14′′S 13° 59′ 14′′E
70890	17.6059	Okangundumba.	18° 46' 16" S 13° 59' 39" E	18° 46' 17" S 14° 00' 00" E	18° 46' 26" S 14° 00' 00" E	18° 46' 25" S 13° 59' 43" E	18° 46′ 21′′S 13° 59′ 48′′E
70891	17.9824	Okangundumba	18° 46' 26" S 13° 59' 39" E	18° 46' 26" S 14° 00' 00" E	18° 46' 35" S 13° 60' 00" E	18° 46' 37" S 13° 59' 50" E	18° 46′ 30′′S 13° 59′ 49′′E

2.2 SURROUNDING LAND USES

Generally, the mining claims are surrounded by other EPLs, mining claims and open spaces. West of EPL 7081 containing the mining claims, there is D3710 road which passes on the western boundary of the EPL containing the mining claims, followed by EPL 7079 and Ozondundu Communal Conservancy, southwest there is EPL 7438, south there is EPL 7877 and Omatendeka Communal Conservancy. The mining claims are located within the Okangundumba Communal Conservancy.

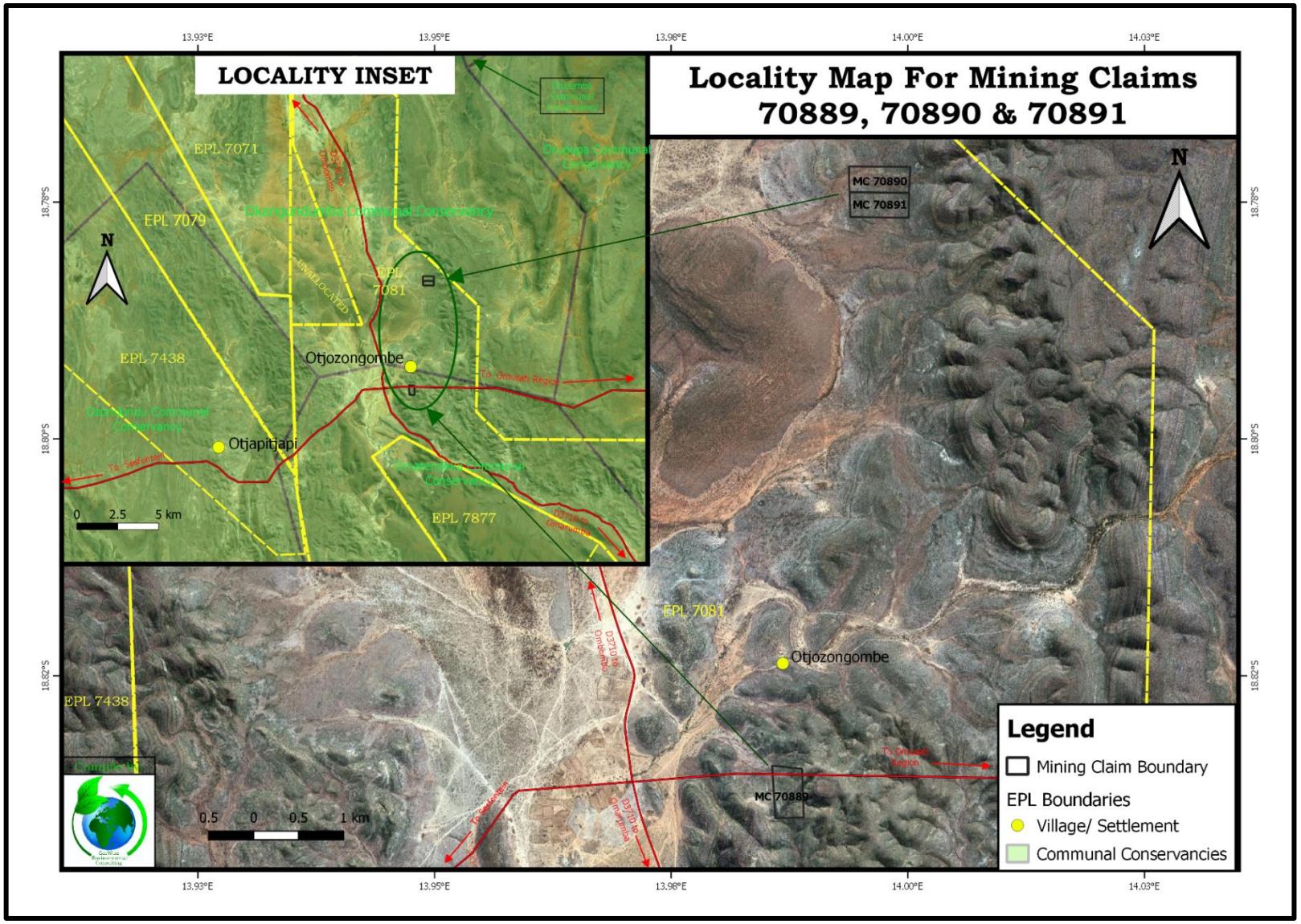

Figure 1: Locality Map

2.3 PROJECT ACTIVITIES

Exploration is a stage of investigating or examining about the geological condition of an area. The main aim at this stage is to find high quality ore. It is vital to note that, no construction will take place during the phase of exploration. In addition, existing roads will be used hence reducing the impact of clearing vegetation. Roads in bad conditions will be upgraded and where the mining claims are inaccessible, cut lines will be created for accessibility of vehicles

2.3.1 RESEARCH AND RECONNAISSANCE

Firstly, the Proponent has to conduct a research using i.e survey of existing literature, examination of aerial photographs and satellite imagery alongside acquisition of geophysical data and geological maps of the prospective region. The desktop information is used to generate a geological model on which all the future exploration activities will be based.

Reconnaissance will be done whereby Mr David an employee of Kaoko Mining Namibia (Pty) Ltd will walk around the mining claims so as to try and identify areas with ore deposits. In a case that Mr David identifies a potential area, Mr Arno (geologist) will further verify. During this stage, prospectors will only look in the rocks thus for useful minerals and other clues to where a deposit may be hidden. The main purpose of carrying a reconnaissance is to reduce the areas of study by identifying select ones for further studies.

2.3.2 TRENCHING AND DRILLING

Where mineralisation occurs close to surface, trenching can be utilised to obtain samples, help establish structural controls and delineate the potential resource. This is a cost-effective method compared to drilling. Kaoko Mining Namibia intends to use limited trenching and also drilling. Trenching will be carried out to expose the ore body near to the surface and shovels and picks will only be used. Drilling will be used to have a better understanding of the subsurface geology. In a case that the ore deposits extend underneath, drilling will be used. Exploratory openings or boreholes will be drilled at closer intervals along the strike and also depth wise, to accurately determine the shape, size, disposition of ore and grade of ore body. Water for exploration drilling will be obtained from nearby village.

2.3.3 GEOCHEMICAL SAMPLING AND ANALYSIS

Samples will be collected during trenching and drilling and sent for chemical analysis/testing.

2.3.4 MAPPING

A map will be produced showing areas with potential deposits. Such maps will be of great importance during the mining phase.

2.4 POST EXPLORATION PHASE

This phase can be termed as decommissioning or post exploration phase, when exploration activities come to an end. The main issue at this stage will be rehabilitation. All affected areas

will be rehabilitated so as to try to restore the environment to what it was before. Activities which will be done include, backfilling all pits and stockpiling disturbed bedrock.

2.5 PROJECT COST

The total funding required to set up the project is not yet established.

CHAPTER THREE: ANALYSIS OF ALTERNATIVES

The following chapter will focus on the alternatives to the project. Alternatives to the project are different options, other possibilities or other course of action, which can be adopted. The alternatives to the proposed project are:

Option 1 – Alternative locations

Option 2 – No project alternative

Option 3 – Continue with the project

3.1 ALTERNATIVE LOCATIONS

Option 1, which is alternative locations, implies that a different location to carry out the development must be acquired somewhere else other than the chosen site. Nevertheless, the fact that there are possibilities of copper deposit basing on past researches justify the use of the proposed sites for further studies.

3.2 THE "NO PROJECT" ALTERNATIVE

Option 2, which is "no project alternative", implies that the project must not be undertaken on the proposed land rather the land should remain undisturbed. However, the "no project alternative" will be less favorable from the socio-economic perspective due to the following factors:

- **Local Empowerment-** the shareholders of the company are local people hence the project will help to reduce poverty rate thus improving their social wellbeing.
- **Transfer of skills**- in future (mining phase) the project will probably enable locals to obtain skills and knowledge through trainings.
- **Growth and development**- the project has the potential to benefit the locals mainly in future. If medium to large copper deposit are discovered during exploration phase, plans to start mining will be done which will result in growth and development of the area in terms of human capital and infrastructure.
- **Employment creation**-more jobs will mainly be created in future thus during the mining phase. Currently, two people will be employed permanently and locals will be hired in cases when manual labor is required.

3.3 OTHER ALTERNATIVES

Initially, it was proposed that limited trenching shall be used and drilling when necessary. However, both methods will be used depending on the condition of the ground and the required depth. Table 2 below indicate the proposed methods.

Table 2: Exploration methods

Method	Pros	Cons
Limited Trenching	- Ideal for understanding surface geology.	-Difficult in areas with limited access
Drilling	-Easier installation in areas with limited access (under buildings, roads, railway tracks, hills, rivers, ponds, heavily-wooded areas) -Ideal when one requires to understand subsurface geology -Less impact on job site and public -Reduced restoration costs due to minimal impact on land -Maintains a cleaner job site -Environmentally-friendly process	-Drilling is also not an option for shallow trenches less than 2 ft. deep.

Table 3: Services alternatives

Services	***Proposed source***	***Alternative source***
Water	Local water sources from the nearby villages will be used.	Piping water from other sources out of the project area so as to supplement local water supplies.
Power for drilling	Diesel generators	Solar
Power for cooking	Gas stoves	Fire wood
Workers accommodation	Campsite in Otjapitjapi Village for geologist, assistant and drilling crew. Other employees for manual labor will be sourced from Otjapitjapi and other nearest villages.	Accommodation can be sourced from the nearest town which is Sesfontein.
Road (site accessibility)	Mining Claims to be accessed from C43 road (Opuwo Sesfontein road) then into D3710	C41 to D3710
Waste Management		

Sewage	Portable toilet to be used and these are advantageous because they are easy to transport and environmentally friendly (if properly disposed)	Ventilated improved pit (VIP) latrine.

3.4 ALTERNATIVES ASSESSMENT OUTCOMES

Option 3, which promotes the continuation of the project, has been seen as the preferred alternative. Option 3, was viewed as beneficial given the benefits that come with the project. In addition, both methods (limited trenching and drilling) shall be used when necessary. Furthermore, water for the proposed activity will be sourced from Otjapitjapi Village. In cases that the water sources from the village have low yields, water will be transported by trucks from other villages around the area. Apart from that, power for drilling will come from a diesel-powered generator. The route which comes from C43 to D3710 will be used but an alternative route from C41 to D3710 can be an alternative route. Connecting to the D3710 road via the C41 road is a shorter route to the mining claims but the disadvantage is that you travel a longer distance on the D3710 which is in bad condition. The route along the C43 road is more favourable as this road is in a better condition and you travel most of the distance along it only to branch into the D3710 when you are about to get to the mining claims. Portable toilets shall be used at the village and site where the contractor crew, geologist and assistant will be staying and working respectively. Portable toilets are easily transportable and environmentally friendly (if properly disposed).

CHAPTER FOUR: RELEVENT LEGISLATION

This chapter reviews various applicable legislations, which govern the project. The objective is to ensure that the proposed project comply with Namibia's relevant laws, policies and regulations. Table 4 below indicates laws and policies, which relates to the project.

Table 4: Relevant legislations related to the project

Aspect	Legislation	Relevant Provisions	Relevance to the Project
The Constitution	Namibian Constitution First Amendment Act 34 of 1998	− According to article 91(c) it provides for duty to guard against ''the degradation and destruction of ecosystems and failure to protect the beauty and character of Namibia'' − Article 95 (l) deals with the ''maintenance of ecosystems, essential ecological processes and biological diversity'' and sustainable use of the country's natural resources.	− During exploration activities, sustainable practices should be performed.
Environmental	Environmental Management Act 7 of 2007	− States that, projects with significant environmental impacts are subject to an environmental assessment process (Section 27). − Requires for adequate public participation during the environmental assessment process for interested and affected parties to voice their opinions on a project (Section 2).	− The EMA should guide the management of this project. − Adverts should be published in two local newspapers twice. − The public and relevant authorities should be consulted during the process of public participation as per the requirement of the act − The EMP which will guide on the management of the environment should be drafted as per the requirement of the act
	EIA Regulations (2012)	− Lists all activities, which cannot be undertaken without an EIA.	− This project is listed under mining and quarrying activities.

			– Activity 3.3 states that resource extraction, manipulation, conservation and related activities require an EIA.
	Convention on Biological Diversity (1992)	- Article 1 lists the conservation of biological diversity amongst the objectives of the convention.	- The Proponent should consider the impact of the project on the biodiversity of the area, the MCs are located within the Okangundumba Conservancy
	Nature Conservation Ordinance No. 4 of 1975	Chapter 6 provides for legislation regarding the protection of indigenous plants	- Indigenous and protected plants should be protected within the areas of works.
	Environmental Assessment Policy of Namibia (1995)	The Policy seeks to ensure that the environmental consequences of development projects and policies are considered, understood and incorporated into the planning process, and that the term ''environment'' is broadly interpreted to include biophysical, social, economic, cultural, historical and political components.	- The EIA considers this term of ''environment''.
	Minerals (Prospecting and Mining) Act,1992 (Act 33 1 of 1992)	To provide for the reconnaissance, prospecting and mining for, and disposal of, and the exercise of control over, minerals in Namibia; and to provide for matters incidental thereto. ''mineral'' means any substance, whether in solid, liquid or gaseous form, occurring naturally in, on or under any land and having been formed by,	- The intended activity involves exploration of minerals mainly copper ore.

		or subjected to, a geological process, excluding-(c) subject to the provision of subsection (2) , soil, sand, clay, gravel or stone (other than rock material specified in Part 2 of schedule 1) .	
Soil	Soil Conservation Act 6 of 1969	This act covers the prevention and combating of soil erosion; the conservation, improvement and manner of use of the soil and vegetation; and the protection of water sources	- Limited trenching will leave earthed soils hence it should not be left un-rehabilitated.
Water	Water Act 54 of 1956	− Prohibits the pollution of underground and surface water bodies.	− Fuel and oil leakages from operating machinery and vehicles might be experienced hence this can result in environmental contamination with possibilities of negatively affecting groundwater if the quantities and frequency are high − If drilling activities go below the level of the water table, they might be possibilities of pollution. Hence the pollution of water resources should be avoided during the exploration process.
Health and Safety	Labour Act (No 11 of 2007)	− This act emphasizes and regulates basic terms and conditions of employment, it guarantees prospective health, safety and welfare of employees and protects employees from unfair labour practices.	− The Proponent will be obliged to create a safe working environment for the employees.

	Public Health and Environmental Act, 2015	− The act mainly emphasis on proper management of the environment, to prevent negative health impacts. − The act promotes proper waste management.	− Proper waste management should be promoted to prevent nuisance, which can consequently affect public health. − Recycling, reuse and reduce must be practised at all times thus if any waste is generated.
	Heritage Act	− The Heritage Act of 2004 makes provision for the developer to identify and assess any archaeological and historical sites of significance. The existence of any such sites should be reported to the Monuments Council as soon as possible. The Council may serve notice that prohibits any activities as prescribed within a specified distance of an identified heritage/archaeology site.	− In an event that the Proponent comes across any archaeological or historical sites of significance, they should report immediately to the Monuments Council

N.B: The Proponent shall be required to comply with the legislations. Where there is need to engage private consultants to facilitate compliance, the Proponent is encouraged to consult qualified and certified personnel. The Environmental consultant is supposed to conduct legal compliance audits and produce bi-annual reports, which will be required during renewal of environmental clearance certificate. The Proponent should also renew the permit from National Heritage Council.

CHAPTER FIVE: DESCRIPTION OF THE AFFECTED ENVIRONMENT

This chapter describes the environmental setting of the project, which includes the biophysical environment and the socio-economic environment. The baseline information will assist in the monitoring of the environmental impacts during the exploration phase.

5.1 BIO-PHYSICAL ENVIRONMENT

5.1.1 Climate

The area under study is located on the north-west part of Namibia and is classified under a semi-arid climate. In the absence of site-specific climatic data, the climate data from Opuwo was used in this report. The area receives little rainfall with the average annual rainfall ranging from 300-350 mm per annum. Maximum temperatures can reach 34°C-36°C during the summer months. Agriculture and many other human activities in the area of study are severely limited by the shortage of moisture and high temperatures. Table 5 below briefly describe the general climatic conditions experienced within the area of study, as deduced from the Atlas of Namibia, by Mendelsohn et al 2003.

Table 5: General Climate Data

Average Annual rainfall:	Average annual rainfall in the area is between 300-350mm per year
Variation in rainfall:	Variation in annual rainfall is averaged to be 40-50 % per year
Average evaporation:	Average evaporation in the area is between 2240-2380mm per year.
Precipitation:	January-March receives high rainfall, with January being the wettest. June and July being the driest month
Water Deficit:	Average water deficit in the area is between 1700-1900mm per year.
Temperatures	Annual temperatures are 20-22 °C per year Average maximum temperature 34°C-36°C Hottest month February Average minimum temperatures 6°C-8°C Coldest month July
Wind direction	Wind directions in the area are predominantly from the south.
Humidity	Most humid month is March with 80%-90% and September being the least with 10%-20%

(Source: Atlas of Namibia, 2003)

5.1.2 Topography, Soils & Geology

Kunene Region consists of a variety of rock formations, most of them exposed in a rugged landscape of valleys, escarpments, mountains and large open plains. The topography of the region is mainly mountainous. The elevation of the region is 868m above sea level.

The study area is mainly covered by lithic leptosols soil which are very thin and shallow. Leptosols typically form in actively eroding landscapes, especially in the hilly or undulating areas that cover much of southern and north-western Namibia (Mendelsohn 2000). Leptosols are coarse-textured soils which are characterized by their limited depth caused by the presence of a continuous hard rock, highly calcareous or cemented layer within 80cm of the surface. The leptosols are, therefore the shallowest soils to be found in Namibia and they often contain much gravel. Their water holding capacity is low and vegetation in areas in which they occur is often subject to drought (Mendelsohn 2000). Rates of water run-off and water erosion can be high when heavy rains fall. Leptosols can only support low densities of livestock and wildlife.

Geology of Kunene Region is classified mainly under the Otavi Group (Ls). Mendelsohn (2000) pointed that Kunene Region has the oldest rocks and the Damara supergroup and gariep complex. Dominate rock type around the mining claims is limestone and dolomite, **see figure 2, Hydrogeology Map**. Table 6 below also shows possible types of mineral deposits on the mining claims.

Table 6: Geology for the mining claims

EXCLUSIVE PROSPECTING LICENCE (EPL)	GEOLOGY	COMMODITIES
70889	Lithology:dolomite,limestone,shale, quatzite (Na)	Semi- precious stones
70890	Lithology:dolomite,limestone,shale, quatzite (Na)	Semi- precious stones
70891	Lithology:dolomite,limestone,shale, quatzite (Na)	Semi- precious stones

Image 1: Rock type falling within the study area

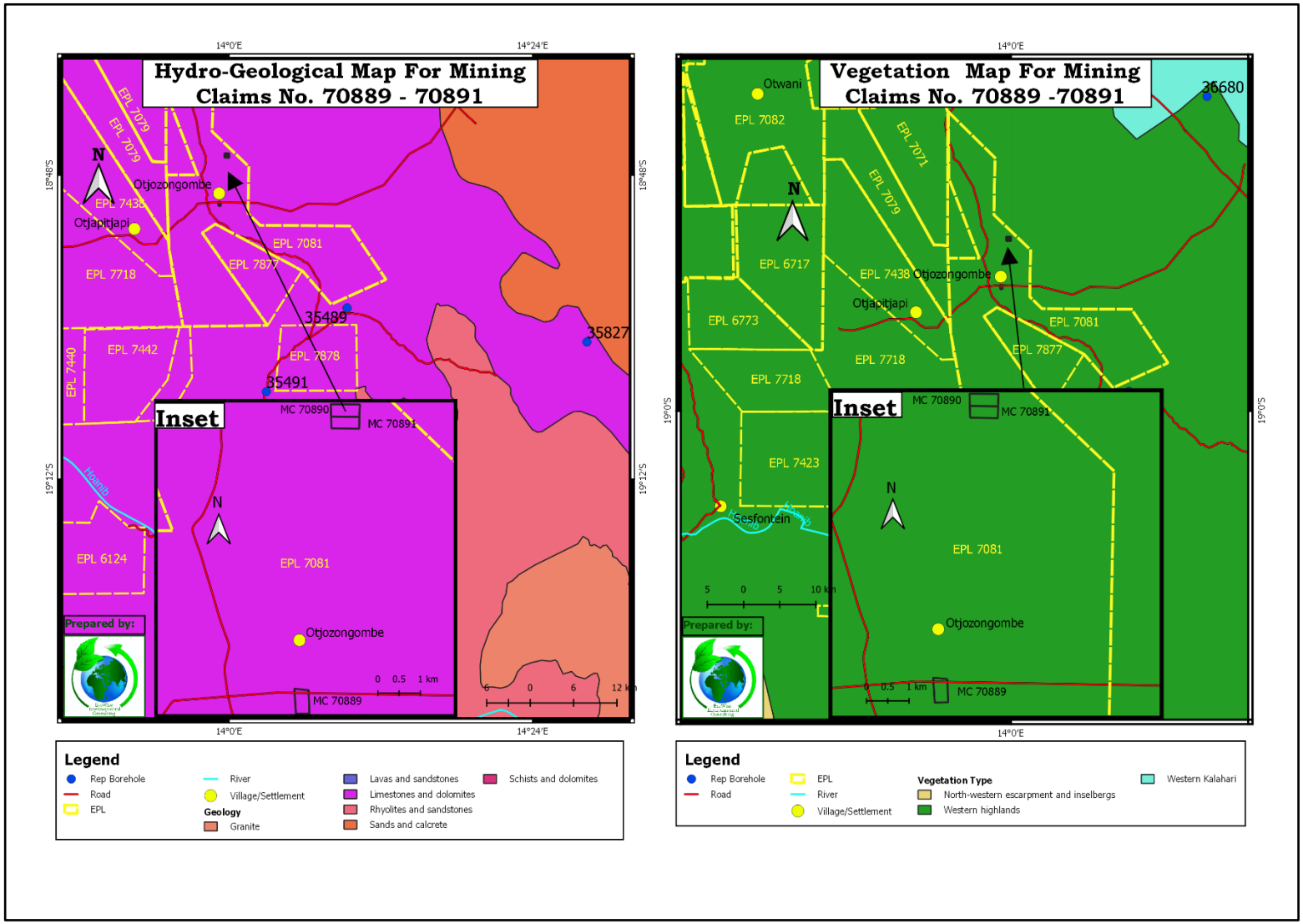

Figure 2: Hydrogeology & Vegetation Map

5.1.3 Hydrogeology

Generally, the region has low groundwater potential aggravated by the sparse knowledge of the aquifers. The settlement of Otjapitjapi has a spring that provide water for animals and the villagers. The quality of groundwater is potable with total dissolved solids amounting to less than 1000mg/l. However, around the mining claims the nearest ephemeral river is Aaprivier which is approximately 20km from the claims.

5.1.4 Vegetation of the study area

On a regional scale, the vegetation structure can be described as the Acacia Tree and Shrub Savanna. The vegetation specifically falls under western highlands and the plant structure is grasslands and scattered trees. The mining claims fall under western highlands, **see figure 2 above, Vegetation Map**. For protected plant species obtained around the mining claims, see table 7 below. Protected plant species around the mining claims are not abundant but fall within the range of uncommon to rare occurrence. To note, the density of vegetation around the area of study is sparse and dry. Image below shows vegetation around the study area.

Table 7: Protected plant species

Species Name	Tree Name	Mining Claims	Occurrence
Albizia Anthelmintica	Worm-cure albizia/ Oumaboom	70889, 70890, 70891	Uncommon to rare occurrence
Berchemia Discolour	Bird Plum	70889, 70890, 70891,	Uncommon to rare occurrence
Boscia Albitrunca	Shepherd's tree/ Witgat	70889, 70890, 70891,	Uncommon to rare occurrence
Sclerocarya birrea	Marula	70889, 70890, 70891	Uncommon to rare occurrence

Key: Abundant, Occasional occurrence, Common to abundant, Uncommon to rare occurrence

Image 2: Vegetation around the study area

5.1.5 Fauna

The area under study generally receives low rainfall which makes it difficult for domesticated animals to survive in such an area with little water for drinking. Generally small animals like goats are mainly domesticated which can feed on tree leaves and survive in arid like conditions. The area has been seriously affected by drought in recent years which resulted in death of livestock. However, table 8 below indicate the general fauna data for small creatures.

Table 8: Summary of General Fauna Data

Type of fauna	Number of different species/genera	Total around Namibia
Mammal Diversity	61-75 Species	217
Bird Diversity	111- 140Species	658
Reptile Diversity	51-60 Species	258
Frog Diversity	1-3 Species	50
Termite Diversity	7-9 Genera	19
Scorpion Diversity	12-13 Species	21

Source: Atlas of Namibia (2003)

5.2 SOCIO-ECONOMIC ENVIRONMENT

The following political constituencies comprises Kunene Region, Opuwo, Sesfontein, Opuwo rural Epupa, Khorixas, Kamanjab and Outjo. Outjo is classified under municipality, Khorixas and Opuwo as towns, Kamanjab as a village. Sesfontein, Fransfontein and Okangwati have been proclaimed and targeted for urban development. Opuwo Rural is an electoral constituency in the Kunene Region and its' administrative centre is the settlement of Otwani.

The mining claims are under Okangundumba Communal Conservancy. Community conservation grew out of the recognition that wildlife and other natural resources are of value in communal areas and the locals are empowered to manage and utilize these resources. In addition, the Himba culture which is also dominate in the area of Opuwo is of significance to tourism. The region offers geo-tourism, eco-tourism and adventure-tourism. The conservancies around Kunene Region hosts wildlife such as desert elephants, rhinos, lions and giraffes. Some of the attractions also found in the region include Epupa Falls, the Skeleton Coast, Hartmann's & Maneuflus valleys, Steep van Zyl's pass, Hoarusib & Hoanib Rivers and Sesfontein.

5.2.1 Population

In the census that was conducted in 2011, the population for Kunene Region was 86 856 of which 43 253 are female and 43 603 are males (NPC 2011). According to NPC (2011), there was an increase in population from 2001 (68 735) to 2011 (86 856). In 2011, Kunene Region had a relatively young population, with about 42 percent of the whole population being less than 15 years of age hence it is vital to bring projects which create employment and empower the youths.

By region, Kunene Region among the other regions has the lowest percentage of people living with HIV. By region it has 9.7% people living with HIV/AIDS (MHSS 2015).

5.2.2 Education Profile

According to (EMIS, 2012) there are 41 Primary schools, 12 Combined school and 6 Secondary schools, in total there are 120 schools which is too low as compared to other regions. Of the 120 schools, 114 are state owned and 6 privately owned. 73 out of 838 teachers in Kunene Region are without training. Of the population aged 6 years and above in Kunene Region, 35.9 % never attended school, 50% left school and 9% are currently at school (NPC 2011). The major problem in the region is shortage of schools such that learners travel long distances to school which might be a factor to high dropouts in the region. In addition, another challenge is lack of proper teaching facilities and physical buildings to accommodate learners and teachers. Given the scenario above, if the project is to be implemented, the Proponent should try to help the community as a social responsibility of the company.

5.2.3 Employment Opportunities

According to NPC (2011), 64 % of the economically active population aged 15 years and above are employed and 36% unemployed in Kunene Region. Many people in the region rely on wages and salaries. According to NPC (2011), 32% of the population in the region relies on farming, 41% on wages and salaries, 5% on cash remittance, 8% on business and 12% on pension.

5.2.4 Archaeology

The project area falls within Kaokoland in Kunene Region, northeast of Namibia. This section will therefore describe how the Proponent will handle any unknown heritage sites that might fall within the Proponent's mining claims. It is also worthwhile to note that currently there are no registered or declared heritage sites that fall within Kaoko Mining Namibia (Pty) Ltd.'s mining claims. In addition, previous archaeological work done around Kaokoland will also be discussed in brief.

According to the Heritage Act (27 of 2004), "heritage" is restricted to places and objects, including those of archaeological, cultural, historical, scientific and social significance. The act also defines "archaeological" as any remains of human habitation or occupation that are more than 50 years old found on or beneath the surface on land or in the sea, and especially notes rock art, being any form of painting, engraving or other representation on affixed rock surface or loose rock or stone which is 50 or more years old. It is essential to understand that the legal protection can extend beyond the archaeological object or site, to include the natural or existing condition or topography of land, as well as the trees, vegetation or topsoil. Kaoko Mining Namibia (Pty) Ltd shall therefore be responsible in persevering any archeological or heritage sites within their project area, in a case that they come across any. The Proponent shall bear in mind that, all archaeological objects are the property of the State and the ownership extends to all archaeological remains, known or unknown. It shall also be the responsibility of the Proponent

to inform the exploration personnel and contractors about the legal status of archaeological remains and the obligation to report the discovery of any new archaeological remains to the National Heritage Council.

Apart from that, during the exploration phase, the exploration personnel should be observant given that they might come across archaeological evidence.

The following should be observed as they might be clues to archaeological evidence; stone artefacts and stone features sites (settlements and graves).

In addition, the exploration team should be aware that archaeological sites commonly occur in these locations; rock outcrops and inselbergs, saddles, drainage lines, pans and dune fields and gravel plains.

a) Brief History of Archaeological work around Kaokoland

Archaeological work has been conducted around the Kaokoland area and significant archaeological evidence has been obtained. The most significant results in the Kaokoland were provided by excavations in a rock shelter, named Oruwanje 95/1 (Frank, in prep). Ovizorombuku 96/1 being another rock shelter was also excavated in 1998 (Vogelsang 1998). The stone artifact accumulation from the basal layers of this site were attributed to date back to an Early Holocene to Late Pleistocene **Age** (around 10,000 **B.P). The** second trench at the site Ovizorombuku 96/1 after excavation produced a sheep bone, coming from one of the final spits. A charcoal sample from this spit was dated about 2500 B.P.

Another site discovered was Omungunda 99/1 which is situated near Opuwo town. With an extension of approximately 23 x 4 m, Omungunda 99/1 is the largest rock-shelter in the region and it was the first site with rock paintings in the Kaokoland (Vogelsang 1998). In addition, around 1999 other sites Hartmann's (N99/3) and Marienfluss valleys (N99/5) located on top of hills, were discovered and they had stone circles, potsherds, glass-beads and an iron arrowhead. According to Vogelsang (1998), a first radiocarbon date from a fireplace inside one of the hut-circles had an age of 230 years hence corresponding with the suspected date of the immigration of the cattle keeping Himba people from Angola. Apart from that, several clusters of stone circles were also discovered at a granite hill close to the border of the Skeleton-Coast Park.

b) Declared Heritage Sites in the vicinity of the proposed development

According to the data sourced from the website of National Heritage Council, there are six declared heritage sites in Kunene Region where Kaoko Mining Namibia (Pty) Ltd mining claims are located. Of the known heritage sites, none overlays the claims for Kaoko Mining Namibia (Pty) Ltd.

c) Unknown Heritage Sites

It is essential to note that, within the mining claims, there might be unknown heritage sites. The Proponent will consult with the headman of the area before conducting any work as their

knowledge will be of great importance in identifying some sites of significance such as their holy grounds and graves. In addition, given that the Proponent comes across unknown heritage sites within the mining claims, the Proponent will follow the following procedures:

Action by person identifying archaeological or heritage material

- If operating machinery or equipment, stop work
- Identify the site with flag tape
- Determine GPS position if possible
- Report findings to foreman

Action by Foreman

- Report findings, site locations and actions taken to superintendent
- Cease any work in immediate vicinity

Action by superintendent

- Visit site and determine whether work can procced without damage to findings
- Determine and mark exclusion boundary
- Record coordinates for the site for confirmation by archaeologist

Action by Archaeologist

- Inspect site and confirm recorded coordinates
- Advise National Heritage Council (NHC) and request written permission to remove findings from work area
- Recover, package and label findings for transfer to National Museum

In the event of discovering human remains:

Action as above

- Field inspection by Archaeologist to confirm that remains are human
- Advise and liaise with NHC and Police
- Recover remains and remove to National Museum or National forensic Laboratory, as directed

d) Management of "no-go areas"

Currently there are no declared or registered heritage sites that overlap or coincide with our proposed project area, hence this section at the moment does not apply to this project.

CHAPTER SIX: PUBLIC PARTICIPATION

Public participation process is a fundamental principal of the EIA process and it involves engaging members of the public to express their views about a certain project. Public involvement is a valuable source of information on key impacts, potential mitigation measures and the identification and selection of alternatives. Section 2 of the Environmental Management Act (2007), states that public participation in decision-making affecting the environment shall be promoted and fair and equitable access to natural resources shall be promoted. The

Environmental Management Act (No 7 of 2007), empowers the local community to participate in project conducted within their jurisdiction.

During the public participation of the proposed exploration project, the following principals were used: inclusivity, transparency and relevance.

6.1 OBJECTIVES OF THE STAKEHOLDER CONSULTATION PROCESS

The objectives of the public consultation are;

- To inform I&AP about the proposed activity and to give them the opportunity to express their views, concerns or opinions.
- To reduce conflict through early identification of contentious issues
- To gather potential negative and positive environmental impacts associated with the proposed project from the stakeholders' perspectives.
- To engage stakeholders for the effective mitigation and enhancement of negative and positive impacts arising from the proposed project respectively.

6.2 PRINCIPLES GOVERNING PUBLIC CONSULTATION

The following principals were used during the public participation:

6.2.1 Inclusivity

The public participation was open for everyone; invitation to make comments and attend the meetings was announced in the local newspapers, The Namibian and New Era. To ensure that all stakeholders were involved, the consultant compiled a list. Both locals, traditional authorities and Kunene Regional Council were conducted; **see Appendix A, letters sent to stakeholders.** The list included the following:

- Kunene Regional Council
- Traditional Authorities
- Locals

6.2.2 Open and transparency

The consultant took time to explain the background of the project and both positive and negative impacts associated with the project. All people who registered as Interested and Affected Parties were also given a BID and full document of the EIA was available upon request.

6.2.3 Relevance

The consultant remained focused on subjects related to the project. Interested and Affected Parties were suppose to make comments relating to socio-economic and environmental impacts associated with the project. Political and other non-related comments were considered not relevant.

6.3 NOTIFICATION OF INTERESTED AND AFFECTED PARTIES

The consultation was facilitated through the following means:

6.3.1 Background Information Document (BID)

The consultant prepared a BID, which was circulated to Interested and Affected Parties. A BID is a short document, which briefly gives the background of the project. The main aim of distributing the BID to Interested and Affected Parties is to bring awareness and clarity about the proposed project. **A copy of the BID is provided in Appendix A.**

6.3.2 Advertisement

Adverts were placed in two local newspapers namely, The Namibian and New Era as shown in table 9 below.

Table 9: Details of public notification for the EIA study

Newspaper	Area of Distribution	Language	Date Placed
The Namibian	Country Wide	English	28 October2019
The Namibian	Country Wide	English	4 November 2019
New Era	Country Wide	English	28 October 2019
New Era	Country Wide	English	4 November 2019
Site notices	Kunene Regional Council, Otwani Clinic	English	1 November 2019

(See Appendix A)

6.3.3 Public Meeting

The public meetings were announced in The Namibian and New Era. The meetings were held on 2 November 2019 at Otwani Rural District Council (Otwani), Sesfontein Conservancy (Sesfontein) and Otjapitjapi village as shown on site images below. For more information on issues raised during the meetings, **see Appendix A, Meeting Minutes.**

Image 3: Stakeholder meeting at Otwani RDC

Image 4: Stakeholder meeting at Sesfontein Conservancy

Image 5: Stakeholder meeting in Otjapitjapi Village

6.3.4 Questionnaires

Questionnaires were also distributed amongst the participants so as to gather more information on their views towards the project. Distribution of questionnaires was also done to allow stakeholders to air their views privately. The questionnaires were open –ended whereby the respondent was free to express their views and ideas. **The questionnaires are attached in Appendix A.**

6.3.5 Public Notices

Notices with project information were placed at Kunene Regional Council, Otwani Clinic and around the villages. Images below show the notices.

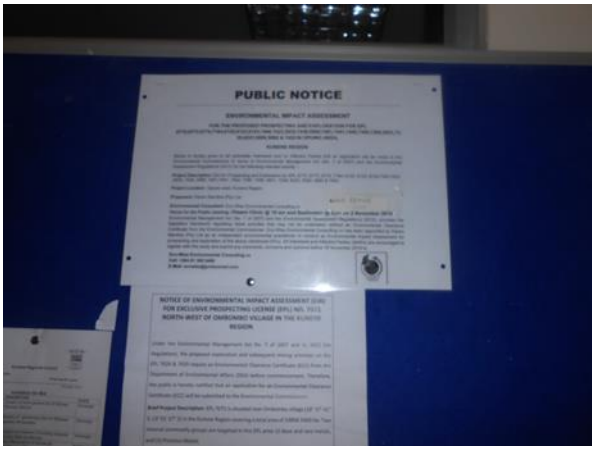

Image 6: Public notice at Otwani Clinic & Kunene Regional Council respectively

6.4 SUMMARY OF STAKEHOLDERS CONSULTATION.

During the public participation process, all people viewed the project as beneficial to the community. For more issues raised during the public participation process, **see Appendix A, Meeting Minutes** for both the three meetings. In summary, the following major issues were brought forward:

a) Employment

Many participants recommended that locals be employed by the proponent. However, it is essential to note that during the exploration phase two people (geologist and assistant) will be employed permanently by Kaoko Mining Namibia (Pty) Ltd. During this phase, personnel with experience mainly in geology will be required hence the need to employ experienced staff. Therefore, during this phase, personnel for casual labor will be sourced depending on the availability of the jobs. Employment will be mainly created in future thus during mining phase.

b) Relations with the community and communication

Mr. Elago Hamnjela (Administrative officer at Kunene Regional Council) also pointed out that, the company should remain friendly to the community and communication should always be maintained. Concerning this issue, the Proponent promised to keep good relations with the community. The Proponent also highlighted that if they get permission to start exploration activities, they will always notify the headman before working in their area. The Proponent also noted that communication with the headman will always be vital given that they will always want to know if there are any holy grounds in the area before any works.

c) Joining the company

Participants in Otjapitjapi village were mainly concerned about joining the company and registering their EPLs and mining claims. In response, the proponent indicated that for now its too late as the EIA is already underway.

d) Community development

Traditional authorities were mainly concerned about community development. Chief Kaenda Herunga of Otjikukutu emphasized that, the proponent should develop schools, roads, waterpoints and kindergartens. Given that the Proponent decides to conduct mining activities in future, social responsibilities should be fulfilled.

e) Encroachment of boundaries

Another issue which was raised during the public meeting was encroaching boundaries. It is essential to note that the Proponent shall not be allowed to encroach on other EPLs which are not part of their sites. The Proponent shall use maps and GPS to see the boundaries of their EPLs.

f) Project description

Mr. Wassenaar emailed requesting the kml file and it was sent to him. He further required clarification on the exploration activities to be done. See Appendix A, response. It is essential to note that, it was decided that both methods which are limited trenching and drilling will be used. Trenching will only be used to understand the surface geology and drilling will be used to understand the subsurface geology. Limited trenching will only be done after the geologist confirms that there is potential ore deposits basing on reconnaissance of the rocks. This implies that no unnecessary trenching shall be done.

6.4.1 Stakeholders' Recommendations

Conducted traditional authorities recommended the project to go ahead but the Proponent was tasked to employ locals and bring development to the community.

CHAPTER SEVEN: ASSESSMENTOF ENVIRONMENTAL IMPACTS

This section serves to identify all the potential impacts both negative and positive. In identifying these potential impacts, mitigation measures have been proposed so that the Proponent may carry out the process in an environmentally sound manner. The methodology, which was used to assess impacts and alternatives, include the following:

- Public participation
- Site visit
- Professional experience

7.1 IDENTIFICATION OF POTENTIAL IMPACTS OF THE PROJECT

Positive Impacts

- Local empowerment
- Employment creation.
- Land utilization for the benefit of people

Negative impacts

- **Air Environment**
- Dust
- Noise
- **Land Environment**
- Impact on landscape
- Vegetation loss
- Generation of waste
- Impact on fauna
- Impact on soil

Water Environment

- Impact on surface and groundwater sources
- **Socio -Economics**
- HIV/AIDS
- Occupational Health and Safety risks.
- Heritage impact
- Population influx
- **Indirect Impacts**
- Cumulative impacts

7.2 IMPACT ANALYSIS

In this section, the impacts of the proposed project on human and biophysical environment are evaluated and analyzed. Following the identification of the various potential environmental impacts, the impact analysis framework looked at the impacts under the following categories;

Table 10: Ranking Matrix

	Temporal scale			**Score**
EFFECT	Short term	Less than 5 years		1
	Medium term	Between 5 and 20 years		2
	Long term	Between 20 and 40 years (a generation) and from a human perspective almost permanent.		3
	Permanent	Over 40 years and resulting in a permanent and lasting change that will always be there.		4
	Spatial Scale			
	Study area	The proposed site /within immediate area of the activity		1
	Beyond project boundary	Surrounding area outside the project boundary		2
	Regional	District and Provincial level		3
	National	Country		4
	International	Internationally		5
	Severity		**Benefit**	

	Slight/Slightly Beneficial	Slight impacts on the affected system(s) or party(ies)	Slightly beneficial to the affected systems(s) or party(ies)	1
	Moderate/Moderately Beneficial	Moderate impacts on the affected system(s) or party(ies)	An impact of real benefit to the affected system(s) or party (ies)	2
	Severe/Beneficial	Severe impacts on the affected system(s) or party(ies)	A substantial benefit to the affected system(s) or party(ies)	4
	Very Severe/Very Beneficial	Very severe change to the affected system(s) or party(ies)	A very substantial benefit to the affected system(s) or party(ies)	8
	Likelihood			
LIKELIHOOD	Unlikely	The likelihood of these impacts occurring is slight		1
	May occur	The likelihood of these impacts occurring is possible		2
	Probable	The likelihood of these impacts occurring is probable		3
	Definite	The likelihood is that this impact will definitely occur		4

Table 11: Ranking matrix for Environmental Significance

Environmental Significance		**Positive**	**Negative**
LOW	An acceptable impact for which mitigation is desirable but not essential. The impact by itself is insufficient even in combination with other low impacts to prevent development.	4-7	4-7
MODERATE	An important impact, which requires mitigation. The impact is insufficient by itself to prevent the implementation of the project but which, in conjunction with other impacts may prevent its implementation.	8-11	8-11
HIGH	A serious impact, which, if not mitigated, may prevent the implementation of the project. These impacts would be considered by society as constituting a major and usually long-term change to the natural and/or social environment and result in severe negative or beneficial effects.	12-15	12-15

VERY HIGH	A very serious impact, which may be sufficient by itself to prevent the implementation of the project. The impact may result in permanent change. Very often, these impacts are unmitigable and usually result in very severe effects or very beneficial effects.	16-20	16-20

Table 12: Matrix to show environmental significance

	3	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	16
1	4	5	6	7	8	9	10	11	12	13	14	15	16	17
2	5	6	7	8	9	10	11	12	13	14	15	16	17	18
3	6	7	8	9	10	11	12	13	14	15	16	17	18	19
4	7	8	9	10	11	12	13	14	15	16	17	18	19	20

7.3 IMPACT EVALUATION

7.3.1 Negative impacts associated with exploration phase:

1. **Impact on landscape**

Identified Impact	Effect						Risk or Likelihood	Score	Overall Significance
	Temporal Scale	Score	Spatial Scale	Score	Severity of impact	Score			
Impact on landscape Unmitigated	Short term	1	Study area	1	Moderate impact	2	Definite	4	8
Mitigated	Short term	1	Study area	1	Slight impact	1	May occur	2	5

Exploration activities such as trenching and drilling will disturb the natural state of the land. Disturbance of rocks will cause alternation of existing landscape. Less harm is generally expected during the exploration phase given that trenching shall be limited and done at a small scale with the use of shovels and picks. No machinery shall be used during trenching. If mitigation measures are implemented, the impact is expected to be of low environmental significance.

Mitigations and recommendation

- Limited trenching should be done to understand the surface geology but when need arise to understand the subsurface geology, drilling should be used.
- Removed rocks and soil should be replaced back and levelling of the area done so as to try to restore the area to its natural state

2. Dust

Identified Impact	Effect						Risk or Likelihood	Score	Overall Significance
	Temporal Scale	Score	Spatial Scale	Score	Severity of impact	Score			
Dust Unmitigated	Short term	1	Study area	1	Slight impact	1	Probable	3	6
Mitigated	Short term	1	Study area	1	Slight impact	1	May occur	2	5

Dust is expected to be generated during movement of vehicles given that the roads are dust roads. Dust is likely to be produced also during limited trenching and drilling. The severity of the impact is expected to be slight such that it will not affect by-passers or animals. Employees working in the area are the ones who might be at risk hence they are expected to cover themselves with dust masks to avoid contracting diseases like pneumoconiosis. The impact is however expected to be of low environmental significance.

Mitigations and recommendation

- Soil watering when soil works are being executed and where dust is emitted
- People at site should be provided with respirators
- Regular monitoring and review to ensure safe operation

3. Noise impact

Identified Impact	Effect						Risk or Likelihood	Score	Overall Significance
	Temporal Scale	Score	Spatial Scale	Score	Severity of impact	Score			
Noise Unmitigated	Short term	1	Study area	1	Slight impact	1	May occur	2	5
Mitigated	Short term	1	Study area	1	Slight impact	1	Unlikely	1	4

During exploration, noise above the ambient levels of the area might be generated locally from exploration activities such as drilling and frequenting vehicles. Noise generated is not expected to affect outside the boundaries of the claims. Noise generated might affect employees working at the site hence posing a risk of ear damage. The normal levels of 55 decibels recommended by World Health Organization (WHO) might be surpassed during the exploration phase. Drilling machines can produce noise of 95- 100 decibels. However, the impact of noise will remain of low environmental significance if mitigation measures are implemented.

Mitigations and recommendation

- A drilling interval should be established, used and adhered to and working hours should be limited to minimum of 8 hours per day
- Noise should be addressed and mitigated at an early stage and employees should be equipped with ear protection equipment.
- Proper and timely maintenance of machineries and vehicles

4. Vegetation Disturbance

Identified Impact	Effect						Risk or Likelihood	Score	Overall Significance
	Temporal Scale	Score	Spatial Scale	Score	Severity of impact	Score			
Vegetation disturbance Unmitigated	Medium term	2	Study area	1	Slight impact	1	May occur	2	6
Mitigated	Medium term	2	Study area	1	Slight impact	1	May occur	2	6

Vegetation might be lost and disturbed when establishing cutlines, during trenching and drilling. The severity is expected to be slight given that the Proponent will use existing roads and in cases that the roads need improvement, they will be upgraded. No new roads will be established but cutlines might only be created for accessibility of vehicles thus when there is need. The mining claims are under Okangundumba Communal Conservancy hence the Proponent shall be compelled to protect the natural resources around the area.

Mitigations and recommendation

- Protected plant species should not be removed but preserved and the activities should fit into the environment without affecting the protected trees.
- Massive clearing shall not be allowed

5. Impact on soil

Identified Impact	Effect						Risk or Likelihood	Score	Overall Significance
	Temporal Scale	Score	Spatial Scale	Score	Severity of impact	Score			
Soil Unmitigated	Short term	1	Study area	1	Moderate impacts	2	Definite	4	8
Mitigated	Short term	1	Study area	1	Slight impacts	1	Definite	4	7

Soil will be disturbed during drilling and limited trenching. Soil might also be partly affected by oil or fuel leakages from vehicular and drilling machines. The impact is expected to affect only the study area and it will be definite that soil will be disturbed.

Mitigations and recommendation

- After completion of exploration activities such as trenching, removed soil layers must be replaced and levelling must be done so that the original condition is restored.
- Proper care should be taken so that there is no spill that would cause soil contamination
- If any hazardous waste is produced it should be properly handled and sent for disposal to appropriate disposal areas
- Fuels shall not be kept/stored at the site

6. Impact on surface and groundwater sources

Identified Impact	Effect						Risk or Likelihood	Score	Overall Significance
	Temporal Scale	Score	Spatial Scale	Score	Severity of impact	Score			
Surface & groundwater Unmitigated	Short term	1	Study area	1	Moderate impact	2	May occur	2	6
Mitigated	Short term	1	Study area	1	Slight impact	1	Unlikely	1	4

There will be no storage of oils and fuel on site, however there is risk of spillage of hydrocarbons from vehicles and drilling machine which may result in environmental contamination. The nearest small ephemeral river to the mining claims is Aaprivier which is approximately 20km. Hence posing minimum harm to surface water bodies. Groundwater sources might be the ones at risk if any spillages occur.

Mitigations and recommendation

- Implement a maintenance programme to ensure all vehicles, machinery and equipment remain in proper working condition and maintenance should be conducted in designated areas only, preferably off-site.

- Waste oils and fuels from drip trays on stationery vehicles and machinery should be disposed of as hazardous waste at a licensed facility by a specialist hazardous waste handler.

7. Impact on fauna

Identified Impact	Effect						Risk or Likelihood	Score	Overall Significance
	Temporal Scale	Score	Spatial Scale	Score	Severity of impact	Score			
Impact on fauna Unmitigated	Short term	1	Study area	1	Moderate impact	2	Definite	4	8
Mitigated	Short term	1	Study area	1	Slight impact	1	Unlikely	1	4

Exploration activities (walking around, trenching and drilling) might result in loss for animal habitancy. Noise generated from these activities might also scare away animals. In addition, wild animals might also be at risk if prospectors practice poaching activities for meat.

Mitigations and recommendation

• Working hours should be limited to during the day, thus enabling wildlife to roam freely at night.

8. Generation of waste

Identified Impact	Effect						Risk or Likelihood	Score	Overall Significance
	Temporal Scale	Score	Spatial Scale	Score	Severity of impact	Score			
Generation of waste Unmitigated	Short term	1	Study area	1	Slight impact	1	Definite	4	7
Mitigated	Short term	1	Study area	1	Slight impact	1	May occur	2	5

Waste might be generated from unearthed rocks and soil, oils, fuel, food leftovers, papers and plastics. It is definite that waste will be generated from unearthed rocks and soil but if mitigation measures are implemented the impact will be of low environmental significance.

Mitigations and recommendation

- Contaminated wastes in the form of soil, litter and other material must be disposed off at an appropriate disposal site.
- Strictly, no burning of waste on the site or at the disposal site is allowed as it possess environmental and public health impacts
- After completion of exploration activities such as trenching, removed soil layers and rocks must be replaced and levelling must be done so that the original condition is restored

7.3.2 Negative socio-economic impacts associated with exploration phase:

1. Occupational Health and Safety Risks

Identified Impact	Effect						Risk or Likelihood	Score	Overall Significance
	Temporal Scale	Score	Spatial Scale	Score	Severity of impact	Score			
O.H.S Unmitigated	Short term	1	Study area	1	Moderate impacts	2	May occur	2	6
Mitigated	Short term	1	Study area	1	Slight impact	1	Unlikely	1	4

Noise, dust and occupational stress are hazards, which are likely to be encountered during the exploration phase. Dust emitted during trenching and drilling can cause pneumoconiosis to employees thus if they are exposed to it for prolonged periods. Moreover, work pressure on employees can cause stress hence resulting into accidents.

Mitigations and recommendation

- Conduct Hazard identification and risk assessments
- Comply with all Health and Safety standards specified in the Labor Act.

- Provide all staff on site with protective equipment (helmets, gloves, respirators, work suits, earplugs, goggles and safety shoes where applicable).

2. Population Influx

Identified Impact	Effect						Risk or Likelihood	Score	Overall Significance
	Temporal Scale	Score	Spatial Scale	Score	Severity of impact	Score			
Population Influx Unmitigated	Short term	1	Beyond project boundary	2	Slight impact	1	Unlikely	1	5
Mitigated	Short term	1	Beyond project boundary	2	Slight impact	1	Unlikely	1	5

During the exploration phase, there will be people coming to work at the site. However, the Proponent is expecting to hire a few people given that this stage of the project is not labor intensive as compared to mining. The Proponent will hire two permanent employees (geologist and assistant to the geologist), contractors for drilling and locals for manual labor when the need arises. Therefore, the impact of population influx is expected to remain of low environmental significance.

Mitigations and recommendation

- Local employment should be a priority so as to reduce the number of outsiders entering Opuwo area

3. Heritage impact

Identified Impact	Effect						Risk or Likelihood	Score	Overall Significance
	Temporal Scale	Score	Spatial Scale	Score	Severity of impact	Score			
Heritage impact Unmitigated	Short term	1	Study area	1	Moderate impact	2	May occur	2	6
Mitigated	Short term	1	Study area	1	Slight impact	1	Unlikely	1	4

At the sites, there are no known heritage areas or artefacts deemed to be impacted by the exploration activities. However, there might be unknown archaeological remains within the mining claims. The Proponent is required to consult with the headman of the area before any work is done so that if there are any areas which are holy or with graves, the Proponent would be aware. In addition, if the Proponent come across archaeological features or objects that possess cultural values (e.g. Pottery, bones, shells, ancient clothing or weapons, ancient cutlery, graves etc.), the area should be barricaded off and the relevant authorities should be contacted immediately.

Mitigations and recommendation

- The Proponent should consult the headman of the area before conducting any work.
- All works are to be immediately ceased should an archaeological or heritage resource be discovered.
- The National Heritage Council of Namibia (NHCN) should advise with regards to the removal, packaging and transfer of the potential resource.

4. Risk and spread of HIV/AIDS

Identified Impact	Effect						Risk or Likelihood	Score	Overall Significance
	Temporal Scale	Score	Spatial Scale	Score	Severity of impact	Score			
HIV/AIDS Unmitigated	Short term	1	Regional	3	Severe impact	4	May occur	2	10
Mitigated	Short term	1	Beyond project boundary	2	Slight impact	1	Unlikely	1	5

The fact that people will be coming from different locations and meeting at one place can result in anti-social behaviours like prostitution hence the spread of HIV/AIDS. If mitigation measures are implemented, it will be unlikely that the virus will spread and the impact will be of low significance.

Mitigations and recommendation

- Employer should allocate time for employees to visit their families.
- Free distribution of condoms

5. Cumulative Impacts

Identified Impact	Effect						Risk or Likelihood	Score	Overall Significance
	Temporal Scale	Score	Spatial Scale	Score	Severity of impact	Score			
Cumulative impacts Unmitigated	Short term	1	Study area	1	Slight impact	1	Probably	3	6
Mitigated	Short term	1	Study area	1	Slight impact	1	May occur	2	5

Alternation of existing landscape caused by limited trenching and drilling might impact on archaeological heritage and also result in loss of habitancy for some animals which can further affect the food web. The greatest potential impact of the proposed development on the archaeological heritage of the surrounding landscape will be during the removal of topsoil during limited trenching and drilling on identified areas of interest with possible mineral deposits. The proposed works will have a negative archaeological impact on undisturbed areas of ground where topsoil will be removed.

Mitigations and recommendation

- Limited trenching should be done to understand the surface geology but when need arise to understand the subsurface geology, drilling should be used.
- The Proponent will need to monitor, by seeking consultation from an archaeological consultant during topsoil removal over relatively large areas so as to ensure the full recognition and recording of any buried finds or features.
- Removed rocks and soil should be replaced back and levelling of the area done so as to try to restore the area to its natural state.

7.3.3 Positive impacts associated with the project

1. **Employment creation**

Identified Impact	Effect						Risk or Likelihood	Score	Overall Significance
	Temporal Scale	Score	Spatial Scale	Score	Severity of impact	Score			
Employment creation Unmitigated	Short term	1	National	4	Very beneficial	8	Definite	4	17
Mitigated	Short term	1	National	4	Very beneficial	8	Definite	4	17

It is definite that jobs will be created during the exploration phase. The type of jobs will range from skilled, semi-skilled and unskilled and locals will definitely be recruited when manual labour is required.

2. **Local Empowerment**

Identified Impact	Effect						Risk or Likelihood	Score	Overall Significance
	Temporal Scale	Score	Spatial Scale	Score	Severity of impact	Score			
Local Empowerment Unmitigated	Permanent	4	Regional	3	Very beneficial	8	Definite	4	19
Mitigated	Permanent	4	Regional	3	Very beneficial	8	Definite	4	19

The shareholders of Kaoko Mining Namibia (Pty) Ltd are all Namibian citizens who managed to group their licenses together in a bid to explore for the possible discovery of a medium to large minable copper deposit. If the deposits are discovered in future, the shareholders and those who depend on them will benefit as long as the mine is operating.

3. Land utilization for the benefit of people

Identified Impact	Effect						Risk or Likelihood	Score	Overall Significance
	Temporal Scale	Score	Spatial Scale	Score	Severity of impact	Score			
Land utilization for the benefit of people Unmitigated	Permanent	4	Regional	3	Very beneficial	8	Definite	4	19
Mitigated	Permanent	4	Regional	3	Very beneficial	8	Definite	4	19

The formation of the company helped locals since they did not have funds to start exploration activities. Given that exploration activities are done and minable deposits are obtained, this can result in utilisation of the land hence benefiting the people.

4. Generation of Revenue

Identified Impact	Effect						Risk or Likelihood	Score	Overall Significance
	Temporal Scale	Score	Spatial Scale	Score	Severity of impact	Score			
Revenue Unmitigated	Permanent	4	National	4	Very beneficial	8	Definite	4	20
Mitigated	Permanent	4	National	4	Very beneficial	8	Definite	4	20

Kaoko Mining Namibia (Pty) Ltd will pay tax hence generating revenue. More taxes will also be generated through contracted and subcontracted companies.

7.3.4 Post-Exploration Phase

The stage of exploration is expected to have minimum damage to the environment as compared to mining. However, pits created during limited trenching need to be rehabilitated. The following shall be done as a way to restore the environment:

- All pits shall be backfilled or contoured to a stable angle of repose.
- Stockpile disturbed bedrock on site in a safe and stable manner.

7.4 SUMMARY & ANALYSIS OF IMPACTS

During the exploration phase, the following impacts will fall under moderate environmental impacts if no mitigation measures are put in place; impact on landscape, fauna, soil and HIV/AIDS. However, if the project is well managed and the proposed mitigation measures are implemented accordingly, all the identified impacts will present minimum or no harm to the environment and to local people.

CHAPTER EIGHT: ENVIRONMENT MANAGEMENT AND MONITORING PLAN

Environmental planning and management as a concept seek to improve and protect environmental quality for both the project site and the neighborhood through segregation of activities that are environmentally incompatible. Environmental planning and management integrate land use structure, social systems, regulatory law, environmental awareness and ethics. Environmental Management Plan (EMP) is a vital output for an Environmental Impact Assessment as it provides a checklist for project monitoring and evaluation.

EMP for the proposed project is aimed at providing a logical framework within which identified negative environmental impacts can be mitigated and monitored. **See Appendix C**, for the EMP.

CHAPTER NINE: CONCLUSIONS AND RECOMMENDATIONS

9.1 CONCLUSION

In conclusion, the social and economic rating for this project is positive. The project does not pose any serious and negative environmental impacts. Adequate mitigation measures have been proposed to address any of the negative impacts arising from the project. Should the Proponent implement all the suggested mitigation measures, the consultant recommends the issuance of the Environmental Clearance Certificate.

9.2 RECOMMENDATIONS

The following recommendations have been brought forward:

- Unnecessary clearing of vegetation shall not be allowed unless when the need arise to create cutlines for accessibility of vehicles.

- After exploration activities, the Proponent should rehabilitate the area by backfilling the pits or contour to a stable angle of repose
- Environmental audits by an independent environmental consultancy must be carried out during the exploration phase to monitor environmental compliance. The monitoring and audit reports should accompany the application for renewal of the environmental clearance certificate after 3 years.

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