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SCOPING ENVIRONMENTAL IMPACT ASSESSMENT FOR PROPOSED SMALL-SCALE MINING ON MINING CLAIMS 70310, 72092 & 72093 NEAR ONDERA AREA, OTUANI, KUNENE REGION

MEFT PROJECT NO.: 260504007424

MAY 2026

DOCUMENT INFORMATION

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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 Environmental 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
I&APs	Interested and Affected Parties
LTD	Limited Company
MC	Mining Claim
MEFT	Ministry of Environment Forestry and Tourism
MIME	Ministry of Industries Mines and Energy
PPP	Public Participation Process
PTY	Proprietary
ToR	Terms of Reference

EXECUTIVE SUMMARY

The owner of the mining claims is Marius Leon Steiner and the proposal is to conduct an Environmental Impact Assessment (EIA) for small-scale mining on mining claims 70310, 72092 & 72093 near Ondera Settlement, Otuani area, Kunene Region. Marius Leon Steiner will be referred as the proponent in this report. The commodities for the mining claims will include; **Base and Rare Metals, Precious Metals, Industrial Minerals, Non-nuclear minerals and Semiprecious Stones.**

The proponent intends to mine using open cast mining method. The activities which will be involved will include; site preparation and infrastructure installation (mainly temporary infrastructure in the form of containers). In addition, during the operation phase, the following activities will be conducted; soil sampling, bulk sampling, drilling, blasting, shallow open pit excavation**,** overburden removal, ore extraction, stockpiling of ore, loading of ore**,** waste rock dumping and hauling of ore to the crusher. These activities will have possibilities of causing negative impacts. Possible negative impacts which might be associated with these activities might include; impact on vegetation, impact on fauna, generation of dust, noise, impact on landscape, impact on soil, vibration from blasting and occupational health and safety hazards. Possible positive impacts will include; employment creation, empowerment of the local people, transfer of skills, boosting Namibia's copper supplies and mineral exports, community development etc.

Eco-Wise Environmental Consulting cc conducted the Environmental Impact Assessment (EIA) for the proposed small-scale mining. 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 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 assessment, public consultation through advertisement, public meetings, placing of notices, distribution of questionnaires and consultation with relevant authorities e.g Opuwo Rural Constituency Office, Otjambangu Conservancy and the Ombepera Traditional Authority.

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

Specific objectives included:

- To determine the potential environmental impacts derived from the proposed small scale mining 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 main findings indicate that the project will be associated with both negative and positive impacts, with the negative impacts ranging from medium to low environmental significance. With the implementation of the proposed mitigation measures, these medium impacts can pose less to no harm to the environment.

CHAPTER ONE: BACKGROUND

1. INTRODUCTION

Marius Leon Steiner proposes to conduct small-scale mining activities on mining claims 70310, 72092 & 72093 near Ondera Settlement, Otuani area, Kunene Region. Marius Leon Steiner shall be working with New Horizon Investments Pty Ltd. The commodities for the mining claims will include; **Base and Rare Metals, Precious Metals, Industrial Minerals, Non-nuclear minerals and Semiprecious Stones**. MC 70310, 72092 & 72093 were checked on the Ministry of Industries, Mines and Energy portal and were found not to be falling under environmental sensitive areas or withdrawn areas.

The consultant who conducted this scoping EIA is Eco-Wise Environmental Consulting cc. 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 environmental assessment. The EIA regulations (2012) states all the activities which require an EIA 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 an EIA. The competent authority will be, Ministry of Environment Forestry and Tourism (MEFT).

1.2 NEED FOR THE PROJECT

Promote local empowerment	The mining claim holder will be working together with New Horizon Investments (Pty) Ltd hence local empowerment will be promoted. The mining claim holder is a Namibian.
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 mined, this will boost Namibia's copper supplies and mineral exports. In addition, the operations of the small-scale mining will generate revenue for the government through taxes. Revenue generated through taxes will be used for economic development.
Employment creation	Employment in the area of study is limited to almost none. It is of recent when proposals of starting mining claims around the area is being brought forward. If this project is accepted, employment will be created, the type of jobs will

	range from skilled, semi-skilled and unskilled. Type of jobs will range from core mining operations personnel (mine claim supervisors, miners, driller, blaster), equipment and machinery operators (excavator operator, front-end loader operator, tipper truck driver), safety, environmental personnel and support and administrative staff.
Local development	Generally, the area of Opuwo rural is remote such that access to some areas is difficult. This project has enabled the creation of access roads which are now also being used by locals.

1.3 SCOPE OF THE PROJECT

The scope of the study includes carrying out an environmental investigation 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 scoping EIA study. The report is aimed at identifying and evaluating environmental and socio-economic impacts associated with the project.

1.4 TERMS OF REFERENCE

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

- Determine 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 a scoping EIA report for submission to Ministry of Environment Forestry and Tourism (MEFT) and Ministry of Industries Mines and Energy (MIME).
- Coordinate the whole application process of the Environmental Clearance Certificate (ECC) until the issuance of the certificate.

1.5 OBJECTIVES

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

1.5.1 GENERAL OBJECTIVE

- To determine the potential environmental and socio-economic impacts derived from the proposed small scale mining activities

1.5.2 Specific Objectives

- To determine the potential environmental impacts derived from the proposed small scale mining 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.

1.6 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 consultant visited the site on 07/04/2026. The field visit was meant for physical inspections of the sites in order to gather information on the state of the environment.
c) **Public Participation**-The study also sought public views through advertisement and a public meeting. The first meeting was held on 09/04 2026 at Opuwo Rural Constituency Office in Otuani and then at the site on 10/04/2026.
d) **Mapping-**More data was obtained from the maps which were produced by the GIS consultant. The maps included vegetation, hydrogeology and location maps.
e) **Reporting**- all data gathered was used to compile a scoping EIA and EMP report which was submitted to MEFT and MIME.

1.7 LAND OWNERSHIP

The land is under communal land, **see Appendix B** consent letter from the traditional authority. The owner of the mining claims was however allocated the mining claims by MIME.

1.8 OVERVIEW OF EIA REPORT

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

- Project Description.
- Relevant Legislation
- 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

The mining claims 70310, 72092 & 72093 are located near Ondera Settlement, Otuani area, Opuwo Rural Constituency in Kunene Region. Ondera settlement is a small settlement which is situated approximately 1.4km from the mining claims. The mining claims are also located within the Otjambangu Conservancy.

Table 1: Size and coordinates for the mining claims

Mining Claim Number (MC)	Area (Hectares)	Conservancy	Middle
70310	15.8464	Otjambangu	18° 38' 07" S 13° 40' 07" E
72092	7.8924	Otjambangu	18° 38' 07" S 13° 39' 55" E
72093	17.9336	Otjambangu	18° 37' 57" S 13° 40' 20" E

2.2 SURROUNDING LAND USES

The mining claims are generally surrounded by open spaces. The nearest settlement is Ondera to the southwest and it is *approx* 1.4km. Further southwest (approx. 2.3km) there is borehole WW022669. On the eastern side, there is Omao settlement which is *approx*. 5.8km, borehole WW016724 which is *approx.* 4.6km and Noideb River which is also *approx.* 4.6km. On the western side there is the tributary of Noideb River which is *approx.* 1.6km. Immediate north it is an open area and further north there is a school which is *approx*. 7.8km. The mining claims are also located within the Otjambangu Conservancy.

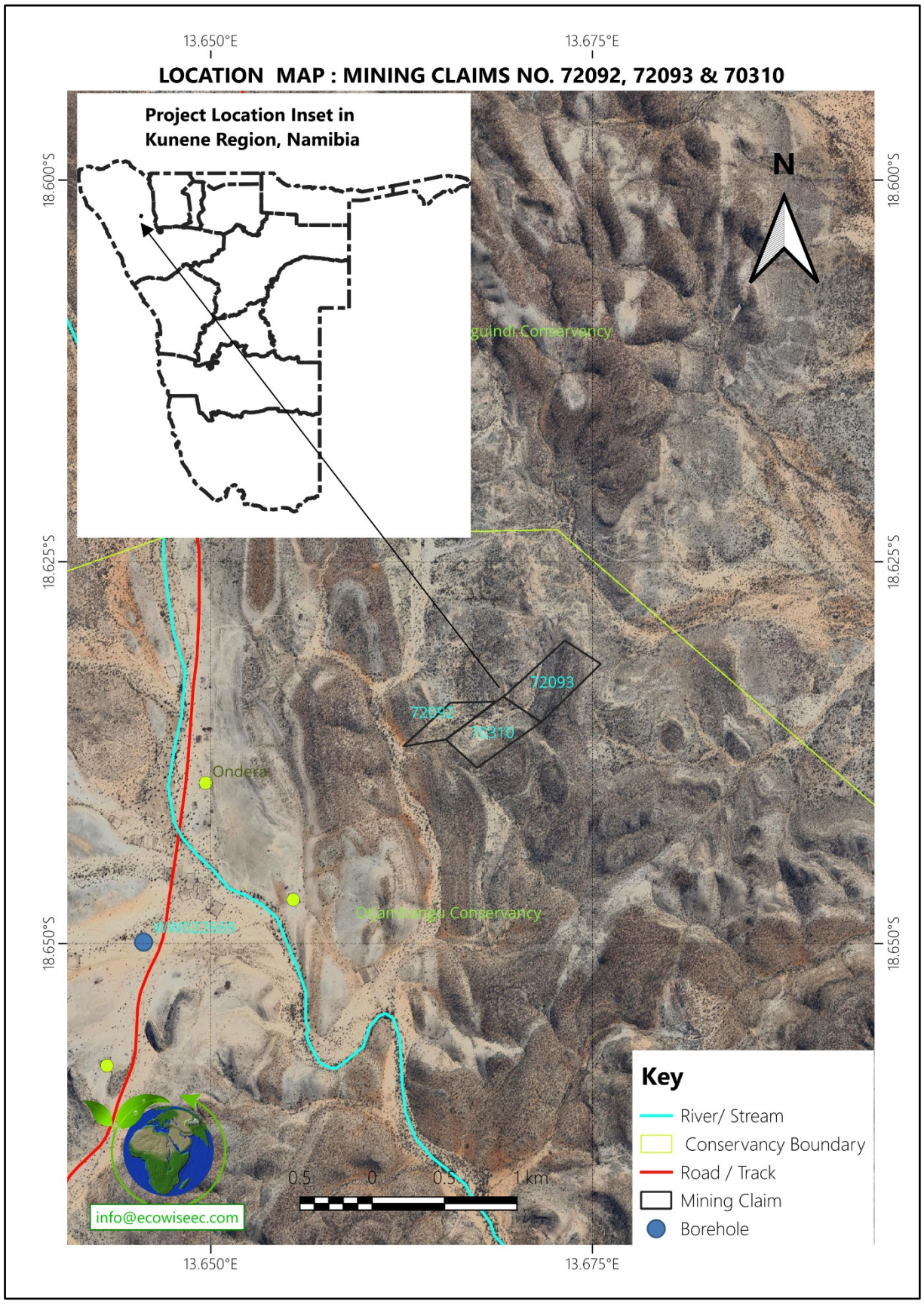

Figure 1: Location Map

2.3 PROJECT ACTIVITIES

In the paste, the Proponent has conducted exploration around the area of study. Mining of semiprecious stones has also been allowed within the mining claim area. On site, there is an open hole which was opened during the exploration phase, as shown on image 1 below. It is during these activities when potential copper deposits were explored hence the proponent now intends to add the following commodities; ***Base and Rare Metals, Precious Metals, Industrial Minerals, Non-nuclear minerals and Semiprecious Stones.*** The Proponent now intends to move to the next phase which is small scale mining. Figure 2 below shows the phases involved.

Furthermore, the proponent also developed access roads which lead to the site and continuous upgrading of the access roads is being done. The only infrastructure which was observed on site is a small stone cottage structure and a corrugated zinc structure at the entrance as shown on the images below.

Continuous exploration of the site will be done during the day. If it happens that any other mineral is found necessary amendments will be done. The process will be overseen by an appointed manager and responsible people on site. To note, only mining of the ore body, loading and transportation will be done on the site. The ore will be transported to a crushing facility which is off site.

The project will undergo the following activities; site preparation and development, infrastructure Installation, mineral ore extraction by open cast mining, loading and transportation and waste management activities. During the operation phase, the main aim will be mineral ore extraction using the open cast method. Machinery which will be used will include; RC (Reverse Circulation Drilling Rig), Excavator, Bulldozer and Tipper Trucks. The following will be the phases and activities which will be involved during the small-scale mining;

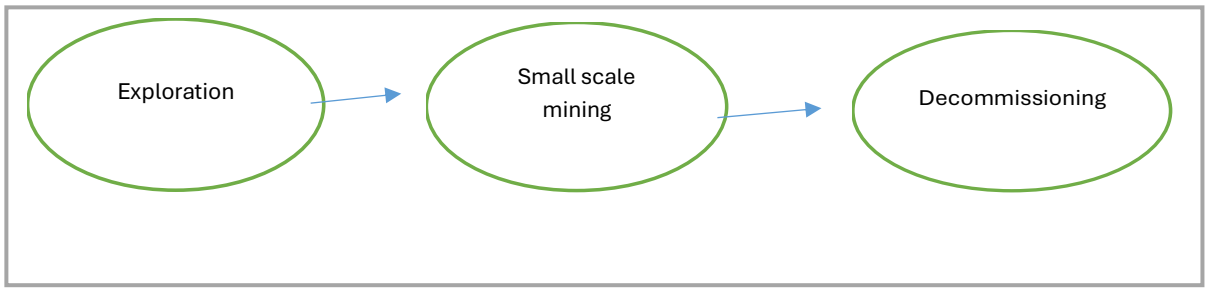

Figure 2: Phases involved in the project

Image 1: Open exploration hole on site

Image 2: Structure on site

Image 3: Corrugated zinc structure on site

Image 4: Access road to the site

2.3.1 CONSTRUCTION PHASE

1. Site Preparation & Development	▪ Fencing of the area ▪ Land clearing which will involve vegetation removal ▪ Topsoil stripping and stockpiling (to be used during rehabilitation) ▪ Upgrading of access road and preparation of cutlines when necessary
2. Infrastructure Installation	▪ Temporary storage structures (likely to be in the form of a container) ▪ A constructed kitchen, ablution block and covered roofing and concrete floors for tents. ▪ Basic power supply (generator) ▪ Safety signage installation within the mining area

2.3.2 OPERATION PHASE

1. Mineral ore extraction by open cast mining	▪ Soil sampling ▪ Bulk sampling ▪ Drilling- basically selective drilling and blasting due to the hardness of the material ▪ Blasting ▪ Shallow open pit excavation ▪ Overburden removal ▪ Ore extraction ▪ Stockpiling of ore ▪ Loading of ore ▪ Waste rock dumping ▪ Hauling of ore to the crusher

2. Loading and Transportation	Mined ore will be transported from the site to the crusher which is offsite. Tipper trucks will be used to transport the ore. From the mining claim track roads will be used and then the existing road C43. The type of tipper trucks which will be used will depend on the production scale. It should be ensured that the trucks are covered to prevent material spillage and that the trucks comply with Namibian road traffic regulations.

3. Waste Management Activities	During the operation phase, waste will be generated mainly in the form of waste rock. In addition, hydrocarbon waste in the form of oils, greases, fuel spillages might also be produced. ▪ Waste rock disposal ▪ Spill prevention and containment

2.3.3 DECOMMISSIONING PHASE

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.

Mine Closure & Rehabilitation	▪ Backfilling of pits ▪ Removal of available infrastructure ▪ Topsoil replacement ▪ Revegetation ▪ Closure reporting

Required Resources	During the small-scale mining phase, there will be resources which will be required and some of them will include; ▪ RC (Reverse Circulation Drilling Rig); ▪ Excavator; ▪ Bulldozer; ▪ Tipper Trucks; ▪ 4x4 vehicle(s); ▪ Compressor and generator(s); ▪ Fuel to power the drills; ▪ Picks and shovels; ▪ Containers for storage use; ▪ Water for consumption; ▪ Ablution facilities; ▪ Accommodation for the employees; ▪ Proper cooking area; ▪ Lighting etc

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 previous exploration activities justify the use of the proposed sites to conduct small scale mining.

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 owner of the claims is a Namibian hence by promoting this project, a local will be empowered.
- **Transfer of skills**- the project will probably enable locals to obtain skills and knowledge through work experience and trainings.
- **Growth and development**- the project has the potential to benefit the locals if medium deposit are discovered and mined, this will result in growth and development of the area in terms of human capital and infrastructure (roads).
- **Employment creation**- employment will be created and locals will be the first priority.

3.3 OTHER ALTERNATIVES

Table 2: Services alternatives

Services	***Proposed source***	***Alternative source***
Water	▪ Water will be obtained from the nearest borehole ▪ Potable water for drinking and cooking will be stored in a 10 000-liter tank/container	▪ Collecting water from other nearby boreholes ▪ In a case that the need arises, the proponent can also try to survey for water around the site, and drill a borehole. Installation of water tanks powered by solar system can then be used.
Power	▪ Diesel generators	▪ Solar
Cooking	▪ A constructed kitchen and fire wood will be used	▪ Gas stoves
Employees accommodation	▪ A covered roofing and concrete floors for tents will be put on site	▪ No alternative was seen viable as the nearest settlement is Ondera which is 1.4km
Road (site accessibility)	▪ Mining Claim to be accessed from C43 road (Opuwo Sesfontein road) then track road	▪ No alternative route was seen viable to use
Waste Management		
Ablution facilities	▪ A constructed ablution block	▪ Portable toilet is recommended and these are advantageous because they are easy to transport and environmentally friendly (if properly disposed)
General waste	▪ Waste will be collected and transported to Opuwo landfill	▪ No alternative was seen viable
Waste rock	▪ Waste rock generated during the mining activities shall be disposed at a designated area within the site. This waste rock should be used during the rehabilitation phase.	▪ No alternative location other than the site was seen viable to dispose the waste rock

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. Furthermore, water for the proposed activity will be sourced from selected boreholes close to the site and potable water for drinking in container tanks. In cases that the water from selected boreholes have low yields, water will be transported by trucks from other villages around the area. The Proponent can also try to look into the alternative of drilling a borehole and installing a solar powered system at the site. If this alternative becomes a solution in future, the proponent should apply for necessary permits. Apart from that, power for drilling will come from a diesel-powered generator. The proponent intends to construct an ablution block. However, portable toilets are recommended given that, they are easy to transport and environmentally friendly (if properly disposed). Waste generated at the site will be collected and transported to Opuwo landfill. In addition, waste rock generated during the operations shall be disposed at the site on an area which will be designated for that. The route which can be used to get to the site is C43 road (Opuwo Sesfontein road) and then track road.

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 3 below indicates laws and policies, which relates to the project.

Table 3: 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.	– Ensure that the project align with principles of sustainable development, ensure that environmental degradation is minimized and that natural resources are utilized responsibly – Ensure rehabilitation of the site after closure of the operations
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 act should guide the management of this project. – Proper channel of communication between the project owner/s and the community should be established – The public and relevant authorities should be consulted during the process of public consultation as per the requirement of the act – The EMP which will guide on the management of the environment should be drafted and used as an onsite guideline document.
	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 Ms are located within the Otjambangu 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.	- This policy outlines the principles and procedures for environmental assessment in Namibia. - It guides best practice in environmental planning, including early identification of impacts, consideration of alternatives, and implementation of mitigation measures.
	Hazardous Substances Ordinance No. 14 of 1974	This ordinance gives provision to control the handling of hazardous substance in all circumstances	- To ensure proper handling of explosives which will be used during blasting.

	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, 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).	- The intended activity will involve mining of copper bearing minerals, Base and Rare Metals, Precious Metals, Industrial Minerals, Non-nuclear minerals and Semiprecious Stones.
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	- The mining activities will leave earthed soils hence rehabilitation must be done during the decommissioning phase. - Ensure safe operations so as to avoid oil, grease and fuel spillages which can cause soil contamination
Water	Water Act 54 of 1956	– Prohibits the pollution of underground and surface water bodies.	– Ensure safe operations which do not end up contaminating water sources
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. – To follow legal labour requirements on remuneration

	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. - Ensure public safety from noise and dust
	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
	Regional Council Act, 1992 (Act No. 22 f 1992)	- The Regional Councils Act legislates the establishment of Regional Councils that are responsible for the planning and coordination of regional policies and development. The main objective of this Act is to initiate, supervise, manage and evaluate development at regional level.	- To observe the regional by laws

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 personnel. The Environmental consultant is supposed to conduct environmental monitoring and produce bi-annual reports, which will be required during renewal of the environmental clearance certificate. The Proponent is also required to seek permits or consents were necessary. Some of the permits might include;

Table 4: Some of the key permits for small-scale mining in Namibia

Permit / Licence	**Issuing Authority**	**Purpose**
Mining Claim (MC)	Ministry of Mines and Energy	Legal right to mine
Environmental Clearance Certificate (ECC)	Ministry of Environment, Forestry and Tourism	Environmental approval
Explosives Permit	Namibian Police	Blasting and explosives
Water Abstraction Permit	Department of Water Affairs	Water use
Land Access Consent	Traditional Authority	Use of communal land
Heritage Clearance	National Heritage Council	Protection of cultural sites
Road / Transport Permit	Roads Authority	Ore transport
Labour Compliance	Ministry of Labour	Worker safety and employment

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 small-scale mining phase.

5.1 BIO-PHYSICAL ENVIRONMENT

5.1.1 CLIMATE

The area under study is classified under semi-arid climate conditions. In the absence of site-specific climatic data, the climate data from Opuwo was used in this report. According to Mendelsohn et al (2003) the area receives an average annual rainfall ranging from 300-350 mm per annum. Moilanen (2015) during a study also noted that the area of Opuwo receives around 379mm rainfall per year and of the 379 mm of annual rainfall, approximately 84% is lost to evapotranspiration, 15% contributes to surface runoff, and only 1% recharges groundwater resources. In general, the area receives little rainfall which most of it is lost to evapotranspiration hence impacting of the water which reaches the groundwater sources.

In addition, maximum temperatures can reach 34°C-36°C during the summer months (Mendelsohn et al 2003). 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 above sea level is 772m, Opuwo 1,155m (https://en-nz.topographic-map.com/place-ss1h/Namibia/) and 1593m for Otuani (https://elevationmap.net/otwani-opuwo-na-1001339130). The study area is mainly covered by lithic leptosols soils 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.

Geology of the study area is classified mainly under the Otavi Group (Ls). Dominate rock type around the mining claims area is limestone and dolomite, **see figure 3 below, Hydrogeology Map**. Table 6 below also shows possible types of mineral deposits on the mining claims.

Table 6: Geology for the mining claims

MC	GEOLOGY	COMMODITIES
70310	Lithology:dolomite,limestone, shale, quatzite (Na)	Base and Rare Metals, Precious Metals, Industrial Minerals, Non-nuclear minerals and Semiprecious Stones
72092	Lithology:dolomite,limestone, shale, quatzite (Na)	Base and Rare Metals, Precious Metals, Industrial Minerals, Non-nuclear minerals and Semiprecious Stones
72093	Lithology:dolomite,limestone, shale, quatzite (Na)	Base and Rare Metals, Precious Metals, Industrial Minerals, Non-nuclear minerals and Semiprecious Stones

a)

b)

c)

Image 5: Exposed rocks within the study area

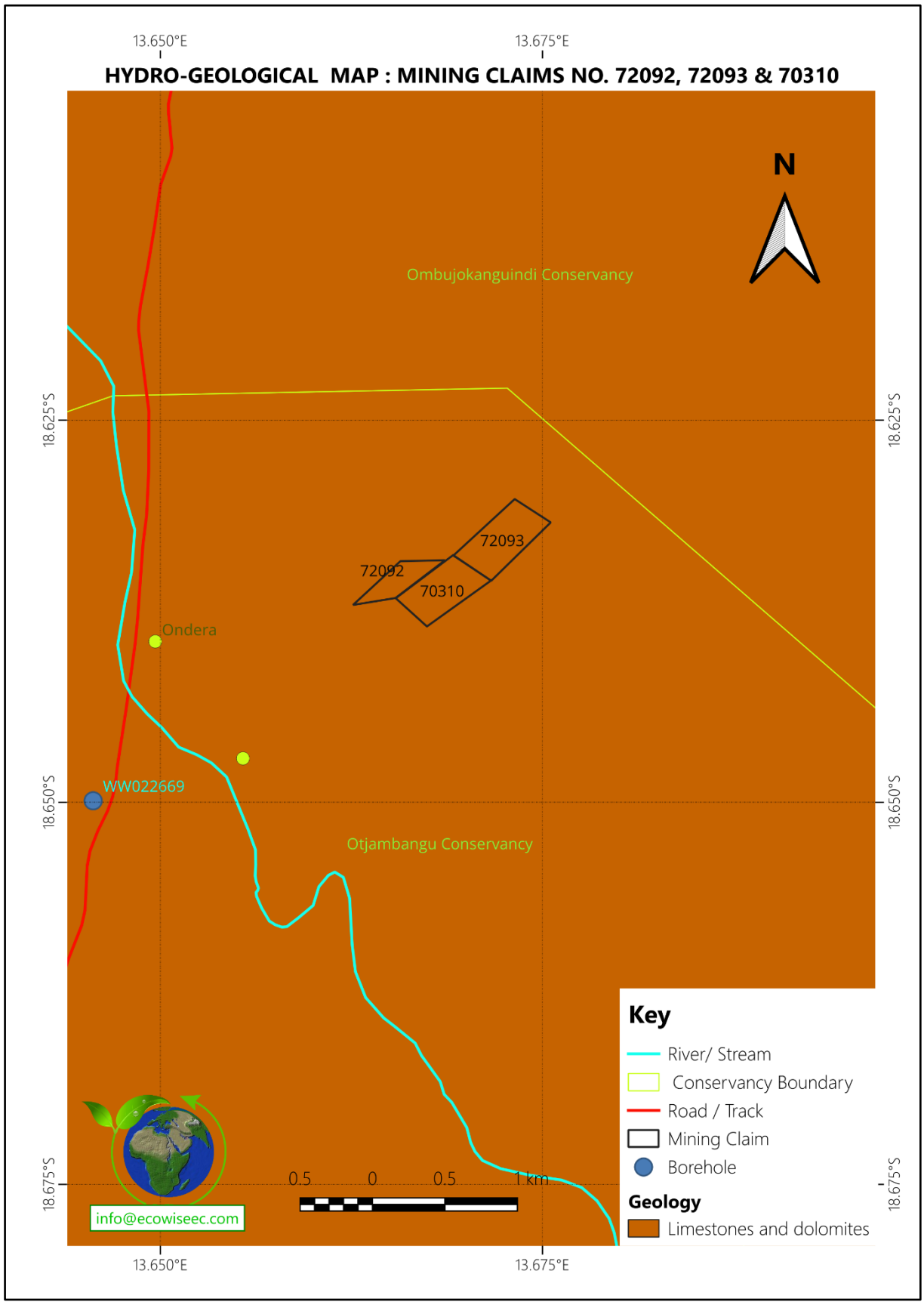

Figure 3: Hydrogeology Map

5.1.3 HYDROGEOLOGY

Generally, the region has low groundwater potential aggravated by the sparse knowledge of the aquifers. 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 Noideb River which is approximately 4.6km due east of the mining claims. There is also a tributary of Noideb River which is 1.6km to the west. The nearest borehole is WW022669 which is approximately 2.3km from the mining claims.

5.1.4 VEGETATION OF THE STUDY AREA

The vegetation structure of the study area is woodlands, **see figure 4 below, Vegetation Map**. The tree species are adapted to low rainfall, high evapotranspiration rates and shallow soils. At the site dominate vegetation are thorn trees with also sparse mopane trees. The density of vegetation around the area of study can be classified under medium density with the thorn trees highly populated. Images below show vegetation around the study area. 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.

Table 7: Protected plant species

Species Name	**Tree Name**	**Occurrence**
***Colophospermum* Mopane**	Mopane	Uncommon to rare occurrence

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

a) Vegetation around mining claim 70310

b)

c)

d) (b,c,d shows vegetation around mining claim 72093)

e) Vegetation around mining claim 72092

f)

Image 6: a- f shows vegetation around the area of study

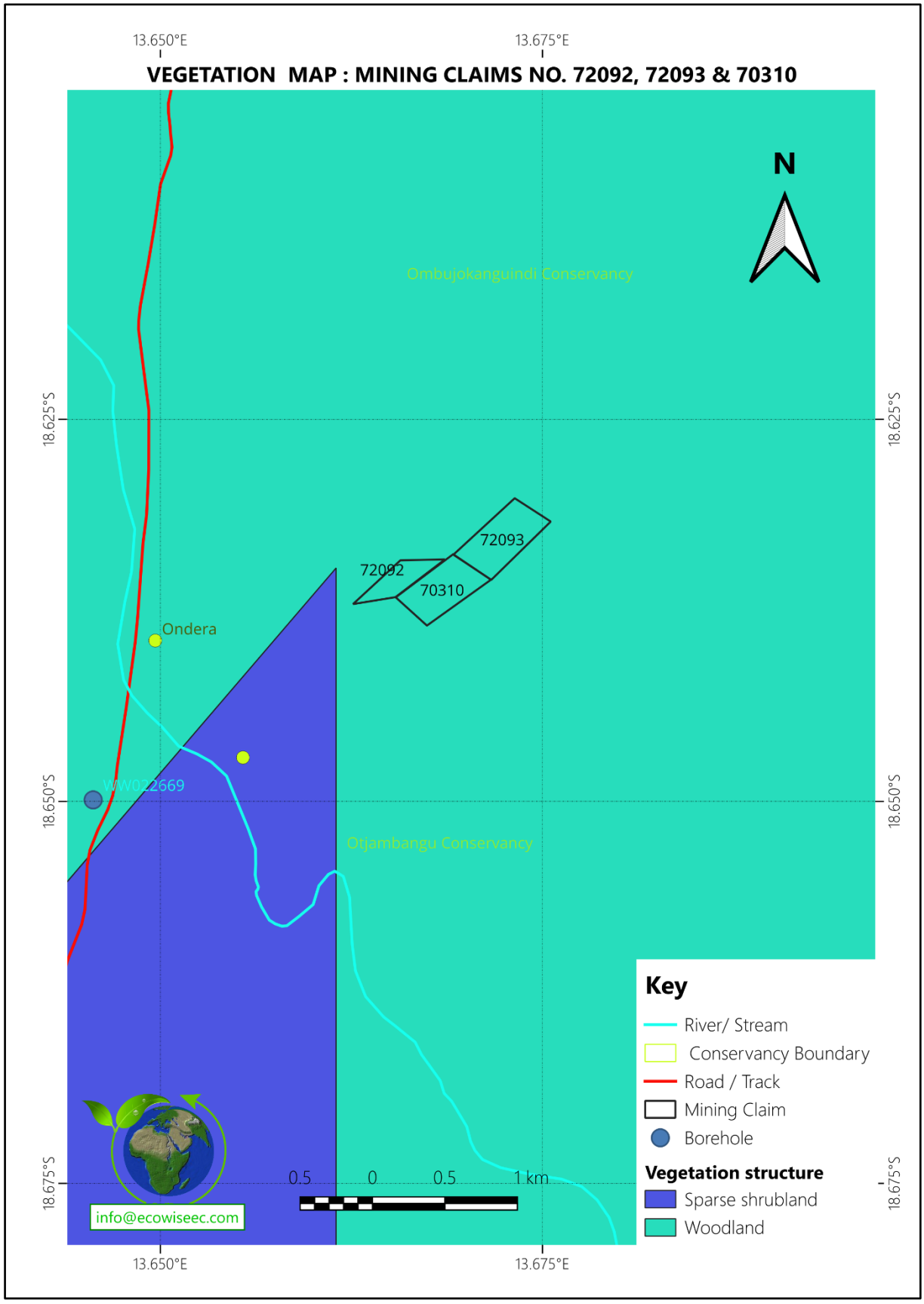

Figure 4: Vegetation Map

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. Droppings of goats and cattle were observed at the site as shown in the image below. 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)

Image 7: Evidence of wildlife near the study area

Image 8: Evidence of domesticated animals within the study area

Image 9: Evidence of insects within the study area

Image 10: Evidence of bird nests within the study area

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 center is the settlement of Otuani.

The mining claims are under Otjambangu 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 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 below 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 (NPC 2011). 73 out of 838 teachers in Kunene Region are without training (NPC 2011). 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). Musaso Combined School is the nearest school to the site and it is approximately 7.8km from the site. 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.

5.2.3 Employment Opportunities

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. Compared to the rest of Namibia, Kunene Region is relatively underdeveloped and this may be due to the inaccessible mountainous geography of the area and the dryness that does not allow much activities such as farming. Infrastructure such as roads hardly exists especially as one enters in the rural parts of the region. As the region might have an average percentage of 32% relying on farming, this is mainly farming of small livestock like goats. Farming of crops especially deep in the rural parts like Otuani, Ondera and Omao remain difficult given the dryness of the area. Taking a further look at the areas around the study area, to have formal employment remains difficult to almost impossible for the locals. It is of recent, that proposals regarding mining activities are taking place around the area of Opuwo, if these proposals are activated to mining this might create employment for the people.

5.2.4 Archaeology

This section will describe how the Proponent will handle any unknown heritage sites that might fall within the Proponent's mining claims. The archaeologist conducted a site assessment of the mining claims on 1 and 2 April 2026. The archaeologist from the site assessment did not find any potential heritage resources within the mining claims.

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. The Proponent 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 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.

Regardless that archaeological work was conducted around the area, the personnel should continue to be observant. 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 personnel 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) Unknown Heritage Sites

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

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 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 meeting was announced in the local newspapers, New Era and Windhoek Observer. To ensure that all stakeholders were involved, the consultant compiled a list. The traditional authority, the conservancy and the Rural Constituency Office were conducted; **see Appendix A, letters sent to stakeholders.**

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.

6.2.3 RELEVANCE

The consultant remained focused on subjects related to the project. Interested and Affected Parties were supposed 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, New Era and Windhoek Observer as shown in table 9 below.

Table 9: Details of public notification for the EIA study

Newspaper	Area of Distribution	Language	Date Placed
Windhoek Observer	Country Wide	English	9 April 2026
Windhoek Observer	Country Wide	English	2 April 2026
New Era	Country Wide	English	2 April 2026
New Era	Country Wide	English	9 April 2026
Site notices	Opuwo Rural Constituency Office & at the site	English	7 April 2026

(See Appendix A)

6.3.3 PUBLIC MEETING

The public meeting was announced in the Windhoek Observer and New Era. The meeting was held on 9 April 2026 at Opuwo Rural Constituency Office as shown on site images below. The public meeting was advertised for 08/04/2026 but the chief shifted the meeting to the next day. Another meeting was held again the following day of 10/04/2026 at the site, **see Appendix A, Meeting Minutes.**

a)

b)

Image 11: a- b, shows public meeting at Opuwo Rural Constituency Office

Image 12: shows public meeting at the site.

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. No questionnaires were brought back to the consultant.

6.3.5 PUBLIC NOTICES

Notices with project information were placed at Opuwo Rural Constituency Office. Image below shows the notice.

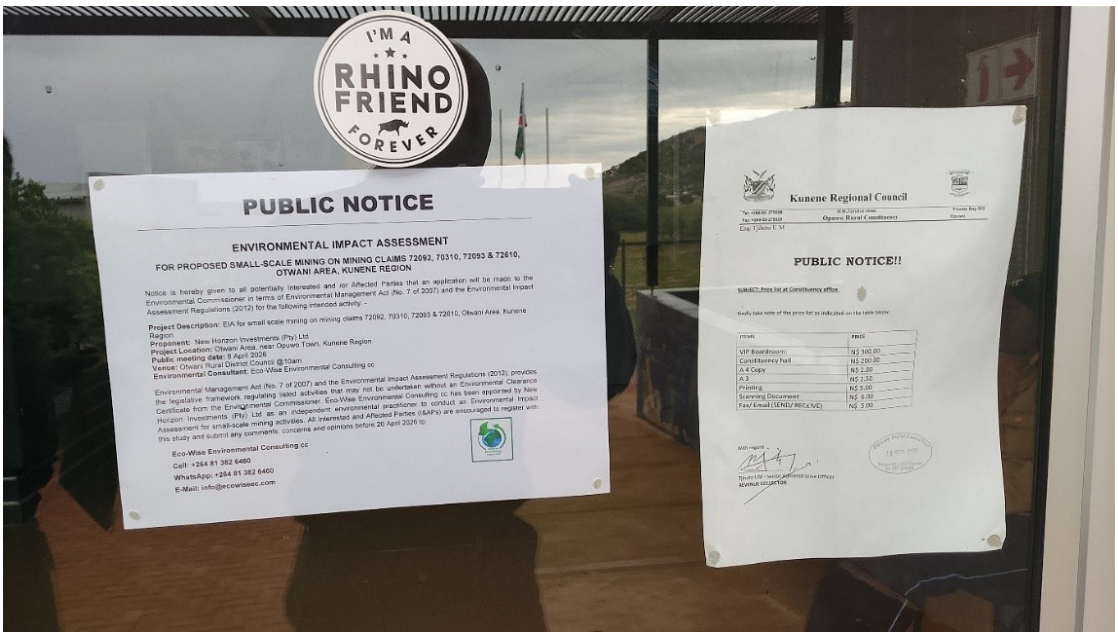

Image 13: shows public notice at Opuwo Rural Constituency Office

6.4 SUMMARY OF STAKEHOLDERS CONSULTATION.

During the public meetings held on 9 April and 10 April 2026 at Opuwo Rural Constituency Office and also at the site, the community agreed that they will not welcome the project until the proponent's representative comes to the community and have a discussion with them, **see Appendix A, Meeting Minutes** for both the two meetings. In summary, the following major issues were brought forward:

a) Number of mining claims

Two of the community members claimed that among the mining claims of Marius Leon Steiner, they only knew that one mining claim was only registered under Marius Leon Steiner. The discussion on this issue ended when the consultant showed them that indeed the claims were all registered under Marius as we cross checked together on the Ministry of Mines Portal.

b) Request to see the proponent's representative

The community also further demanded that, they want to see the representative of Marius. They claimed that Marius also had an agreement with one gentleman. They claimed that mining claim 70310 belonged to that gentlemen but he did not have the capacity to do the paper work hence he handed over the claim to Marius and they had an agreement. They indicated that, this was the reason why they wanted the representative of Marius so that they could discuss these issues. The consultant and the community then agreed to meet the following day (10 April 2026) with the representative.

c) Meeting held at the site on 10 April 2026

Friday 10 April 2026, the consultant, representative of Marius and the community met at the mining claims in Ondera area at around 10am. Mr. Hansie (representative of Marius) attended the meeting but he could not answer or agree to anything as he indicated that he is only a manager. He noted that these issues need the sister of Marius hence he will communicate with her and they will set a date with the community to discuss these issues.

d) Meeting held on 2 May 2026 between the proponent's representative and the community

The community and Marius representative discussed and reached an agreement. The community accepted the project and the chief granted the letter of consent **see Appendix B.** The gentleman (J. Kapetja) who claimed that he had a standing agreement with Marius reached an agreement with the representative of Marius, **see Appendix B.**

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 consultation
- Site visit
- Professional experience

7.1 IDENTIFICATION OF POTENTIAL IMPACTS OF THE PROJECT

Positive Impacts	**Negative impacts**
- Local empowerment - Employment creation - Community development - Generation of revenue	- **Air Environment** - Dust - Noise - Impact on vibration from blasting - **Land Environment** - Impact on landscape - Vegetation loss - Generation of waste - Impact on fauna - Impact on soil - Traffic & transportation impact **Water Environment** - Impact on surface and groundwater sources - **Socio -Economics** - HIV/AIDS - Occupational Health and Safety risks. - Increase in number of people in the area - Heritage impact - **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**
	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**	
EFFECT	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 CONSTRUCTION PHASE (SITE PREPARATION AND INFRASTRUCTURE INSTALLATION)

This phase will mainly involve site preparation and infrastructure installation. Temporary office and storage structures in the form of containers will be erected.

1. Impact on vegetation

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

During site preparation, vegetation will be cleared to pave way for the proposed project. Areas which need to be worked on will be cleared and also areas where infrastructure will be installed. Existing road which led to the site is already there but cutlines within the mining claims might also be created when necessary. It is essential to note that the area of study is within the Otjambangu Conservancy and the trees which are mostly found within the mining claims area are thorn trees and sparsely *Colophospermum* mopane. The vegetation around the mining claim area is medium density. It will be definite that vegetation will be cleared to pave way for the development and the severity is expected to be moderate without mitigation and of slight impact with mitigation.

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.
- Proponent shall be compelled to protect the natural resources around the area.
- Vegetation should be cleared on areas which need to be worked, massive and unnecessary clearing is discouraged.

2. 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	Medium term	2	Study area	1	Moderate impact	2	Definite	4	9
Mitigated	Medium term	2	Study area	1	Slight impact	1	Probable	3	7

Clearing of vegetation will consequently result in destruction of habitats for wildlife, birds, and insects within the area. In addition, the clearing might also result in reduction of biodiversity in the mining area. Animals within the area might also be disturbed by noise generated by human activity. This might make some species to relocate while others may disappear from the affected area.

Mitigations and recommendation

- Limit vegetation removal only to areas required for mining.
- Establish buffer zones around sensitive habitats.

3. 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

During the site preparation, topsoil stripping and stockpiling will be done hence affecting the natural state of the environment within the study area. In addition, clearing of vegetation to pave the way for the development will also reduce soil stability. The impact is expected to affect only the study area and it will be definite that soil will be disturbed.

Mitigations and recommendation

- Cover stockpiles to prevent erosion
- Avoid unnecessary vegetation clearing

7.3.2 NEGATIVE IMPACTS ASSOCIATED WITH OPERATION PHASE

The main activities involved during this phase are; mineral ore extraction using open cast mining, loading and transportation. It is essential to note that at the site only mining of the ore will be done. Crushing of the ore will be done off site hence the ore will be transported to the crushing area.

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	Permanent	4	Study area	1	Moderate impact	2	Definite	4	11
Mitigated	Medium term	2	Study area	1	Slight impact	1	Definite	4	8

Open-cast mining requires the removal of vegetation and topsoil to expose the ore body hence this will disturb the natural state of the sites. In addition, the drilling and blasting effect will cause alternation of existing landscape. During the small-scale mining there will be creation of mine pits, waste rock dumps, and haul roads that alter the landscape. It will be definite that the mining activities will disturb the landscape of the study area therefore, the proponent should ensure that at decommissioning the sites are rehabilitated.

Mitigations and recommendation

- Minimize land disturbance: Restrict clearing and excavation only to the required mining footprint.
- Topsoil stripping and storage: Remove and stockpile topsoil separately for later rehabilitation.
- Progressive rehabilitation: Rehabilitate mined-out areas while mining continues in other sections.
- Backfilling of pits: Use waste rock and overburden to fill excavated pits where feasible.
- Slope stabilization: Shape slopes to safe angles to prevent collapse and erosion.
- Maintain selective drilling

2. Air quality and Dust Generation

Identified Impact	Effect						Risk or Likelihood	Score	Overall Significance
	Temporal Scale	Score	Spatial Scale	Score	Severity of impact	Score			
Air quality & Dust Unmitigated	Short term	1	Study area	1	Moderate impact	2	Probable	3	7
Mitigated	Short term	1	Study area	1	Slight impact	1	May occur	2	5

Dust is expected to be generated from the following activities, drilling, blasting, loading and movement of trucks and machinery. Emissions from trucks and operating machinery might also produce exhaust emissions which might affect the quality of air within the area of work. Dust and exhaust emissions generated might increase particulate matter in the air, reduce air quality which might affect employees and vegetation in cases of dust and exhaust emissions deposition. The severity of the impact is expected to be slight with mitigation measures. Employees working in the area are the ones who might be at risk hence they are expected to cover themselves with dust masks.

Mitigations and recommendation

- Soil watering when soil works are being executed and where dust is emitted
- People at site should be provided with dust masks
- Cover trucks transporting ore
- Regular monitoring and review to ensure safe operation
- Limit vehicle speed on haul roads
- Maintain mining equipment regularly to reduce emissions

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	Moderate impact	2	Probable	3	7
Mitigated	Short term	1	Study area	1	Slight impact	1	May occur	2	5

Noise above the ambient levels of the area might be generated locally from the small-scale mining activities such as drilling, blasting, frequenting trucks and operating machinery such as excavators and loaders. Noise generated might affect animals within the area and employees working at the site. The normal levels of 55 decibels recommended by World Health Organization (WHO) might be surpassed during the operational phase. Drilling machines can produce noise of 95- 100 decibels.

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
- Restrict blasting and noisy operations to daytime hours and blasting should be notified to employees before it takes place
- 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, trucks and vehicles

4. 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	Slight impacts	1	May occur	2	5
Mitigated	Short term	1	Study area	1	Slight impacts	1	Unlikely	1	4

Soil might also be partly affected by oil or fuel leakages from trucks and operating machines.

Mitigations and recommendation

- 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
- Proper storage area with proper containment should be there at the site
- Proper and timely maintenance of machineries, trucks and vehicles

5. Impact on vibrations from blasting

Identified Impact	Effect						Risk or Likelihood	Score	Overall Significance
	Temporal Scale	Score	Spatial Scale	Score	Severity of impact	Score			
Vibrations from blasting Unmitigated	Medium term	2	Study area	1	Moderate impacts	2	Probable	3	8
Mitigated	Medium term	2	Study area	1	Slight impacts	1	Probable	3	7

Explosives used during blasting generate ground vibrations and shock waves. Blasting activities might disturb wildlife within the area and also nearby homesteads of Ondera which is approximately 1.4km from the sites.

Mitigations and recommendation

- Develop and follow a controlled blasting plan.
- Use small and controlled explosive charges.
- Conduct blasting only at designated times and notify employees beforehand and also notify the villagers of the day/s and time blasting takes place.
- Maintain safe blast distances.

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	slight impact	1	May occur	2	5
Mitigated	Short term	1	Study area	1	Slight impact	1	Unlikely	1	4

There is risk of spillage of hydrocarbons from trucks, vehicles and operating machines which may result in environmental contamination. Chemical residues from explosives and waste rock piles exposed to rainwater may also cause contamination if they find their way to the water bodies. In addition, the proponent intends to construct an ablution block and this might have the possibility of contamination if the waste water finds its way to the water bodies. Furthermore, it will also be unlikely that the water table will be affected, the excavations will not reach the water table levels.

Mitigations and recommendation

- Portable toilets are recommended and these are advantageous because they are easy to transport and environmentally friendly (if properly disposed)
- 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 hazardous waste handler.
- Store fuels and oils in bunded areas to prevent leak
- In case of any spills, immediately cleanup spills using absorbent materials
- There should be a monitoring programme for water use, water volumes used on site should be recorded. Water should be used sparingly
- Registered boreholes have recorded yields, as such if projected water requirements for the mining operations exceeds this yield or approaches the threshold of these boreholes then alternative water supply arrangements should be made.
- Operations should not reach the water table. In an event that this occurs, an updated EMP to cater for mining below the water table should be prepared

7. 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	Moderate impact	2	Definite	4	8
Mitigated	Short term	1	Study area	1	Slight impact	1	Definite	4	7

Waste will be generated from unearthed waste rocks. During open-cast mining, amounts of waste material are produced and this waste will be disposed at the waste dump, an area which will be designated for that purpose at the site. In addition, waste will also be produced from oils, fuel, food leftovers, papers and plastics. It is definite that waste will be generated at the sites.

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
- Frequent collection of waste at the site by service providers
- Placement of refuse bins at the sites
- Placement of portable toilet on the sites for employees
- Identify designated waste rock disposal areas.
- Use waste rock for backfilling mined pits where possible

8. 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	slight impact	1	unlikely	1	4
Mitigated	short term	1	Study area	1	Slight impact	1	unlikely	1	4

Open-cast mining will create pits which can be traps for animals. Given that there are homesteads which are approximately 1.4km (Ondera), the proponent should fence the mining claims. It will be definite that the mining activities will disturb the landscape of the study area therefore, the proponent should ensure that at decommissioning the sites are rehabilitated.

Mitigations and recommendation

- Ensure the sites are fenced
- Minimize land disturbance: Restrict excavation only to the required mining footprint.
- Progressive rehabilitation: Rehabilitate mined-out areas while mining continues in other sections.
- Backfilling of pits: Use waste rock and overburden to fill excavated pits where feasible.
- Maintain selective drilling

9. Traffic and Transportation Impacts

Identified Impact	Effect						Risk or Likelihood	Score	Overall Significance
	Temporal Scale	Score	Spatial Scale	Score	Severity of impact	Score			
Traffic and Transportation Impacts Unmitigated	Short term	1	Beyond project boundary	2	Moderate impact	2	Probable	3	8
Mitigated	Short term	1	Beyond project boundary	2	Slight impact	1	May occur	2	6

There might be a possibility of increase of traffic in the area given that there will be need for transportation of ore and materials. Mined ore will be transported to a crusher (offsite) where the crushing process will take place. Further transportation of the ore will happen until it reaches its' market. This movement of trucks will have a possibility of damaging the roads, increasing dust along transport routes, risk of road accidents and increase of noise and disturbance to settlements along the routes which will be used. The number of loads per month will depend on the rate they will be working at the sites and also on the availability of the ore on the areas they will be working on.

Mitigations and recommendation

- Control vehicle speed limits.
- Schedule transportation of the ore
- Install road signage and warning systems.

7.3.3 NEGATIVE SOCIO-ECONOMIC IMPACTS ASSOCIATED WITH OPERATION 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

The use of explosives for blasting might present risks to employees such as accidental explosions due to improper handling of explosives, injuries from flying rock fragments during blasting, exposure to dust and gases, risk of pit wall collapse or rock falls and equipment accidents involving trucks and excavators. In addition, occupational stress and noise can also affect employees. Work pressure on employees can cause stress hence resulting into accidents.

Mitigations and recommendation

- Provide training on safe drilling and blasting practices.
- Use licensed explosives handlers.
- Maintain machinery regularly.
- Provide first aid facilities and emergency response plans.

- 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 and this must be done frequently (helmets, gloves, dust masks, work suits, earplugs, goggles and safety shoes where applicable).
- Ensure the employees have proper facilities
- Place proper safety signage at the site

2. Increase of the number of people in the area

Identified Impact	Effect						Risk or Likelihood	Score	Overall Significance
	Temporal Scale	Score	Spatial Scale	Score	Severity of impact	Score			
Increase of the number of people in the area Unmitigated	Short term	1	Beyond project boundary	2	Slight impact	1	Probable	3	7
Mitigated	Short term	1	Beyond project boundary	2	Slight impact	1	May occur	2	6

There shall be people who will come to work at the sites. The proponent will hire local people where necessary and where expertise is required the people will be sourced outside the community. The impact of population influx is expected to remain of low environmental significance given that the numbers which will be employed are not too high and some of these people will be employed from the community.

Mitigations and recommendation

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

The heritage assessment conducted found out that, at the site there are no known heritage resources. However, there might be unknown archaeological remains within the mining claims which might later be found during the excavations. 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 Chief 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.
- Respect customary land use, cultural sites, and community rights within the authority's jurisdiction.

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	Beyond project boundary	2	Moderate impact	2	May occur	2	7
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 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.

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

The landscape will be altered by activities associated with site preparation and mineral ore extraction by open cast. This alteration will have possibilities of affecting the vegetation within the study area hence affecting the habitancy for some animals which can further affect the food web.

Mitigations and recommendation

- 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.
- Implement community grievance mechanisms.
- Proponent shall be compelled to protect the natural resources around the area.
- Vegetation should be cleared on areas which need to be worked, massive and unnecessary clearing is discouraged.

7.3.4 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. The type of jobs will range from skilled, semi-skilled and unskilled and locals will definitely be recruited.

2. Community development

Identified Impact	Effect						Risk or Likelihood	Score	Overall Significance
	Temporal Scale	Score	Spatial Scale	Score	Severity of impact	Score			
Community development Unmitigated	Permanent	4	Beyond project boundary	2	Very beneficial	8	Definite	4	18
Mitigated	Permanent	4	Beyond project boundary	2	Very beneficial	8	Definite	4	18

The proponent will assist the community when they can. A road which led to the site was established and this road is also being used by the locals.

3. 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

The proponent will pay tax hence generating revenue. More taxes will also be generated through contracted and subcontracted companies.

7.3.5 DECOMMISSIONING PHASE

Given that this will be small scale mining, the damage to the environment is expected to be minimum. However, pits created during the operation phase need to be rehabilitated. The following shall be done as a way to restore the environment:

- Develop and implement a rehabilitation plan.
- Backfill open pits where feasible.
- Use the stockpiled soil to cover the ground so as to try to return the area to its natural state.
- Fence off dangerous areas if pits cannot be filled.
- Restore vegetation using indigenous plants.
- Monitor rehabilitation success after closure.

7.4 SUMMARY & ANALYSIS OF IMPACTS

During the small-scale mining phase, the following impacts will fall under moderate environmental impacts if no mitigation measures are put in place; impact on vegetation, impact on landscape, impact on fauna, impact on soil, impact on vibration from blasting, impact on traffic and transportation and generation of waste. 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.

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. Mitigation measures have been proposed to address 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:

- Portable toilets are recommended and these are advantageous because they are environmentally friendly (if properly disposed). They reduce pollution risks near rivers, drainage lines, and groundwater resources
- It is recommended that; if the scale/activities of operations changes in future the EMP be updated/amended to cater for the change in scale of these operations.
- Unnecessary clearing of vegetation shall not be allowed; vegetation should be cleared on areas which need to be worked.
- After the small-scale mining 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 small-scale mining phase to monitor environmental compliance. The biannual reports should accompany the application for renewal of the environmental clearance certificate after 3 years.

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