EPEMBE PROJECT

ENVIRONMENTAL IMPACT ASSESSMENT
FOR SMALL-SCALE ACTIVITIES WITHIN MINING CLAIMS (MC)
73283, 73284, 73285, 73286 & 75208, EPUPA CONSTITUENCY,
KUNENE REGION

SCOPING REPORT WITH ASSESSMENT

Prepared by Philip Hooks

February 2025

Project:	Environmental Impact Assessment for Small-Scale Mining Activities within Mining Claims 73283, 73284, 73285, 73286 & 75208, Epupa Constituency, Kunene Region
Report: Version/Date:	Final Report for submission to the Environmental Commissioner Version 2, 13 February 2025
Prepared for:	Timo Smit
Cite this document as:	**Hooks, P.N., 2025. Scoping Report with Environmental Impact Assessment for Small-Scale Mining Activities within Mining Claims 73283, 73284, 73285, 73286 & 75208, Epupa Constituency, Kunene Region**

EXECUTIVE SUMMARY

Timo Smit (hereinafter referred to as the Proponent) has pegged the Mining Claims (MCs) 73283, 73284, 73285, 73286 & 75208 under the Epembe Project in the Kunene Region, with the intention to conduct small-scale mining activities for Base and Rare Metals, Industrial Minerals, Precious Metals and Precious Stones. The five mining claims are about 18 ha each in size and are located on communal land approximately 80 km northwest of Opuwo in the Kunene Region, within the vicinity of the Omuangete and Ohamaremba villages.

The Terms of Reference for the proposed project is based on the requirements set out by the Environmental Management Act (EMA) (2007) and its EA Regulations (2012).

The proponent appointed Philip Hooks, an independent Environmental Assessment Practitioner (EAP), to undertake the assessment and compile this scoping assessment report and Environmental Management Plan (EMP) in support of the application. An EIA process has been commissioned based on the requirements of the Environmental Management Act (Act. No. 7 of 2007) and associated EIA regulations as per Government Notice (GN) No. 29 and 30. An Environmental Clearance Certificate (ECC) for the operation of the proposed small-scale mining activities is required in compliance with the provisions of the Environmental Management Act of 2007, and thus an EIA application with associated support documents has been developed for submission to the Ministry of Mines and Energy (MME) and to the Ministry of Environment, Forestry and Tourism (MEFT) for review.

The Environmental Impact assessment (EIA) report, including an Environmental Management Plan (EMP), will enable MME and MEFT to make an informed decision regarding the proposed development from an environmental perspective. An assessment of the potential impacts is undertaken to determine the significance of the mining activities comprised of small-scale mining and processing and with the construction of associated infrastructure on site. An assessment of decommissioning of the proposed project is included.

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LIST OF ABBREVIATIONS

AMSL	Above Mean Sea-Level
BID	Background Information Document
bgl	Below ground level
CRO	Chief Regional Officer
DEA	Directorate of Environmental Affairs
DRWS	Directorate of Rural Water Supply
EA	Environmental Assessment
EAP	Environmental Assessment Practitioner
ECC	Environmental Clearance Certificate
EMA	Environmental Management Act No 7 of 2007
EMP	Environmental Management Plan
EMS	Environmental Management System
GRN	Government
HDPE	High-density polyethylene
IAPs	Interested and Affected Parties
IUCN	International Union for Conservation of Nature
JP	John Pallett
KAC	Kunene Anorthosite Complex
KNL	Proponent Company Name
MAP	Mean Annual Precipitation
MAR	Mean Annual Runoff
MEFT	Ministry of Environment, Forestry and Tourism
ML	Mining Licence
MAWLR	Ministry of Agriculture, Water, Land & Resettlement
MME	Ministry of Mines & Energy
MoHSS	Ministry of Health & Social Services
NGO	Non-Government Organisation
NNW	North North West
PBS	Performance Base Standard
PPP	Public Participation Process
REE	Rare Earth Elements
SR	Scoping Report
TSF	Tailings Storage Facility
UNCCD	United Nations Convention to Combat Desertification
UNFCCC	United Nations Framework Convention on Climate Change
WNW	West North West
WRD	Waste Rock Dump

GLOSSARY OF TERMS

Competent Authority	A body or person empowered under the local authorities act or Environmental Management Act to enforce the rule of law.
Environment	As defined in the Environmental Assessment Policy and Environmental Management Act - "land, water and air; all organic and inorganic matter and living organisms as well as biological diversity; the interacting natural systems that include components referred to in sub-paragraphs, the human environment insofar as it represents archaeological, aesthetic, cultural, historic, economic, palaeontological or social values".
Environmental Assessment (EA)	Process of assessment of the effects of a development on the environment.
Environmental Management Plan (EMP)	A working document on environmental and socio-economic mitigation measures, which must be implemented by several responsible parties during all the phases of the proposed project.
Fenetization	A quartzo-feldspathic rock that has been altered by alkali metasomatism at the contact of a carbonatite intrusive complex.
Interested and Affected Party (IAP)	Any person, group of persons or organisation interested in, or affected by an activity; and any organ of state that may have jurisdiction over any aspect of the activity.
Kaokoveld Centre of Endemism	A term used to describe the special endemic nature of the Kaokoveld area.
Mitigate	The implementation of practical measures to reduce adverse impacts.
Proponent (Applicant)	Any person who has submitted or intends to submit an application for an authorisation, as legislated by the Environmental Management Act no. 7 of 2007, to undertake an activity or activities identified as a listed activity or listed activities; or in any other notice published by the Minister or Ministry of Environment & Tourism.
Scoping Process	Process of identifying: issues that will be relevant for consideration of the application; the potential environmental impacts of the proposed activity; and alternatives to the proposed activity that are feasible and reasonable.
Stakeholder Engagement	The process of engagement between stakeholders (the proponent, authorities and IAPs) during the planning, assessment, implementation and/or management of proposals or activities. The level of stakeholder engagement varies depending on the nature of the proposal or activity as well as the level of commitment by stakeholders to the process. Stakeholder engagement can therefore be described by a spectrum or continuum of increasing levels of engagement in the decision-making process. The term is considered to be more appropriate than the term "public participation".
Stakeholders	A sub-group of the public whose interests may be positively or negatively affected by a proposal or activity and/or who are concerned with a proposal or activity and its consequences. The term therefore includes the proponent, authorities (both the lead authority and other authorities) and all interested and affected parties (I&APs). The principle that environmental consultants and stakeholder engagement practitioners should be independent and unbiased excludes these groups from being considered stakeholders.

1 BACKGROUND AND INTRODUCTION

Timo Smit (hereinafter referred to as the Proponent) has pegged the Mining Claims (MCs) 73283, 73284, 73285, 73286 & 75208 for the Epembe Mining Project in the Kunene Region, with the intention to conduct small-scale mining activities for Base and Rare Metals, Industrial Minerals, Precious Metals and Precious Stones. The five mining claims are about 18 ha each in size and are located on communal land approximately 80 km northwest of Opuwo in the Kunene Region, within the vicinity of the Omuangete and Ohamaremba villages. Figure 1 below renders a locality map of the MCs.

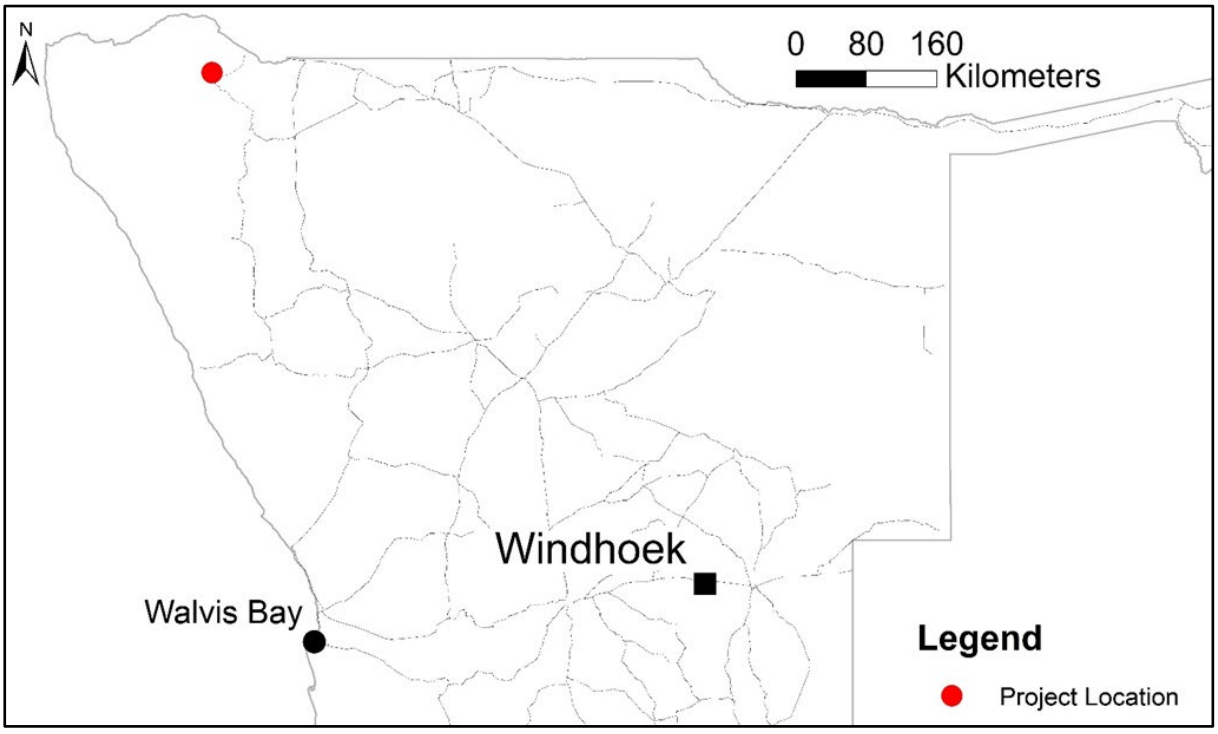

Figure 1. Project Location in Namibia

2 EIA TERMS OF REFERENCE

Timo Smit appointed Philip Hooks, an independent Environmental Assessment Practitioner (EAP), to undertake the assessment in application for an Environmental Clearance Certificate (ECC), and compile this scoping assessment report and Environmental Management Plan (EMP) in support of the application. The curriculum vitae of the EAP is provided in **Appendix A**.

The Terms of Reference for the proposed project are based on the requirements set out by the Environmental Management Act (EMA) (2007) and its EA Regulations (2012). The process covered the following steps, as divided into the sections below. Each section describes what was undertaken.

2.1 SCREENING, PLANNING, SITE VISITS & SCOPING

The scope of the study was finalised after consultation with the geologists and environmental manager, after which desktop research was conducted to gather information related to the physical environment in terms of the biodiversity, geology and social economic status of the people living around the project area.

2.2 LEGAL FRAMEWORK

All legislation, policies and guidelines that had reference to the proposed project were listed. The activities for which clearance is required for the project were extracted from the EMA Regulations. As per legal requirements, any exploration and mining activities require the Environmental Commissioner within the Ministry of Environment & Tourism to render an Environmental Clearance Certificate (ECC) in terms of the Environmental Management Act, No. 7 of 2007 (EMA).

2.3 PROJECT DESCRIPTION

The aim of this report is to provide details on the proposed construction, operational, decommissioning and mine closure activities that will enable decision makers to make informed judgements regarding the development from an environmental perspective. Stakeholders who must provide consent are hereby informed about the project details. This section was based on the information that was provided by the proponent.

2.4 PUBLIC PARTICIPATION PROCESS

This chapter serves to inform Interested and Affected Parties (I&APs) and relevant authorities of the details of the proposed development and provide them with a reasonable opportunity to participate during the process.

Stakeholder engagement through the Public Consultation Process, is described in a later section of this report. Public meetings with the local communities took place on the 3rd of December 2024.

2.5 ENVIRONMENT DESCRIPTION

The 'environment' is defined in the Environmental Assessment Policy and Environmental Management Act as "land, water and air; all organic and inorganic matter and living organisms as well as biological diversity; the interacting natural systems that include components referred to in sub-paragraphs, the human environment insofar as it represents archaeological, aesthetic, cultural, historic, economic, paleontological or social values".

Relevant environmental data was compiled by making use of primary information from site visits, secondary data and stakeholder consultation. The report identified existing environmental (both ecological and socio-economic) conditions of the receiving environment to determine environmental sensitivities. Information regarding the biophysical and socio-cultural environment was sourced from several studies previously done near the Omuangete and Ohamaremba areas.

2.6 IMPACT ASSESSMENT

The scoping and assessment process aims to guide and promote sustainable and responsible development and not to discourage development.

Potential environmental impacts and associated social impacts were identified and addressed in the report. The EAP has assessed all likely positive and negative impacts environmental and social impacts at the local and regional (Kunene Region) and national (Namibia) levels using an adaptation of the 'Hacking Assessment Method'. Possible enhancement measures have been listed for those positive impacts while prevention, mitigation and rehabilitation measures have been provided for negative impacts. The environmental assessment was conducted to comply with Namibia's Environmental Management Act other legal requirements applicable to the development and Namibia. The assessment process involved merging of various information streams into a description of the environment and the proposed project. If the environmental commissioner finds that the assessment

of potential impacts and the proposed mitigation measures proposed in this report, are acceptable, an ECC may be awarded.

2.7 ENVIRONMENTAL MANAGEMENT PLANNING (EMP)

This task involved the drafting of a standalone document that outlined the management, monitoring and mitigation measures that will avoid, minimise and/or mitigate potentially negative impacts. In some case remediation and rehabilitation will be required. The ECC should refer to the EMP, and the conditions stipulated therein, thus rendering the EMP a legally binding document to which the proponent must adhere.

3 ADMINISTRATIVE, LEGAL AND POLICY REQUIREMENTS

To protect the environment and achieve sustainable development, all projects, plans and programmes deemed to have adverse impacts on the environment require an ECC, as per the Namibian legislation which lists specific activities that need to apply for such clearance. The establishment of the proposed small-scale mining activities falls within the range of these activities as mentioned above. The relevant project activities for which an ECC application must be made (listed as per Government Notice No 29 of 2012) are included in **Table 1** below:

Table 1. Applicable EMA listed activities

Activity No.	Activity	Applicability
1 b	The construction of facilities for the transmission of electricity	Diesel powered generators will be used as the source of electricity on site.
2.1	The construction of facilities for waste sites, treatment of waste and disposal of waste.	Provision of ablutions on site for staff. Creation of a waste rock dump on site (topsoil stock piles included) Wet mineral Tailings Storage Facility (TSF) included
2.2	Any activity entailing a scheduled process referred to in the Atmospheric Pollution Prevention Ordinance 1976	The site crushers, mills, will be used on site. A permit in terms of the Atmospheric Pollution Prevention Ordinance of 1976 is required
2.3	The import, processing, use, recycling, temporary storage, transit or export of waste	Provision of ablutions on site for staff Storage of waste oil for recycling
3.1	The construction of facilities for any process or activity which requires a licence, right or other form of authorisation, and the renewal of a licence, right or other form of authorisation in terms of the Mineral (Prospecting and Mining Act of 1992.	Establishment of a mine, a processing plant and accessory works area
3.2	Other forms of mining or extraction of any natural resources whether regulated by law or not.	Quarrying activities are a form of extraction of a natural resource.
4	The clearance of forest areas, deforestation, afforestation, timber harvesting or any other related activity that requires authorisation in term of the Forest Act, 2001 (Act No. 12 of 2001) or any other law.	The removal of trees will be done in association with the Directorate of Forestry who issue permits
8.1	The abstraction of ground or surface water for industrial or commercial purposes.	Water will be abstracted from:

		1. The Kunene River and conveyed to the mine site via water bowsers and 2. borehole network
9.1	The manufacturing, storage, handling or processing of a hazardous substance defined in the Hazardous Substances Ordinance 1974	Storage of fuel on site and handling of explosives for blasting purposes.
9.4	The storage and handling of a dangerous goods, including petrol, diesel, liquid petroleum, gas or paraffin, in containers with a combined capacity of more than 30 cubic Meters at any one location	Petroleum Products Regulations No 2000: Section (3) (2) No person shall possess or store any fuel except under authority of a licence or a certificate
9.5	Construction of filling stations or any other facility for the underground and aboveground storage of dangerous goods, including petrol, diesel, liquid, petroleum, gas or paraffin.	Petroleum Products Regulations No 2000: Section (3) (2) No person shall possess or store any fuel except under authority of a licence or a certificate

Additional pertinent legislation sets and policies which have (generally) informed the EA are listed in **Table 2**. Reference is made regarding the applicability of each law to this project.

Air pollution in Namibia was governed by the Atmospheric Pollution Prevention Ordinance (No. 11 of 1976), which mainly focused on the impact of air pollution emitted from point sources on occupational health and safety. It was limited in that it did not consider the impact of emissions from multiple air pollution sources on the surrounding environment nor did it address ambient air quality issues. The Atmospheric Pollution Prevention Ordinance (No. 11 of 1976) was then replaced by the Pollution Control and Waste Management Bill which considers emissions from multiple air pollution sources and their impact on the surrounding environment. Although the bill makes provision for air quality standards, Namibia does not have any air quality standards that can be implemented at present. Therefore, according to Article 144 of the Namibian Constitution, international standards may be adopted.

Namibia's Environmental Assessment Policy for Sustainable Development and Environmental Conservation (1995) as well as the Draft Procedures and guidelines for EIA & EMP of 2008 requires the following steps in an Environmental Impact Assessment Procedure:

1. Project identification & conceptualisation
2. Appoint work to an environmental assessment practitioner
3. Development of proposal through consultation
4. Application with baseline scoping report and draft environmental management plan
5. Notification with baseline report and terms of reference for full EIA
6. Review of applications & registrations
7. Full investigation, EIA Report and draft environmental management
8. Mitigation plan(s)
9. Application with full EIA and draft environmental management plan
10. Conditions and approval
11. Record of Decisions
12. Appeal (if necessary)

13. Implementation of proposal

14. Monitoring, auditing and ongoing mitigations

The legal matrix of the project not only promotes sustainable development, but does so within the consideration of local, regional and national planning and development initiatives. It further serves to ensure that the health and safety of communities and workers are brought into the EMP. These procedures will be followed for the project described in the following section.

Table 2. Additional National and International Legislation

Legislation / Policy	Summary	Applicability to Assessment	Included in Report
National Legislation			
The Namibian Constitution	➢ Promote the welfare of people, ➢ Incorporates a high level of environmental protection, ➢ Incorporates international agreements as part of Namibian law.	All proposed development should aim at promoting the welfare of all people in a sustainable manner.	Principles of sustainable development and protection of the environment are enshrined in the objectives and goals of impact minimisation for adverse impacts.
Environmental Management Act Act No. 7 of 2007, Government Notice No. 232 of 2007	➢ Defines the environment, ➢ Promote sustainable management of the environment and the use of natural resources, ➢ Provide a process of assessment and control of activities with possible significant effects on the environment.	The proposed project is listed in the EMA regulations which require an application for an ECC.	The project has been registered with MEFT and the final SR and EMP will be submitted in support of an ECC application.

Legislation / Policy	Summary	Applicability to Assessment	Included in Report
National Legislation			
Soil Conservation Act (Act No. 76 of 1969)	➢ Law relating to the combating and prevention of soil erosion, the conservation, improvement and manner of use of the soil and vegetation and the protection of the water sources Namibia. ➢ 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.	Infrastructure development of the proposed project will inevitably impact on the soils and further pose risks to soil contamination in the construction and operation phases.	Principles of soil conservation and pollution prevention have been included the EMP which will be submitted in support of an ECC.
The Water Act Act No. 54 of 1956	➢ Remains in force until the new Water Resources Management Act comes into force, ➢ Defines the interests of the state in protecting water resources, ➢ Controls the disposal of effluent, ➢ Draft regulations are being reviewed	Water will be used during the construction, operational and decommissioning phases. Ground water will be abstracted from a borehole; in such instance a water abstraction permit is required. A water registration / permit is also required for the disposal of wastewater into a French drain. Regulations about proximity to rivers are relevant.	Mitigation measures relating to water contamination are described in the EMP for the construction and operational phases.
Water Resources Management Act Act No. 11 of 2013	➢ Provide for management, protection, development, use and conservation of water resources, ➢ Prevention of water pollution and assignment of liability, ➢ Not in force yet.	Water will be used during the construction and operation Phases for construction purposes as well as sewage management. No water will directly be sourced from a river or dam	Mitigation measures relating to water contamination are described in the EMP for the construction and operation phases.

Local Authorities Act Act No. 23 of 1992, Government Notice No. 116 of 1992	➢ Define the powers, duties and functions of local authority councils, ➢ Regulates discharges into sewers.	EMA requires public participation inclusive of NGO's, local and regional government and IAPs.	Local and regional offices have been invited to participate in the application process.
Public Health Act Act No. 36 of 1919	➢ Provides for the protection of health of all people.	The proposed project may have health impacts on labourers and surrounding communities during the construction and operational phases.	Health and safety measures have been incorporated into the EMP of the proposed project
Labour Act Act No 11 of 2007, Government Notice No. 236 of 2007	➢ Provides for Labour Law and the protection and safety of employees, ➢ Labour Act, 1992: Regulations relating to the health and safety of employees at work (Government Notice No. 156 of 1997).	The proposed project will require labour during the planning, construction, operational and decommissioning phases.	Measures to ensure that the requirements of the labour act are MEFT have been included in the EMP.
Electricity Act, 2007 (Act No. 4 of 2007)	➢ The Electricity Act aims to establish the Electricity Control Board and provide for its powers and functions; to provide for the requirements and conditions for obtaining licences for the provision of electricity; to provide for the powers and obligations of licensees; and to provide for incidental matters. Under section 17, no person may establish or carry on any undertaking for - ➢ (a) the generation of electricity; ➢ (b) the trading of electricity; ➢ (c) the transmission of electricity; ➢ (d) the supply of electricity; ➢ (e) the distribution of electricity; ➢ (f) the importation of electricity; or ➢ (g) the export of electricity,	The proposed project will obtain electricity produced from diesel generators on site.	Health and safety measures for the use and storage of fuel on site have been incorporated into the EMP of the proposed project

	➢ Unless such person holds a licence issued under this Act that authorises the particular activity.		
Road Traffic and Transport Act Act No. 52 of 1999 Government Notice No 282 of 1999	➢ Provides for the control of traffic on public roads and the regulations pertaining to road transport.	➢ Roadworthiness, ➢ Fitness for drivers, ➢ Loads on Vehicles, ➢ Transportation of Dangerous good, ➢ Road traffic signs, ➢ All construction vehicles to adhere to the provisions of the act.	As part of the Health and Safety mitigation measures in the EMP: Road traffic signs to be erected during the construction phases and maintained during the operational phase.
National Heritage Act Act No. 27 of 2004, Government Notice No. 287 of 2004	➢ Provides for protection and conservation of places and objects of heritage significance and the registration of such places and objects.	Although no sensitive archaeological or heritage features have been identified in the area, such artefacts may be discovered during project activities.	Chance finds procedures of possible heritage / archaeological finds have been included as a condition to be conducted in the EMP.
Hazardous Substances Ordinance Ordinance No. 14 of 1974	➢ Applies to the manufacture, sale, use, disposal and dumping of hazardous substances as well as their import and export. ➢ Aims to prevent hazardous substances from causing injury, ill-health, or the death of human beings.	Various hazardous substances will be used during the construction, operational and decommissioning phases of the proposed project.	Handling, storage and disposal of such substances have been identified as per specific impacts as per the EIA and EMP which details management measures for hazardous substances throughout the project.
Pollution Control and Waste Management Bill (draft document)	➢ Not in force yet, ➢ Provides for prevention and control of pollution and waste, ➢ Provides for procedures to be followed for licence applications.	Various waste streams will be generated during the construction, operational and decommissioning phases. These include possible chemical and physical pollution.	Waste management measures have been highlighted in this report and management measures have been included in the EMP.

Legislation / Policy	Summary	Applicability to Assessment	Included in Report
International Law			
Stockholm Declaration on the Human Environment, Stockholm 1972.	➢ Recognizes the need for a common outlook and common principles to inspire and guide the people of the world in the preservation and enhancement of the human environment.	The proposed development is situated in the Kunene Region amongst people with world heritage interest or status.	Identifying potential impacts of the project. The EMP has measures to mitigate negative impacts and enhance positive impacts
United Nations Framework Convention on Climate Change (UNFCCC)	➢ The Convention recognises that developing countries should be accorded appropriate assistance to enable them to fulfil the terms of the Convention.	Some emissions may be released during the construction and operational phase of the proposed development.	Emissions are planned to fall outside of the World Health Standards. Should such parameters be exceeded all necessary steps are to be taken to reduce emissions as mentioned in this report.
Convention on Biological Diversity, Rio de Janeiro, 1992	➢ Under article 14 of The Convention, EIAs must be conducted for projects that may negatively affect biological diversity.	Although the proposed project will be developed on previously disturbed areas (portion of claims mined already) the site still has sensitive features.	Aspects of the biodiversity has been included in this report and EMP.
United Nations Convention to Combat Desertification (UNCCD)	➢ Aims at land management and combating desertification/land degradation to contribute to the conservation and sustainable use of biodiversity and the mitigation of climate change.	Infrastructure development of the proposed project will impact on the soils and further pose risks to soil contamination in the construction and operational phases.	Principles of soil conservation and pollution prevention have been included the EMP which will be submitted in support of an ECC.

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4 PROJECT DESCRIPTION

4.1 PROJECT RATIONALE / NEED AND DESIRABILITY

The proposed activity focuses on small-scale mining activities for Base and Rare Metals, Industrial Minerals, Precious Metals and Precious Stones.

This project has the potential to contribute to the Kunene region's economy, and in doing so, will contribute to the socio-economic development in the area by providing jobs and providing opportunities for continued diversification of economic activities. The project is considered to be a small operation.

Potential direct benefits of the project include:

- Direct capital investment
- Stimulation of economic development
- Skills development and employment (an average of 55 unskilled works will be employed during the operational phase.
- Foreign exchange earnings
- Value addition to Namibian raw materials

Potential indirect benefits of the project include:

- Expansion of trade and industrial activity in the town and region.
- Inducement of additional investments
- Diversification of the regional and national economy.

4.2 NATURE & SIZE OF THE PROJECT

The MCs are about 18 ha each in size and are located on communal land approximately 80 km northwest of Opuwo, near the Omuangete and Ohamaremba villages in the Kunene Region. The accessory work areas will fall within the extent of the mining claims where terrain and mining target areas dictate.

The Proponent plans to conduct small-scale mining activities for Base and Rare Metals, Industrial Minerals, Precious Metals and Precious Stones. The use of the surrounding land is agricultural.

4.3 LOCATION DETAILS & ACCESSIBILITY

MCs 73283, 73284, 73285, 73286 & 75208 are located within the Kunene Region and in the northern Epupa Constituency. The MCs are in an area about 80 km northwest of Opuwo. **Figure 2** below renders a map of the claims relative to other claims showing the gravel district road in the south western corner of the map..

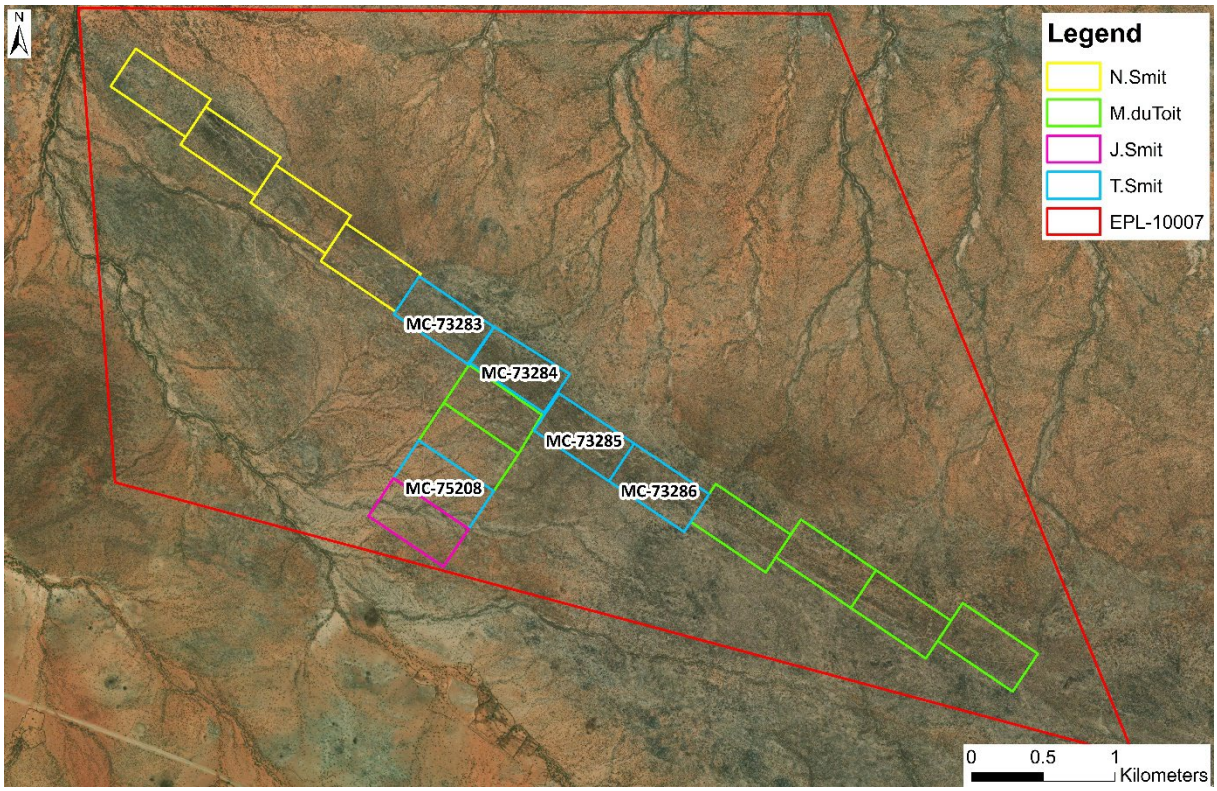

Figure 2. Satellite image of mining claims location relative to claim owners

4.4 ACCESSIBILITY

Access to the MCs is from routes along the C43 and D3701 roads. Access from the district road is along existing single-track gravel roads that were constructed most likely by hand through the clearing of the bush. The district roads are two-way gravel roads. From Opuwo or Ruacana to the port of Walvis Bay the road is mainly tarred with gravel for the stretches to Opuwo and Ruacana.

4.5 PROPOSED PROJECT PLAN

The following is the summary of envisaged development with mining and processing activities that are expected to be undertaken by the project proponent during different project development phases.

4.5.1 Construction Phase Activities

The pilot processing plant will be constructed on one of the mining claims. The EIA process will direct the decision-making process with regards to site selection for the pilot plant. Construction will begin soon after the approval of the environmental clearance application. Conceptual design layouts are under development.

4.5.2 Operational Phase

The operational activities include the following:

- Continued exploration within the mining claims;
- Mineral ore extraction by open cast mining;
- Mineral processing.

Techniques make use of modern equipment such as excavators, diamond wire saw, circular diamond cutting machines, compressor driven drill rigs, jack hammers and dump trucks. Open cast mining will be established according to good practice procedure. The mining operations comprise of the phases including site clearing, excavations – by means of drilling and blasting, digging, removing and haulage of rock to processing plant and storage yard.

Future planned operations will entail the drilling and blasting of rock outcrops to a depth of 50 metres for rare metal mineralisation. Multiple quarries (i.e. wedge, terrace or trench shaped) will be mined at various places within the four mining claims. Quarry depth will be to about 50 m. Mineral waste will be deposited in waste rock dumps and a tailings storage facility.

The expansion of mining and processing activities beyond the pilot plant will require an amended environmental clearance application and approval from MEFT. The current application is ring fenced to pilot plant phase only. The mining and processing of the Tantalum-Niobium deposit will occur using the process as rendered in the conceptual design in **Figure 3** below.

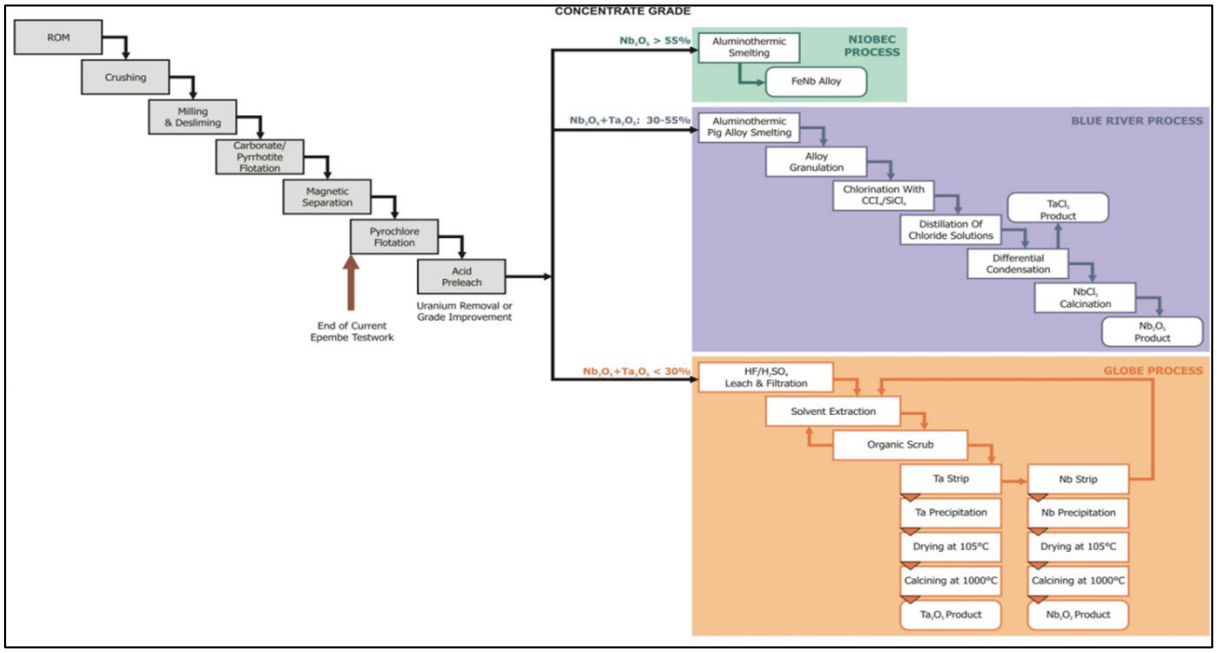

Figure 3. Conceptual design of the mining and processing from Run of Mine (ROM) to final products.

4.5.2.1 Product Transport

Product from the mining activities is to be transported as bulk cargo as well as in bagged form. The viability of any mining operation, just like most industries, is particularly sensitive to the logistics concerned with getting the product to market. Different options are presently being investigated for the transport of the products to the harbour of Walvis Bay.

There are currently two options for the type of truck to be used for the haulage. Either the usual 36 tonne load or a specialised 67 tonne load. At a maximum monthly production of 5,000t a total of 139 truckloads at 36t each (first option) would transport product each month. That is 5 trucks each day. The product would be transported either along the gravel road to Ruacana or via Opuwo and thereafter along the upgraded bitumen roads to the port of Walvis Bay. The product would either be in bulk bags on low-bed trucks or in bulk trailers with covers.

A reduction in the number of trucks required for the transport could be achieved if a Performance Base Standard (PBS) trucking option is approved by the Roads Authority. The bridge study (Olivier, 2020) was undertaken to support the usage of 67 tonne payload trucks along the upgrade bitumen road route from Opuwo to Walvis Bay. The bridge assessment along the preferred route was assessed for weight carrying capacity.

Geometrical information of bridges was verified on site, most importantly with respect to deck thicknesses and spans. Concrete strength estimates were established by means of Schmidt Hammer tests. Maximum Safe Yield design was compared to the modelled yield induced by the PBS Smart Truck configuration. From the work undertaken (Olivier, 2020) the bridges can accommodate the load imposed by the proposed high-tonnage vehicle with ample safety margins. The envisaged PBS option aims for an allowable unit load of 67 tons. This would almost half the number of haulage trucks on the road and or reduce the frequency with which the trucks must run. **Table 3** lists the preferred and alternative routes and renders the travelling distances for each leg of the routes. The preferred route would be the shortest but includes a gravel section at the start of the journey. **Figure 4** renders a map of the planned haulage route. The preferred route is shorter by 406 km for the round trip. Although the preferred route includes gravel road sections it is not as congested as some legs of the alternative route.

Table 3. Preferred and alternative road routes for haulage trucks.

Preferred route	**Distance**	**Units**	**Road**	**Surface**
Mine Site to Ruacana	100	km	Via D3700	gravel
Ruacana to Kamanjab	287	km	via C35	bitumen
Kamanjab to Fransfontein	84	km	via C35	bitumen
Fransfontein to Uis	135	km	via C35	bitumen
Uis to Hentiesbay	124	km	via C35	bitumen
Hentiesbay to c28 (Swakop)	74	km	via C34	bitumen
Swakop junction to Namport	45	km	Via D1984	bitumen
Total	**849**	**km**		
Full cycle	**1698**	**km**		
Alternative route				
Mine Site to Opuwo	60	km	via D3701	gravel
Opuwo to Kamanjab	262	km	via C35	bitumen
Kamanjab to Outjo	157	km	via C40	bitumen
Outjo to Otjiwarongo	72	km	via B1	bitumen
Otjiwarongo to Omaruru	140	km	via C33	bitumen
Omaruru to Karibib	65	km	via C33	bitumen
Karibib to Usakos	33	km	via B2	bitumen
Usakos to Swakopmund	138	km	via B2	bitumen
Swakopmund to Namport	45	km	via D1984	bitumen
Total	**1022**	**km**		

Full cycle	**2044**	**km**		

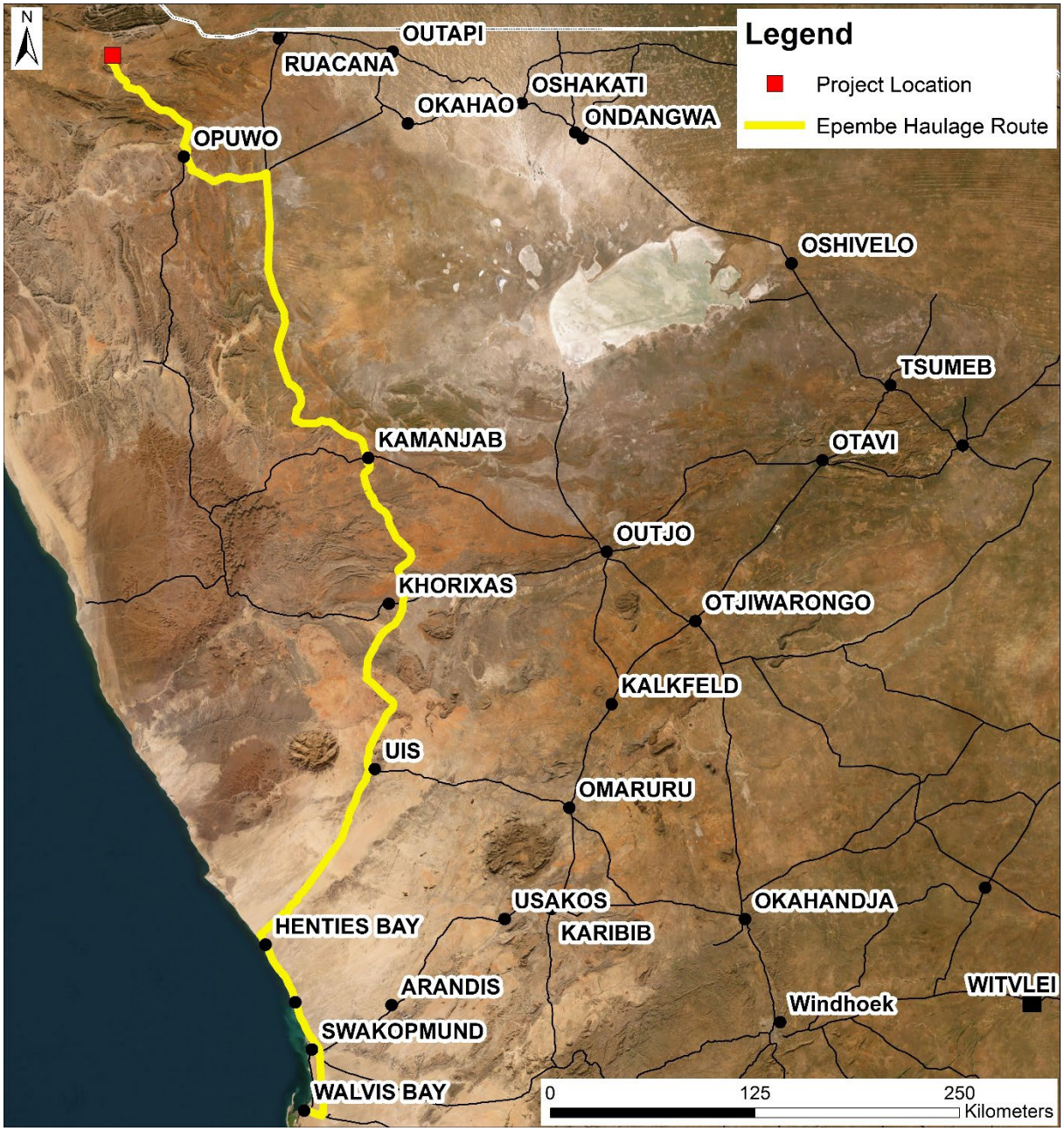

Figure 4. The preferred haulage route for transporting the various products to the Walvis Bay port.

4.5.2.2 Water Supply

Water supply sources being considered are either.

- Ground water abstraction; and
- NamWater

It is suggested that amounts of water can be sourced from the nearest NamWater supply scheme or from one of the surrounding neighbours or community boreholes and then be trucked to the MCs, as there is no existing infrastructure on site for the water utility company. The latter is the preferred option.

If for any reason more water is required then the proponent suggests abstraction of ground water, which can be done at minimal extraction cost, boreholes can be sunk to augment supply volumes. However, for this option groundwater exploration would need to be undertaken following the required permit application process.

4.5.2.3 Power Supply

Power required during the operation phase will be provided by direct connectivity from diesel generator equipment. Diesel will be stored at the mine site.

4.5.2.4 On-Site Fuel Storage

Diesel storage at the mine site will consist of a bunded fuel tank system, conveniently placed and accessible for the frequent deliveries. In addition to this it is feasible for a few bunded mobile facilities to be placed conveniently for use by the mining equipment at the various active mining areas. These facilities will be of modern construction, either double-skinned or bunded to ensure spills are prevented.

Delivery systems will use sealed fittings to prevent spillage. The fuel facilities should be actively manned. Lubricants will be stored in a double bunded facility which is designed for this purpose. Lubricants will be transferred to machines via reticulated network within the heavy vehicles workshop or mobile lubrication trucks.

Standardised spill kits and reporting systems will be in place to deal with hydrocarbon spills. Contaminated soils will be transferred to a remediation section on site specifically designed for soil remediation.

4.5.2.5 Explosives Magazine and Use of Explosives

In terms of the proper use and storage of explosive material on site, the Explosives Act of 1956 states that the proponent can only keep, store or possess explosives in such a manner and in such quantities as have been approved in writing by an inspector and shall only be stored on premises where there is an explosives factory or explosives magazine. The proponent should obtain a permit issued by an inspector of the explosive police unit and the explosives need to be kept in quantities not exceeding 500 kilograms and be stored in an isolated place. Every 120 days the proponent should furnish the Chief Explosive Inspector with information in writing as from the said date regarding the quantity of explosives in the company's possession or custody. The proponent should bear in mind that the inspector may enter any explosives facility or explosives magazine at any hour of the day or night for the purpose of inspection and for making inquiries relative to the compliance with the provisions of this Act and its regulations, or relative to the means used therein for preserving the safety of the public or employees or for purposes of analysis or test, ask for samples of explosives or ingredients of explosives from the proponent.

4.5.2.6 Security of the Mining Sites and Accessory Works Area

Various locations and infrastructure may need to be fenced to control the access to the various hazardous or potentially unsafe facilities to prevent unauthorised persons and vehicles from entering these areas, and to keep out animals from the surrounding communal farming area. Public safety is the guiding principle behind this aspect. Security personnel may be needed from time to time.

4.5.3 Decommissioning Phase

If all mineral resources are spent, or the proponent has other reasons to no longer continue operations, then the proponent will be required to cease operations on the MCs. This decommissioning phase includes the following activities:

- removal of infrastructure constructed for the purpose of the small-scale mining operations on site,

- potential sale of any permanent office and ablution infrastructure for residential use
- Rehabilitation of waste rock dumps and the tailings storage facility to encourage natural revegetation
- Secure the quarry areas and tailing facility for long term public safety (i.e. by fencing, revegetation or physically changing the angle of quarry sides.
- Rehabilitate roads where necessary.
- Re-assign electrical and water infrastructure for use by the residents.

These and other aspects are addressed in the EMP of this study. This is necessary so that rehabilitation and landscaping can be conducted as the quarries, trenches and pits are created during the mining activities. This saves money in the long term so that the rehabilitation works do not get left to the time of closure of operations when costs might be more. The temporal length of the operations would be based on the expected demand and the size of the resource. However, this may vary significantly as the demand may fluctuate.

In accordance with the EMA, the proponent is required to make funds accessible which will specifically be available and allocated for rehabilitation efforts. This fund should continually be available during the mining operations and yet also be sufficient to cover all decommissioning activities at decommissioning. The rehabilitation of the various sites on the MCs is to encouraging vegetation growth to reduce the effects of soil erosion and to re-establish normal ecosystem functionality after the mining activities cease.

4.5.4 No Go Project Option

The proposed mining activities for MCs 73283, 73284, 73285, 73286 & 75208 will only have minimal negative impact on the environment if the mitigation methods prescribed within the EMP are effectively implemented. However, if the outcome of the assessment would have identified a fatal flaw or if the decision of the MEFT was to not grant environmental clearance, then the 'no go' option would result. No small-scale mining activities would occur on the site. This will not only deprive the proponent of an opportunity to enhance economic wealth but will also deny other key stakeholders an opportunity to earn much needed income. Furthermore, the local authority and central government agencies would not earn revenue through rates and taxes

4.5.5 Specialist Studies

No specialist survey of the physical, chemical and biological characteristics of the MCs were done. However, a number of studies have been completed for other projects within the larger area and Opuwo surroundings. Though not a site-specific baseline study as such, this report represents a reference point for comparing any current and future data to be collected.

5 PUBLIC CONSULTATION

The Environmental Management Act (Act No 7 of 2007) (EMA) and the Environmental Assessment Regulations (MEFT, 2012) require that the proponent provide the public with details of the project during a public participation process. Consultation with the public forms an integral component of an EA and enables Interested and Affected Parties (IAPs) e.g. neighbouring landowners, local authorities, environmental groups, civic associations and communities, to comment on the potential environmental impacts associated with the proposed operations and to identify additional issues which they feel should be addressed in the scoping phase. Consultation was initiated and facilitated through notification letters, site and press notices, public meetings and focus group meetings. **Table 4** outlines the important dates and associated actions and meetings related to the Public Participation Process.

Table 4. Important Dates and Actions Related to the Public Participation Process

Date	Description	Facilitator	Stakeholders	Confirmations, details, follow-ups
15 November 2024	Nation-wide	NMH (Namibian Sun, Republikein & Allgemeine Zeitung)	All interested parties	Advertisements in public newspapers – first notice.
22 November 2024	Nation-wide	NMH (Namibian Sun, Republikein & Allgemeine Zeitung)	All interested parties	Advertisements in public newspapers – second notice.
From 22 November 2024	Public Notices posted on notice boards	Charon Katjiuongua	Public venues (school, shops, Opuwo Regional Office)	Photos of the site notices were taken.
03 December 2024	Omuangete Primary School	Immanuel Katali	All interested parties	Public Meeting Attendance Register
04 December 2024,	Focus groups meetings MEFT office, Opuwo	Immanuel Katali Charon Katjiuongua (Translator) Gideon Kalumbu (Proponent Representative)		

Date	Description	Facilitator	Stakeholders	Confirmations, details, follow-ups
18 December 2024	Deadline for submission of comments to EAPs.			
17 January 2025	Public Review	Philip Hooks	All Stakeholders and registered and interested and affected parties	An email was sent to all stakeholders containing links to the Draft EIA Report and Draft EMP.
31 January 2025	End of Public review	Philip Hooks	Work on all issues and responses from Public Review	Incorporated into the Executive Summary
14 February 2025	MEFT Offices / Online Portal	Philip Hooks	DEA and MME	Submission of the Final EIA Report and Draft EMP; Copy sent to MME

5.1 SITE NOTICES

Site notices for this application were erected conspicuously to inform the public:

- At the Omuangete Primary School where the public meeting was held in Omuangete Village
- Kunene Regional Offices, Opuwo

These notices were still present at the time of the public meeting on the 03 December 2024. Photographs of the site notices can be found in **Appendix B.**

5.2 PRESS NOTICES

Press notices were placed in three widely distributed newspapers for two consecutive weeks providing details of the project whilst giving the public an opportunity to register as IAPs. Notices appeared in the Namibian Sun, Republikein and Allgemeine Zeitung newspapers (Namibia Media Holdings – Market Watch) on the 15th and 22nd of November 2024. Scanned copies of the newspaper notices are attached in **Appendix C.**

5.3 BACKGROUND INFORMATION DOCUMENT

A Background Information Document (BID) was provided to the various IAPs throughout the initial public participation process. This document provides an overview and a non-technical summary of the proposed development and acts as an easy reference to the proposed project. The BID is included in **Appendix D.** It was distributed in hard copy format during the public meetings.

5.4 PUBLIC MEETINGS & FOCUS GROUP MEETINGS

The Public meeting was held on 03 December 2024, at Omuangete Primary School. A focus group meeting with stakeholders also took place in Opuwo on 04 December 2024. A presentation was given on the project at both meetings. The people attending were asked to give their comments on the project. The focus group meetings and stakeholder engagement is summarised in **Appendix E**. The power point presentation used for the meetings is given in **Appendix F**. The comments and requests

made at these public meeting were minuted and these can be found in **Appendix G**. For the register of the public meeting please refer to **Appendix H**.

5.5 STAKEHOLDER NOTIFICATION

The full list of stakeholders is included in **Appendix H**. All the IAPs were contacted by email and invited to the public meetings. Immanuel Katali facilitated the public consultation process and wrote up the consultation report and the minutes of the public consultation meetings.

5.6 PUBLIC CONSULTATION OUTCOMES

A summary of the main points of concern are presented in **Table 5** below. The responses to the concerns raised during the round of public consultation provided in the appendices. No material changes were made to the report or Draft EMP based on the concerns as they have already been considered and mitigation measures had been incorporated in the Draft EMP prior to the public review period. Only the mitigations provided by the heritage specialist were added after the public review period.

Table 5. The main points of concern received from people who attended the public meetings.

	Theme	Summary of issues
1	Heritage issues	Request for proper avoidance of sacred sites when planning mining and exploration works. A specialist study was commissioned.
2	EIA process	Enquiries about the qualifications and contact details of the EAP conducting the stakeholder engagements
3	Environmental Management	Enquiries about who is responsible for carrying out work for dust, waste management, noise pollution and tree clearing.
4	Further consultations with the local community	Requests and suggestions from the local community for further consultation in advanced stages of the project (i.e. mining)
5	Land use	Concern about conflicting land uses with e.g. vegetation, grazing land, wildlife, homesteads and/or grave sites.
6	Miscellaneous	Clarifications on neighbouring exploration/mining operations, and the importance of environmental and social considerations in planning.

5.7 PUBLIC REVIEW & REPORT FINDINGS FEEDBACK

The public review period for the Draft Scoping Report with Assessment and Draft EMP takes place between 17th January 2025 and 31st January 2025. Final amendments and comments were received during this period and the final documents were prepared and submitted to MEFT on the 14th February 2025.

6 DESCRIPTION OF THE ENVIRONMENT

This section lists the most important properties and environmental characteristics of the study area.

6.1 GEOLOGY

6.1.1 Regional Geology

MCs 73283, 73284, 73285, 73286 & 75208 and surrounding area is in the Eastern Kaoko Zone (EKZ) of the Kaoko Belt, in the Kunene Region, of northwestern Namibia. The northern part of the EKZ is dominated by the Kunene Anorthosite Complex (KAC). The KAC is the largest anorthosite complex in the world, with only about 10% of the KAC in Namibia, and 90% in the south-western part of Angola.

The KAC in Namibia can be divided into northwestern and southeastern bodies. The northwestern body is made up of a white massive anorthosite. The southeastern part, called the Zebra Mountain lobe, is an interlayered body, subdivided into white and green anorthosite, dark leucotroctolite, and olive-bearing anorthosite. The white and green colour of the anorthosite is due to sericitisation and saussuritisation of plagioclase and the white anorthosites are older than the dark leucotroctolites.

Post-dating and bordering the KAC are several, mostly mafic to ultramafic intrusions (Maier et al., 2013). These intrusions form the so-called 'Satellite Intrusions' of the KAC. The magmatic rocks of this group span from dunite, peridotite, pyroxenite, gabbro, troctolite, norites, anorthosites, to syenites and alkaline granites.

The eastern to southern part of the KAC in Namibia, is transected by numerous regional shear zones, striking WNW and NNW. These mylonitised shear zones are intruded by syenite, quartz syenite, calcitic and ankeritic carbonatite dykes. The volatile-rich intrusives caused intense fenitisation of the older magmatic rocks. The country rocks of the Epupa basement are heavily altered by the alkaline intrusives

6.1.2 Local Geology

The Epembe deposit is an at least 10 km long carbonatite-syenite dyke at the south-western margin of the Kunene Alkaline Complex in Northern Namibia. The Epembe carbonatite-syenite complex intruded at around 1.2 Ga into the Mesoproterozoic country rocks of the Epupa Complex which comprises mainly of granitic gneisses and amphibolites. The dyke is between 90 - 130 m wide in the central part and widens to up to 270 m in its northern portion. Further northward, the dyke system is almost entirely covered by scree, fluviatile sediments and calcrete but rare outcrops show its intermittent continuation while it eventually splits into sub-parallel sets of dykes.

The Epembe dyke follows a regional shear zone which strikes towards NW and dips sub-vertically towards SW. Carbonatite also fills dykes and voids in the country rocks parallel to the dyke. The carbonatites are associated and closely related with slightly older syenite intrusions which form massive outcrops in the central and southern parts of the Epembe dyke but only very small intrusives and often brecciated xenoliths along the dyke's margins in the northern part. A late pegmatitic nepheline syenite is co-genetic with the earliest carbonatite phases.

Although the carbonatite deposit represents a single major magmatic event, it shows a layered internal structure and clear successions of magmatic pulses in form of cross-cutting dykes of different carbonatite phases. The sub-vertical almost tabular layers are caused by parallel zones of syenite xenoliths and alignment of the non-calcitic mineral phases in flow bands. The bands consist of accessory minerals such as apatite, feldspar, aegirine, phlogopite as well as pyrochlore and zircon.

6.2 SOILS

The soils in this area are mainly Chromi-Leptic Cambisols. Cambisols are young soils that show the first signs of differentiating into distinct horizons. They form in recently deposited or exposed colluvial, alluvial and aeolian parent materials, or where aridity or low temperatures slow down processes of soil formation. Cambisols are found in a variety of climates but are particularly prevalent in arid and semiarid areas.

The suitability of the soils for crop production ranges from low to moderate. The soil type renders a moderate crop production potential. The soils have limitations such as low cation exchange capacity, a cemented calcareous layer within 100cm or continuous rock within 100 cm from the soil surface.

6.3 HYDROLOGY

The regional hydrological setting of the project falls in the Kunene Catchments which comprises parts of the Kunene North groundwater basin. This river catchment is one of the northernmost of the twelve major westerly flowing ephemeral river systems that occupy the hyper- to semi-arid areas of western Namibia (Fennessy, 2009).

The Kunene River is a westward flowing perennial river located along the Angola-Namibia border. The catchment area is 107,000 km^2 with an average MAR of 5,200 Million m^3/year. The river level is dependent on the discharge from the hydropower station located upstream at Ruacana but subject to seasonal flooding. The minimum flow is mostly experienced in November, but the low flow is still approximately 20 m^3/sec (72,000 m^3/hr). The required approximately 15 m^3/hr abstraction to supply the mine and surrounding communities would therefore have negligible effect on the river flow.

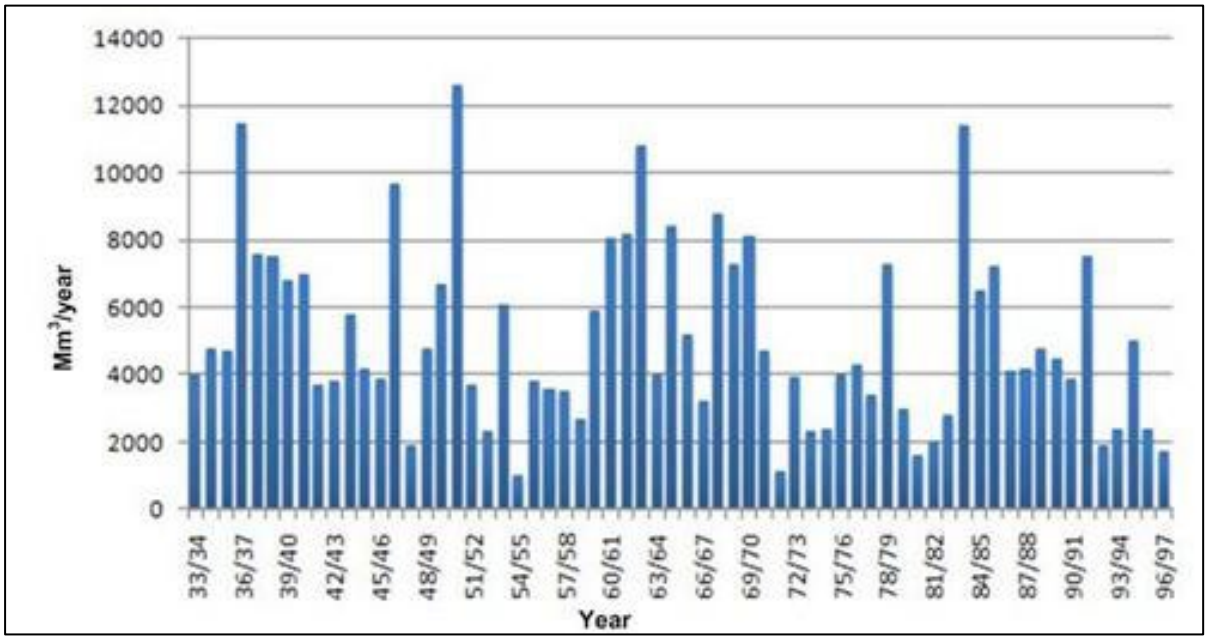

Figure 5. Kunene River Annual Runoff at Ruacana

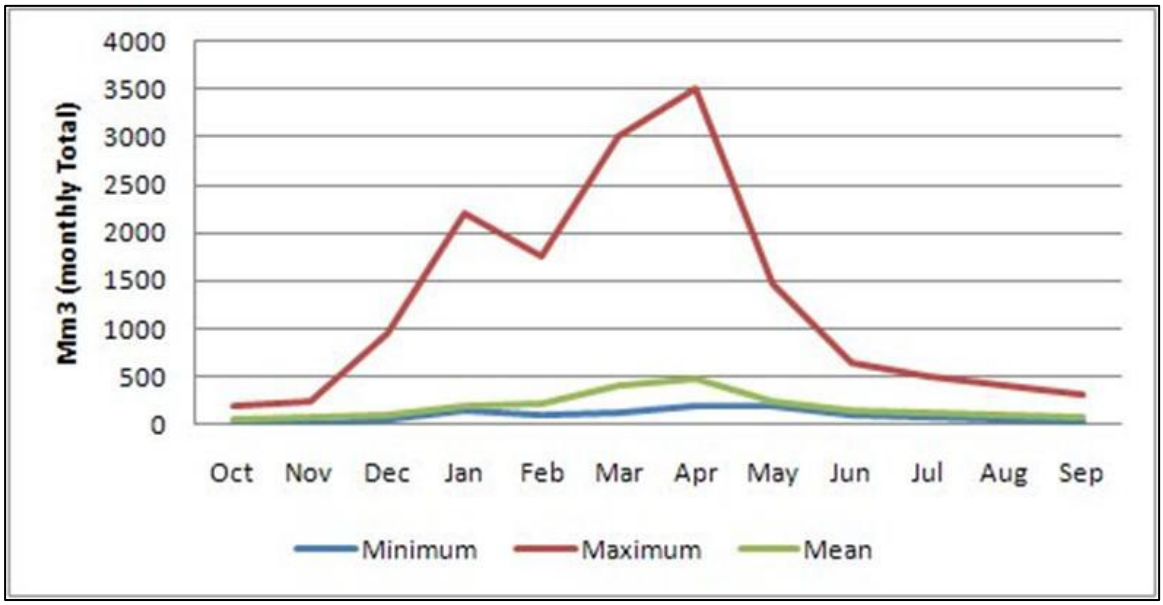

Figure 6. Kunene River Hydrograph, Ruacana.

The Kunene River has an extremely high variation in flow (and river level) making river abstraction infrastructure costly and also subject to flood damage. A few options are available ranging from a floating system to wet wells. In-river infrastructure is generally extremely costly and construction timing during low water season is essential.

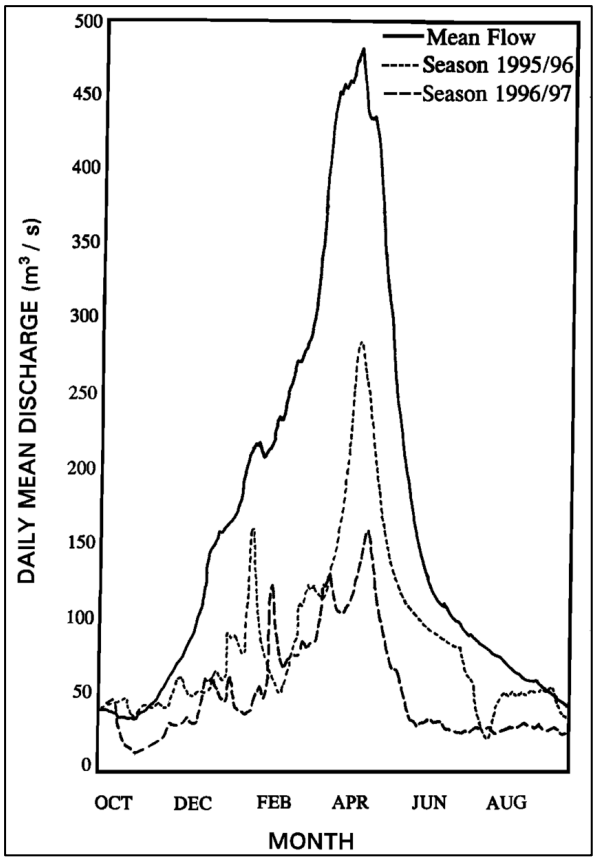

Figure 7. Daily Mean Discharge - Kunene River at Ruacana

Considering the relatively low quantities of water required, no abstraction infrastructure would be required at this stage of the project. According to the Directorate of Rural Water Supply (DRWS), the Kunene River is relatively unpolluted with a low concentration of phosphorus as well as other

nutrients. The river does however have a high sediment load making the water turbid and would therefore require filtration before use

6.4 GROUNDWATER

The area is underlain by a generally low productive and fractured aquifer with an increased potential where fractures and faults (crevices) occur on a local scale, in the absence of drought conditions. The aquifer is a rock body with low groundwater potential, which yields about 3-15 m^3 of water per hour. Water quality is considered good for farms and small communities (Atlas of Namibia Team, 2022). Recharge is dependent on rainfall that is known to be erratic in the semi-arid Kunene Region.

Should the project require the drilling and abstraction of water from new boreholes, an application must be submitted to the Ministry of Agriculture Water and Land Reforms (MAWLR). The entire area is dependent on groundwater resources (from boreholes and springs) for domestic purposes and stock watering. The proponent will need to ascertain through drilling a borehole whether there is sufficient yield for human consumption, ablutions, construction and other needs.

6.5 CLIMATE

Climate data described below comprises the temperatures, wind and rainfall typical for the area. The importance of this data is for assessing the potential impacts of dust emanating from the mining activities and predicting directions and intensity of emission plumes. The direction and distance that plume travels can assist in planning the locations of mining infrastructure and the degree to which receptors might be affected.

6.5.1 Temperature

Air temperature is important, both for determining the effect of plume buoyancy (the larger the temperature difference between the plume and the ambient air, the higher the plume can rise), and determining the development of the mixing and inversion layers (Liebenberg-Enslin 2019).

The climate of the Kunene Region is classified as semi-arid (tropical steppe) to very arid (desert). Maximum and minimum temperatures at Opuwo, the nearest weather station, range between 34-36 °C and 6-11 °C during the hottest and coldest months, respectively. Kunene Region is one of the warmest regions with high temperatures (warm and hot) throughout the year. Hot seasons in these areas last for almost 4 months - September to January at monthly averages of about 33 °C (Figure 8). Relative humidity in the Opuwo area ranges between 80 to 90% during the most humid months and between 10 and 20% during the least humid months. The average annual rates of evaporation in the Opuwo area range between 1,960 and 2,100 mm (Mendelsohn et al., 2009)

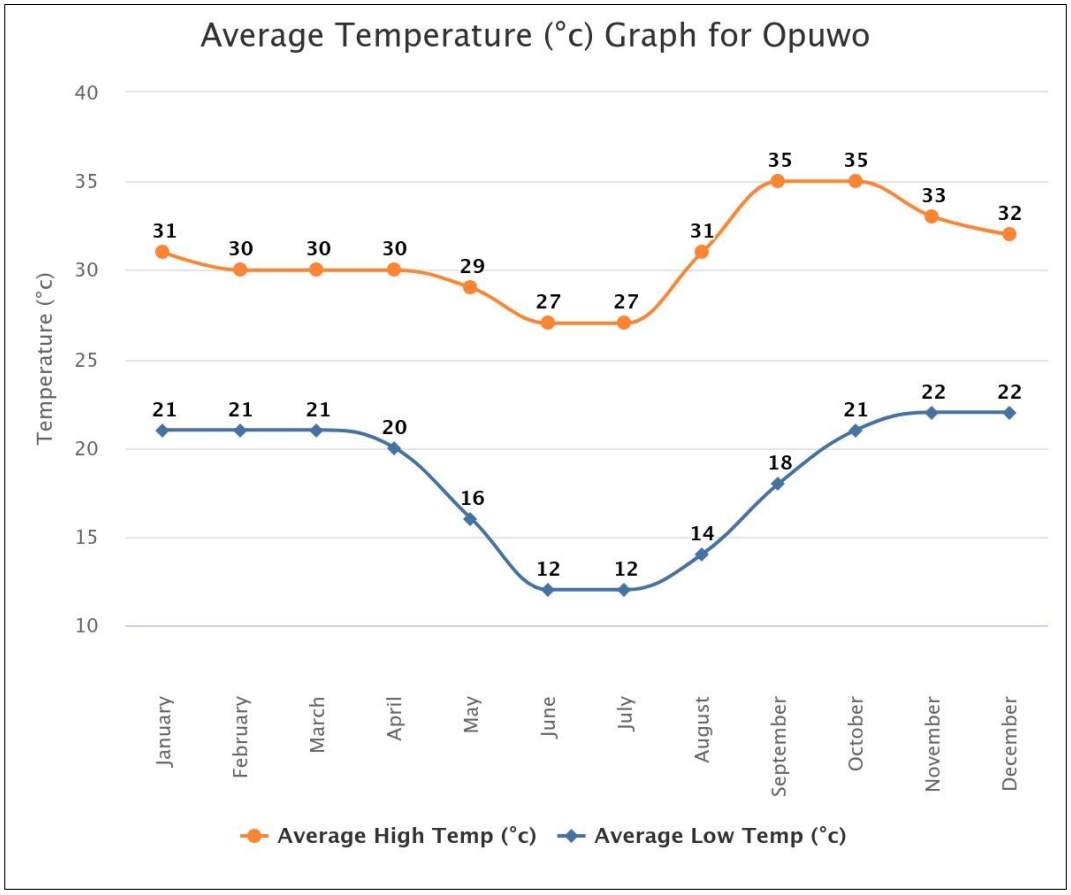

Figure 8. Average minimum and maximum temperatures for each month of the year for Opuwo (www.worldweatheronline.com)

6.5.2 Wind

The wind direction, and the variability in wind direction, determines the general path air pollutants will follow, and the extent of crosswind spreading. Wind roses comprise 16 spokes, which represent the directions from which winds blew during the period. The colours used in the wind roses below, reflect the different categories of wind speeds; the red area, for example, representing winds between higher than 5 m/s. The dotted circles provide information regarding the frequency of occurrence of wind speed and direction categories. The frequency with which calms occurred refers to periods during which the wind speed was below 1 m/s. (Liebenberg-Enslin 2019)

Seasonal variation in the wind field is shown in Figure 9 with predominantly southwesterly and west-southwesterly winds during the summer months (Nov – Feb). During the autumn months (Mar – May), the westerly flow subsided with more frequent winds from the east and east-northeast. The winter months reflected predominant east-northeasterly and easterly winds with almost no flow from the westerly sector. During springtime (Aug – Oct) the easterly flow started to subside with more frequent flow again from the west-southwest. (Liebenberg-Enslin 2019)

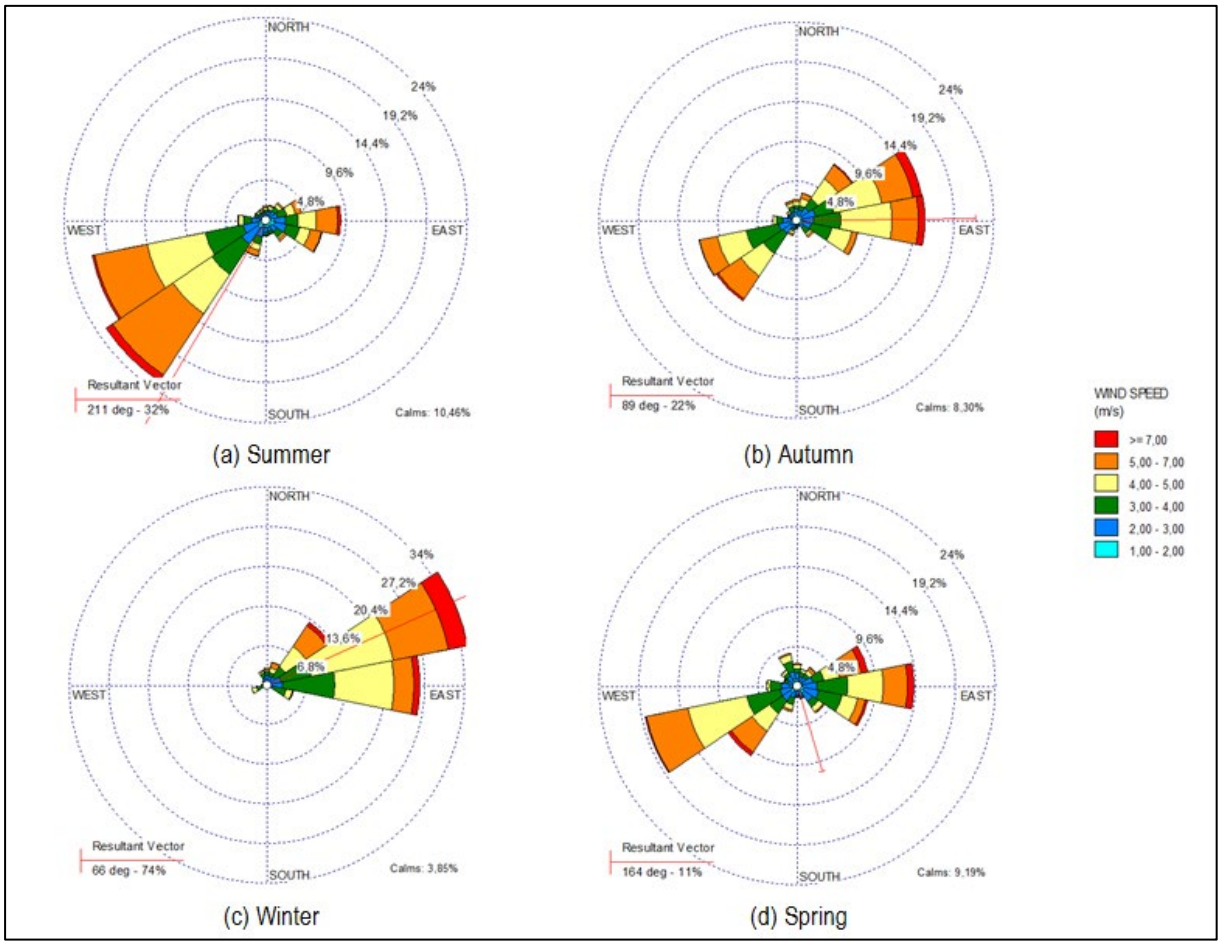

Figure 9. Modelled wind data for the seasons from 2016 to 2001 for Opuwo (Liebenberg-Enslin 2019)

6.5.3 Rainfall

Precipitation is important to air pollution studies since it represents an effective removal mechanism for atmospheric pollutants and inhibits dust generation potentials. Monthly average rainfall figures obtained from worldweatheronline.com are illustrated in Figure 10. (Liebenberg-Enslin 2019)

Based on long-term rainfall data for Opuwo (1940 – 2001), the area receives between 62 mm and 837 mm. The rainy season is between December and March, with the dry season from May to September. (Liebenberg-Enslin 2019)

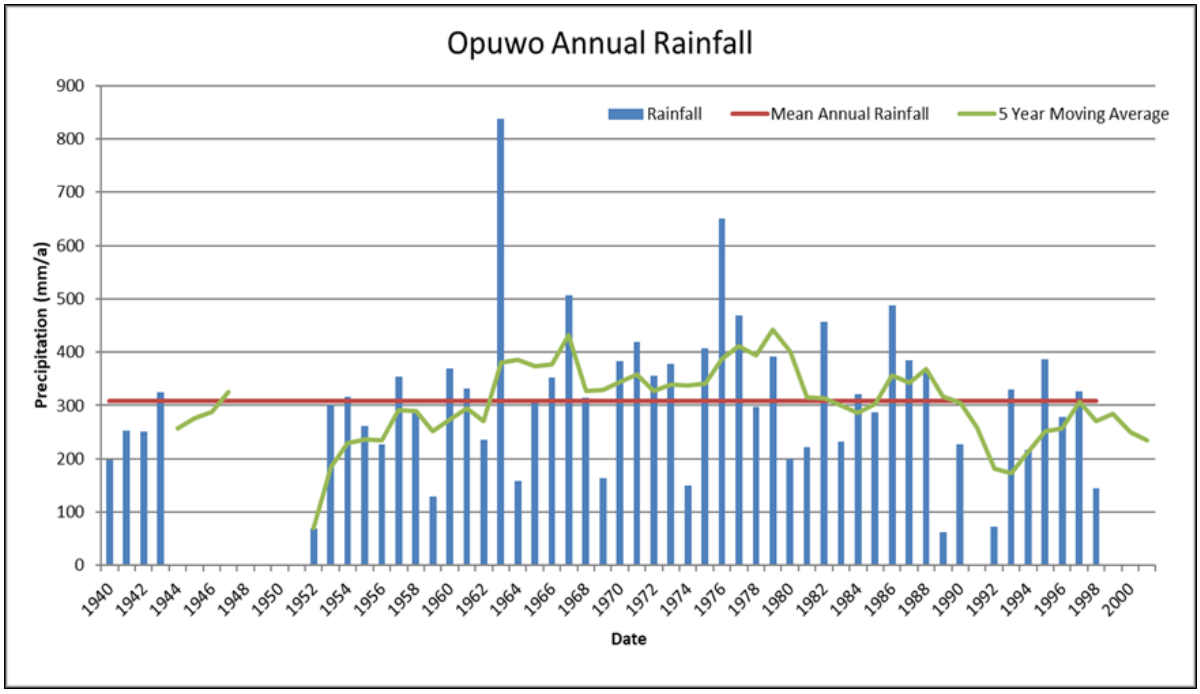

Figure 10. Opuwo annual rainfall data from 1940 to 1998 (Liebenberg-Enslin 2019).

6.6 BIOLOGICAL ENVIRONMENT

At the African scale the project site falls in the Savanna biome, in the stable savanna zone where the ratio between woody and grass plants is determined by climate, particularly annual rainfall below 560 mm . At the Namibian scale the site is in the Western Highlands biome, which is characterised by an Acacia Tree-and-Shrub Savanna vegetation type and a dominant vegetation structure of grassland and scattered trees (Mendelssohn, et al., 2002).

The region's biodiversity patterns are variable according to Mendelssohn et al (2002), whose ranking for plant diversity (the number of species present in an area) is given here as medium-high.

On the landscape scale, the scale on which biodiversity conservation needs are addressed, endemism levels are high for many taxa because of ranges that extend from Angola south across the Kunene River (Mendelssohn, et al., 2002).

At a global scale the project site falls in the Afrotropical Region for all vertebrate taxa. Anthropomorphic modification and the low density of vegetation result in a low density of large mammals.

The project site falls within the Kaokoveld centre of endemism, a biogeographical region rich in endemic and range-restricted plants and animals. Because of the remoteness of the region there is a dearth of data on biodiversity, but recent discoveries of plant species underline the conservation importance of the region. The cumulative impact of mining and other development in the arid zones of Namibia and Angola means that development in such areas should be planned responsibly, and management measures implemented and monitored diligently.

6.6.1 Flora

Generally, Flora in the Kaokoveld is relatively under collected (as the area is highly inaccessible) and the flora of especially the high mountain ranges is largely unknown. The Kaokoveld as a whole is famous for its floristically diversity area with high levels of plant endemism ascribed to diversity in soils, topography and climate. Should mining be contemplated a specialist botanical study would be called for.

According to Mendelsohn (2002), overall plant species richness in the general area is low to medium (approx. 300 to 400 spp.). The vegetation within the study site was found to be dominated by red thorn acacia (Acacia Reficiens), mopane (Colophospermum mopane) and purple pod terminalia (*Terminalia prunioides*). Various Commiphora species, *Moringa ovalifolia*, *Sterculia africana* and *Sesamothamnus guerichii* can also be found in the general area.

Some species of conservation concern which may potentially occur in the general area are: Camel-thorn (*Acacia erioloba*); Welwitchia (*Welwitchia mirabilis*) Bird-plum (*Berchemia discolour*); Shepherd's tree (*Boscia albitrunca*); Mopane (*Colophospermum mopane*); Leadwood (*Combretum imberbe*); *Elaeodendron transvaalensis*; Wild ebony (*Euclea pseudebebus*); Namaqua rock-fig (*Ficus cordata*); Sycamore fig (*Ficus sycomorus*); and African star-chestnut (Sterculia africana). It is important to note that Elaeodendron transvaalensi sis not protected under the (Namibian) Forest Regulations 2015: Forest Act 12 of 2001.

Commiphora multijuga and *Moringa ovalifolia* may also be present in the area and they are expected in low numbers. Mopane trees are prevalent in this habitat, and it is protected due to its high value to humans and their livestock. The following tree species are protected under the (Namibian) Forest Regulations 2015 and may occur in the general project areas: Bushman poison (*Adenium boehmianum*); Worm-cure Albizia (*Albizia anthelmintica*); various Commiphora species; Kobas (*Cyphostemma currorii*); Blue Kobas (*Cyphostemma juttae*); Kaoko Kobas (*Cyphostemma uter*); Owambo Wooden-banana (*Entandrophragma spicatum*); Namib Coral-tree (*Erythrina decora*); Anaboom (*Faidherbia albida*); Kaoko kirkia (*Kirkia dewinteri*); Bottle Tree (*Pachypodium lealii*); Marula (*Sclerocarya birrea*); Kaoko Sesame-bush (*Sesamothamnus benguellensis*); Large-leaved Sterculia (*Sterculia quinqueloba*); Wild Tamarisk (*Tamarix usneoides*); and Buffalo-thorn (*Ziziphus mucronata*) (see http://treeatlas.biodiversity.org.na/).

Some bush clearing may be required during the 2nd and 3rd phase of construction, where access roads and sites for mining and associated activities are chosen. The clearing of any vegetation would not be on the scale, which triggers a full EIA, but permits to fell trees and clear bush may require a Forestry Permit. In addition to this, vegetation clearing restrictions within 100m of rivers must be taken into account as outlined in the draft regulations of the Water Resource Management Act (Rothauge 2017). Any relaxation of this rule needs to be confirmed and approved by the Ministry of Agriculture, Water and Land Reform (MAWLR).

The draft EMP has made recommendations aimed at reducing and controlling potential disturbances so that the disturbances to flora are kept to a reasonable minimum and that activities are contained within the MCs areas as far as possible.

6.6.1.1 Land use and resource utilisation

Livestock carrying capacity is regarded as relatively low and so the risk of farming in this area is medium (Mendelsohn *et al* 2002).

The subsistence farming has had some impact on the habitat functioning in terms of the availability of resources higher up the food chain. This is anecdotally or qualitatively evidenced by the intensively browsed vegetation and the absence of herbaceous vegetation in the three habitats. The extent to which climate, i.e the persisting drought, has played a contributing role in diminishing the potential for re-establishment of grasses and herbaceous plants is unknown.

The community subsists from the various habitats in multiple ways through the harvesting of wild fruits and or seeds and even bulbs. The veld is also a source of natural medicinal remedies and even cosmetic products. It is important that, at advanced stages of the project, the proponent works with the community to identify the areas within the project footprint that provide such resources and provide some means of access or compensation for loss of access to such resources if at all necessary.

6.6.2 Fauna

The area is viewed as a relatively high mammal, reptile and intermediate amphibian diverse (Mendelsohn et al. 2002). There too is a diversity of birds' that occurs near the area which ranges in high numbers of species due to the dominance of mopani trees in the surrounding, the mopane worm (*Gonimbrasia belina*), is likely to be seasonally common in this habitat, which is a food source for people. Another important food producing invertebrates in this habitat are the mopane bees (*Meniponula sp*), which may be existing in extensive quantities.

The area is well-thought-out to be a high reptile variety area and approximately more than 15 species may hypothetically occur, the African rock python (*Python nataensis*) and the leopard tortoise (*Geochelone paradalis*). Mammals in this area ranges in numerous numbers of species and indigenousness ranging from 9-10 species. Those that could possibly occur in the area comprise of types considered almost vulnerable like the Commersons Leafnosed Bat (*Hipposideros vittatus*), Angolan epauletted fruit bat (*Epomophorous angolensis*).

In Namibia there are a wide-spread of, Hartmanns mountan zebra (*Equus zebra hartmannnae*), black-faced impala (*Aepyceros melampus petersi*), giraffe (*Giraffa Camelopardalis*), black mongoose (*Herpestes flavescens*), bushveld sengi (*Elephant intufi*), mountain ground squirrel (*Xerus princeps*), endangered black rhinos (*Diceros bicornis*) may also possibly occur in this area, cape fox (*Vulpes chama*), bat-eared fox (*Octocyon megalitis*), African elephant (*Laxodonto africana*), southern African wildcat (*Felis silvestris*) cheetah (*Acinonyx jubatus*) and savanna pangolin (*Smutsia temminckii*) (Strohbach, 2001). There is also a group of near- thread animals likely to be seen such as the fruit bat (*Epomophorous angolensis*), brown hyaena (*Parahyaena brunne*), and white rhinoceros (Griffin, 2003).

6.7 SOCIO-CULTURAL ENVIRONMENT

6.7.1 Introduction

Ashby (2019) quotes the Kunene Regional Council's Development Profile of 2015 in stating that it supports mining of mineral resources as it will contribute to economic growth of the region. More specifically, it suggests that investors within the mining sector are encouraged to engage in Public Private Partnerships (PPPs) with local communities, thereby addressing the inequitable distribution of mineral resources in the region.

6.7.2 Demography

According to the Namibian Statistics Agency reporting of 2023, the regional populations is at 120,762, with a nearly 1:1 ratio of male to female. The population lived in 28,890 households, with an average household size of 3.8 persons. The Epupa Constituency has a population of over 24,000 inhabitants while the population Opuwo is 12,335. The devastating drought years since 2013 have caused many farmers to lose their livelihoods and have increased migration to Opuwo to be in easier reach of drought-relief food from the government (Ashby 2019). This has put considerable strain on the Opuwo Town Council to provide basic services such as water, ablution and refuse removal in the informal settlements which have expanded rapidly.

6.7.3 Regional Economics

According to the National Planning Commission 2015 reporting (Ashby 2019) the Kunene Region has the second highest proportion of people classified as materially deprived (63.4% compared to the national average of 48%), reflecting the relatively high proportion of semi-nomadic pastoralist Himba people in the region with few material possessions.

Not all the statistics for the 2023 national census are available at the time of this study. However, according to the 2014 national statistics data summarised by Ashby (2019) 84% of people in the Kunene Region live in inadequate housing conditions which lack basic services to the home, compared

to the national average of 76%. In the Epupa Constituency, only 29% of households had access to safe water and 92% of households had no toilet facility. Only 8% of households used electricity for lighting and 92% had no decent lighting (critical for improving school performance). Approximately 78% of households in this area relied on wood or charcoal for cooking.

6.7.4 Education

According to the 2015 Planning Commission (Ashby 2019), the region has the highest levels of education deprivation of all the regions (81.6% compared to the national average of 63%), measured by educational attainment reached by people aged 15 to 59 inclusive.

6.7.5 Land Use

Agriculture is the most important employment sector in the region but as the region is very arid, farming was the main source of income for only 31% of households in 2011 (Ashby 2019). In theory communal grazing of livestock benefits from rangeland management practises which protect and enhance the grazing resource. This fits very well with Namibia's Community Based Resource Management programme of conservancies which has enabled communities to manage the natural resources in their areas and use them for community benefits and improvement of individual livelihoods. The high number of conservancies and community forests in northern Kunene is largely a reflection of the remoteness of many areas and the divisions within communities, often along ethnic lines. The MCs do not fall under any registered conservancy.

6.7.6 Cultural Heritage

Although the people themselves represent a rich and important heritage in terms of the lifestyle, traditions and ongoing cultural practices, the MCs 73283, 73284, 73285, 73286 & 75208 are not located in an area where documented sensitive sites are found.

A meeting and site visit with the local leaders confirmed the location of important graves sites. No important pre-historic sites are known to exist in the areas to be mined and developed. See **Appendix I** for the short report on the outcome of the heritage site visit and meeting. **Figure 11** renders a map of the sites that traditional leaders and the educational cultural officer visited to see if there were any heritage sites of importance. The specialist archaeologist carried out a site survey and compiled an impact assessment report (see **Appendix K**) which was submitted to the National Heritage Council of Namibia together with an EIA Consent Application. **Appendix I** also includes the proof of submission

of the consent application

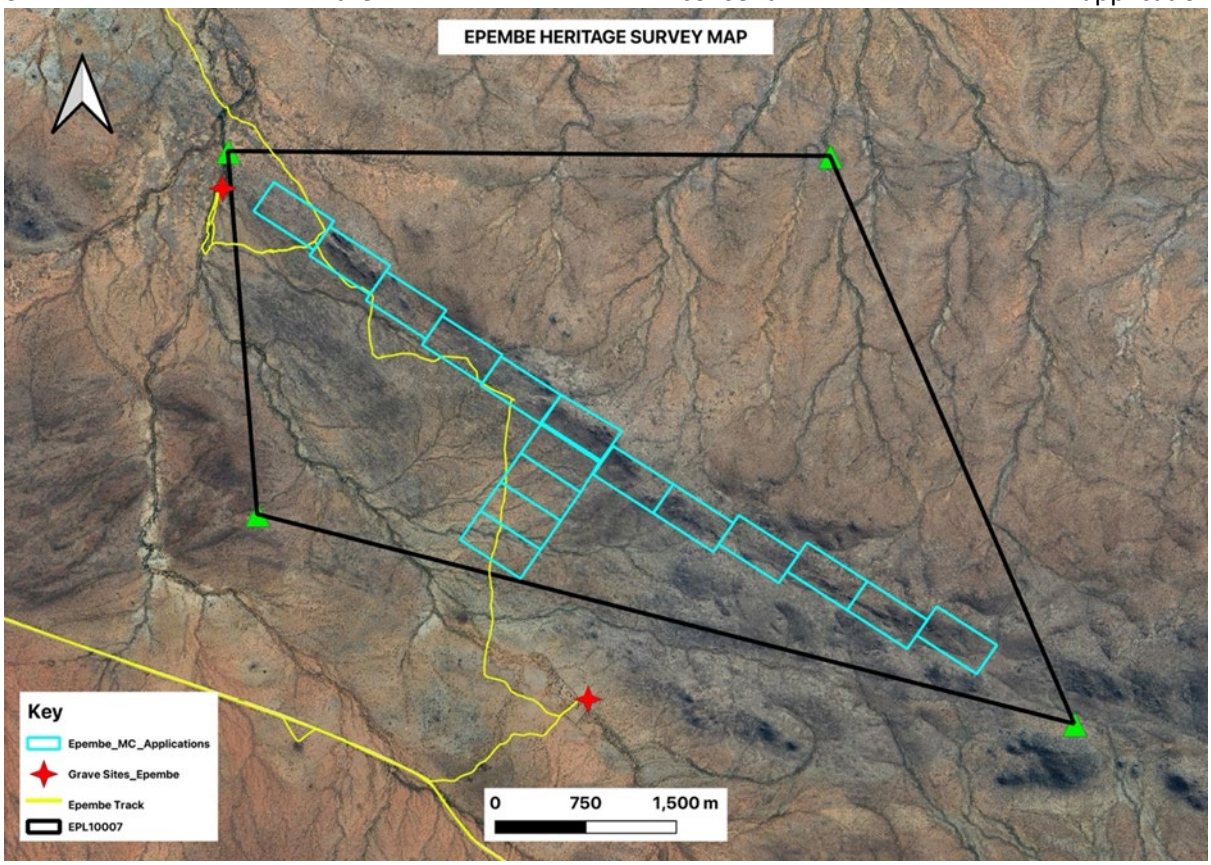

Figure 11. Heritage survey map showing location of graves.

6.7.7 Potential Impacts

This small-scale mining project will bring a few opportunities for employment during construction and operation. It will have a small positive socio-economic impact both in the immediate project area and at the nearest larger towns of Opuwo and Ruacana.

Potential impacts which will be assessed in include:

- Economic impact at national, regional and local levels
- Jobs and skills development
- Minor negative livelihood changes in the immediate project area: e.g. loss of grazing,

No fatal flaws have been identified for the envisaged project development and operations.

7 IMPACT ASSESSMENT

The impact assessment of all the listed aspects was carried out using an adaptation of the Hacking Method. Both, the criteria used to assess the impacts and the Method of determining the significance of the impacts, is outlined in **Table 6** below: (This procedure complies with the method provided in the Namibian EIA Policy document and EIA regulations)

- *Part A* provides the approach for determining impact consequence (combining severity, spatial scale and duration) and impact significance (the overall rating of the impact).
- Impact consequence and significance are determined from *Part B and C*.
- The interpretation of the impact significance is given in Part D. Both mitigated and unmitigated scenarios are considered for each impact.

The purpose of this section is to assess and identify the most relevant environmental impacts by describing certain quantifiable aspects of these and to provide possible mitigation measures to minimise the magnitude of the impacts that would be expected from the proposed mining activities.

The following potential impacts on the environment for the mining activities were identified and assessed:

- Air quality
- Noise
- Health & safety
- Visual
- Land use
- Waste
- Ecological &Biodiversity
- Water Resource
- Socio-economic
- Heritage

These identified potential impacts were evaluated. A **mitigation hierarchy** was considered as follows. Firstly, one tries to **prevent** the impact. If this is not possible then **mitigation measures** are applied to each aspect. Should the mitigation measures not reduce the impact, then an **alternative site** or **method** is considered. If an alternative is not possible then **rehabilitation** is considered as the last on-site resort. Usually, a combination of mitigation measures, alternative methods and rehabilitation is carried out to lower the impacts. If none of the above can be achieved to reduce the impact in the long term, then an **offset** can be considered where an improvement to the environment at another project site is actioned or a considerable contribution is given to a biodiversity conservation cause elsewhere is made.

Table 7 to **Table 19** describe and assess the potential impacts of the project.

Table 6. Criteria for assessing impacts

PART A: DEFINITION AND CRITERIA		
Definition of SIGNIFICANCE		**Significance = consequence x probability**
Definition of CONSEQUENCE		**Consequence is a function of severity, spatial extent and duration**
Criteria for ranking of the SEVERITY/NATURE of environmental impacts	**H**	Substantial deterioration (death, illness or injury). Recommended level will often be violated. Vigorous community action. Irreplaceable loss of resources.
	M	Moderate/ measurable deterioration (discomfort). Recommended level will occasionally be violated. Widespread complaints. Noticeable loss of resources.
	L	Minor deterioration (nuisance or minor deterioration). Change not measurable/ will remain in the current range. Recommended level will never be violated. Sporadic complaints. Limited loss of resources.
	L+	Minor improvement. Change not measurable/ will remain in the current range. Recommended level will never be violated. Sporadic complaints.
	M+	Moderate improvement. Will be within or better than the recommended level. No observed reaction.
	H+	Substantial improvement. Will be within or better than the recommended level. Favourable publicity.
Criteria for ranking the DURATION of impacts	**L**	Quickly reversible. Less than the project life. Short term
	M	Reversible over time. Life of the project. Medium term
	H	Permanent. Beyond closure. Long term.
Criteria for ranking the SPATIAL SCALE of impacts	**L**	Localised - Within the site boundary.
	M	Fairly widespread – Beyond the site boundary. Local
	H	Widespread – Far beyond site boundary. Regional/ national

PART B: DETERMINING CONSEQUENCE					
SEVERITY = L					
DURATION	Long term	**H**	**Medium**	**Medium**	**Medium**
	Medium term	**M**	**Low**	**Low**	**Medium**
	Short term	**L**	**Low**	**Low**	**Medium**
SEVERITY = M					
DURATION	Long term	**H**	**Medium**	**High**	**High**
	Medium term	**M**	**Medium**	**Medium**	**High**
	Short term	**L**	**Low**	**Medium**	**Medium**
SEVERITY = H					
DURATION	Long term	**H**	**High**	**High**	**High**
	Medium term	**M**	**Medium**	**Medium**	**High**
	Short term	**L**	**Medium**	**Medium**	**High**
			L	**M**	**H**
			Localised Within site boundary Site	Fairly widespread Beyond site boundary Local	Widespread Far beyond site boundary Regional/ national
			SPATIAL SCALE		

PART C: DETERMINING SIGNIFICANCE					
PROBABILITY (of exposure to impacts)	Definite/ Continuous	**H**	**Medium**	**Medium**	**High**
	Possible/ frequent	**M**	**Medium**	**Medium**	**High**
	Unlikely/ seldom	**L**	**Low**	**Low**	**Medium**
			L	**M**	**H**
			CONSEQUENCE		

PART D: INTERPRETATION OF SIGNIFICANCE	
Significance	**Decision guideline**
High	It would influence the decision regardless of any possible mitigation.
Medium	It should have an influence on the decision unless it is mitigated.
Low	It will not have an influence on the decision.

***H = high, M= medium and L= low and + denotes a positive impact.**

Table 7. Air Quality Impacts

<table>
<tr><td>Impact Event</td><td colspan="6">Disturbances to soil, rock and ore resulting in excessive dust in the atmosphere</td></tr>
<tr><td>Description</td><td colspan="6">Dusty atmospheric conditions do prevail in the arid northwest of Namibia particularly during the winter months when dry easterly winds blow and during early summer months and when south westerly winds blow. Mining activities will generate dust as follows:
➢ Movement of vehicles along road network hauling ore to the plant on site are likely to lift dust into the air. Trucks, transporting product along the dirt roads travelling south through to Henties Bay after which the road surface is bitumen tar.
➢ Drilling and blasting will most definitely cause dusty conditions.
➢ Crusher, sifting screens and conveyor functioning will result in dusty conditions.
➢ The TSF and waste rock dump (WRD).
➢ Product handling & storage areas
The surrounding habitats receive the dust that emanates from the mining activities and may potentially be affected. Fauna and flora alike could be impacted as ecosystem functioning is possibly affected.
Negative effects of dust on personnel working at the quarries are likely to occur if dust suppression techniques are not employed and personal protection equipment is not used to safeguard the health of personnel.</td></tr>
<tr><td>Nature</td><td colspan="6">Negative</td></tr>
<tr><td>Phases</td><td colspan="6">Phases during which sources of dust apply are highlighted below; Significance assessment was carried out on the operational phase which presents a long term risk.</td></tr>
<tr><td>Construction Phase</td><td colspan="2">Operational Phase</td><td colspan="2">Decommissioning Phase</td><td colspan="2">Post Closure</td></tr>
<tr><td>Road network establishment</td><td colspan="2">Road use and maintenance</td><td colspan="2">Demolishing structures</td><td colspan="2" rowspan="3">Background levels will most likely resume soon after closure.</td></tr>
<tr><td rowspan="2">Road network establishment</td><td colspan="2">Drilling and excavation</td><td colspan="2">Rehabilitation of slopes</td></tr>
<tr><td colspan="2">Road use and maintenance</td><td colspan="2"></td></tr>
<tr><td>Severity</td><td colspan="6">Moderate / measurable deterioration (discomfort). Recommended level will occasionally be violated.</td></tr>
<tr><td>Duration</td><td colspan="6">Reversible over time. Life of the project. Medium term</td></tr>
<tr><td>Spatial Scale</td><td colspan="6">Fairly widespread – Beyond the site boundary. Localised at best. Though this does depend on mobility of particles and prevailing weather conditions. The only place outside the local area is along the gravel roads during transportation.</td></tr>
<tr><td>Probability</td><td colspan="6">Definite and continuous</td></tr>
<tr><td>Mitigation</td><td>Severity</td><td>Duration</td><td>Spatial Scale</td><td>Consequence</td><td colspan="2">Probability of Occurrence</td><td>Significance</td></tr>
<tr><td>Unmitigated</td><td>M</td><td>M</td><td>M</td><td>M</td><td colspan="2">H</td><td>M</td></tr>
<tr><td>Significance of Consequence</td><td colspan="6">Unless it is mitigated the generation of dust should have an influence on the decision to carry out the activity or not. Natural weather conditions can create very dusty atmospheric conditions regardless of the existence of the mine. However, mining and processing activities on site will contribute significantly to local atmospheric dust levels and could potentially affect the ecosystem functioning. Company personnel could be affected depending on the content of the atmospheric dust and how great the exposure is.</td></tr>
<tr><td>Prevention</td><td colspan="6">Dust creation cannot be prevented completely. Water is normally used to suppress dust on the roads. However, this scarce resource cannot be applied continuously and indiscriminately without impacting the groundwater resource.</td></tr>
<tr><td>Mitigation Action</td><td colspan="6">Dust suppression techniques will be necessary when dust becomes an issue during the dry winter months. The following can be done to reduce exposure of the environment and personnel to continuous and excessive dust plumes:
➢ Avoid dust generating activities that create excessive dust during windy conditions.
➢ Personnel are required to wear personal protection equipment if excessive dust should be created.</td></tr>
</table>

	➢ All vehicles transporting product material off site should be covered with a tarpaulin when travelling on the national road network of tar and gravel roads. ➢ Windbreaks and covers can be used to reduce lifting of dust from crushers, screens and conveyors. ➢ Water spays at the various plant components will effectively keep dust from blowing into the atmosphere (only if water sources are sustainably used) ➢ The road network within the sites can be sprayed with water and other dust suppressants during dry dusty conditions (only if water sources are sustainably used) ➢ Waste rock dumps (WRDs) and the TSF should be landscaped and compacted where necessary to supress erosion of soil and dust emission on windy days. ➢ Natural revegetation of the WRDs and the TSF side walls would mitigate the amount of dust that these sources could generate. ➢ To mitigate gaseous pollutants released from the combustion of hydrocarbons, use of high-quality fuels will ensure quantities released per unit weight of product are at levels within environmental limits. ➢ In order to know whether the dusty conditions created by mining activities will exceed the limits or standards set for the southern African context it is necessary to set up a monitoring network of dust fallout buckets. The results of the monitoring will confirm the ambient air quality during baseline pre-construction conditions, and this will provide a gauge by which the site-specific conditions compare to the industry standards used.

Mitigation	**Severity**	**Duration**	**Spatial Scale**	**Consequence**	**Probability of Occurrence**	**Significance**
Mitigated	**L**	**L**	**M**	**L**	**L**	**L**

Significance of Consequence	The dust suppression techniques if applied diligently and consistently will result in a low significance impact for both the biophysical and social environment.
Confidence Level	High, provided management implements the mitigation action and the company provides the necessary financial support to implement the measures required

Table 8. Noise Impacts

Impact Event	**Disturbance of sense of place and the effect on tranquil ambient noise levels**		
Description	Potential noise sources during the mining activities could originate from vehicles, earthmoving equipment, generators and drilling operations. The irritation issue of these noise sources will depend on the closeness of the mining activities to various receptors. For rural districts the day-time ambient noise level requirement outlined in SANS 10103 (2008) between 6am and 10pm is 45dBA (**A-weighted decibel**). This is in line with the guidelines published by the World Health Organisation (WHO). The noise levels should not exceed the ambient noise levels for rural settings. The residences mentioned above would fall into the rural category.		
Nature	Negative		
Phases	Phases during which sources of noise will apply are highlighted below; Significance assessment was carried out on the operational phase which presents a long-term risk.		
Construction Phase	**Operation Phase**	**Decommissioning Phase**	**Post Closure**
Vehicles on road network	Vehicles on road network	Dismantling crushers & screens	Background or baseline levels will most likely become prevalent again immediately after closure.
Conveyor construction	Rock Cutters, crushers & screens	Dismantling conveyors	
Crushers & screens	Conveyor functioning	Demolishing buildings	
Building construction	Drilling & blasting	Rehabilitation of slopes	
	Ore and blocks haulage from quarry pit	Constructing fences	
Severity	Moderate / measurable deterioration (discomfort). Recommended level will occasionally be violated. Widespread complaints		
Duration	Reversible over time. Life of the project. Medium term		

Spatial Scale		Fairly widespread – Beyond the site boundary. Localised at best. Though this does depend on mobility of particles and prevailing weather conditions.				
Probability		Definite and continuous				
Mitigation	**Severity**	**Duration**	**Spatial Scale**	**Consequence**	**Probability of Occurrence**	**Significance**
Unmitigated	**M**	**M**	**M**	**M**	**H**	**M**
Significance of Consequence		Mitigations to reduce noise levels measured at receptors will be necessary.				
Prevention		Noise creation cannot be prevented and will occur and should be mitigated.				
Mitigation Action		There are industrial standards to which the noise sources (i.e. machinery) must comply. Regular maintenance of machinery should ensure the acceptable noise levels for operators working with the machines. It is not clear whether this will produce the accepted rural standard at the homesteads. It is recommended that any complaints regarding noise be recorded and included in the environmental reports. Should complaints persist then a survey by a suitably qualified and independent occupational hygienist will be required. Shields which deflect the noise away from receptors may reduce the decibels to within the rural standards. The placement of stockpiles and buildings will also play a role to ensure sources of noise are not directly in line with the farm homestead. Transportation routes should be planned for trucks such that they pass noise sensitive receivers at appropriate times. A restriction of the hours of movement, e.g. not allowing the transport of material during the noise sensitive hours of the night can mitigate noise impacts. The frequency (distance between trucks can also be planned to fall within a limited period. For rural districts, the daytime ambient noise level requirement outlined in SANS 10103 (2008) between 6am and 10pm is 45dBA. This is in line with the guidelines published by the World Health Organization (WHO). The nuisance factor of these noise sources will depend on the proximity of the mining activities to the national road, homesteads and sensitive animal habitats.					
Mitigation	**Severity**	**Duration**	**Spatial Scale**	**Consequence**	**Probability of Occurrence**	**Significance**
Mitigated	**L**	**M**	**M**	**L**	**L**	**L**
Significance of Consequence		The normal maintenance may reduce the probability of noise marginally. Should the shielding of noise sources keep the noise measured at the receptors to within the limits then the significance could drop to low.				
Confidence Level		The EAP is confident that the mitigations will result in lowering the impact significance. A good monitoring system will enable the mine to document the facts and respond accordingly by enhancing any noise reduction strategies.				

Table 9. Health & Safety Impacts – Noise and Vibration Effects on Personnel

Impact Event	**The effects of excessive noise and vibration on the health and safety of personnel.**
Description	Noise: ➢ Long term exposure to high levels of noise can cause permanent hearing loss. Neither surgery nor a hearing aid can help correct this type of hearing loss. ➢ Short term exposure to loud noise can also cause a temporary change in hearing (ears may feel stuffed-up) or ringing in your ears (tinnitus). These short-term problems may go away within a few minutes or hours after leaving the noisy area. Vibration: Different vibration types are defined as: ➢ Hand-Arm Vibration is defined as mechanical vibration that, when transmitted to the human hand-arm system, entails risks to the health and safety of workers, particularly, vascular, bone or joint, neurological or muscular disorders. Whole-Body Vibration is defined as the mechanical vibration that, when transmitted to the whole

		body, entails risks to the health and safety of workers lower back morbidity and trauma to the spine.				
Nature		Negative				
Phases		Phases during which sources of noise and vibration could apply are highlighted below; Significance assessment was carried out on the operational phase which presents a long-term risk.				
Construction Phase		**Operational Phase**		**Decommissioning Phase**	**Post Closure**	
Crushers & screens		Rock Cutters, Crushers & screens		Dismantling crushers & screens	Background or baseline levels will most likely become prevalent again immediately after closure. Personnel no longer on site.	
Conveyor construction		Conveyor functioning		Dismantling conveyors		
Vehicles on road network		Vehicles on road network		Demolishing structures		
Severity		Substantial deterioration (permanent damage to spine from vibration or hearing). Recommended level will often be violated. Personnel potentially unable to work any longer.				
Duration		Permanent. Beyond closure. Long term.				
Spatial Scale		Localised - Within the site boundary.				
Probability		Definite and continuous				
Mitigation	**Severity**	**Duration**	**Spatial Scale**	**Consequence**	**Probability of Occurrence**	**Significance**
Unmitigated	**M**	**M**	**L**	**M**	**M**	**M**
Significance of Consequence		Mitigations to reduce noise levels and exposure to vibrations for personnel are imperative.				
Prevention		Engineering controls that reduce sound exposure levels are available and technologically feasible for most noise sources. Engineering controls involve modifying or replacing equipment or making related physical changes at the noise source or along the transmission path to reduce the noise level at the worker's ear. The same goes for vibration. The following should be considered: ➢ Choose low-noise tools and machinery. ➢ Maintain and lubricate machinery and equipment (e.g. oil bearings). ➢ Enclose or isolate the noise source.				
Mitigation Action		**Noise:** The **Occupational Safety and Health Administration** (OSHA) guidelines set legal limits on noise exposure in the workplace. These limits are based on a worker's time weighted average over an 8 hour day. With noise, OSHA's **permissible exposure limit** (PEL) is 90dBA for all workers for an 8 hour day. The OSHA standard uses a 5dBA exchange rate. This means that when the noise level is increased by 5dBA, the amount of time a person can be exposed to a certain noise level to receive the same dose is cut in half. The WHO guideline on maximum noise levels to prevent hearing impairment set noise level limits at an average of 70 da over a 24-hour period with maximum noise levels not exceeding 110 dBA during the period. These limits would apply if the day-time shift is prolonged beyond the 8-hour day. **Mitigation actions include:** ➢ Operating noisy machines during shifts when fewer people are exposed. ➢ Limiting the amount of time, a person spends at a noise source. ➢ Providing quiet areas where workers can gain relief from noise sources. ➢ Where possible, restricting worker presence to a suitable distance away from noisy equipment. (Controlling noise exposure through distance is often an effective, yet simple and inexpensive administrative control.)				

	➢ In open space, the further the distance from the source of noise, the worker may experience a decrease in noise levels to be about 6dBA less for every doubling of the distance (nonlinear relationship). ➢ Hearing protection devices, specifically earmuffs for long periods of exposure near sources and at all times use plugs for all places outside offices within the claims not near noise sources for extended periods ➢ PPE is considered an acceptable mitigation, but a less desirable option to control exposures to noise. ➢ Entrance and exit medicals to test hearing should be carried out as a minimum requirement. **Vibration:** Meet industry vibration regulations; set daily exposure limit values and action values for both hand-arm and whole-body vibration for eight-hour shifts. Personnel can work shorter shifts where excessive vibration conditions exist.

Mitigation	Severity	Duration	Spatial Scale	Consequence	Probability of Occurrence	Significance
Mitigated	**L**	**M**	**L**	**L**	**L**	**L**

Significance of Consequence	If all the mitigations listed are used then the significance of the impact will be maintained at low.
Confidence Level	The EAP is confident that the mitigations will result in low significance. A good monitoring system will enable the proponent to document the facts and respond accordingly by enhancing any noise and vibration reduction strategies. Continuous training of personnel is imperative

Table 10. Health & Safety Impacts – General Hazards and Potential Risk of Injury

Impact Event	**Injury risks due to normal working conditions**		
Description	The potential impacts on human health and safety resulting from activities in any phase could include occupational accidents and injuries, vehicle accidents, exposure to weather extremes, trips and fall on uneven terrain, adverse health effects from dust generation and emissions, and contact with hazardous materials. The potential for these impacts to occur would be low because of the limited range of activities and number of workers required during operations. Gecko follows a set of industry-specific safety and health policies in the work place. Typical operational procedures that pose risks to operational personnel are: ➢ Operating heavy machinery e.g. such as, front-end loaders, excavators, drill rig and stationary processing equipment. ➢ Operating haulage trucks ➢ Snake bites, or scorpion stings, etc		
Nature	Negative		
Phases	Phases and specific activities or equipment during which personnel are exposed to health and safety risks will apply are highlighted below; Significance assessment was carried out on the operational phase which presents a long term exposure risk.		
Construction Phase	**Operational Phase**	**Decommissioning Phase**	**Post Closure**
Large mobile equipment	Large mobile equipment and product haulage	Demolishing structures	Personnel no longer on site.
Working at heights Rock falls from steep and high cliff faces of quarry pit	Rock falls from steep and high cliff faces of quarries	Constructing fences Rehabilitation of slopes	
	Fire and explosion hazards		
Severity	Substantial deterioration. Should industry standards be exceeded personnel may potentially be unable to work any longer.		
Duration	Permanent. Beyond closure. Long term.		

Spatial Scale		Localised - Within the site boundary.				
Probability		Definite and continuous				
Mitigation	**Severity**	**Duration**	**Spatial Scale**	**Consequence**	**Probability of Occurrence**	**Significance**
Unmitigated	**H**	**H**	**L**	**H**	**H**	**H**
Significance of Consequence		Mitigations to reduce exposure to health and safety risks for personnel are imperative.				
Prevention		The removal of hazards or risks will possibly prevent accidents from occurring. However, it is not possible to remove all risks.				
Mitigation Action		It is not possible to prevent all incidents from occurring completely. An accident is an unplanned incident though it could have been foreseen if the necessary precautions had been taken. Not all hazards can be removed but the risk it presents can be lowered. An integrated health and safety management system acts as a monitoring tool and mitigating tool to reduce the risks. Typical mitigating measures within the health and safety management systems are:- ➢ Draw up operational procedure manuals ➢ Provide health and safety awareness training ➢ Establish practical standard housekeeping rules ➢ Where applicable, colour code certain areas, equipment and substances to thereby classifying the risks. ➢ Provide signage for personal protective equipment (e.g. protective clothing like safety boots and hard hats) ➢ Institute safe working procedures and require permits to work ➢ Devise and implement emergency response plans ➢ Close coordination with the traffic authorities to ensure road safety signs are strategically placed and ensure all employee drivers are well trained ➢ Provide easy access to Material Safety Data Sheets (MSDS) ➢ Provide first aid treatment and training ➢ Devise emergency medical procedures for all eventualities ➢ Undertake daily safety reminders and/or drills ➢ Establish regulations for handling fuel The MSDS gives health related medical responses for personnel assisting staff who are exposed to the fuels. Procedures for dealing with injuries or accidents must be in place and all contact details for emergency personnel must be available. This list is not comprehensive and could be supplemented substantially by the Health & Safety Manager				
Mitigation	**Severity**	**Duration**	**Spatial Scale**	**Consequence**	**Probability of Occurrence**	**Significance**
Mitigated	**L**	**L**	**L**	**L**	**L**	**L**
Significance of Consequence		If all the mitigations listed are implemented then the significance will be maintained at low.				
Confidence Level		The EAP is quite confident that the mitigations will result in low significance. Continuous training of personnel is imperative.				

Table 11. Visual Impacts

Impact Event	**Changes to the aesthetic appeal of the area due to presence of people, vehicles and machinery. Visible changes to habitats due to human activities.**

Description	The experience of enjoying the landscape free of human activities is considered highly desirable. Intrusions into the current scenery may be unwelcomed. The MCs sites are remote and no main tourism routes pass through this valley. Residents within a 5 km radius are few. Impact on visual resources would be considered unfavourable if the landscape was significantly degraded or modified. The presence of mining personnel, vehicles and other equipment may reduce the aesthetic appeal of the area.					
Nature	Negative					
Phases	Phases during which traffic, infrastructure and dust plumes which potentially play a role in visual nuisances are highlighted below;					
Construction Phase	**Operational Phase**		**Decommissioning Phase**		**Post Closure**	
Additional traffic on the district road and mine access roads	Ore haulage and possible blasting creating dust plumes		Dismantling infrastructure with cranes		Barren mountain slopes and quarry scarring	
Dust plumes caused by mobile equipment operating at drilling sites	Bare slopes, waste rock dumps, topsoil stockpiles		Denuded mountain slopes and open quarries not revegetated			
Severity	Moderate / measurable deterioration. Recommended level will occasionally be violated. Widespread complaints. Noticeable loss of resources. It is a remote area off the main tourism route.					
Duration	Reversible over time. Life of the project. Medium term (Except for the quarries which will remain visible for the long term.					
Spatial Scale	Fairly widespread – Beyond the site boundary. Localised at best. Though this does depend on mobility of particles and prevailing weather conditions.					
Probability	Definite (in terms of dust plume creation from blasting) and continuous (in terms of the barren mountain slopes until revegetated during post closure)					
Mitigation	**Severity**	**Duration**	**Spatial Scale**	**Consequence**	**Probability of Occurrence**	**Significance**
Unmitigated	**M**	**M**	**M**	**M**	**M**	**M**
Significance of Consequence	The two aspects for visual impact are under consideration: **1.** Unless it is mitigated the generation of dust should have an influence on the decision to carry out the activity or not. However, natural weather conditions can also create very dusty atmospheric conditions. The mining activities on site will contribute to local atmospheric dust levels and will potentially affect the visual experience of the people staying nearby. Those communities staying along the transport route are affected by other road users too, so this aspect is a cumulative impact. This aspect is considered a minor aspect and temporary in nature. **2.** The aesthetic changes to the landscape can be mitigated for all phases of project. Alternatives have been considered which will reduce the visual impact of the project on anyone who pass through the area.						
Prevention	Dust creation cannot be prevented completely. Water is normally used to suppress dust on the roads. For operations to continue, personnel, vehicles and machinery will continue to operate within the larger area of the MCs for the duration of the project. Although minimal in most parts of the claims, it I not possible to operate and have no visual presence at all.					
Mitigation Action	Best practice Methodologies for operations will be employed. These may include the following: ➢ Existing roads and tracks are used to access the mine site. ➢ Dust suppression using water will most likely not be practical due to the non-sustainability of ground water usage. ➢ Product transport should either be containerised or at least installed with covers.					

	➢ Careful planning to avoid disturbing significant floral and faunal habitats when accessing the mining site ➢ Training personnel regarding the visible signs of faunal and floral biodiversity and the avoidance of habitat disturbance. ➢ Minimise the footprint of personnel, vehicles and machinery ➢ Rehabilitate habitats through the removal of obvious signs of human presence. ➢ Regular removal of waste daily and disposal of waste in the appropriate manner. ➢ Removal of machinery from the mining sites if periods of inactivity are prolonged. ➢ If lighting is required at night, lights need to be strictly controlled, and fixtures should be low-glare lighting with downward facing directed beams (except for quarry walls) ➢ Constructed structures should have natural colours so that they can blend in with the surrounding environment. ➢ Often, the sites that are disturbed and rehabilitated at least from an aesthetic perspective will in time be recolonized by both plants and animals. The aim is to minimise the footprint to achieve the least impact due to anthropogenic influence.

Mitigation	Severity	Duration	Spatial Scale	Consequence	Probability of Occurrence	Significance
Mitigated	**L**	**M**	**L**	**L**	**L**	**L**
Significance of Consequence	The dust suppression techniques if applied diligently and consistently will result in a medium significance visual impact for the residents in the immediate vicinity. because dust from heavy traffic on the main dirt road will not be mitigated except by reducing travelling speeds. Additionally, the visual alteration of the mountain slopes cannot be mitigated until mine closure when at that time the quarries will remain a visual reminder of the once active mine.					
Confidence Level	High - provided management implements the mitigation action and the company provides the necessary financial support to implement the changes required. A commitment to rehabilitating the denuded slopes and waste rock dump with the stockpiled topsoil will need to be done where practical and necessary.					

Table 12. Land Use Impact

Impact Event	**Herders could potentially experience restrictions to their grazing areas**						
Description	The MCs are situated on land belonging to the government of Namibia granted to rural people in the form of communal land. The MCs fall within the Epupa Constituency but may be under the stewardship of the Vita Royal House Traditional Authority. The community has grazing rights to the area						
Nature	Negative						
Phases	Phases during which potential conflicts may apply are highlighted below; Significance assessment was carried out on the operational phase, which presents a long-term risk. Aspects where potential conflicts may arise are listed. However, the long-term presence of quarries pose a safety risk. This is included in the assessment.						
Construction Phase	**Operational Phase**		**Decommissioning Phase**		**Post Closure**		
Access to site	Access to site		Access to site		Access to site		
Access to groundwater resources / boreholes	Access to groundwater resources / boreholes		Access to groundwater resources / boreholes		Public safety		
Public safety	Public safety		Public safety				
Asset security	Asset security		Asset security				
Waste management	Waste management		Waste management				
Severity	Moderate / measurable deterioration (discomfort). Recommended level will occasionally be violated. Widespread complaints. Noticeable loss of resources. Herders' area for grazing will be reduced marginally.						
Duration	Reversible over time. Life of the project. Medium term (except quarry which is long term)						
Spatial Scale	Localised. Within accessory works area and 500m boundaries around the quarries						
Probability	Definite / continuous						
Mitigation	**Severity**	**Duration**	**Spatial Scale**	**Consequence**	**Probability of Occurrence**		**Significance**
Unmitigated	**M**	**M**	**L**	**M**	**H**		**M**
Significance of Consequence	Mitigations to ensure no conflicts with landowners occur will be necessary.						
Prevention	It is not possible to prevent all conflicts. Any unforeseen issues will be mitigated through the various mechanisms stipulated in the EMP						
Mitigation Action	The EMA requires that permission be provided by the competent authorities for the listed activity. The EIA has facilitated a transparent process by which concerns can be raised. The proponent is subservient to the conditions laid down by the guidelines / conditions and the law that upholds it. The implementation of the mining programme will be in accordance with the approved Environmental Management Plan (EMP). The draft EMP can be found in **Appendix J.** The following mechanisms should be included in the environmental management system: ➢ Correspondence and agreements - document filing system ➢ Review memoranda of understanding annually ➢ Keep complaints register up to date ➢ Update stakeholder register regularly ➢ Engage land users regularly to maintain open channels of communication ➢ Fence off mining areas to increase public safety where necessary Depending on the management approach and decisions to allow access to grazing during no blasting periods and land markers or fences restricting access for safety and security the footprint and impact on normal usage of the area could be kept to a minimum thereby keeping the spatial extent localised. Public safety must prevail and access must be temporarily prohibited during blasting.						

Mitigation	Severity	Duration	Spatial Scale	Consequence	Probability of Occurrence	Significance
Mitigated	**L**	**L**	**M**	**L**	**L**	**L**
Significance of Consequence	Maintaining good relationships with landowners is imperative so that the severity and duration of disputes can be kept low. This will ensure the probability is low.					
Confidence Level	The EAP is confident that a well-designed and well implemented stakeholder engagement programme will cover the land use conflicts that could potentially arise.					

Table 13. Waste Impact

Impact Event	**Generation of Waste**		
Description	Waste is generated during the construction, operational and decommissioning phases of the mine's life. Waste can be classified into mineralised and non-mineralised waste. Non-mineralised waste can be classified as non-hazardous and hazardous waste. Medical waste is an additional category. 1. **Non-Hazardous non-Mineralised includes:** Metal cut offs, rubber, wood, product packaging, organic materials, glass, plastics, food scraps, cardboard/paper, used PPE, etc. 2. **Hazardous non-mineralised:** Printer cartridges, sewerage, batteries, hydrocarbons (oils, grease), fluorescent, etc. 3. **Medical waste:** Syringes, material with blood stains, bandages, etc. 4. **Mineral waste includes:** waste rock, tailings from mineral processing, rejects from beneficiation or concentration of other minerals, refinery or processing discards and sludges, smelter and other furnace slags, ashes, etc. (not all apply to this site but provided as examples)		
Nature	Negative		
Phases	Phases during which waste will be produced are highlighted below; Significance assessment was carried out on the operational phase which presents a long-term risk. Receptors potentially affected by waste are listed.		
Construction Phase	**Operational Phase**	**Decommissioning Phase**	**Post Closure**
Company personnel health	Company personnel health	Company personnel health	General public health
General public health	General public health	General public health	Groundwater
Groundwater	Groundwater	Groundwater	Biodiversity
Biodiversity	Biodiversity	Biodiversity	Soil
Soil	Soil	Soil	Atmosphere - dust and other volatiles emitted from waste are covered under air quality impacts but there is some overlap with waste management risks
Atmosphere	Atmosphere	Atmosphere	
Severity	Moderate / measurable deterioration (discomfort). Recommended level will occasionally be violated. Widespread complaints. Noticeable loss of resources.		
Duration	Reversible over time. Life of the project. Medium term		
Spatial Scale	Fairly widespread – Beyond the site boundary. Localised at best.		
Probability	Definite / continuous		

Mitigation	Severity	Duration	Spatial Scale	Consequence	Probability of Occurrence	Significance
Unmitigated	**M**	**M**	**M**	**M**	**H**	**M**
Significance of Consequence	The mining activities will generate waste. Preventative and Mitigating mechanisms are imperative.					
Prevention	Some waste products of categories 1-3 that can potentially impact the listed receptors can be managed to prevent impacts. Actions and company commitments that can prevent the impacts include the following:					

	➢ A waste management procedure should cover recycling, re-use, storage, handling, transportation, and disposal ➢ Collection and disposal of waste must be effective enough to not impact any of the receptors ➢ If waste must be stored and separated on site then the activities must take place on sealed surfaces, within bunds and fenced areas, and made ready for transport off-site by packaging the waste in sealed containers
Mitigation Action	Where waste product impacts on the receptors cannot be prevented the preventative measures above should still be employed to mitigate or reduce the impacts. Mitigations for the various receptors include the following: ➢ Personal protection equipment (PPE) can protect personnel from exposure to disease or toxic chemicals ➢ Awareness training for company personnel and the general public will inform them of those wastes that may cause harm, pollute the soil, groundwater or air (if particulate) ➢ Some wastes are dangerous to fauna and flora; Animals should not be able to access the waste management area; waste must be contained so that it cannot enter the naturally vegetated areas beyond the accessory works area. ➢ Containerisation of highly volatile wastes should be actioned to reduce emissions but not so effectively that creates explosive risks if pressures build up. The latter may occur if the containers are stored outside in the heat of the sun. A waste management programme as outlined in the EMP should keep records in the form of an inventory of waste products collected, sorted, stored, recycled, reused or disposed. Certificates for disposal of hazardous waste should be filed. The mineral waste (category 4 above) will most likely only be waste rock and process tailings that cannot be processed for product. This waste rock will be dumped or stockpiled on site or alongside the new processing plant and could be used in the rehabilitation during decommissioning phase. The health risks associated with the process tailings is discussed under the health impacts above. Sewerage created at the camp or management offices either needs to be deposited directly into approved and permitted French drains or removed offsite. If the latter is to be done then sealed sewerage tanks are required. The regulations under the Water Resource Management Act need to be consulted with regards to the erection of French drains near water courses. They cannot to be constructed within 100m of the banks of a water course. Storage of hazardous liquid waste must by law follow industry standards. These standards will be communicated in fuller details by the fuel supplier. Ideally, self bunded containers should be brought to site and placed upon sealed surfaces with waste collection sumps. Fuel collection should be carried out upon the same sealed surface with slopes for runoff into the sumps. At the mining claims sites a similar bunded surface must be constructed where fuel from a bowser can be transferred to the mobile plant. Regular removal of oil to recyclers is advised. All hazardous liquid waste should be stored on sealed surfaces
Rehabilitation	If the mitigation hierarchy is followed, rehabilitation may or may not be required. Should an accident occur during the process of collection, storage or disposal of waste and no mitigation be actioned then one of the receptors may be impacted. Consequently, the following examples of rehabilitation may be required: ➢ A person who is exposed to disease (bacteria from organic waste) or toxic waste (mineral or non-mineral), which results in harm, will need medical attention ➢ Soil which is contaminated by used hydrocarbons needs to be relocated to a remediation cell where the material after treatment, i.e. the addition of fertiliser, air and water will within a year be suitable for re-use. ➢ In the event of groundwater contamination by chemicals or hydrocarbons, the sinking of a borehole or the excavation of a pit in the vicinity of the contaminate source will allow the pumping of the groundwater into a holding dam. Through the continued pumping a cone of depression will draw the contaminated water towards the pump. The collected contaminated water can be discarded at a registered hazardous waste site or if separable the contaminant can be removed from the water before disposal. The reclaimed water could be pumped back in the pit or borehole.

Mitigation	Severity	Duration	Spatial Scale	Consequence	Probability of Occurrence	Significance
Mitigated	**L**	**M**	**L**	**L**	**L**	**L**
Significance of Consequence	If the mitigation hierarchy is followed through to rehabilitation, then the resultant consequence could be insignificant.					
Confidence Level	A well designed and well implemented waste management programme will provide the necessary confidence that the risks to receptors will be of low significance.					

Table 14. Ecological & Biodiversity Impacts

Impact Event	**Mining activities may affect biodiversity of fauna and flora directly or through habitat alteration.**
Description	Through mining in general there is potential for impacting the diversity of species within the various habitats by reducing population numbers of certain species. Pressures on the population numbers can potentially lead to a reduction of a population within an area causing the species to no longer exist within that area. Should a species be endemic to that same area then the risk of extinction is high. Habitats can be severely altered potentially changing the type of habitat or leading to the removal of micro habitats. No specialist fauna and flora studies have been commissioned for the MCs. Site visits, species lists for the area and reference to other studies carried out nearby and elsewhere reveal that the habitats, fauna and flora present in the area are not endemic to claims and accessory works area specifically but are either common or potentially rare throughout the Kunene Region **Fauna:** **A. Potential destruction of habitats and organisms** could take place during construction and operations, construction and use of roads by vehicles and machinery, clearing of land, building/erection of infrastructure, within laydown areas, around water tanks, at accommodation, around human activities, during blasting and earthmoving, around vehicle movements, and the operation of machinery. The potential impact could be as follows: ➢ Death of animals that are struck by earthmoving equipment, vehicles and machinery. Protected and at-risk species such as bat-eared fox, Cape fox, aardwolf and brown hyena are vulnerable to roadkill. ➢ Death of animals due to poaching. ➢ Raptors, bustards and migrating birds are vulnerable to power line impacts such as collision and electrocution. ➢ Bird nests, nesting habitats and feeding habitats are destroyed, affecting the viability of bird populations. ➢ Mammal and reptile burrows, burrow habitats and feeding habitats are destroyed, affecting the viability of the populations of these taxa. ➢ Parts of territories and home ranges are destroyed. ➢ Loss of plants and decline in habitat quality. ➢ Dust causes a decline in air quality and creates conditions for health decline in plants and animals. ➢ Noise disturbs animals and causes increase in stress. **B. Potential disturbance of animals and interference with their behaviour** during operations, when infrastructure and roads form obstacles to the directional movement of animals, when an increase in human and vehicle presence and movement results from mining activities, as a result of loud noises caused by blasting and the operation of heavy machinery. The potential impact could be as follows: ➢ Larger mammals and birds are the taxa most likely to be affected. ➢ The loss of migration corridors causes stress and an increased risk of death to various taxa. ➢ Birds and eggs could be poached. ➢ Animals, particularly birds, are disturbed while going about their daily activities, such as feeding, roosting and breeding. ➢ Dust creates conditions for health decline in plants and animals, and an increase in stress for animals. ➢ Noise disturbs the normal behaviour of animals, specifically mammals.

	C. **Potential light pollution as result of light sources** that are visible outdoors. This can impact in the following ways: ➢ Invertebrates that are attracted to the light provide an unnatural food source for taxa such as bats, geckos, nightjars and frogs. These insectivores are attracted to the food and then face conditions where they are more likely to die from causes such as collisions and predation. ➢ Invertebrates could die every night from exhaustion or predation, potentially disrupting their population numbers and causing disturbances in ecological processes. **D.** **Alteration of topography** during construction and operational phases can occur because of excavation of the ore bodies leaving a deep, open pit or several smaller quarries on the mountain. The processing plant and waste stockpiles will create large heaps of material on the surface of the landscape. This cumulative (for mining in the Kunene Region) impact acts on the level of ecosystems and could result in the following: ➢ Irreversible alteration of the ecologically valuable rocky outcrops. ➢ This impact may affect ecosystem functioning. ➢ Direct destruction of habitat and organisms (see A above). ➢ Fragmentation of habitat, leading to the loss of migration corridors for various taxa, in turn resulting in the loss of individual organisms and potentially populations. **E.** **Groundwater drawdown** - Abstraction of water for drilling, mining, ore processing and human consumption: ➢ River vegetation is dependent on groundwater to some extent. **F.** **Contamination of soil and water** - Chemicals used in the processing of ore, e.g. radioactive thorium, escape containment and contaminate the soil, surface and groundwater ➢ Chemicals leach into soil, causing contamination of soil and eventually groundwater. ➢ Effects of chemicals are cumulative and build up in groundwater over time. ➢ Once in the groundwater, there is the potential for contamination to spread beyond site boundaries. The Kunene River is an internationally important ecological feature that could potentially be directly affected. ➢ Birds, mammals and reptiles are attracted by an unnatural source of water (open water body) and either drown or ingest contaminated water. **G.** **Impacts associated with accommodation of staff** – During construction, operational and closure phases, vehicles can cause death of organisms, staff could be involved in poaching and plant collection, cooking and lighting practices cause fires, water use in an arid zone with few resources, poor sewerage practices and from cooking and cleaning cause oil spillage. ➢ Direct destruction of organisms and habitat. ➢ Oil spills and sewerage contaminate soil and water. ➢ Fires destroy habitats and cause death of animals. **Flora:** The habitats and flora are either common throughout the Kaokoland and if restricted in distribution or to micro habitats, they do occur outside the planned mining areas. The following potential aspects were assessed: A. Mining activities may affect the ecology of the flora directly through **habitat alteration or destruction** within the planned mining claims and accessory works area: Cumulative impact: mining in Kunene Region, especially on ecologically valuable rocky ridges and outcrops. Loss of plants and decline in habitat quality. Dust causes a decline in air quality and creates conditions for health decline in plants and animals. B. **Alteration of topography –** the sources of the impact during the construction and operational phases are from excavation of the orebodies that leave deep open pits caused by drilling, blasting and open cast mining and the use of equipment such as excavators, compressor driven drill rigs and cutting machines. The processing plant and mineral waste is deposited on the cleared ground. ➢ This is a cumulative impact of mining in the Kunene Region. ➢ Irreversible alteration of the ecologically valuable rocky ridges. ➢ This impact may affect ecosystems. ➢ Direct destruction of plants and habitat.

	➢ Fragmentation of habitat, leading to the disruption or loss of colonisation pathways for seed dispersal, in turn resulting in the loss of individual organisms and potentially populations.					
Nature	Negative					
Phases	Phases during which mining activities may impact the ecology and biodiversity through habitat alteration or destruction are highlighted below; The significance assessment was carried out on both the construction and operational phases.					
Construction Phase	**Operational Phase**		**Decommissioning Phase**		**Post Closure**	
Flora	Flora		Flora		Flora	
Fauna	Fauna		Fauna		Fauna	
Habitat	Habitat		Habitat		Habitat	
Species diversity	Species diversity		Species diversity		Species diversity	
Severity	Moderate / measurable deterioration. Noticeable loss of resources.					
Duration	Permanent, beyond closure, long term.					
Spatial Scale	Localised - Within the site boundary for flora but beyond the site boundary for fauna					
Probability	Possible/frequent					
Mitigation	**Severity**	**Duration**	**Spatial Scale**	**Consequence**	**Probability of Occurrence**	**Significance**
Fauna - A. Potential destruction of habitats and organisms						
Unmitigated	**M**	**M**	**L**	**M**	**M**	**M**
Fauna – B. Potential disturbance of animals and interference with their behaviour						
Fauna B.	**M**	**M**	**L**	**M**	**H**	**M**
Fauna – C. Potential light pollution as result of light sources						
Fauna C.	**M**	**M**	**L**	**M**	**H**	**M**
Fauna - D. Alteration of topography						
Fauna D.	**M**	**H**	**M**	**H**	**H**	**H**
Fauna - E. Groundwater drawdown						
Fauna E.	**M**	**M**	**M**	**M**	**M**	**M**
Fauna - F. Contamination of soil and water						
Fauna F.	**M**	**H**	**M**	**H**	**M**	**M**
Fauna - G. Impacts associated with the accommodation of staff						
Fauna G.	**M**	**M**	**M**	**M**	**M**	**M**
Flora – A. Destruction of plant and habitats						
Flora A.	**H**	**H**	**L**	**H**	**H**	**H**
Flora – B. Alteration of Topography						
Flora B.	**M**	**H**	**M**	**H**	**H**	**H**
Significance of Consequence	The mining activities will alter the habitats that previously existed. Soil and flora will be removed. Some fauna will relocate and compete for resources in adjacent habitats, but many will be destroyed and/or affected negatively. Dust and lighting will also impact ecosystem. Mitigating & rehabilitation mechanisms are imperative.					
Prevention	Not possible as at least many specimens of the most common flora taxa found in the district will be removed or destroyed during construction and clearing activities					
Mitigation Action	***Fauna:*** **A. Destruction of organisms and their habitats:**					

	➢ Keep the overall development footprint as small as possible. ➢ The extent and location of the construction site should be fenced and all construction activities should take place within the fence. Adherence should be strictly enforced. ➢ The location of roads, pipelines and power lines must be planned to minimise fragmentation or disturbance of habitats. ➢ Anti-erosion measures must be taken where roads and tracks cross a wash or drainage. ➢ Carefully plan the placement of stockpiling construction material so as to avoid sensitive areas. ➢ Limit construction activities to daytime hours to reduce noise. ➢ Educate construction and permanent staff as to their environmental obligations. All contractors should be held responsible for transgressions and significant penalties should be levied in order to ensure compliance. ➢ Position temporary construction infrastructure (e.g. accommodation) in areas that will definitely be disturbed during operations. ➢ Erect linear structures (power lines, water pipelines) as close as possible to existing roads and tracks. Maintenance roads/tracks for linear structures should be built as close as possible to the structure and access should be limited to essential maintenance. Do not put water tanks, power pylons or any other large infrastructure in the river or washes. ➢ No sewerage overflow or French drain may be placed within 100 m of a wash or river. ➢ A vertebrate specialist should identify nests, dens and other breeding locations and demarcate them before construction so that these sites can be avoided as part of the EMP. ➢ Reptiles and amphibians that are exposed during ground clearing should be captured for translocation by a qualified expert. ➢ No collection of plants should be allowed. No fires should be allowed. ➢ A comprehensive restoration plan should be drawn up by an expert BEFORE construction commences, at least at conceptual level, and should make provision for monitoring and adaptive management as the project develops. Some rehabilitation actions should be implemented during operations in order to be effective, e.g. removal and location of topsoil; location of waste rock dumps to ensure efficient restoration later; road and pipeline locations. **B. Disturbance of animals and interference with their behaviour**: ➢ The extent of the operation should be clearly demarcated on site layout plans and fenced in. The nature of a fence would be informative rather than restrictive – it is to make the boundaries of the area of operations clear to staff, visitors and contractors, and to effectively control access to undeveloped areas. ➢ Areas surrounding the mine and accessory works that are not part of the demarcated development should be considered a no-development zone. ➢ No employees, visitors or machinery should be allowed in such a zone. ➢ No off-road driving should be allowed. ➢ Limit activities to day-time hours so as to reduce noise. ➢ Only controlled and contained fires should be allowed for cooking and heating purposes. Only wood collected during the clearing of areas during the construction phase should be used for firewood. ➢ The significance of this impact is somewhat decreased by the fact that human presence and human-caused disturbance in the region is already interfering with the presence and movement of many taxa, particularly large mammals. ➢ Staff and contractors should be trained in sensitive human-wildlife interaction. **C. Light Pollution**: Not much is known about the effect of light on populations and ecosystems and the precautionary principle is applied here. ➢ Install motion detectors to limit light use to the minimum possible. ➢ Outdoor lights should be directed downwards and not up into the sky. ➢ Use yellow or amber outdoor lights because invertebrates don't detect yellow light as well as white. ➢ Install insect screens in doors and windows located in buildings that are used at night. **D. Alteration of Topography**: ➢ It may not be possible to rehabilitate the site significantly, but a comprehensive restoration plan would mitigate impacts to some extent. ➢ A comprehensive restoration plan with financial mechanisms for implementation should be drawn up by an expert during the construction phase. It is possible that some mitigation measures and rehabilitation actions should be implemented during

	operations in order to be effective; therefore, a restoration plan should be in place at the start of operations. ➢ Implement the restoration programme as soon as possible after the impact has ceased. **E. Groundwater drawdown:** ➢ Monitor groundwater levels. ➢ Monitor plant and vertebrate diversity downriver from the abstraction site at a minimum of once a year. **F. Contamination of Soil and Water**: ➢ Containment measures should be strictly enforced to the highest existing standards. Open water structures should be sealed and provide no opportunity for either leakage or entry by animals. ➢ Constant monitoring of open bodies of water and their associated pipes, lining and covers is essential to ensure that there is no malfunction, tear or opening. ➢ Treatment of the final discharge of water should be in such a way as to eliminate any possibility of active chemicals entering the soil or groundwater. **G. Impacts linked to accommodation of staff** ➢ All inhabitants and visitors in the staff compound should receive environmental awareness training, including training on indiscriminate defecation. ➢ The staff compound should be fenced in and the only access allowed outside the fence is on the entrance road. ➢ All cleaning and washing should take place inside a designated area (e.g. kitchen, laundry) and fat traps should be installed at the drain outlet from these areas. ➢ No collection of plants or plant material should be allowed. ➢ No open fires or flames should be allowed in the staff compound. ➢ Gas cooking facilities should be provided. ➢ Lights should be solar, or generator powered - no candles or paraffin lamps. ➢ Firefighting equipment should be placed in the compound. Equipment should always be tested regularly and be in working condition. All inhabitants of the compound should be trained in the use of this equipment and know where it is. ➢ Water saving measures should be put in place, e.g. low-pressure shower heads and taps; daily checks of pipes and tanks; immediate repair of leaks. ➢ Sewerage should be of sufficient capacity for the number of people and should be a sealed breakdown system. ➢ No sewerage overflow structure or French drain may be placed within 100 m of a wash, drainage line or river. ***Flora:*** **A. Habitat alteration and destruction** - The spatial extent of the infrastructure should be planned to keep it as small as possible. Then when clearing areas, where possible, do not fell the larger and older trees as they act as seed (genetic stock) sources. Roads, pipelines and power lines must be planned in order to minimise fragmentation or disturbance of habitats The following most important mitigations should be implemented: ➢ Do not put water tanks, power pylons or any other large infrastructure in the river or washes. ➢ Position temporary construction infrastructure (e.g. accommodation) in areas that will definitely be disturbed during operations. ➢ Erect linear structures (power lines, water pipelines) as close as possible to existing roads and tracks. ➢ Carefully plan the placement of stockpiling construction material so as to avoid sensitive areas. ➢ Awareness training for management & other personnel must focus on: ➢ Training of all personnel to limit the habitat alteration during the construction and operational phases of the mine ➢ Teach knowledge and understanding of the flora and its ecology

	The following basic rules must be adhered too: ➢ No littering ➢ Driving only on existing roads (roads created by the mine inside the mining areas. ➢ Firewood should come from trees that were felled within the cleared areas and no additional clearing for firewood should occur. ➢ A restoration plan should be drawn up by an expert BEFORE operations commences, at least at conceptual level before construction starts, and should make provision for monitoring and adaptive management as the project develops. ➢ Some rehabilitation actions should be implemented during operations to be effective, e.g. removal and location of topsoil; location of waste rock dumps to ensure efficient restoration later; road and pipeline locations. **B. Alteration of Topography** ➢ It may not be possible to rehabilitate the mining sites significantly, but a comprehensive restoration plan would mitigate impacts to some extent. ➢ A restoration plan should be drawn up by an expert BEFORE operation commences. Implement the restoration programme as soon as possible after the impact has ceased.
Rehabilitation	The following aspects should be considered when finalising the closure plan: ➢ The infrastructure removal and landscaping of the accessory works area to match as far as possible the baseline conditions. ➢ Funds for rehabilitation should be set aside from the start of the mining activities. ➢ Reasonable and acceptable ways of rehabilitation should be implemented on an ongoing basis as well as at the time of site closure. ➢ Where soils have been affected by spillages such hydrocarbons, these soils should be stockpiled and appropriately treated to regulate the contamination levels prior to being used for rehabilitation purposes.

Mitigation	Severity	Duration	Spatial Scale	Consequence	Probability of Occurrence	Significance
Mitigated	**L**	**M**	**L**	**L**	**L**	**L**
Significance of Consequence	If the mitigation hierarchy is followed through to rehabilitation then the resultant consequence could be insignificant overall.					
Confidence Level	A well designed and well implemented rehabilitation programme will provide the necessary confidence that the altered habitats could be rehabilitated at the end of the mining activities to a degree that the final footprint of the mine will be acceptable.					

Table 15. Water Resource Impact

Impact Event	**Mining activities may affect water resources through over utilisation**		
Description	Water will be needed for drinking, and personnel ablutions and may be needed for drilling operations. It is suggested that amounts of water can be sourced from Opuwo or from one of the surrounding neighbours and then be trucked to the site, as there is no existing infrastructure on site for the water utility company, this is the preferred option. If for any reason more water is required then the proponent suggests abstraction of water from the river or ground water, which can be done at minimal extraction cost, a borehole can be sunk to augment supply volumes. The feasibility of each option must be weighed up. This depends largely on the supply capabilities of the source and the demand of the project. Water is a scarce resource and needs to be used sustainably. Groundwater reserves should not be depleted below an acceptable level if boreholes are used. The groundwater or infrequent surface water flow is at risk of contamination by sewerage, chemicals and hydrocarbons that are not contained properly.		
Nature	Negative		
Phases	Phases during which mining activities may impact the water resources are highlighted below..		
Construction Phase	**Operational Phase**	**Decommissioning Phase**	**Post Closure**
Surface water (ephemeral rivers)	Surface water (ephemeral rivers)	Surface water (ephemeral rivers)	Receptors should no longer be at risk as abstractions should

Groundwater (via borehole abstraction)	Groundwater (via borehole abstraction)	Groundwater (via borehole abstraction)	have ceased and all potential contamination sources would have been removed

Severity	Substantial deterioration (death, illness or injury). Recommended water levels level could often be violated. Irreplaceable loss of resources should the groundwater be contaminated.
Duration	Reversible over time.
Spatial Scale	Fairly widespread – groundwater and surface water can potentially convey impacts beyond the boundary of the MCs.
Probability	Definite / continuous

Mitigation	Severity	Duration	Spatial Scale	Consequence	Probability of Occurrence	Significance
Unmitigated	**H**	**M**	**M**	**H**	**H**	**H**

Significance of Consequence	A high significance is expected if no mitigation measures are implemented.
Prevention	Alternative water sources to be developed such as direct intake from the Kunene River or aquifer in the bank of the Kunene River are sustainable sources. Monitoring of groundwater level and water quality should serve as an early warning system in case of overexploitation of groundwater.
Mitigation Action	With regards water abstraction from boreholes, a continuous monitoring programme for water abstraction is required to manage the water level fluctuations sustainably. Abstraction must be stopped if the sustainable use cannot be maintained. In the case where long-term structures, like machine workshops or chemical storage areas have been established to mitigate against the accidental spillage of pollutants it is necessary to construct sealed surfaces with drains (e.g., oil water separators in the case of hydrocarbons) and bunds. These serve for dispensing or distribution sites and storage sites respectively. Water should be recycled on site and no discharge of wastewater should be carried out on site. Ablution facilities should have correctly sized design criteria, to ensure that effluent discharge meet the requirements set by the Department of Water Affairs.

Mitigation	Severity	Duration	Spatial Scale	Consequence	Probability of Occurrence	Significance
Mitigated	**M**	**M**	**L**	**M**	**L**	**L**

Significance of Consequence	If the mitigation hierarchy is followed through to rehabilitation, then the resultant consequence could be insignificant. Groundwater levels will be restored with natural recharge over time.
Confidence Level	A well designed and well implemented mitigation programme alone should provide for a low significance. Rehabilitation will provide greater confidence that if polluted, the receptors could be rehabilitated before or at end of the mining activities.
Monitoring	Monitor groundwater level, gauge river level, rainfall, and abstraction daily. Groundwater levels monitoring is recommended for any existing boreholes, and also for the proposed new boreholes. Water levels are to be measured continuously, preferably by using pressure transducers. Overall, the water balance of the MCs area and associated operations is to be monitored particularly for the following components: ➢ Water disposal in tailings ➢ Recovered water and decrease in recovered water volumes ➢ Intake of freshwater to the mining sites and plant form the water supply wellfield ➢ Increase or decrease of outflow to the evaporation dam

Table 16. Socio-Economic Impact

Impact Event	**Positive aspect of sustaining employment in the sector.**					
Description	The proponent will contract mine workers to conduct the small-scale mining activities on site. In addition, a security team may also be employed during time of operations. The immediate (radius of 3km) surrounding area is only sporadically resided upon. Herders use the area for grazing their livestock. The negative social impact is deemed negligible and the positive aspects of the project on the economic benefits outweigh any negative aspects.					
Nature	Positive					
Phases	Phases during which mining activities may contribute to the local economy are highlighted below; The significance assessment was carried out on the operational phase which represents the longest term when benefits are greater.					
Construction Phase	**Operational Phase**		**Decommissioning Phase**		**Post Closure**	
Construction personnel	Operational personnel		Demolition personnel			
Security personnel	Security personnel		Security personnel		No employment	
Support services	Support services		Support services			
Severity	Substantial improvement. Will be within or better than the recommended level. Favourable publicity.					
Duration	Reversible over time. Life of the project. Medium term					
Spatial Scale	Fairly widespread – Beyond the site boundary. Local					
Probability	Possible/ frequent					
Mitigation	**Severity**	**Duration**	**Spatial Scale**	**Consequence**	**Probability of Occurrence**	**Significance**
Unmitigated	**M+**	**M+**	**M+**	**M+**	**M+**	**M+**
Significance of Consequence	A medium positive significance is expected.					
Prevention	Economic benefits could be prevented locally if no residents are employed and all materials and equipment is imported from other towns in the region and beyond. Actions that will prevent the positive impact of employment creation for this project would be the no-go alternative due to either a fatal flaw from socio-economic or biodiversity impacts being of high significance. Retrenchment of permanently employed can be avoided by diversifying the business options in the construction industry.					
Mitigation Action	Where possible personnel should be hired from the local resident pool. At least this should apply to the unskilled vacancies. The proponent could start social responsibility projects to uplift the areas health and educational needs.					
Mitigation	**Severity**	**Duration**	**Spatial Scale**	**Consequence**	**Probability of Occurrence**	**Significance**
Mitigated	**M+**	**M+**	**M+**	**M+**	**H+**	**M+**
Significance of Consequence	A medium positive significance is expected.					
Confidence Level	Provided local residents are hired then one can be more confident in achieving the medium significance. Through meaningful permanent employment economic development can be secured for all concerned.					

Table 17. Product Handling & Storage Impacts

Impact Event	**Bulk storage and handling of product at Walvis Bay Port**
Description	The management of the product at the Port of Walvis Bay involves various hazards that can have an impact on the Port functioning, third parties and the proponent. The potential impacts on human health and safety resulting from activities at the port could include occupational accidents and injuries, vehicle accidents, exposure to weather extremes, trips and fall on

	uneven terrain, adverse health effects from dust generation and emissions, and contact with hazardous materials. The site of storage itself needs to be safeguarded from any impacts of the product directly. Failure to store and handle the product safely at any point between the storage facility and the stowage on board the ship could have negative impacts on the other users of the port and areas they are responsible for. The proponent and contractors must follow a set of industry-specific safety and health policies at the Port. Typical operational procedures that pose risks to operational personnel are: ➢ Operating heavy machinery such as, front-end loaders, conveyors, forklifts, articulated trucks and trains during handling and transfer to ships ➢ Operating haulage trucks during offloading Some products may manifest normal risks such as dust inhalation.					
Nature	Negative					
Phases	The significance assessment was carried out on the operations at the port. No construction phase is expected.					
Construction Phase	**Operational Phase**		**Decommissioning Phase**		**Post Closure**	
	Receiving product from the mine in bulk or bulk bags Storage and containment of bulk bags or bulk product at the port Transfer of the product to the vessel				.	
Severity	Moderate / measurable deterioration. Noticeable loss of resources.					
Duration	Medium term. Life of Mine.					
Spatial Scale	Localised - Within the site boundary. Temporary storage at Walvis Bay Harbour					
Probability	Definite and continuous					
Mitigation	**Severity**	**Duration**	**Spatial Scale**	**Consequence**	**Probability of Occurrence**	**Significance**
Unmitigated	**M**	**M**	**L**	**M**	**M**	**M**
Significance of Consequence	Mitigations to reduce exposure to health and safety risks for personnel are imperative.					
Prevention	The removal of hazards or risks will possibly prevent accidents from occurring. However, it is not possible to remove all risks.					
Mitigation Action	It is not possible to prevent all incidents from occurring completely. An accident is an unplanned incident though it could have been foreseen if the necessary precautions had been taken. Not all hazards can be removed but the risk it presents can be lowered. An integrated health and safety management system acts as a monitoring tool and mitigating tool to reduce the risks. Typical mitigating measures within the health and safety management systems are:- ➢ Draw up operational procedure manuals ➢ Provide health and safety awareness training ➢ Establish practical standard housekeeping rules ➢ Colour code certain areas, equipment and substances to thereby classifying the risks. ➢ Provide signage for personal protective equipment (e.g. protective clothing like safety boots and hard hats) ➢ Institute safe working procedures and require permits to work ➢ Devise and implement emergency response plans ➢ Close coordination with the traffic authorities to ensure road safety signs are strategically placed and ensure all employee drivers are well trained					

	➢ Provide easy access to Material Safety Data Sheets (MSDS) ➢ Provide first aid treatment and training ➢ Devise emergency medical procedures for all eventualities ➢ Undertake daily safety reminders and/or drills ➢ Establish regulations for handling the product ➢ Establish monitoring points for particulate contamination around the storage facility. Procedures for dealing with injuries or accidents must be in place and all contact details for emergency personnel must be available. This list is not comprehensive and could be supplemented substantially by the Health & Safety Manager With respect radiation exposure the following mitigations and monitoring are either mandatory by law or recommended: ➢ Annual medical assessment ➢ PPE – dust masks are worn by all employees exposed to manganese dust. The type used is FFP3; ➢ Rules applicable to the Port Authority must be applied. ➢ Equipment for measuring radiation emissions need to be purchased and personnel trained to use them.

Mitigation	Severity	Duration	Spatial Scale	Consequence	Probability of Occurrence	Significance
Mitigated	**L**	**L**	**L**	**L**	**L**	**L**
Significance of Consequence		If all the mitigations listed are implemented, then the significance will be maintained at low.				
Confidence Level		The EAP is quite confident that the mitigations will result in low significance. Continuous training and medical monitoring of personnel and the regionally (SADC region) recommended frequency is imperative. The regionally (SADC region) accepted levels of radiation exposure in employees must be monitored and maintained. The port authority will place the onus on the proponent to provide proof that the source of pollutants is not from the site of proponent.				

Table 18. Heritage Impacts

Impact Event	Heritage related impacts.
Description	Kaokoland is a special place and it is recognised for its world heritage and for the people who continue to live off the land there. Any existence of graves and other such important heritage aspects within the MCs area could mean that specific areas within the MCs need to be kept pristine for further study. The mining claims area has no formally registered sites of national importance from a historical and pre-historic perspective. If any unknown sites were damaged in any way during project activities, it would be considered a heritage impact and depending on the importance of the site result in a great loss were it damaged by mining activities. See the **Appendix I** for the Heritage Survey carried out with the elders of the communities where important sites were identified and mapped. See **Appendix K** for the specialist Archaeology & Heritage Impact Assessment Report. Based on the Archaeological and Heritage Impact Assessment (AHIA) report for Mining Claim No. 75205, the potential impacts of mining on heritage aspects within the claim area are expected to be low. However, it's important to note the following points: 1. Surface scatter: The report mentions that a few areas were recorded to have surface scatter, which could potentially be impacted by mining activities. 2. Buried or unseen features: While no significant features were identified that required buffering or protection, the report emphasizes the possibility of buried or unseen cultural heritage sites that could be impacted.

	3. Chance finds: The specialist report strongly advises the adoption of a Chance Find Procedure throughout the mining activities, indicating the potential for discovering previously unknown heritage resources during mining operations. 4. General disturbance: Any mining activity has the potential to disturb the landscape and potentially impact undiscovered archaeological or heritage resources. The report concludes that while no major heritage impacts were identified, caution should be exercised during mining activities. The overall impact is expected to be low
Nature	Negative
Phases	Phases during which the significance assessment was carried out is highlighted in green. It is the various personnel who could potential come across as yet to be documented find.

Construction Phase	**Operational Phase**	**Decommissioning Phase**	**Post Closure**
Construction personnel	Operational personnel		
Security personnel	Security personnel		
Residents	Residents		

Severity	Negligible (minor) is expected
Duration	Not reversible over time. long term
Spatial Scale	Localised to within the mining claims.
Probability	Possible because no records known to proponent

Mitigation	**Severity**	**Duration**	**Spatial Scale**	**Consequence**	**Probability of Occurrence**	**Significance**
Unmitigated	**H**	**H**	**L**	**H**	**L**	**M**

Significance of Consequence	A medium significance is expected should significant heritage sites or artifacts exist and no mitigations are implemented.
Prevention	Well trained staff who know what to look for during the construction and operation phases could prevent any destruction of important sites.
Mitigation Action	This study indicates no existence of archaeological resources on site. A heritage survey only identified grave sites outside the MCs (See **Appendix I**). A follow up survey and specialist study was undertaken (See **Appendix K**). The following lists the mitigations to be implemented. Based on the AHIA report for Mining Claim No. 75205, the author provides the following mitigation measures: 1. Adopt and implement a Chance Find Procedure throughout the exploration activities. 2. Exercise caution during mining activities, as archaeological material may possibly surface from underground. 3. Focus and stick only to the targeted sites that will be selected for mining. 4. Comply with and adhere to the recommended mitigation measures put forth in Section 16.2 of the specialist report. 5. Implement the recommended mitigations as part of the general Environmental Management Plan (EMP). 6. Proceed with the project only after receiving approval from the National Heritage Council of Namibia. 7. Limit activities to the areas that have been surveyed and assessed in the specialist report. The specialist emphasizes that while no significant features requiring buffering or protection were identified, these general recommendations aim to protect any buried or unseen new features/cultural heritage sites that may be encountered during mining activities.

Mitigation	**Severity**	**Duration**	**Spatial Scale**	**Consequence**	**Probability of Occurrence**	**Significance**
Mitigated	**L**	**H**	**L**	**M**	**L**	**L**

Significance of Consequence	A low significance is expected based on the findings of the specialist and if mitigation measures are fully implemented.
Confidence Level	Provided all personnel are trained in the procedure of chance finds the destruction of anything important could be prevented.

Table 19. Post Mining Legacy Impact

Impact Event		**Abandonment of the mining site potentially exposes public and wildlife to hazards**				
Description		When a mining area is abandoned the infrastructure and altered landscape can affect the safe access of wildlife and general public if not rehabilitated. The altered habitat may or may not promote the re-establishment of organisms once found there. Visual rehabilitation to the original state is not always practical due to economic factors.				
Nature		Negative				
Phases		Phases during which decommissioning, and mine closure may impact public safety, future ecosystem functioning for domestic livestock and wildlife, economic stability and social health, and asset security. The significance assessment is carried out for the post closure phase.				
Construction Phase		**Operational Phase**		**Decommissioning Phase**		**Post Closure**
Not applicable		Not applicable		Ecosystem functioning		Ecosystem functioning
				Public safety		Public safety
				Economic uncertainty		Social challenges of unemployment
				Asset security		
Severity		Substantial deterioration after mine closure with respect to aspects listed above.				
Duration		Permanent. Beyond closure. Long term.				
Spatial Scale		Fairly widespread – Beyond the site boundary. Local				
Probability		Definite / continuous				
Mitigation	**Severity**	**Duration**	**Spatial Scale**	**Consequence**	**Probability of Occurrence**	**Significance**
Unmitigated	**H**	**H**	**M**	**H**	**H**	**H**
Significance of Consequence		A high significance is expected if no mitigation mechanisms are implemented. This is a worst case scenario where no alternative uses of the altered habitat is considered. In terms of economic benefits lost, it is important to note that the longer the mining operations go on, the longer the benefit to the community..				
Prevention		The resources are finite and so decommissioning is inevitable at some point. The degree to which the impact of closure will have will depends on the mitigations that can be considered. Ecosystem functioning of the whole area cannot return to baseline conditions unless the excavated quarries is refilled and the area revegetated to baseline conditions. This is not practical Public harm can be prevented provided the area is secured and the risky hazards are inaccessible. Jobs within this sector will be lost. This cannot be prevented unless the employees move with the company to the next site. Theft and damage to equipment can be prevented during the decommissioning phase provided good security prevents any form of criminal behaviour by disgruntled employees.				
Mitigation Action		Visual impacts can be mitigated through a thorough removal of all infrastructure. The reduction in the size of the mine footprint during operations and decommissioning increases the probability that more habitat will become fully functional when the mining ceases.				

	Secure fencing or other physical objects (rock piles) around any hazardous quarry pits (i.e. height risks) could prevent accidents from occurring but the permanent and visually acceptable barrier to humans and wildlife would be required to prevent injuries due to falling from heights. Access down into the pit could be allowed provided there is no risk from falling rocks. The access road leading to the quarries and WRD areas should be closed off to the public except to those that need access to the facilities for inspection after closure. Wherever there are safe access roads that are useable by the neighbours, these should be left. When the mining activities end, the losses of employment will have a negative economic effect on the livelihoods of the workers and the region. To mitigate this impact all stakeholders should be notified about the mine closure in good time.
Rehabilitation	Reasonable rehabilitation of the mining sites should take place. The proponent will be responsible to put aside funds for rehabilitation. The mine closure plan with the mine rehabilitation or restoration plan should be written up during the first three years of the first environmental clearance. Rehabilitation of the abandoned mining area will amongst other things include the following: ➢ All movable assets to be removed off site ➢ All waste to be removed from site to prevent later potential excavation by people trying to recover any sort of usable scrap / materials ➢ All immovable machinery to be dismantled and removed from site ➢ Possibly create shallow sloped sides of quarried areas ➢ WRD material are used in landscaping ➢ All stockpiled topsoil will be re-laid on the landscaped areas. ➢ Designed landscaped areas to be revegetated with plants from the nursery ➢ Finally, erect fencing or barriers to prevent access by public or animals to cliff faces of the quarried pits

Mitigation	**Severity**	**Duration**	**Spatial Scale**	**Consequence**	**Probability of Occurrence**	**Significance**
Mitigated	**L**	**M**	**L**	**L**	**L**	**L**
Significance of Consequence	If the mitigation hierarchy is followed through to rehabilitation, then the resultant consequence could be insignificant or at worst a low significance.					
Confidence Level	A well designed and well implemented mine closure plan should provide for a low significance upon mine closure.					

8 ENVIRONMENTAL MANAGEMENT PLAN

The Environmental Management Plan (EMP) provides management options to ensure impacts of the quarries are minimised. An EMP is a tool used to take pro-active action by addressing potential problems before they occur. This should limit the corrective measures needed, although additional mitigation measures might be included if necessary. The draft EMP is found in **Appendix J**.

The objectives of the EMP are:

- to include all components of the operations of the project;
- to prescribe the best practicable control methods to lessen the environmental impacts associated with the operations of the project;
- to monitor and audit the performance of operational personnel in applying such controls; and
- to ensure that appropriate environmental training is provided to responsible operational personnel.

The EMP acts as a stand-alone document, which can be used during the various phases (construction, operational and decommissioning) of the facility. All personnel taking part in the extraction operations should be made aware of the contents of the EMP, to plan the relevant operations accordingly and in an environmentally sound manner. The EMP outlines 9 environmental management programmes which are to be used for all phases of the mining activities. Monitoring recommendations are included in the EMP.

The programmes listed and described in the EMP are:

1. Air quality Management Programme
2. Noise Management Programme
3. Health & safety Management Programme (includes Security)
4. Visual Management Programme
5. Stakeholder Communication Management Programme (include socio-economic aspects)
6. Waste Management Programme
7. Ecology Management Programme
8. Water Resource Management Programme
9. Mine Closure & Rehabilitation Management Programme

The proponent could implement an Environmental Management System (EMS) to manage these 9 programmes. However, a good EMS goes beyond mere implementation of the EMP. An EMS is internationally recognized as best practice that will ensure ongoing incorporation of environmental constraints. At the heart of an EMS is the concept of continual improvement of environmental performance with resulting increases in operational efficiency, financial savings and reduction in environmental, health and safety risks. An effective EMS would need to include the following elements:

- A stated environmental policy which sets the desired level of environmental performance;
- An environmental legal register;
- An institutional structure which sets out the responsibility, authority, lines of communication and resources needed to implement the EMS;
- Identification of environmental, safety and health training needs;
- Implementation of the EMP's Environmental programmes;
- Stipulated environmental objectives and targets to be MEFT, and work instructions and controls to be applied in order to achieve compliance with the environmental policy;

- Periodic (internal and external) audits and reviews of environmental performance and the effectiveness of the EMP and EMS;

9 CONCLUSIONS & RECOMMENDATIONS

The proponent will contribute locally to employment opportunities for both locals and contractors. Skills transfer and training would develop the local workforce during both the construction and operational phases. Social responsibility projects need to be identified by the proponent to help the rural communities develop their skills or provide for their health of education.

The EMP should be used as an on-site reference document for the design, construction, operations and decommissioning of the mine and associated works. Parties responsible for transgressing the EMP should be held responsible for any rehabilitation that may need to be undertaken. The proponent could use an in-house Health, Safety, Security and Environment Management System in conjunction with the EMP and its management programmes. Personnel must be taught and understand the contents of the EMP as a minimum requirement. Best practice would be the hiring of a suitably qualified and experienced environmental control officer to implement the environmental management programmes. Alternatively, the implementing of the programmes should be delegated amongst the management personnel on and off site. The EMP requires minimum and realistic monitoring of the environmental aspects explicitly listed for each of the management programmes.

Based on the information provided in this report, the EAP is confident that the identified potential impacts associated with the project can be reduced to acceptable levels. This is conditional on the implementation of all the measures (i.e. preventions, mitigations, remediations, monitoring etc.) described in the EMP.

10 REFERENCES

Ashby, A., 2019. Socio-Economic Scoping Study as input to the Environmental Scoping Study, for Gecko's Proposed Opuwo Cobalt Project, Kunene Region. Baseline Scoping Report.

Fennessy, J. (2009). *Home range and seasonal movements of Giraffa camelopardalis angolensis in the northern Namib Desert.* African Journal of Ecology, 47(3), 318-327.

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Mendelsohn, J., Jarvis, A., Roberts, A. & Robertson, T. 2002. *Atlas of Namibia. A portrait of the land and its people*. David Philip Publishers, Cape Town, RSA.

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Sarma, D., 2022. Hydrological and Hydrogeological Assessments as Part of an Environmental Scoping Study for Mining of Blue Sodalite Dimension Stone, and Other Minerals: ML40 and Mining Claims, Kunene Region.

Appendix A: The curriculum vitae of the EAP

PHILIP HOOKS

Tel: +264 81 127 9936 (Namibia)
Email: philip.nigel.hooks@gmail.com
LinkedIn: www.linkedin.com/in/philip-hooks-50268156

PROFILE

A highly driven and collaborative **Management Professional** who has successfully completed numerous projects and activities and gained a wealth of exposure across environmental management, having worked in key sectors. A hardworking and reliable individual who has numerous strengths and knowledge including a thorough understanding of regulations and expertise in ensuring compliance as well as highly effective team management skills who would enhance any forward-thinking organisation.

KEY SKILLS

- Wealth of environment management experience
- Environmental impact assessments
- Development and implementation of environmental management plans
- Exploration and mining sector experience
- Auditing expertise
- Extensive project management exposure
- Exceptional management and leadership skills
- Complex problem solving skills
- Naturally hardworking and reliable
- Driven by international best practice and compliance
- Stakeholder engagement
- Negotiation and influential skills

EXPERIENCE

2018 – 2025 **Environmental Consultant** – Self-employed

Key Responsibilities:

- I currently lead an EIA for a salt mining clearance application; assist on another EIA for an exploration application; report writing for mining and exploration licences for renewal clearance requirements. I completed an EIA for a manganese mine as well as some small mining claims in the Kunene Region in 2020. I completed an EIA for a sodalite and REE mine in the Kunene Region in 2021. I completed an Amendment EIA for Okorusu Mine in 2023.

2015 – 2018 **Environmental Specialist** – Gecko Namibia

Key Responsibilities:

- I oversaw all environmental matters for the group, from compliance and auditing to implementation, monitoring and reporting. My services were outsourced for EIAs

2012 – 2014 **Environmental Scientist** – Geo Pollution Technologies

Key Responsibilities:

- I undertook Environmental Impact Assessments and developed industry specific Environmental Management Plans (EMPs)

2011 **Health Safety Environment and Radiation Training Officer** – Rio Tonto

1997 – 2011 **Teacher and School Principal** – Swakopmund Christian Academy

18.07.24 Epembe Mining Claims (73283, 73284, 73285, 73286 & 75208)

Key Responsibilities:

- I taught Science and Mathematics for students age 11 to 16 (Grade 6 to 10)

1995 – 1996 **High School Teacher** – Karibib Private School

Key Responsibilities:

- I taught Physical Science, Biology and Mathematics

ENVIRONMENTAL MANAGEMENT SKILLS AND PROJECTS

2015 – 2018

- Air quality monitoring, Forest tree surveys, Water quality monitoring, Performance audits, Coordinate environmental consultants, Plan budgets, Compile biannual environmental reports, Implement EMPs for operational projects, Develop management systems, Conduct awareness training
- at Okorusu Mine, Okanjande Mine, EPL4167 (Cape Cross Salt Project), EPL4346 (Gecko Cobalt Mining)

2012 – 2014

- Seawater quality monitoring for Namibian Ports Authority, Develop & manage the ocean monitoring programme for Erongo Desalination Plant, Fuel station pollution surveys, Workshop facilitation
- for Etosha Fishing Company, Namibian Ports Authority – Walvis Bay Harbour, Erongo Desalination Plant, Langer Heinrich & Rossing Mine & the Ministry of Fisheries and Marine Resources

ENVIRONMENTAL IMPACT ASSESSMENT SKILLS AND PROJECTS

2018 – 2020 Environmental Impact Assessment & Environmental Monitoring

- Environmental impact assessment, Project registration, Site assessment, GIS, Legal review, Drafting environmental statements, Stakeholder engagement, Public meeting facilitation, Project management, Environmental monitoring, Develop environmental management plans – for ORANO mining group, Gecko Salt & Private clients.

2015 – 2018 Prospecting Licences, Mining licences and Mining Claims

- for Reptile Uranium Namibia, Gecko Rare Metal Mining, Gecko Gold Mining, Gecko Salt, Swakopmund Salt Company

2013 – 2014 Fuel tank farm, Fuel retail facility, Harbour dredging

- for Natura Energy, Tidal Wave Investments, Walvis Bay & Luderitz Namibia Ports Authority

2012 – 2013 Marine impacts of bitterns discharge, Power line re-routing, Fuel Depot Tank Farm

- Rezoning Heavy Fuel Oil Boiler Replacement Fuel Bunkering, Liquid petroleum gas bulk storage facility
- for Walvis Bay Salt, Namdeb, Engen, Vivo Energy, Merlus Fishing, Etosha Fishing, Puma, Manica and Corridor Gas & Oil Terminal

QUALIFICATIONS AND PROFESSIONAL DEVELOPMENT

18.07.24 Epembe Mining Claims (73283, 73284, 73285, 73286 & 75208)

2012 – 2014 University of Free State, South Africa, Magister (Environmental Management)
1994 University of Cape Town, South Africa, Diploma of Education (Secondary – Biology & General Science)
1992 University of Cape Town, South Africa, BSc (Hons) (Botany-Ecology)
1989 – 1991 University of Cape Town, South Africa, BSc Botany (Environmental & Geographical Science)

ADDITIONAL INFORMATION

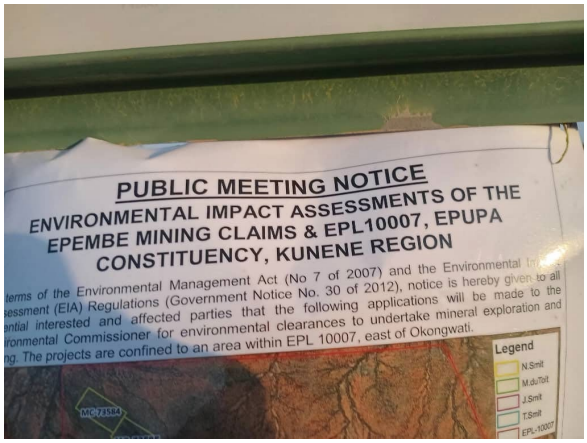
Licences: Full and clean vehicle driving licence, skippers licence (under 25 tonne)

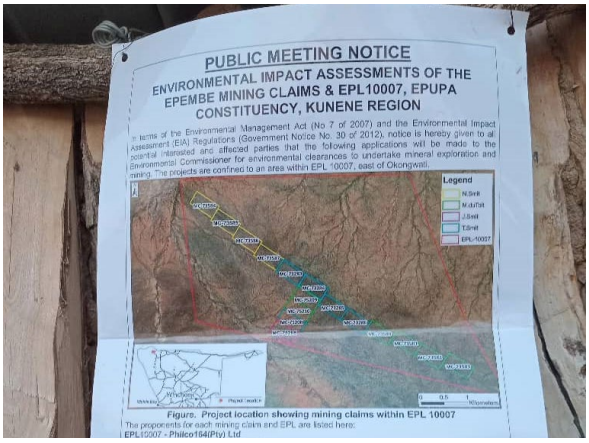
IT Skills: Microsoft Office, GIS software (ArcMap, Manifold, DRN GPS)

Interests: I have a keen interest in nature and enjoy walking and hiking in the wild. I spend time serving at my church outside of work time.

REFERENCES AVAILABLE UPON REQUEST

Appendix B: Site notice photographs (opposite site and at nearby village)





Appendix C: Newspaper adverts of public meetings

2 Republikein Sun Allgemeine Zeitung Market Watch FRIDAY 15 NOVEMBER 2024

Investment grade status distant

South Africa's ratings seen stuck in 'junk' despite investor optimism

Sentiment boosted by coalition and end to power cuts.

TANNUR ANDERS

S&P does not think South Africa is investment grade as yet.

South Africa will be unable to shed its "junk" credit rating for years to come, credit analysts said, despite investor optimism over the economic trajectory since the formation of a coalition government this year.

S&P Global is scheduled to review the sovereign rating of Africa's most industrialised economy on Friday, though the agency has its long-term foreign currency rating three notches into sub-investment grade at 'BB-', with a stable outlook.

Eight months of uninterrupted power supply after years of blackouts and the promise of faster economic reform under the coalition has boosted business confidence. But fiscal risks remain and it will be a while before economists can gauge the new government's success at accelerating growth.

"That discussion around investment grade is still a very distant one. We're still very far from that," Tatonga Rusike, Sub-Saharan Africa economist at Bank of America Securities, said in an interview.

For S&P or the other two big agencies, Moody's and Fitch, to move to a positive outlook - a sign that an upgrade may follow soon - would require evidence of much faster growth and progress stabilising public debt, analysts said.

Fitch also has South Africa's long-term foreign rating three notches into sub-investment grade at 'BB-', with a stable outlook. It has completed its 2024 reviews and last week raised doubts over the government's ability to meet some of the targets it set in October's mid-term budget.

Moody's has South Africa two notches into sub-investment grade at 'Ba2', with a stable outlook.

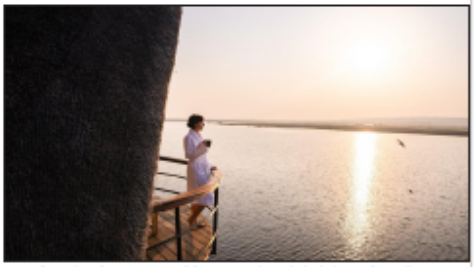
"There are still big risks, at the same time, to the outlook for public finances," said Miyelani Maluleke, head of South Africa macroeconomics research at local bank Absa.

South Africa's growth forecasts still lag behind those for many emerging market peers, with the government expecting growth of just 1.1% this year.

Analysts said sustained economic growth of around 2% and evidence that debt was stabilising could prompt a move to a positive outlook in the first half of 2025.

Debt as a share of gross domestic product jumped from 23.6% in 2009 to 74.1% this year, and the government said last month that it aimed for it to peak at 75.5% in 2026.

"They [ratings agencies] want to see evidence that the changes are actually delivered in terms of improved economic performance," Absa's Maluleke said. -REUTERS



Tourists and visitors can expect to see a re-branded Chobe Water Villas.

O&L Leisure recently re-branded Chobe Water Villas.

PUBLIC MEETING NOTICE

ENVIRONMENTAL IMPACT ASSESSMENTS OF THE EPEMBE MINING CLAIMS & EPL10007, EPUPA CONSTITUENCY, KUNENE REGION

In terms of the Environmental Management Act (No 7 of 2007) and the Environmental Impact Assessment (EIA) Regulations (Government Notice No. 30 of 2012), notice is hereby given to all potential interested and affected parties that the following applications will be made to the Environmental Commissioner for environmental clearances to undertake mineral exploration and mining. The projects are confined to an area within EPL 10007, east of Okongwati.

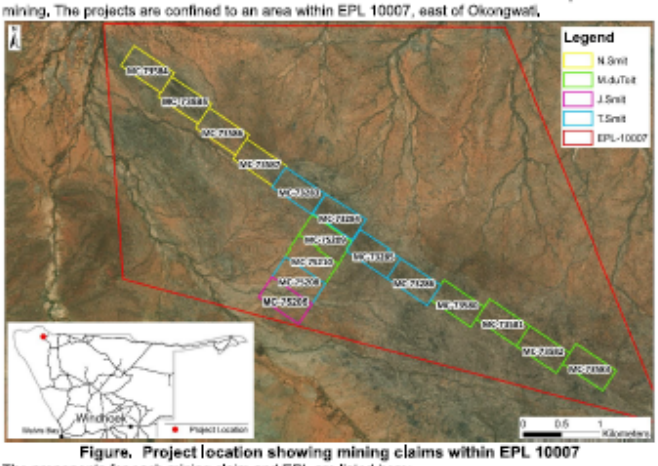


Figure. Project location showing mining claims within EPL 10007

The proponents for each mining claim and EPL are listed here:

EPL10007 - Philco164(Pty) Ltd
Mining Claims 75205 – Mr, J,P,Smit
Mining Claim 73283,73284, 73285, 73286 & 75208 – Mr. T.Smit
Mining Claims 73580, 73581, 73582, 73583, 75209 & 75210 – Mr. J,M, du Toit
Mining Claims 73584, 73585, 73586 & 73587 – Ms N, Smit

Environmental assessment practitioner: Mr. Philip Hooks

Public Consultation Meeting:

Tuesday, 3rd December 2024, at Omuangete Primary School, Omuangete at 10:30am

You are hereby invited to attend the meeting and to share any comments, issues or concerns related to the proposed mining activities, for consideration in the EIA Report and Environmental Management Plan.

Should you require any additional information please contact Mr. Immanuel Katali who will manage the public participation.

Contact emails: ikatali@inkenvironconsult.com / philip.nigel.hooks@gmail.com

Registration and written submissions for the scoping phase will be received up to 18th December 2024

O&L Leisure unveils Chobe Water Villas re-brand

STAFF REPORTER

O&L Leisure – a subsidiary of the Ohlthaver & List (O&L) Group - announced the relaunch of Chobe Water Villas, its exclusive riverside retreat, with a revitalised brand identity that brings guests closer to "Namibia Through Our Eyes". Situated on the banks of the Chobe River, this luxurious oasis invites travellers to experience Namibia's rich landscape and vibrant wildlife like never before.

Underpinning the rebrand of Chobe Water Villas is O&L's dedication to showcasing Namibia's unparalleled beauty, both through its pristine landscapes and its warm hospitality. The

new branding echoes the O&L persona of being "Authentic, Caring and Passionate", transforming the property into more than a destination but a sanctuary where guests find Namibia's soul.

Reflecting on the newly launched O&L Leisure Masterbrand, this rebrand stands as a commitment to a unified guest experience across all O&L Leisure properties, embodying one brand and one promise while preserving each location's unique essence.

Whether visiting Midgard, Strand Hotel Swakopmund, Mokuti Etosha, Chobe Water Villas – where heaven meets earth – or any future property, guests can expect a consistent standard of excellence.

This transformation aligns with O&L Leisure's "Namibia Through Our Eyes" campaign launched in September, which celebrates the natural splendour and cultural richness brought to life across the company.

The Chobe Water Villas rebrand is the first step in this journey, with the Leisure Masterbrand set to be fully rolled out across all properties by 2025.

From breathtaking sunsets over the Chobe River to elevated sky walks that immerse guests in the sights and sounds of the wilderness, Chobe Water Villas is the ultimate luxury retreat for those seeking an extraordinary connection with nature, the company said. Imagine the scene: elephants bathing leisurely in the river's cool waters, hippos bellowing nearby and birds swooping gracefully overhead.

Every experience is carefully crafted to showcase Namibia's raw, untamed beauty, inviting guests to be a part of the landscape, not just a spectator. "The essence of Chobe Water Villas lies in its ability to offer visitors a rare blend of tranquillity and adventure, capturing Namibia's soul in every detail. This is a place where 'heaven meets earth' and where guests can truly experience the serene, majestic rhythm of nature," said Sven Thieme, Managing Director of O&L Leisure and Executive Chairman of the O&L Group.

For O&L Leisure, Chobe Water Villas represents more than just another luxurious property in its portfolio; it's a vital part of the company's mission to bring out the best of Namibia's tourism offering.

The property caters to international travellers seeking one-of-a-kind experiences and Namibians who wish to rediscover their own landscapes.

By investing in Chobe's transformation, O&L Leisure aims to create a destination that resonates with every guest, a place that truly feels like Namibia's best-kept secret.

MultiChoice expected to lose almost R2 billion

VERNON PILLAY

Embattled and financially insolvent MultiChoice reported that it will suffer another blow as its interim loss for the 2025 financial year will be larger than last year's.

According to its interim financial statements for the six months through to September 2024, the DStv owner is expected to lose an estimated R1.84 billion.

Why is the company failing?

MultiChoice said that its poor financial performance has been impacted by severe pressure in the macroeconomic, foreign exchange rate and consumer environment in key markets, most notably Nigeria and Zambia.

The company acknowledged that it is facing "the most challenging operating environment in the group's history".

"MultiChoice is pursuing an inflationary pricing strategy and targeting R2 billion in cost savings in the group's full-year results ending 31 March 2025, to offset weaker subscriber activity and foreign exchange pressures," the company said. -IOL

FRIDAY 22 NOVEMBER 2024 Market Watch Republikein Sun Allgemeine Zeitung 9

035 Regskennisgewings Legal Notices

FNB

Estate of the Late **MOSES KAVIKAIRIUA**

FARMER

SURVIVING SPOUSE: Vanaundje Kavikairiua

ESTATE NO: No. E 1713/2021

Notice is hereby given that the First and Final Liquidation and Distribution Account in the above Estate will lie for inspection at the Office of the Master of the High Court, WINDHOEK, and a duplicate thereof at the Office of the Magistrate at Okakarara for a period of 21 days from the publication thereof.

FIDUCIARY NAMIBIA (PTY) LTD, P.O. BOX 448, WINDHOEK, NAMIBIA

ESTATE LATE **JOSEPH WINDSTAAN**

Occupation: UNEMPLOYED

Debtors and creditors in the above estate are requested to forward their claims and pay their debts to the undersigned within a period of 30 days from date of publication of this notice.

FNB

Estate of the Late **PETRUS HENNING VERMAAK**

ELECTRICIAN

SURVIVING SPOUSE: Lord Vermaak

Notice is hereby given that the First and Final Liquidation and Distribution Account in the above Estate will lie for inspection at the Office of the Master of the High Court, WINDHOEK and a duplicate thereof at the Office of the Magistrate at WALVIS BAY for a period of 21 days from the publication thereof.

FIDUCIARY NAMIBIA (PTY) LTD, P.O. BOX 448, WINDHOEK, NAMIBIA

FNB

Estate of the Late **MARIA KASHEETA**

PENSIONER

Creditors and Debtors in the above Estate are hereby called upon to lodge their claims with and pay their debts to the undersigned within thirty days of the publication hereof.

FIDUCIARY NAMIBIA (PTY) LTD, P.O. BOX 448, WINDHOEK, NAMIBIA

FNB

Estate of the Late **JOHANNA MARIA RETIEF**

PENSIONER

SURVIVING SPOUSE: Gert Johannes Retief

Notice is hereby given that the First and Final Liquidation and Distribution Account in the above Estate will lie for inspection at the Office of the Master of the High Court, WINDHOEK and a duplicate thereof at the Office of the Magistrate at WINDHOEK for a period of 21 days from the publication thereof.

FIDUCIARY NAMIBIA (PTY) LTD, P.O. BOX 448, WINDHOEK, NAMIBIA

FNB

Estate of the Late **HOLGER SOMMER**

LECTURER

Notice is hereby given that the First and Final Liquidation and Distribution Account in the above Estate will lie for inspection at the Office of the Master of the High Court, WINDHOEK and a duplicate thereof at the Office of the Magistrate at Keetmanshoop for a period of 21 days from the publication thereof.

FIDUCIARY NAMIBIA (PTY) LTD, P.O. BOX 448, WINDHOEK, NAMIBIA

NOTICE

EXECUTORS AND TRUSTEES NAMIBIA

ESTATE OF THE LATE: LOUIS JACOBUS STEENKAMP

PENSIONER

NOTICE IS HEREBY SERVED THAT THE FIRST AND FINAL LIQUIDATION AND DISTRIBUTION ACCOUNT IN THE ABOVE ESTATE IS LYING FOR INSPECTION AT THE OFFICE OF THE MASTER OF THE HIGH COURT WINDHOEK AND AT THE MAGISTRATE'S OFFICE AT OUTJO FOR A PERIOD OF TWENTY-ONE DAYS FROM DATE OF PUBLICATION OF THIS NOTICE.

BANK WINDHOEK LIMITED, TRUST DEPARTMENT, WINDHOEK

Bank Windhoek

CONSENT USE I, R.R.E Gaiko ID 55121400144 owner of Erf 49 A&B corner of Acali Doëseb / Uitspanweg in Okahandja herewith would like to continue to operate the school as in the past and therefore I need to get Consent Use.

I also want to apply for permission to erect temporary prefabricated structures to accommodate the pupils for 2025.

Any objections must be lodged to: Town Planning Okahandja: 062 505130 within fourteen (14 days) after last date of advertising 22 November 2024

NOTICE

EXECUTORS AND TRUSTEES NAMIBIA

ESTATE OF THE LATE: WERNER EDMUND JEFFERY

Date of Death: 12 JUNE 2021

NOTICE IS HEREBY SERVED THAT THE FIRST AND FINAL LIQUIDATION AND DISTRIBUTION ACCOUNT IN THE ABOVE ESTATE IS LYING FOR INSPECTION AT THE OFFICE OF THE MASTER OF THE HIGH COURT WINDHOEK FOR A PERIOD OF TWENTY-ONE DAYS FROM DATE OF PUBLICATION OF THIS NOTICE.

BANK WINDHOEK LIMITED, TRUST DEPARTMENT

Bank Windhoek

NOTICE

EXECUTORS AND TRUSTEES NAMIBIA

ESTATE OF THE LATE: SYLVIA MARLENE NEELS

ADMINISTRATOR

Date of Death: 25 JUNE 2021

NOTICE IS HEREBY SERVED THAT THE AMENDED SECOND AND FINAL LIQUIDATION AND DISTRIBUTION ACCOUNT IN THE ABOVE ESTATE IS LYING FOR INSPECTION AT THE OFFICE OF THE MASTER OF THE HIGH COURT WINDHOEK AND AT THE MAGISTRATE'S OFFICE AT REHOBOTH FOR A PERIOD OF TWENTY-ONE DAYS FROM DATE OF PUBLICATION OF THIS NOTICE.

BANK WINDHOEK LIMITED, TRUST DEPARTMENT, WINDHOEK

Bank Windhoek

MUNICIPALITY OF WALVIS BAY

Notice is hereby given in terms of section 63(2)(b) of the Local Authorities Act, 1992 (Act 23/1992) that the Municipality of Walvis Bay intends to lease, by private transaction, a Portion of Farm 38 to King Charcoal Namibia (Pty) Ltd

DESCRIPTION

a portion of Farm 38

AREA (m²)

33,000

PURCHASE AMOUNT EXCLUDING 15% VAT (N$)

35 310.00

Full particulars pertaining to the lease will lie for inspection by interested persons until Tuesday 3 December 2024 at room 46, Municipal Offices, Kuisebmond. For more information Mrs Merinda /Kais can be contacted at telephone (064) 2013232 during office hours.

Any person objecting to the proposed sale, may in writing lodge an objection together with the grounds/motivation thereof, to the Manager: Housing and Properties at the above address or to Private Bag 5017, Walvis Bay, before or on Friday, 6 December 2024 at 12:00.

Jack Manale
Manager: Housing and Properties
Tel: (064) 201 3338
Email:

NOTICE

EXECUTORS AND TRUSTEES NAMIBIA

ESTATE OF THE LATE: MARTHINUS JOHANNES SPANGENBERG

FARMER

DEBTORS AND CREDITORS IN THE ABOVE ESTATE ARE REQUESTED TO FORWARD THEIR CLAIMS AND PAY THEIR DEBTS TO THE UNDERSIGNED WITHIN A PERIOD OF 30 DAYS FROM DATE OF PUBLICATION OF THIS NOTICE.

BANK WINDHOEK LIMITED, TRUST DEPARTMENT, WINDHOEK

Bank Windhoek

ESTATE LATE ENGINIE NAIBAS

Notice is hereby given that the First and Final Liquidation and Distribution Account in the Estate of the Late ENGINIE NAIBAS, Identity Number 660603 00138, Unmarried and who died on 22 March 2003 at Otjiwarongo, Estate Account No. E1245/2021 will be open for inspection at the offices of the Magistrate's Office in OTJIWARONGO and at the offices of the Master of the High Court in Windhoek for a period of 21 days as from 22 NOVEMBER 2024.

VAN DER WESTHUIZEN & GREEFF
EXECUTORS/AGENTS
PO BOX 47
OTJIWARONGO
TEL: 067-304156

pointBreak

LIQUIDATION AND DISTRIBUTION ACCOUNT IN THE DECEASED ESTATE LYING FOR INSPECTION:

Leon Daniel Van Rooyen

A Pensioner and Widower who resided at Swakopmund, Namibia

NOTICE is hereby given that the First Liquidation and Distribution Account in the above estate will lie for inspection at the Office of the Master of the High Court, Windhoek and a duplicate thereof at the office of the Magistrate, Swakopmund for a period of twenty one (21) days from the date of publication hereof.

POINTBREAK TRUST & ESTATES (PTY) LTD

Estate of the late GERT JOHANNES KRUGER of 5 Stadshouse Crescent, Walvis Bay, Namibia

The First and Final Liquidation and Distribution account in the above estate will lie for inspection at the offices of the Master of the High Court, Windhoek, and the Magistrate's Court, Walvis Bay for a period of 21 days as from publication hereof.

U M Etzold
Agent of the Executrix
ETZOLD - DUVENHAGE
P. O. Box 320, Windhoek
33 Feld Street, Windhoek

IN THE High Court of Namibia

In the matter between:
Case No. HC-MD-CIV-ACT-CON-2017/01615
NEDBANK NAMIBIA LIMITED, Plaintiff
and
HILDE GAES, Defendant

NOTICE OF SALE IN EXECUTION

In execution of a judgment of the above Honourable Court dated 1 February 2019, a sale will be held by the Deputy Sheriff, WALVIS BAY, at the premises, in Erf 2923 Narraville, Walvis Bay, on 3 DECEMBER 2024, at 11H00, of the undermentioned property:

CERTAIN: Erf 2923 (a Portion of Erf 1902) Narraville (Extension No. 1)

SITUATE: In the Municipality of Walvis Bay, Registration Division "F", Erongo Region

MEASURING: 678 (Six Hundred and Seventy-Eight) square metres

Improvements:
1x Entrance Hall, 1x Lounge, 1x Kitchen, 2x Bedrooms, 2x Bathrooms, 1x Single, Garage.

TERMS 10% of the purchase price and the auctioneers' commission must be paid on the date of the sale. Further terms and conditions of the sale will be read prior to the auction and lie for inspection at the office of the Deputy Sheriff, Walvis Bay and at the offices of the execution creditor's attorneys.

Dated at Windhoek this 10th day of October 2024.

DR WEDER KAUTA & HOVEKA INC.
Legal Practitioner for Plaintiff
3RD Floor, WKH House,
Jan Jonker Road
WINDHOEK
[PUK/pg/MAT42709]

MUNICIPALITY OF WALVIS BAY Notice is hereby given in terms of section 63(2)(b) of the Local Authorities Act, 1992 (Act 23/1992), that the Municipality of Walvis Bay intends to sell by private transaction, Remainder of Erf 5166 Walvis Bay, Extension 14 and Erven 6420-6428 Walvis Bay, Extension 14 to the Road Fund Administration

DESCRIPTION: Remainder of Erf 5166 Walvis Bay, Extension 14 and Erven 6420-6428 Walvis Bay, Extension 14

AREA: 4,3943 m2

ZONING: Light Industrial

PURCHASE AMOUNT EXCLUDING 15% VAT: N$19 774 350.00 plus 15% VAT

Full particulars pertaining to the sale will lie open for inspection by interested persons until Tuesday 26 November 2024 at room 46, Municipal Offices Kuisebmond. For more information Mrs Merinda /Kais can be contacted telephonically at (064) 201 3232 during office hours.

Any person objecting to the proposed sale, may in writing lodge an objection together with the grounds/motivation thereof, to the Manager: Housing and Properties at the above stated address or to Private Bag 5017 Walvis Bay,

before or on Friday 29 November 2024 at 12:00

Jack Manale
Manager: Housing and Properties
Tel: (064) 2013338

PUBLIC MEETING NOTICE

ENVIRONMENTAL IMPACT ASSESSMENTS OF THE EPEMBE MINING CLAIMS & EPL10007, EPUPA CONSTITUENCY, KUNENE REGION

In terms of the Environmental Management Act (No 7 of 2007) and the Environmental Impact Assessment (EIA) Regulations (Government Notice No. 30 of 2012), notice is hereby given to all potential interested and affected parties that the following applications will be made to the Environmental Commissioner for environmental clearances to undertake mineral exploration and mining. The projects are confined to an area within EPL 10007, east of Okongwati.

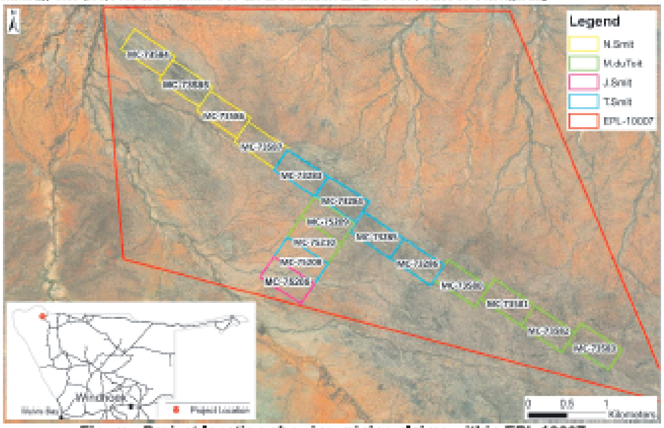


Figure. Project location showing mining claims within EPL 10007

The proponents for each mining claim and EPL are listed here:

EPL10007 - Philco164(Pty) Ltd

Mining Claims 75205 **– Mr. J.P.Smit**

Mining Claim 73283,73284, 73285, 73286 & 75208 **– Mr. T.Smit**

Mining Claims 73580, 73581, 73582, 73583, 75209 & 75210 **– Mr. J.M. du Toit**

Mining Claims 73584, 73585, 73586 & 73587 **– Ms N. Smit**

Environmental assessment practitioner: Mr. Philip Hooks

Public Consultation Meeting:

Tuesday, 3rd December 2024, at Omuangete Primary School, Omuangete at 10:30am

You are hereby invited to attend the meeting and to share any comments, issues or concerns related to the proposed mining activities, for consideration in the EIA Report and Environmental Management Plan.

Should you require any additional information please contact Mr. Immanuel Katali who will manage the public participation.

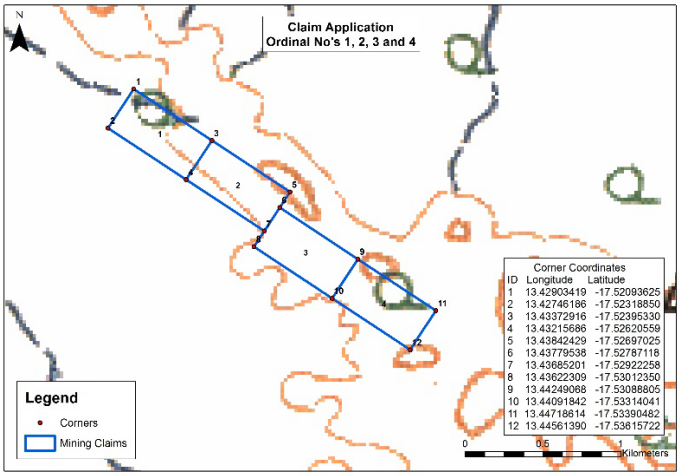
Contact emails: ikatali@inkenviroconsult.com / philip.nigel.hooks@gmail.com

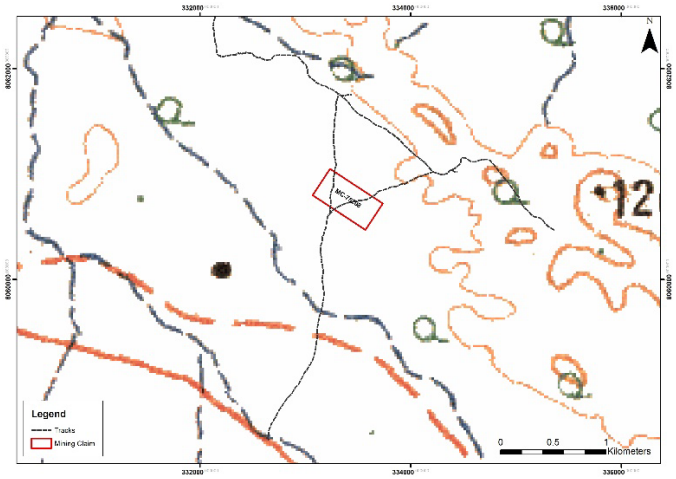
Registration and written submissions for the scoping phase will be received up to 18th December 2024

Appendix D: Background information document

BACKGROUND INFORMATION DOCUMENT

ENVIRONMENTAL CLEARANCE CERTIFICATE APPLICATION MINING PROJECT (MINING CLAIMS 73283, 73284, 73285, 73286 & 75208) EPEMBE, KUNENE REGION





Prepared by Philip Hooks

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INTRODUCTION

Timo Smit (hereafter referred to as the proponent), has pegged mining claims 73283, 73284, 73285, 73286 & 75208) over communal land near Epembe in the Kunene Region. The local community leaders have given written consent for the mining. The proponent intends to apply for an environmental clearance certificate. The following specific activities/aspects apply constitute the amendment:

- Continued exploration within the mining claims;
- Mineral ore extraction by open cast mining;
- Mineral processing;
- Construction of accessory works areas and roads.

The proponent has commissioned an Environmental Impact Assessment (EIA) process based on the requirements of the Environmental Management Act (Act. No. 7 of 2007) and associated EIA regulations Government Notice (GN) No. 29 and 30. An Environmental Clearance Certificate (ECC) for the construction and operation of the proposed mining and processing activities is required and thus an EIA application with associated support documents need to be developed for submission to the Ministry of Mines and Energy (MME) and to the Ministry of Environment, Forestry and Tourism (MEFT) for review.

An EIA and amended Environmental Management Plan (EMP), will enable MME and MEFT to make an informed decision regarding the proposed amendments to the EMP. The environmental commissioner will assess whether this is sufficient to issue the new clearance certificate. The EIA will take the form of a scoping report with impact assessment.

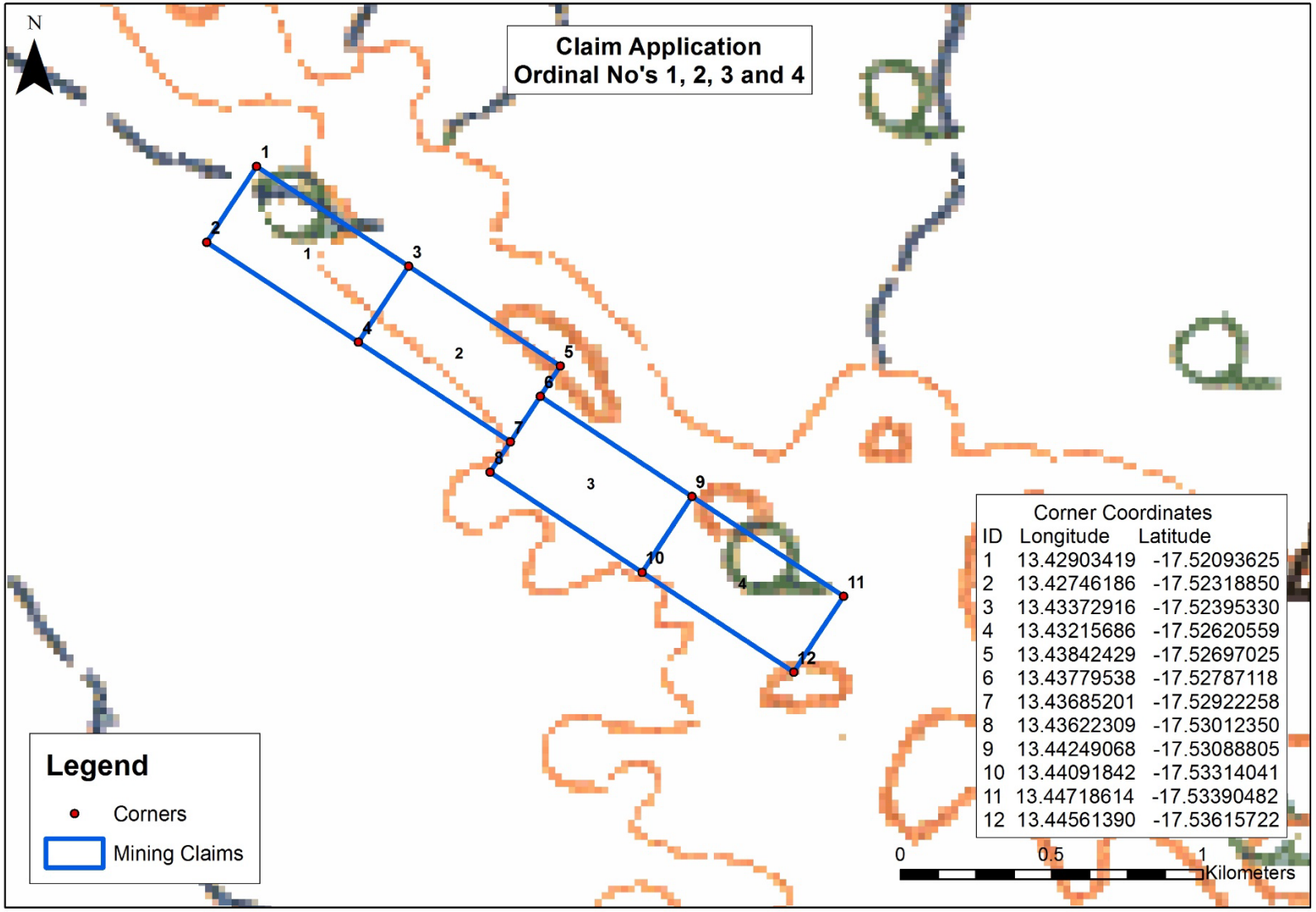
The aim of this background information document (BID) is to:

- Inform I&APs about the activities within the mining claims;
- Provide Interested and Affected Parties (I&APs) the opportunity to register for the public participation process;
- Explain the EIA process being followed;
- Explain how IA&Ps can share any comments, issues or concerns related to the proposed development. This will provide the consultant with additional information which should be taken into account in the identification of environmental aspects and the assessment of potential impacts.

LOCATION

Figure 1 renders a map of the location of the four mining claims. The fifth mining claim is situated nearby to the south west of these four claims.

Figure 12. Location of the four Mining Claims 73283, 73284, 73285, 73286.


N
Claim Application
Ordinal No's 1, 2, 3 and 4
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Corner Coordinates
ID Longitude Latitude
1 13.42903419 -17.52093625
2 13.42746186 -17.52318850
3 13.43372916 -17.52395330
4 13.43215686 -17.52620559
5 13.43842429 -17.52697025
6 13.43779538 -17.52787118
7 13.43685201 -17.52922258
8 13.43622309 -17.53012350
9 13.44249068 -17.53088805
10 13.44091842 -17.53314041
11 13.44718614 -17.53390482
12 13.44561390 -17.53615722
Legend
Corners
Mining Claims
0
0.5
1
Kilometers

COMPANY BACKGROUND INFORMATION

Timo Smit, the holder of the mining claims is a Namibian citizen.

PROJECT MOTIVATION

The proposed small-scale mining and processing will initially consist of opencast mining and the construction of a pilot processing plant. Through the construction and operational phases the project will contribute to the Kunene region's socio-economic development through local job creation.

PROJECT DESCRIPTION

The following is a summary of the project components

CONSTRUCTION PHASE ACTIVITIES

The pilot processing plant will be constructed in one of the mining claims. The EIA process will direct the decision-making process with regards to site selection for the pilot plant. Construction will begin soon after the approval of the environmental clearance application. Conceptual design layouts are under development.

OPERATIONAL PHASE ACTIVITIES

The operational activities include the following:

- Continued exploration within the mining claims;
- Mineral ore extraction by open cast mining;
- Mineral processing.

DECOMMISSIONING PHASE ACTIVITIES

The EMP will stipulate the activities under this phase. A conceptual closure plan will be developed for the mine.

EIA PROCESS

The EIA will be carried out as follows:

Stakeholders and Interested and Affected Parties (IAPs) have been notified regarding the project through the national and local press and by site and public notices. Focus group meetings will be arranged to provide an opportunity for key stakeholders to give their input into the amended activities. Registered IAPs will receive information about the project (including this BID) and requested to give input into the EIA process. The public participation at the focus group meetings and via written correspondence is required under the laws that govern environmental protection.

Specialists, where necessary will provide assessment studies or statements for integration into the EIA. These documents together with other environmental baseline information will be used to assess the potential impacts of the new accessory activities. Measures to offset, mitigate or prevent any potential impacts will be recommended.

Monitoring of activities throughout the phases of the project will be recommended so that the compliance to the recommended measures can be assessed. A Scoping Report with Assessment and Draft EMP will be submitted to the public for review. Thereafter, the documents will be submitted to the Environmental Commissioner, who will weigh up the impact assessment, recommended measures and monitoring suggestions and approve or reject the environmental clearance. If approved, the EMP (supported by the Scoping Report with Assessment and specialist studies/statements) becomes the legally binding plan to which the company must comply.

♦ POSSIBLE ENVIRONMENTAL, SOCIAL AND CULTURAL IMPACTS OF THE PROJECT

Impacts that could potentially arise from the proposed project include but are not limited to:

- Biodiversity impacts
  - Alteration of habitat
  - Physical destruction and general disturbance of biodiversity
- Alteration of landscape
- Air Quality
- Noise
- Surface water and groundwater bodies
- Increased traffic volumes on public roads and road safety
- Employment opportunities (permanent / temporary)
- Growth of both local and regional economy

Where the environmental impact assessment practitioner deems it necessary, specialist studies or statements will be provided for as part of the Scoping Report and Assessment.

♦ PUBLIC PARTICIPATION

The Environmental Impact Assessment process involves interaction with individuals and organisations who are interested in, or who could be affected by, the proposed development. The notification of the project invited IAPs to register for the project. The public meeting, focus group meetings and email correspondence provides you with an opportunity to comment and make further inquiries.

We invite all IAPs to provide in writing, any issues, and suggestions regarding the proposed development. This correspondence must include:

1. Name & Surname;
2. Organization represented;
3. Position in the organization;
4. Contact details and;
5. Any direct business, financial, personal or other interest which you may have in the approval or refusal of the application.

All initial contributions, comments and concerns will be considered in the Scoping Report with Assessment. After the issuing of the Scoping Report with Assessment for public review, all stakeholders and registered IAPs will be requested to provide comments. A 21 working day review period will be granted for this aspect

of the public participation. After the review period, the Scoping Report with Assessment will be submitted to the Environmental Commissioner to apply for an ECC.

For further information, or to register as an Interested or Affected Party, please contact:

Mr. Philip Hooks (Environmental Assessment Practitioner/Consultant)

E-Mail: philip.nigel.hooks@gmail.com
WhatsApp: +44 7340 238 047

Appendix E: Focus Groups / Stakeholders Meetings Reporting.

ENVIRONEMNTAL IMPACT ASSESSMENT PROCESS FOR EXPLORATION AND MINING ACTIVITIES NEAR EPEMBE, KUNENE REGION

ONE-ON-ONE AND FOCUS GROUP MEETINGS

INFORMATION SHARING FOR EPEMBE AND MALACHITE PROJECTS

Date	05 and 06 December 2024
Purpose	Present the Environmental Impact Assessment (EIA) process being followed. Provide the description and overview of the proposed Project. Allow interested & affected parties (IAPs) to provide input into the EIA process and EMP.
Number of Attendees	5 Public Enterprise Staff
Meeting Facilitator	Immanuel Katali (IK)

1 PRESENTATION (FOR ALL 5 KEY STAKEHOLDERS CONSULTED)

IK the independent Environmental Practitioner, introduced himself to the relevant staff at the meeting.

IK explained the aims and objectives of the meeting.

IK presented the project background/motivation as well as the description and location of the proposed project and various project components.

IK also presented the EIA process being followed and explained the potential key social and environmental issues that were identified as part of the initial stages of the EIA process. He ended the presentation by discussing the way forward regarding the EIA process.

2 DISCUSSION

Comments raised during the meetings have been recorded.

3 DEADLINE

IK explained that the deadline for initial comments is 18 December 2024.

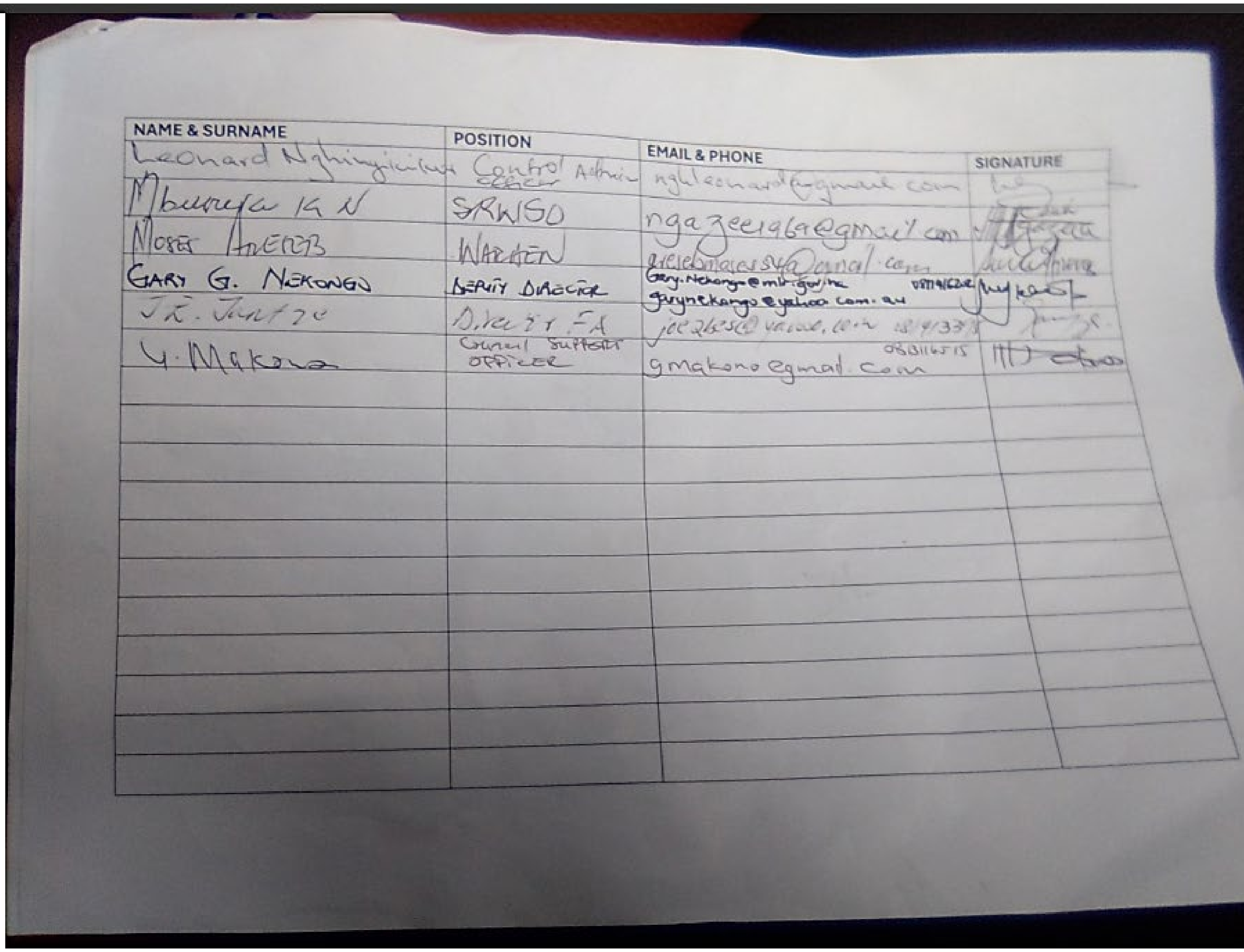
4 KEY STAKEHOLDERS CONSULTED (BASED ON AVAILABILITY)

Name	Position	Organization	Date and Time Consulted	Comment
Leonard Nghilululwa	Admin Control Officer	Ministry of Health and Social Services	05 Dec 2024. 10h30 – 11h00	Thank you for sharing the information. Some of our staff members are not in the office, however, we will also share the information with colleagues.
Mburura K.N **& Gary G. Nekongo**	Senior Water and Sanitation officer Deputy Director	Ministry of Agriculture, Water and Land Reform	05 Dec 2024 11h30 – 12h00	We will share with our colleagues and get back to you.
Moses Areseb	Warden	Ministry of Environment, Forestry and Tourism	05 Dec 2024 12h30 – 13h00	It is better to get input from the rest of the Ministry. We will sit collectively and discuss.
J. Jantze	Director	Kunene Regional Council	06 Dec 2024 10h00 – 10h30	Development is needed for our Region as it will contribute to the socio-economic of the Region. We welcome the project.
U. Makono	Council Support Officer	Opuwo Town Council	06 Dec 2024 10h30 – 11h00	The CEO is currently unavailable, but we will make sure to share the information with him for any commenting.

Annexure 1

Attendance Register

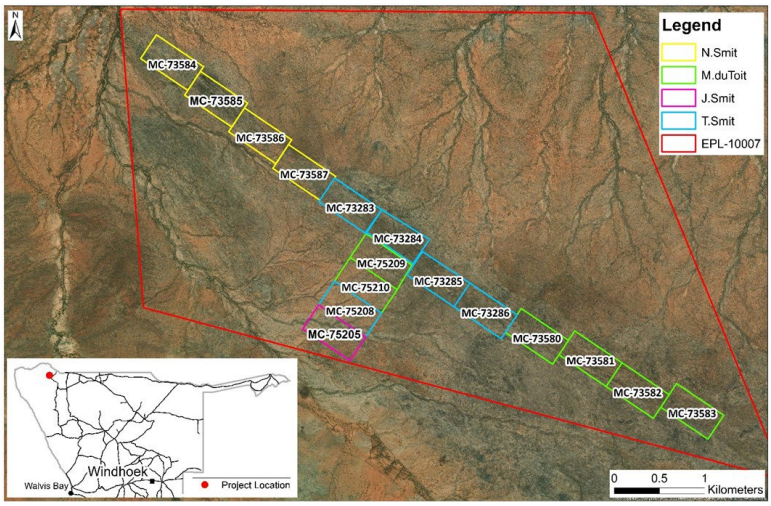
(One attendance register was used for all 5 meetings.)



NAME & SURNAME	POSITION	EMAIL & PHONE	SIGNATURE
Leonard Nghinyiiwa	Control Admin Officer	nghleonard@gmail.com	[illegible]
Mbureya K N	SRWSO	ngazee1969@gmail.com	[illegible]
Moses Anereb	WARDEN	[illegible]@gmail.com	[illegible]
GARY G. NEKONGO	DEPUTY DIRECTOR	Gary.Nekongo@mlr.gov.na [illegible] garynekongo@yahoo.com.au	[illegible]
J.R. Jantze	[illegible]	joe[illegible]@yahoo.com [illegible]	[illegible]
G. Makono	Council Support Officer	0811[illegible] gmakono@gmail.com	[illegible]

Appendix F: PowerPoint presentation document used at the meetings

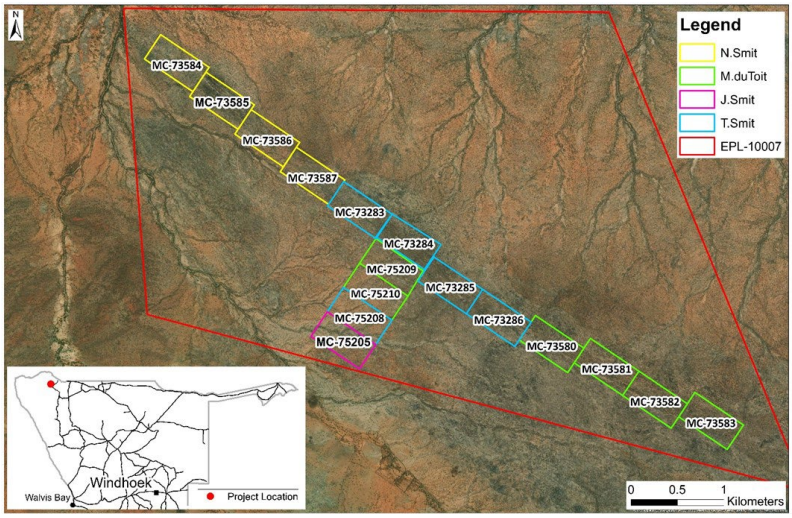
ENVIRONMENTAL IMPACT ASSESSMENT FOR EXPLORATION & MINING ACTIVITIES WITHIN MULTIPLE MINING CLAIMS & AN EPL 10007 EPEMBE, EPUPA CONSTITUENCY, KUNENE REGION



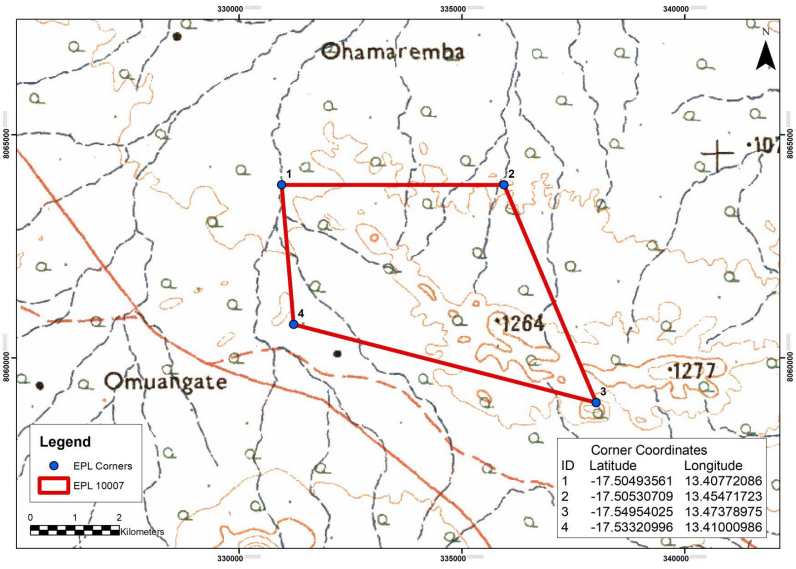
Enquiries about the process and timeline for giving inputs, the proponent, and the need for transparency.

- The public participation process requires that the public are informed about the project. From the notification of the project the public must have the opportunity to give input into the process.
- All registered interested and affected parties must have an opportunity to review these documents and provide input before the final submission to MEFT.

Project Location



Project Location

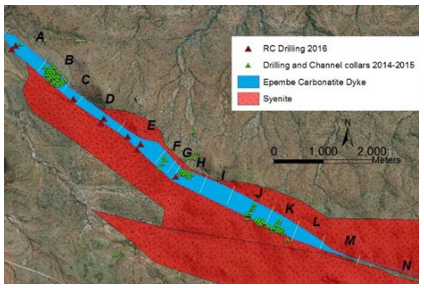


Project Location & Owner

- The Epembe Projects constitute an exploration licence and mining claims within the same area, located east of Okongwati in Kaokoveld, north-western Namibia.
- The carbonatite-syenite dyke deposit occurs within communal land.
- The separate projects and owners (Proponents) are as follows:
  - EPL10007 - Philco164(Pty) Ltd
  - Mining Claims 75205 – Mr. J.P.Smit
  - Mining Claims 73283,73284, 73285, 73286 & 75208 – Mr. T.Smit
  - Mining Claims 73580, 73581, 73582, 73583, 75209 & 75210 – Mr. J.M. du Toit
  - Mining Claims 73584, 73585, 73586 & 73587 – Ms N. Smit

Geology & Mineral Deposits

- The Epembe deposit is an at least 10 km long carbonatite-syenite dyke at the south-western margin of the Kunene Alkaline Complex in Northern Namibia.
- The dyke is between 90 - 130 m wide in the central part and widens to up to 270 m in its northern portion.
- Further northward, the dyke system is almost entirely covered by scree and fluvial sediments and calcrete with rare outcrops.
- Carbonatite also fills dykes and voids in the country rocks parallel to the dyke.
- Accessory minerals such as apatite, feldspar, aegirine, phlogopite as well as pyrochlore and zircon occur too.



Exploration:

Project Description

The mineral groups that have been considered over a broader area and now again over a smaller area for the current Exclusive Prospecting Licence 10007 are Base and Rare Metals, Industrial Minerals, Precious Metals, Dimension Stones and Nuclear Fuels.

Exploration

- Exploration follows three phases
- After the initial prospecting phase, there will be a drilling phase and lastly a pitting, trenching, bulk sampling and trial mining phase.

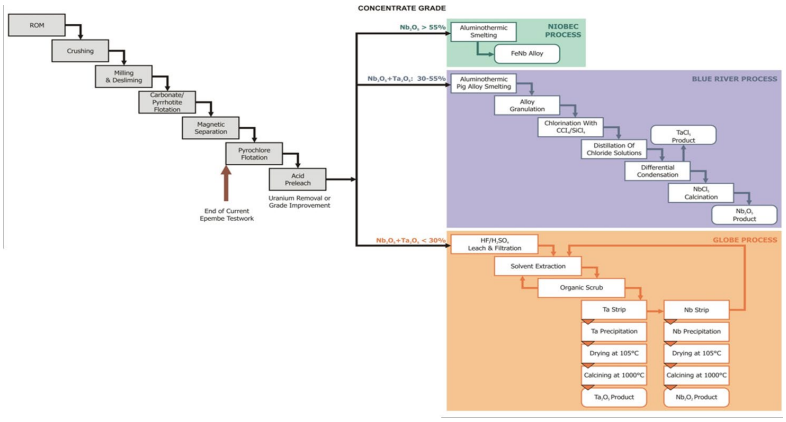
Mining - Project Description

Target Elements for Mining:

Tantalum

Niobium

Uranium



Mining - Construction

- Clearing of vegetation at the planned mining sites and the processing area.
- Stockpiling of topsoil for rehabilitation at a later stage.
- Landscaping of the pilot processing area with its construction of foundations, crusher and screening facilities, pilot processing plant for copper concentrate production, photovoltaics and diesel generators for energy provision, waste rock stockpiles, tailings facility, chemical storage, water reticulation system, water abstraction and conveyance infrastructure.
- Construction of a small Tailings Storage Facility (TSF).
- Erection of site offices near the mine site and at the processing area.

Mining – Operational Phase

- The mining EIA applications are for phase 1 which constitute pilot mining and processing.
- The life of the small-scale mines may may vary but could be approximately 10 years should the 2nd phase of mining rate and size of operations be implemented.
- The phase 1 pilot mining and processing will confirm the viability and the estimated life of mine
- Should phase 2 operations be viable then amendment EIAs will be undertaken at that time.

Mining – Decommissioning

Decommissioning activities will include:

- The removal of infrastructure,
- Preparation of final landforms for closure to encourage vegetation growth thereby reducing the effects of soil erosion and re-establish normal ecosystem functionality thereby rehabilitating the environment.
- Should the phase 1 prove successful for each mining project, and phase 2 proves to be a viable option then the decommissioning would be postponed until the end of phase 2. Phase 2 cannot proceed without an amendment to the clearance certificates.

Project Commencement

- It is anticipated that the proposed construction and mining would commence within six months of receiving the Environmental Clearance of each project.
- Forest tree clearance permits and water abstraction licences will need to be obtained too prior to commencement of activities.

Impact Assessment

- The impact assessments will provide the recommended mitigation measures to be implemented.
- The mitigations will be described in the Draft Environmental Management Plans.

Water use sustainability will be achieved if the following mitigations are employed:

- Limit the use of the groundwater to initial stages of the project until water studies provide for sustainable usage.
- If there are signs of overexploitation (drop in groundwater level and increasing salinity) and groundwater levels are not replenished within a year of use by the mine, then use of the resource should be stopped, and alternative sources found.
- Develop an alternative source of water for sustainable long -term use.

Water Study Mitigation Measures for the soils, surface water and groundwater are as follows:

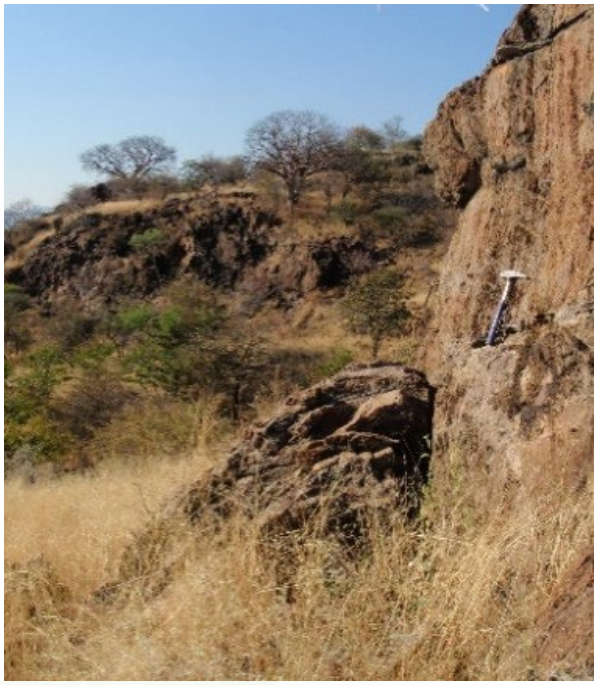
- Construction of a containment dam downstream of the processing plant, TSF, waste rock dump and other stockpiles. Thereby capture all water that is potentially contaminated.
- Evaporation of contained water that is not reused.
- Maintain water balance as a check on any significant water leakage from the operation.
- Regular inspection of TSF and WRDs.
- During the operation of the mine, the sediment material accumulated in the containment dam should be moved to the tailings at regular intervals so that the maximum capacity of the containment dam is retained and the risk of mobilising the material downstream is reduced.

For the management and mitigation of possible impacts from the mining pits the following measures are recommended:

- The pits excavated to a maximum depth of 50 m bgl may below the groundwater level and groundwater inflow could be expected when mining to this depth.
- Surface flow to the pits is also possible and the pits should be protected against inflow of surface runoff water and discharge from the pits should be avoided. Therefore, the pits should be cordoned off with berms (1 m high) to avoid surface inflow to the pit

Biodiversity & Habitats:

The area is made of rocky outcrops, drainage lies and mopane plain habitats



Requests from various authorities for compliance with eg Forestry permits, land and fencing authorisations, road developments, internationally shared water requirements.

- A biodiversity specialist and water specialist would be necessary for the 2nd phase of the projects and studies in these aspects would be needed for any amendment to the environmental clearances.
- Fencing will be confined to small areas for security and public safety purposes.

Requests for thoroughness, including liaison between the biodiversity specialists and local MEFT officials

- Separate fauna and flora specialist studies would be needed for any 2nd phase of the mining developments to assess the impact on the environment.
- NBRI should be included in the flora survey work that would be part of the EMPs' requirements.

Enquiries on the plans to rehabilitate, and on the permanence of the proposed quarries.

- A summary of the flora and fauna will provide background information on the need to provide for rehabilitation of disturbed areas.
- The drafting of a rehabilitation and mine closure plan will be necessary.
- Some quarries will leave permanent scars in the landscape.
- Some smaller excavations like trenches will be re -filled with waste rock but this cannot be done in all cases.
- Action will be necessary thereby ensuring larger quarries are made safe.

Flora:

- The following recommended mitigation measures will be incorporated into the Draft EMP:
- Keep the overall development footprint as small as possible.
- The extent and location of any construction site should be clearly marked out and signage used to restrict movement of vehicles and personnel outside the accessory works areas.
- Roads, pipelines and power lines must be planned in order to minimise fragmentation or disturbance of the habitats.
- Anti-erosion measures must be taken where roads and tracks cross a wash or drainage line.
- Carefully plan the placement of stockpiling construction material, i.e. lay - down areas to avoid sensitive areas.
- Limit construction activities to daytime hours to reduce noise.

Flora:

- Educate construction and permanent staff as to their environmental obligations. All contractors should be held responsible for transgressions and significant penalties should be enforced in order to ensure compliance.
- Position temporary construction infrastructure (e.g. accommodation) in areas that will be disturbed during operations in any case.
- Erect linear structures (power lines, water pipelines) as close as possible to existing roads and tracks.
- Do not put water tanks, power pylons or any other large infrastructure in the river or washes.
- No sewerage overflow or French drain may be placed within 100 m of a drainage line.
- No illegal collection of plants should be allowed.
- No illegal collection of wood for fires (cooking or heating) should be allowed.

Flora:

- A comprehensive restoration plan should be finalised during the first three years of initial clearance period. The Draft EMP includes a conceptual framework for habitat restoration or rehabilitation. Provision for monitoring and adaptive management as the project develops is imperative. Some rehabilitation actions should be implemented during operationsin order to be effective, e.g. removal and location of topsoil; location of waste rock dumps to ensure efficient restoration later.
- Monitor groundwater levels to ensure sustained growth of trees.
- Monitor plant diversity downriver from the abstraction site at a minimum once a year.
- TSF containment measures should be strictly enforced to the highest existing standards.
- Regularly inspect structures related to the Tailings Storage Facility.
- Treatment of the final discharge of water should be in such a way as to eliminate any possibility of active chemicals entering the soil or groundwater. No impact on the vegetation is permissible, especially downstream along the drainage lines.

Fauna:

- The following recommended mitigation measures have been incorporated into the Draft EMP to minimise the potential impacts on fauna expected from the project:
- Keep the overall development footprint as small as possible.
- The extent and location of the construction site and operational areas should be clearly marked out and signage used to restrict movement of vehicles and personnel outside this area.
- Fencing is recommended for the processing plant and TSF where both fauna and public could be at risk.
- The location of roads, pipelines and power lines must be planned in order to minimise fragmentation or disturbance of habitats.
- Anti-erosion measures must be taken where roads and tracks cross a wash or drainage.
- Carefully plan the placement of stockpiling construction material, i.e. lay-down areas to avoid sensitive ground.
- Limit construction activities to daytime hours to reduce noise.
- Educate construction and permanent staff as to their environmental obligations. All contractors should be held responsible for transgressions and significant penalties should be levied in order to ensure compliance.
- Position temporary construction infrastructure (e.g. accommodation) in areas that will be disturbed during operations in any case.

Fauna:

- Areas surrounding the mine, processing plant and exploration sites that are not part of the demarcated development should be considered no-go zones for employees, visitors, vehicles or machinery.
- No off-road driving or driving next to established roads/tracks should be allowed.
- Limit activities to day-time hours to reduce noise.
- No fires outside a controlled area (eg. drum, braai area etc) should be allowed so that the natural vegetation does not burn in an uncontrolled way.
- Staff and contractors should be trained in sensitive human-wildlife interactions.
- Erect linear structures (power lines, water pipelines) as close as possible to existing roads and tracks. Maintenance roads/tracks for linear structures should be built as close as possible to these structures and access should be limited to essential maintenance.
- Do not put water tanks, power pylons or any other large infrastructure within or in the vicinity of drainage lines.
- No sewerage overflow or French drain may be placed within 100 m of drainage lines.
- A vertebrate specialist is recommended for identifying nests, dens and other breeding locations and demarcate them before construction so that these sites can be avoided as part of the EMP.
- Reptiles and amphibians that are exposed during ground clearing should be captured for translocation by a qualified expert.

Fauna:

- A comprehensive restoration plan should be finalised during the first three years of initial clearance period. The Draft EMP includes a conceptual framework for habitat restoration or rehabilitation. Provision for monitoring and adaptive management as the project develops is imperative. Some rehabilitation actions should be implemented during operations in order to be effective, e.g. removal and location of topsoil; location of waste rock dumps to ensure efficient restoration later.
- Not much is known about the effect of artificial light on populations and ecosystems and the precautionary principle is applied here.
- Install motion detectors to limit light use to the minimum possible.
- Outdoor lights should be directed downwards and not up into the sky.
- Use yellow or amber outdoor lights because invertebrates don't detect yellow light as well as white.
- Install insect screens in doors and windows located in buildings that are used after sunset.
- Landscaping of waste rock dumps can become new rocky habitats for recolonisation of flora and fauna, and they should be made according to the provisions of the restoration plan and EMP.
- Monitor groundwater levels.
- Monitor plant and vertebrate diversity downriver from the abstraction site at a minimum of once a year.
- Using an alternative source of water like the Kunene River is expected to mitigate the impact on groundwater levels.

Fauna:

- Animals should not be able to enter the TSF area.
- Regularly inspect structures related to the Tailings Storage Facility.
- Containment of the discharge of TSF water will eliminate any possibility of dangerous chemicals entering the soil or groundwater.
- All inhabitants and visitors in the staff compound should receive environmental awareness training, including training on indiscriminate defecation.
- The staff accommodation area should be fenced in and the only access allowed outside the fence is along the entrance road.
- All cleaning and washing should take place inside a designated area (e.g. kitchen, laundry) and fat traps should be installed at the drain outlet from these areas.
- Gas cooking facilities should be provided instead of allowing wood or charcoal fires for cooking.
- Firefighting equipment should be placed in the compound. It should always be tested regularly and in working condition. All inhabitants of the compound should be trained in the use of this equipment and know where it is.
- Water saving measures should be put in place, e.g. low-pressure shower heads and taps; daily checks of pipes and tanks; immediate repair of leaks.
- Sewerage should be of sufficient capacity for the expected number of people.

Land use:
Conservancy

- Conservancy registration by local communities is pending.

Concern about conflicting land uses with eg the conservancy and livestock operations.

- The proponent is committed to support conservation efforts and will endeavour not to interrupt the livelihoods of the communities that might use the area for grazing.

Requests and suggestions from the local community for ongoing feedback and liaison

- The proponent will continue to interact with the local community using the channels it has already developed.

Concerns about the negative impacts on local people and traditions, caused by work-seekers and entrepreneurs attracted to the area.

- There will be pressures on traditional ways of life, understandably but it will not be the intention of the mine to change the ways of the community.
- It will be necessary for the leaders of the community to resist the affects of the outside world on their traditions.
- Any secondary services that would want to start local businesses in Swartboois Drift , Okongwati or Opuwo would need to get permission from the local authorities to operate such businesses. It will be beyond the authority of the proponent to control these aspects.

Concern about impacts on local livestock farming

- It is the proponent's intention to allow livestock farming to continue as before.
- The only time the shepherds need to stay away from the mining area's 500m radius will be during blasting periods. Ample warning will be given.

Nearby dwellings

- There are no nearby dwellings

Concerns about the deterioration of the roads that will be used by heavy vehicles

- The roads and bridges will maintain their integrity under the payloads planned; and
- the minimum frequency of trips.

Request for proper avoidance of sacred sites when planning the various infrastructure components of the mine.

- No sites of importance have been found

Heritage: no sites of significance

- No significance is attributed to this area

Appendix G: Public Meeting Reporting

INFORMATION SHARING MEETING

ENVIRONMENTAL IMPACT ASSESSMENT FOR EXPLORATION AND MINING ACTIVITIES NEAR EPEMBE, KUNENE REGION

Date	03 December 2024
Venue	Omuangete Primary School, Omuangete
Time	10h30 - 14h00
Purpose	Present the Environmental Impact Assessment (EIA) process being followed. Provide the description and overview of the proposed Project. Allow interested & affected parties (IAPs) to provide input into the EIA process and EMP.
Number of Attendees	86 Public and Omuangete Community Members
Facilitator	Immanuel Katali (IK)
Translator	Charon Katjiuongua (CK)
Client Representative	Gideon Kalumbu (GK) and Morne Du Toit (MDT).

PRESENTATION

The community elders opened the meeting with welcoming remarks and prayer.

IK the independent Environmental Practitioner, introduced himself and welcomed the community to the meeting, followed by an introduction by GK and MDT, stating their roles at Gecko.

IK outlined the meeting procedures and agenda and explained the aims and objectives of the meeting.

IK presented the project background/motivation as well as the description and location of the proposed project and various project components.

IK also presented the EIA process being followed and explained the potential key social and environmental issues that were identified as part of the initial stages of the EIA process. He ended the presentation by discussing the way forward regarding the EIA process.

DISCUSSION

Any issues and concerns raised during the meeting have been recorded in Table 1. Where an issue/comment was given, the relevant response was also included in the table.

No.	Issue raised/ comment	Respondent	Response
1.	Is this the meeting that you previously informed us that before you start with the mining, you are going to sit with the community and agree in principle on some issues?	GK	As Immanuel explained, this is an Environmental Impact Assessment that is a process conducted by Law before licenses are granted by the Mines and Energy. In simple, this is not a gecko meeting, this is an EIA meeting. Should we be granted the licenses, we will come back.
2.	Who are the people going to carry out the work for dust, waste management, noise pollution and tree clearing? Is it the community members?	IK	The project lead is Philip Hooks who will be undertaking the assessment of the environmental aspects. That is why we are having this meeting, to find out from the community on any significant environmental aspects in the area that may require a focused and detailed assessment.
3.	I know the other two gentlemen are from Gecko, however can you explain your	IK	I am an independent environmental assessment

	role exactly? And in which capacity you are, so that you can distinguish yourself from Gecko.		practitioner, facilitating the public meeting on behalf of Philip Hooks, who is the EIA project lead for the EPL and mining claims. Both Philip and I are independent, with the purpose of assessing the potential environmental impacts in a fair and objective manner. Therefore, neither myself nor Philip are from Gecko who manages the projects on behalf of the proponents (project owners)
4.	Not all of us, are acquainted with the concept of environment. Our community has youth and people that require upliftment. Is there a platform to uplift and support the community?	IK	The EMP document will contain various measures that the proponents will have to adhere to once they commence with operations. One of the sections in the document is the social responsibility aspect, aimed at the upliftment of the community.
5.	We did not see any official documents or letters from you regarding your eligibility to conduct this type of meetings.	IK	I am an environmental assessment practitioner by profession. I have completed projects in the past, acceptable to the level required by the Ministry of Environment. Therefore, that confirms my eligibility.
6.	Are you going to be present as well when it's time to go to site for the assessment or is it only Mr. Philip?	IK	As I have mentioned before, I am only conducting the public meeting on behalf of Philip and gathering inputs/comments from the community members and share them with Philip. The overall assessment of the project will be conducted by Philip. However, use this

			platform to provide comments, issues or concerns you may have regarding the project.
7.	What will happen if you find other resources beyond the boundaries of the Mining License?	IK	Should the proponents find other resources beyond the site, then an application to MME for either an EPL or Mining claim will have to be submitted. If approved, then an EIA process will have to be conducted. The same as this.
8.	Why is the heading on the document written “Epembe”, while we are in Omuangeti?	GK	Epembe is just a project name. The initial prospectors in the area that came in the early 2000s found the same rocks, which are traced from Epembe.
9.	I am still confused; you are saying you are not part of Gecko, but you are mentioning Gecko in your presentation. Can you clarify that?	IK	For the proponents to obtain the ECC, they need an EIA to be conducted by an independent party such as Philip and myself.
10.	Looking at the document you handed to us, only Philip’s contact details are on, can we get yours as well?	IK	Yes. I will write my details on a piece of paper for you.
11.	Can Gecko take us to the Mining Claims because there are graves that we know of in that area.	IK	A Heritage/Archaeological assessment will be conducted and if there are any graves in the area, they will be assessed, and relevant mitigation measures will be developed.
12.	There are trees, grazing areas, wild animals, homesteads in the vicinity, graveyards. Those are the things that are there and need to be considered.	IK	Well noted.

13.	What will happen to our grazing land that will no longer be there?	GK	There is a compensation procedure we follow for that.

DEADLINE

IK explained that the deadline for initial comments is 18 December 2024.

CLOSE

The community elders closed the meeting with a prayer.

Annexure 1

Meeting Photos

Appendix H: Attendance registers for public meeting.

Attendance Register

Total 86

ATTENDANCE REGISTER - PUBLIC MEETING

Projects: **Environmental Impact Assessment for Exploration and Mining Activities near Epembe, Kunene Region.**

Exclusive Prospecting License 10007
Mining Claim 75205
Mining Claims 73580, 73581, 73582, 73583, 75209 & 75210
Mining Claims 73283, 73284, 73285, 73286 & 75208
Mining Claims 73584, 73585, 73586 & 73587

Date: **03 DECEMBER 2024, 10H30AM**

Venue: **OMUANGETE PRIMARY SCHOOL, OMUANGETE**

	NAME & SURNAME	POSITION	EMAIL & PHONE	SIGNATURE
1	Maefjina kapika	community member	N/A	Kapika
2	Mesekilepi Kazu	community member	N/A	[signature]
3	Karipangura Tjiposa	senior gain guard	0813553075	[signature]
4	Mahindi Tjipuiko	Community member	081 ~~4079~~ 4079389	M Tj
5	Ritjiroumba kahuvi	community member	N/A	[signature]
6	Nemuiera Ngombe	verse person (chief)	~~N/A~~ 0816477038	[signature]

	NAME & SURNAME	POSITION	EMAIL & PHONE	SIGNATURE
7	Kamundjondi Ndiambe	Community Conservancy Community of [illegible]	0813560955	[signature]
8	Katupei Tjiposa	Community police	N/A	[signature]
9	Uapataiza Hembinda	Community member	0813177259	[signature]
10	Uerikotjidoroua Hembinda	community member	0816558564	Hembinda
11	Verikutura Hembinda	Community member	N/A	
12	Upatasaneua Kapika	Comminity	0817821662	[signature]
13	Rukune Tjipuiko	Community member	N/A	[signature]
14	Tjiputu Muzere	Commity police	N/A	[signature]
15	Tjizee Tjiposa	community member	N/A	[signature]
16	Uakaremua Tjindunda	comminity member	0817051748	[signature]
17	Venao Ngombeo	comminity member	N/A	[signature]
18	Uatondouka Kavari	comminity member	N/A	[signature]
19	Tjituotuo Hunga	Camminity member	0814112068	Hunga
20	Uaetomunjo Tjiposa	chaipesorn	0814395913	TJIPOSA
21	Tjingindia Tjaliko	Comminity police	N/A	[signature]
22	GIDEON KAHUMBA	CHIEF GEOLOGIST	gideon.kahumba@gecko.na 0812958068	[signature]
23	MORNE DU TOIT	CEO	Moine.dutoit@gecko.na 0811291779	

	NAME & SURNAME	POSITION	EMAIL & PHONE	SIGNATURE
24	Maavehorere Tjipuiko	Community member	N/A	[illegible]
25	Kare mbinge	chairperson	N/A	[illegible]
26	Ndiriasa Tjipuiko	versa chief	~~081~~ N/A	[illegible]
27	Munkoiji Mupia	Community member	0818292559	mupia
28	Mauru Tjiposa	versa chief	N/A	Tjiposa
29	Ndiriana pukura	community member	0818241707	[illegible]
30	Topi Tjiposa	community member	081[illegible]84119	Tjiposa
31	Verirunga Kakondo	field officer	0812393806	[illegible]
32	Uakamunika Tjiposa	Chairperson	0857883982	Tjiposa
33	~~Nangatua~~ Vahangeruka Murumbua	Community member	~~08~~ N/A	[illegible]
34	~~Tjimua~~ A.A. Kambambi	Community member	0812143797	Alfons
35	Alfons Kambambi	Senior under chief	N/A	Alfons
36	Alfons Djuana	Committee	0814164651	Alfons
37	Musengua Tjiposa	senior under chief	~~[illegible]~~ 0816936714	Tjiposa
38	Tjeuoo Tjiposa	Community member	0815604460	
39	Karumbeke Hembinda	Community member	N/A	

	NAME & SURNAME	POSITION	EMAIL & PHONE	SIGNATURE
40	Riona Tjiposa	community member	N/A	Tjiposa
41	Mailifua Kapika	community	0814321840	Kapika
42	Matendeho Tjipuiko	community member	0817287519	Tjipuiko
43	Kuzeeko Kuvare	youth adviser	0857740276	[signature]
44	Kapenda Tjipuiko	community member	N/A	Tjipuiko
45	Vaondjuavi Tjirambi	community member	0812021266	Tjirambi
46	Matias Tjirunga	mini guard	0812667462	[signature]
47	Vatiaike Tjirambi	Chairperson	0823080007	Tjirambi
48	Tjozongombe Tjipuiko	community member	0816566608	Tjipuiko
49	Kaivangua Tjipuiko	community member	N/A	[signature]
50	Veriaera Ngombe	community member	N/A	[signature]
51	Maria Albinu	community member	N/A	[signature]
52	Karumba Tutjavi	community member	853358941	[signature]
53	Tikana Ngombe	community member	N/A	[signature]
54	Vapuniea Tjiposa	community member	N/A	Tjiposa
55	Ndamona Shaiyelenga	community member	0816128217	[signature]

	NAME & SURNAME	POSITION	EMAIL & PHONE	SIGNATURE
56	Uishae Tjiposa	Community member	0816748872 gamail5245	[signature]
57	Ugundjisiua Tjiposa	community member	0814548367 o	[signature]
58	Uhongora Tjiposa	community member	0816718373	[signature]
59	Jakurana Tjiposa	community member	~~081~~ N/A	[signature]
60	Mariarukamo Tjirambi	community member	N/A	[signature]
61	Muhambambaro Tjipuiko	Community member	N/A	[signature]
62	Kahupahuya Muharukua	Community member	N/A	[signature]
63	Kukatondua Tjirambi	Community member	N/A	[signature]
64	Hiangunka Tjipikitee	community member	N/A	[signature]
65	Ndjombuu Tjiposa	community member ~~Chair person~~	0817328082	[signature]
66	Kauri Tjipuiko	Community member	0857832222	Tjipuiko
67	Soma Ndiambe	community member	N/A	[signature]
68	Katunjangua Tjiposa	Community member	N/A	[signature]
69	Uaetjae Mbinge	community member	N/A	[signature]
70	Kamaanda Mundja	Community member	N/A	[signature]
71	Mbarikoruu Ruhozu	Community member	N/A	Ruhozu
72	Kamendu Muundjua	community member	N/A	[signature]

	NAME & SURNAME	POSITION	EMAIL & PHONE	SIGNATURE
73	Karitarua Tjiuma	community member	N/A	[signature]
74	~~Tjiuma~~ Meinae Thomas	community member	0815862352	[signature]
75	Utapuike Tjiposa	community member	0814773855	[signature]
76	Ngumeja ~~Tji~~ Tjiuju	Community member	0858029581	[signature]
77	Vepahako Tjipuiko	Community member	N/A	[signature]
78	Kazeronbango Ngoombe	community member	0813619508	[signature]
79	Tjijama ~~Ndjaombe~~ Ndjaombe	community member	N/A	[signature]
80	Muhamutjara Ndjaombe	community member	N/A	[signature]
81	Ouvekoa Tjambiru	community member	N/A	[signature]
82	Uapakuerae Ngombe	community m	~~08~~ N/A	[signature]
83	Kaamenua Tjiposa	community member	0818068880	U. Tjiposa
84	Karandamaoe Ngapike	community member	N/A	[signature]
85	Tjiholizo Tjipuiko	community member	~~0815991-5936~~ 0813194165	[signature]
86	Hikarere Ngombe	Community m	0815995936	[signature]

Name	Title / Office / Role	Organisation / Ministry
Heinz Maundu Hariki	Representative	Traditional Authority: Otjikaoko Royal House
Ndjooma Tjindunda	Junior Headman	Traditional Authority: Vita Royal House
Pahaparue, Muhenje	Relative	Traditional Authority: Vita Royal House
Karungooyo Ruiter	Junior Headman	Traditional Authority: Vita Royal House
Heinz Maundu Hariki	Conservancy Representative	Conservancy: Otjvero (application pending)
Uakarenda Mbinge	Chairperson	Conservancy: Ombazu (registered)
Jaumba Tjisemo	Chairperson	Conservancy: Ombombu Matheti (registered)
Muharakua	Vice Chairperson	Conservancy: Ombombu Matheti (registered)
Petrus Mbahono	Member	Conservancy: Ombombu Matheti (registered)
Ripundua Tjiposa	Secretary	Conservancy: Ombombu Matheti (registered)
Alphons Tjhombo	CEO	Opuwo Town Council
Geoff Munterfering	Director	Save the Rhino Fund
Basilia Shivute	Coordinator	IRDNC (Integrated Rural Development & Nature Conservation)
Eben Tjiho	Manager RDM Program	IRDNC (Integrated Rural Development & Nature Conservation) - NRM Program (National Resource Management)
Lina Kaisuma	Ombazu Conservancy Overseer	IRDNC (Integrated Rural Development & Nature Conservation)
Alexandrine	Personal Assistant - Governor	Regional Government
Hilaria Joree Uaisua	Acting Secretary	Kunene Regional Council
Lucas N. Tjoola	Ex Secretary	Kunene Regional Council
Ms. Doeses	ACRO (Acting Chief Regional Councillor)	Kunene Regional Council
Mr. Jantse	ACRO	Kunene Regional Council
Kazeongere Zeriapi Tjeundo	Opuwo Rural Constituancy Councillor	Kunene Regional Council
Nguzu Johannes Muharukua	Epupa Rural Constituency Councillor	Kunene Regional Council
Julius Kaujova	Council Chairperson, Sesfontein Constituency Office	Kunene Regional Council
Innocent U. Tjipepa	CDP	Ministry of Land & Resettlement
Naftali Eliaser	Chief Warden	Ministry of Tourism and Environment
Joseph	Warden	Ministry of Tourism and Environment
Rauna	Officer	Ministry of Tourism and Environment
Lascoh	Ranger	Ministry of Tourism and Environment
Charlie Matango	Public Relations Officer	CENORED
	Environmental Officer / Manager	NamPower
Andrew Ndishishi	Permanent Secretary	Ministry of Health & Social Services
Mrs. Hileni Fillemon	Public Relations Office	Roads Authority
Mr. Makali	Kunene Head	Roads Authority (Oshakati - responsible for Kunene)
Mr. Roots	Area Manager	Roads Authority (Oshakati - responsible for Kunene)
Saima T Amadhila - Nghishidi	Senior Private Secretary to Permanent Secretary	Ministry of Agriculture, Water & Forestry: Permanent Secretary
Laurica C. Afrikaner	Hydrologist	Ministry of Agriculture, Water & Forestry: Water Affairs
Natanael Amadhila	Chief Regional Forester	Ministry of Agriculture, Water & Forestry: Forestry Directorate
Michael Aimanya	Chief Forest Technician	Ministry of Agriculture, Water & Forestry: Forestry Directorate
Hennie Kakondo	Forest Technician	Ministry of Agriculture, Water & Forestry: Forestry Directorate
Justine Kandali		Ministry of Agriculture, Water & Forestry: Forestry Directorate
Kapukatua Kuvare	Regional Head (Water OPUWO)	Ministry of Agriculture, Water & Forestry: Rural Water Supply
Sam Petrus	Officer (Water OPUWO)	Ministry of Agriculture, Water & Forestry: Rural Water Supply
Emily Kakwena Handunge (Mrs.)	Chief Scientific Officer	Ministry of Agriculture, Water & Forestry: Agriculture
Eugene Simwanza	Chief Agricultural Technician	Ministry of Agriculture, Water & Forestry: Agriculture
Mr. Ambafa	Technician	Ministry of Agriculture, Water & Forestry: Agriculture
Mr. Vepee Havarua		Ministry of Agriculture, Water & Forestry: Agriculture
Charon Sennobia Katjiuongua	Cultural Officer	Ministry of Education
Mr. Tjoola	Principal	Ohandungu Primary School (Ruiters PS)
Jaco Burger	Translator	Private
Otjiherero service	Radio	Namibian Broadcasting Corporation
Community Kunene Radio	Radio	Kaokoland Radio
Broadcasting Studio	Radio	Namibian Broadcasting Corporation
Annette	Owner	Kaokoland Restaurant

Appendix I: Heritage survey report

HERITAGE SURVEY REPORT
FOR

MC73283-73286, MC73580-MC73587, MC73580-MC73583, MC7205, MC75208-MC75210 AND EPL10007 (Epembe Mining & Exploration Projects)

18 December 2024

Hikuru U. Tjazapi

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Table of Figures

1. Introduction

On Wednesday, 18th December 2024, a field assessment was conducted at the Epembe Project (Figure 13) by a survey team comprising Hikuru Tjazapi, Nandu Alfons, and two community representatives: Mr. Mundoitji Mupya from Omungareva Village and Mr. Kaivangua Tjipuiko from Omuangete Village.

Both Mr. Mupya and Mr. Tjipuiko serve as esteemed Advisors and Councillors to the traditional authority in the villages in connection with the Epembe Mining & Exploration Projects.

The primary objective of the field assessment was to systematically identify, locate, and mark any potential archaeological or cultural heritage sites in the proximity of the project area.

2. Project Background

The Epembe Mining & Exploration Projects have been significant exploration targets for the past decade by various prospectors. Over this period, extensive exploration activities were undertaken, including drilling, comprehensive soil, rock, and water sampling programs. Furthermore, bulk samples were collected for rigorous metallurgical and other essential laboratory analyses.

3. Community Consultation

Prior to the field assessment, a public consultation meeting for the ongoing Environmental Impact Assessment (EIA) for the proposed exploration and mining activities for the Epembe Mining & Exploration Projects, was held at Omuangete Primary School on 3rd December 2024. A total of 86 members participated in this important engagement.

This engagement prompted the need to identify and mark sites of cultural and historical importance to the community such as graves and other cultural heritage sites.

4. Findings

The survey identified two significant cultural heritage sites:

4.1 UNMARKED GRAVE

A lone, unmarked grave was located approximately 60 meters outside the northwestern boundary of EPL10007. The grave has been marked for future reference with coordinates **33K 330910 8063562**.

4.2 OMUNGAREVA GRAVEYARD

A graveyard was identified at Omungareva village, situated approximately 850 meters south of the southern border of EPL10007. The graveyard has been marked for future reference with coordinates **33K 333975 8059183**.

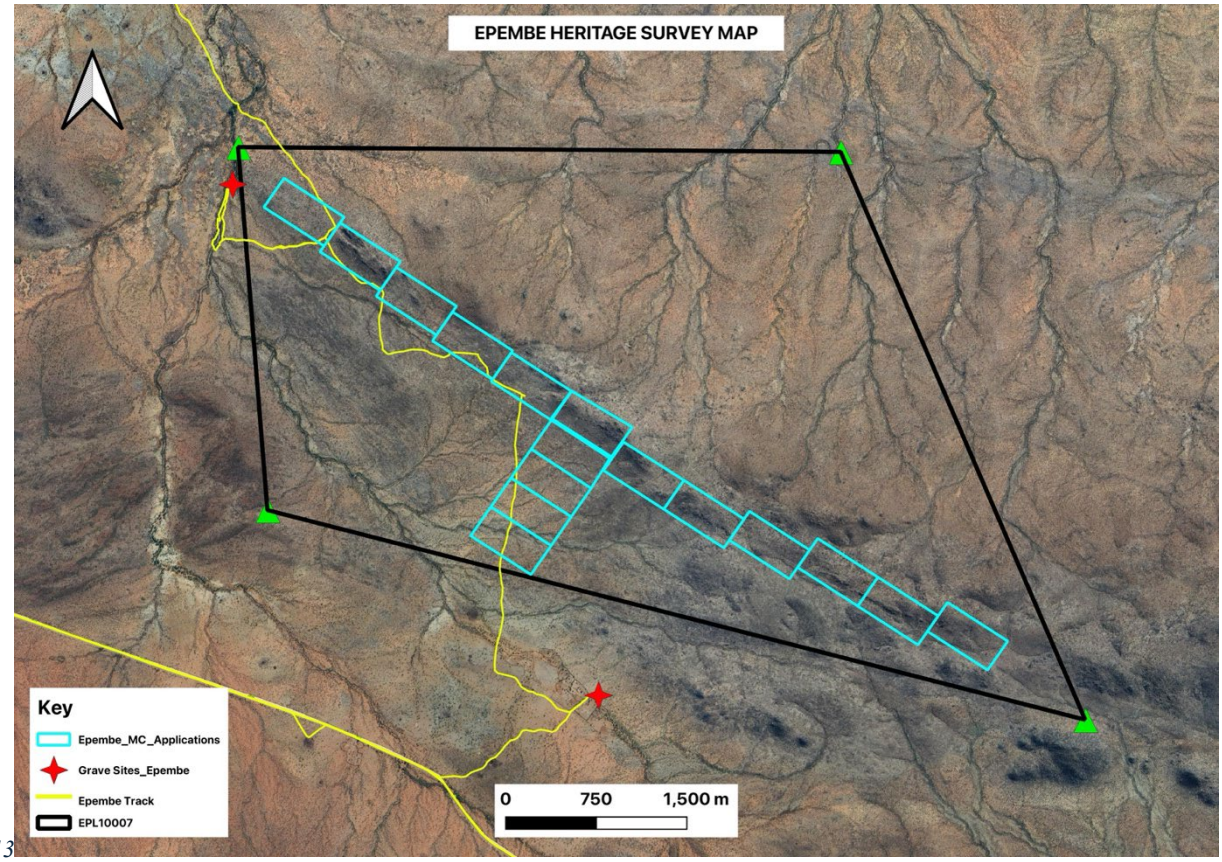


Figure 13 *Map of the Epembe Project showing the marked grave sites around EPL10007*

5. Conclusion

The assessment at the Epembe Project successfully identified two significant cultural heritage sites, both located outside the boundary of EPL 10007. Apart from these identified sites (i.e. unmarked lone grave and the Omungareva graveyard), there are no other known sites of archeological importance within the EPL10007 and the mining claims situated within EPL boundary.

Consent Application Receipt:

National Heritage Council of Namibia
52 Robert Mugabe Avenue • P/Bag 12043 • Ausspannplatz • Windhoek • Namibia
Tel: (061) 244 375 • Fax: (061) 246 872 • E-mail: finance@nhc-nam.org

Secretariat **Receipt No.** 6247 **CASH RECEIPT**

Customer

Date: 13/02/2025

Full Name: Timo Smit

Postal Address: BOX 8912

City: Swakopmund

Phone: +264 853 332373

National Heritage Council of Namibia
HEAD: FINANCE, HR & ADMIN
2025 -02- 13
Private Bag, 12043
Ausspannplatz
Windhoek, Namibia

Quantity	Description	Unit Price	TOTAL
1x	APPLICATION FEES - ITIA CONSENT		N$ 150-00
	LETTER MINING CLAIMS NO:		
	73253, 73284, 73285 & 73286,		
	& 75208, EPUPA KUNENE		
	REGION.		N$ 150-00

Amount in Words: ONE FIVE ZERO N$ ONLY

Receipt Issued by:

studio print 30155

National Heritage Council of Namibia
7173 Lazarette House • Private Bag 12043, Ausspannplatz • Windhoek, Namibia
(061) 244 375 • Fax: (061) 246 872 • E-mail: erica@nhc-nam.org

OFFICE OF THE DIRECTOR

APPLICATION FOR CONSENT

(Sections 53(7) and 55(8) of the National Heritage Act, 2004 (Act No.27 of 2004))

CONDITIONS AND INSTRUCTIONS

1. The receipt issued serves as a reference when making enquiries.

2. Works and activities applied for under section C, of this application, is subject to an environmental impact assessment at the applicant's expense.

3. Instructions for completion:

Applicants must complete the relevant parts of this application.

A. APPLICANT'S DETAILS

1. Name and address of applicant
Timo Smit
P.O. Box 8912
Swakopmund

National Heritage Council of Namibia
HEAD: FINANCE, HR & ADMIN
2025 -02- 13
Private Bag 12043
Ausspannplatz
Windhoek - Namibia

2. Full name and designation of the person in charge of undertaking the works or activities:
Timo Smit
Applicant: Mining Claims 73283, 73284, 73285, 73286 and 75208

3. Full name and personal details of researcher, contractor or person in charge of the proposed works or activities:

Mr. Roland Mushi
Cell: +264 853332373
Email address: rolandmushi@gmail.com

4. Academic qualifications, skills, occupation and competencies of the person in charge mentioned under A2 above.

MSc in Natural Resources Assessment and Management - Graduated from the Institute of Resource Assessment-University of Dar-Es-Salaam.

Bachelor of Arts (Hons) in History and Archaeology – Graduated from University of Dar-Es-Salaam.

- *Areas of specialization; All archaeological and Heritage Impact Studies including Archaeological Impact Assessments, Heritage Impact Assessments, Archaeological and Cultural Heritage Management, Historical and Anthropological studies, Natural Resource Management and Environmental Assessments.*

5. Previous permits issued in Namibia:
_____**Yes**_____

6. Period for which permit is required: From_____
to_____

7. Date by which permit is required:

B. EXPORT AND TRANSPORTATION

8. Indicate whether this is an Application for:

Temporary Export Permanent Export Local Transportation

9. Name and address of Namibian institutions, if any, presently housing the protected place or protected object:

_____
_____

10. Name and address of local or foreign institution, if any, to which the protected place or protected object will be exported:

_____
_____

11. Description of the protected place or the protected object to be exported or transported. Indicate the number of items and, if applicable, the accession numbers given by the Namibian institution, if any, from which the place or object is on loan:

_____
_____
_____
_____

12. Description of the site (cave, rock shelter, grave, structure, midden, open surface site etc.) or geological formation from which the protected place or protected object originates:

_____
_____
_____

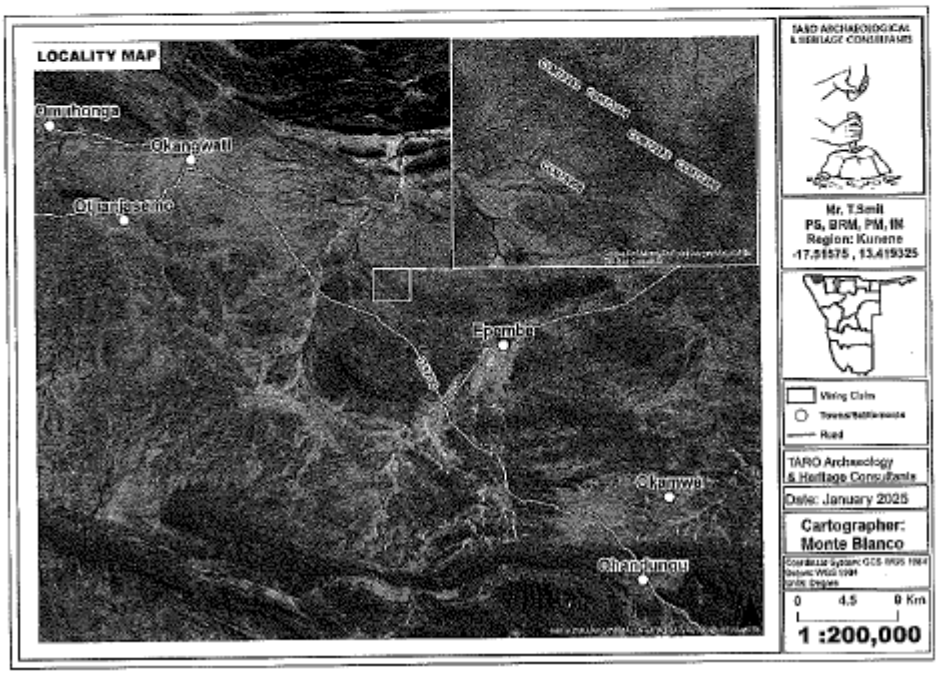
13. Geographic location (farm, village, settlement, town, region, magisterial district, constituency, Global Positioning System coordinates) of the protected place or protected object:

14. Reason for transportation of the protected place or protected object (identification, exhibition etc.):

C: WORKS OR ACTIVITIES

15. Geographic location and address (farm, village, settlement, town, region, magisterial district, constituency, Global Positioning System coordinates) of the site, protected place or protected object where works or activities are proposed

Centre Coordinates: S 17 31'42"
E 13°26'14'



16. Detailed description of the nature of works or activities for which the permit is applied for: (e.g. excavation, construction, filming etc) *(Attach additional and supporting information if the space on the form is insufficient.)*

D: UNDERTAKING BY APPLICANT

17. I Timo Smit (the person in charge of undertaking the works or activities) and (where applicable) being head of the _____ institute, hereby undertake to strictly observe the terms and conditions under which the National Heritage Council may issue the permit.

Signature _____ dated 11 February 2025

18. I _____ the person in charge of _____ Institute where the protected place or protected object to be exported or transported is currently housed, do hereby state that I support / do not support the application. (Note: Please strike out the statement, which is not applicable to this declaration)*(If applicable for purposes of the application.)*

Signature _____ dated _____

19. I _____ the person in charge of

The _____ institute to which the protected place or protected object will be exported do hereby undertake that the protected place or protected object will be returned to Namibia during the period indicated in point A6 above. *(If applicable for purposes of the application.)*

Signature _____ dated _____

National Heritage Council of Namibia
HEAD: FINANCE, HR & ADMIN
2025 -02- 13
Private Bag 12043
Ausspannplatz
Windhoek, Namibia

Permit No.....
(Consecutive number & year of issue)

ARCHAEOLOGICAL AND HERITAGE IMPACT ASSESSMENT REPORT

FOR THE PROPOSED EXPLORATION ACTIVITIES OF SMALL-SCALE MINING ACTIVITIES ON 73283, 73284, 73285, 78286 & 75208 IN EPUPA CONSTITUENCY, KUNENE REGION, NAMIBIA.

Compiled by:

TARO ARCHAEOLOGICAL & HERITAGE CONSULTANTS

Trading as TARO INVESTMENTS CC, Reg. no: cc/2013/10742
P.O. Box 19730, Omuthiya, Namibia
Email: rolandmushi@taroarchaeology.com
Tel: +264 85 333 237 3

Prepared for: Timo Smit

As required under Section 53 (7) and Section 54 (7) of the National Heritage Act (No. 27 of 2004).

Appendix J: Draft Environmental Management Plan

EPEMBE PROJECT

DRAFT ENVIRONMENTAL MANAGEMENT PLAN

FOR SMALL-SCALE MINING ACTIVITIES WITHIN MINING CLAIMS 73283, 73284, 73285, 73286 & 75208, EPUPA CONSTITUENCY, KUNENE REGION

February 2025

Prepared For:

Timo Smit

Prepared By:

Philip Hooks

Title	Draft Environmental Management Plan for small-scale mining activities within Mining Claims (MCs) 73283, 73284, 73285, 73286 & 75208, Epupa Constituency, Kunene Region, Epupa Constituency, Kunene Region
Author	Philip Hooks
Client	Timo Smit
Version	V2
Authoriser	MEFT
Date	13 February 2025
Cite this document as:	Hooks, P., 2025. Draft Environmental Management Plan for small-scale mining activities within Mining Claims (MCs) 73283, 73284, 73285, 73286 & 75208, Epupa Constituency, Kunene Region, Epupa Constituency, Kunene Region

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ABREVIATIONS

EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
ERA	Environmental Risk Assessment
HSE	Health Safety Environment Officer
I&AP	Interested and Affected Parties
MEFT	Ministry of Environment Forestry & Tourism
MC	Mining Claims
MSDS	Materials Safety Data Sheet
PBS	Performance Based Standard
PPP	Public Participation Process

➢ INTRODUCTION

Timo Smit (hereinafter referred to as the Proponent) has pegged the Mining Claims (MCs) 73283, 73284, 73285, 73286 & 75208 near Epembe in the Kunene Region, with the intention to conduct small-scale mining activities for Base and Rare Metals, Industrial Minerals, Precious Metals and Precious Stones. The five mining claims are about 18 ha each in size and are located on communal land approximately 80 km northwest of Opuwo in the Kunene Region, within the vicinity of the Omuangete and Ohamaremba village.

The proponent appointed Philip Hooks, an independent Environmental Assessment Practitioner (EAP), to undertake the assessment and compile the scoping assessment report and Environmental Management Plan (EMP) in support of the application. The curriculum vitae of the EAP is provided in **Appendix A** in the EIA report.

The proposed small-scale mining activities will take place within the boundaries of known mineralisation within the four mining claims and the other mineral licences that the Proponent currently has rights to. The activities will be undertaken in phases as follows:

- The construction phase activities
- The operational phase activities
- Decommissioning phase activities

Operation will entail Continued exploration within the mining claims; Mineral ore extraction by open cast mining; Mineral processing; and Construction of accessory works areas and roads. Mining techniques will make use of modern equipment such as excavators, diamond wire saw, circular diamond cutting machines, compressor driven drill rigs, jack hammers and dump trucks. Open cast mining will be established according to good practice procedure.

Product is to be transported as bulk cargo as well as in bagged form. The viability of any mining operation, just like most industries, is particularly sensitive to the logistics concerned with getting the product to market. Different options are presently being investigated for the transport of the products to the harbour of Walvis Bay. Bulk bags on low-bed trucks or bulk road transport with loads up to 67 tons are envisaged to take the products on the public road infrastructure from the mine site to the harbour of Walvis Bay. The product would be transported along the gravel road to Ruacana and thereafter along the tar roads to the port of Walvis Bay.

Decommissioning activities will include the removal of infrastructure, preparation of final landforms for closure and to rehabilitate roads where necessary. However, ongoing rehabilitation and landscaping should be conducted as the mining operations proceed. Shaping of the excavated / mined areas not only to accommodate rehabilitation efforts, but also in terms of safety, should be conducted according to a rehabilitation plan. In accordance with the Environmental Management Act, the proponent is required to make funds accessible which will specifically be available and allocated for rehabilitation efforts. This fund should continually be available during the life of mine yet also be sufficient to cover the decommissioning activities as required.

The potential impacts associated with the envisaged mining and processing operations are specifically outlined in the environmental impact assessment chapter and include the potential impacts on personnel working at the mine and the general public who might reside near the mine.

The life of mine for the operations would be based on the expected demand and the size of the resource. However, this may vary significantly as the demand may fluctuate.

Public consultation was thorough, and the communities were well informed about the project. This was done through newspaper adverts for two consecutive weeks in the Namibian Sun, Republikein and Allgemeine Zeitung newspapers (Namibia Media Holdings – Market Watch) on the 15th and 22nd of November 2024. Face to face meetings with the public and relevant authorities were also conducted. The stakeholders had an opportunity to ask questions and raise

their various concerns. Upon completion of this report and drafting of the environmental management plan the Interested and Affected Parties have had further opportunity to provide input during the public review period.

The mineral rights are situated in a remote rural area. There are obvious signs of degradation by over-grazing and the effects of the current drought exacerbate the difficulty that the communities experience in living off the land.

The mining operations will take place on communal land. Due respect is given to the communities that use the area for subsistence living. The Ovahimba people are semi-nomadic and may come near the mining operations from time to time. Good community relations are imperative for the successful running of the mining activities. Public safety is of utmost importance.

The assessment of the identified potential impacts was undertaken after due consideration of the physical and biological environment. The programmes below provide the outcome of the mitigated assessment. The chapter on impact assessment in the EIA Report more fully develops the reasons for these outcomes. The outcomes have been incorporated into the environmental management plan and the programmes that will facilitate the implementation of the measures that are required. It is the author's opinion that the environmental clearance be granted on condition that this Environmental Management Plan be implemented. The EIA Report should be used to compliment and supplement the EMP where more understanding is required

This Environmental Management Plan (EMP) documents a series of individual management programmes (MPs) designed to meet legal requirements for the activities related to the Proponents operations. The EMP aims to avoid or minimise potential negative impacts, while optimizing the potential positive impacts associated with the mining operations and decommissioning once the activity has been completed.

➢ PROJECT OVERVIEW

A short description of the project and the location is laid out below. The full project description is given with the EIA report.

➢ Project Location

MCs 73283, 73284, 73285, 73286 & 75208 are located within the Kunene Region and in the northern Epupa Constituency. The MCs area is about 80 km northwest of Opuwo. The licence lies within communal farming areas which fall under the responsibility of the Kunene Regional Council. The people living in the area are led by headmen/chief. Officially they fall under the authority of the Governor of the Kunene Region of northern Namibia and the constituency councillors through the Governor. **Figure 14** renders a map of the mining claim relative to the nearest communities of Omuangete and Ohamaremba.

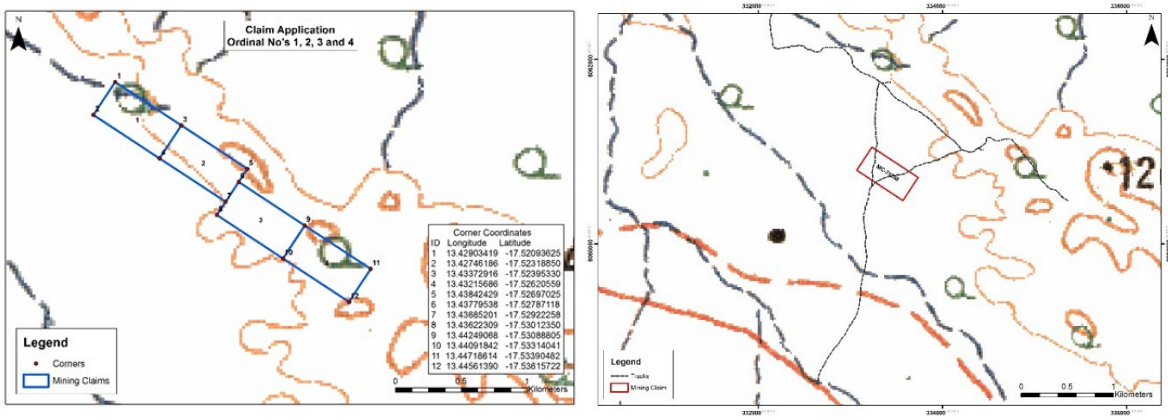

Figure 14. Locations of the Mining Claims

➢ Project Description

The following is the summary of envisaged development with mining and processing activities that are expected to be undertaken by the project proponent during different project development phases.

Construction Phase Activities

The pilot processing plant will be constructed on one of the mining claims. The EIA process will direct the decision-making process with regards to site selection for the pilot plant. Construction will begin soon after the approval of the environmental clearance application. Conceptual design layouts are under development.

Operational Phase Activities

The operational activities include the following:

- Continued exploration within the mining claims;
- Mineral ore extraction by open cast mining;
- Mineral processing.

Techniques make use of modern equipment such as excavators, diamond wire saw, circular diamond cutting machines, compressor driven drill rigs, jack hammers and dump trucks. Open cast mining will be established according to good practice procedure. The mining operations comprise of the phases including site clearing, excavations – by means of drilling and blasting, digging, removing and haulage of rock to processing plant and storage yard.

Future planned operations will entail the drilling and blasting of rock outcrops to a depth of 50 metres for rare earth and metal mineralisation. Multiple quarries (i.e. wedge, terrace or trench shaped) will be mined at various places within the four mining claims. Quarry depth will be to about 50 m. Mineral waste will be deposited in waste rock dumps and a tailings storage facility.

Operational Support Services

Transport

Product from the mining activities is to be transported as bulk cargo as well as in bagged form. The viability of any mining operation, just like most industries, is particularly sensitive to the logistics concerned with getting the product

to market. Different options are presently being investigated for the transport of the products to the harbour of Walvis Bay.

There are currently two options for the type of truck to be used for the haulage. Either the usual 36 tonne load or a specialised 67 tonne load. At a maximum monthly production of 5,000t a total of 139 truckloads at 36t each (first option) would transport product each month. That is 5 trucks each day. The product would be transported either along the gravel road to Ruacana or via Opuwo and thereafter along the tar and gravel roads to the port of Walvis Bay. The product would either be in bulk bags on low-bed trucks or in bulk trailers with covers.

A reduction in the number of trucks required for the transport could be achieved if a Performance Base Standard (PBS) trucking option is approved by the Roads Authority. The bridge study (Olivier, 2020) was undertaken to support the usage of 67 tonne payload trucks along the gravel road route from Opuwo to Walvis Bay. The bridge assessment along the preferred route was assessed for weight carrying capacity.

Geometrical information of bridges was verified on site, most importantly with respect to deck thicknesses and spans. Concrete strength estimates were established by means of Schmidt Hammer tests. Maximum Safe Yield design was compared to the modelled yield induced by the PBS Smart Truck configuration. From the work undertaken (Olivier, 2020) the bridges can accommodate the load imposed by the proposed high-tonnage vehicle with ample safety margins. The envisaged PBS option aims for an allowable unit load of 67 tons. This would almost half the number of haulage trucks on the road and or reduce the frequency with which the trucks must run. The overall wear and tear on the road infrastructure would also be reduced when using the PBS trucks for the preferred and alternative routes and associated distances for each leg of the routes.

The preferred route would be the shortest but includes gravel sections amounting to half the journey. **Figure 15** shows a map of the planned haulage route. The preferred route is shorter by 426 km for the round trip. Although the preferred route includes gravel road sections it is not as congested as some legs of the alternative route.

Table 20 Preferred and alternative road routes for haulage trucks.

Preferred route	**Distance**	**Units**	**Road**	**Surface**
Mine Site to Ruacana	80	km	Via D3700	gravel
Ruacana to Kamanjab	287	km	via C35	bitumen
Kamanjab to Fransfontein	84	km	via C35	gravel
Fransfontein to Uis	135	km	via C35	gravel
Uis to Hentiesbay	124	km	via C35	gravel
Hentiesbay to c28 (Swakop)	74	km	via C34	bitumen
Swakop junction to Namport	45	km	Via D1984	bitumen
Total	**829**	**km**		
Full cycle	**1658**	**km**		
Alternative route				
Mine Site to Opuwo	130	km	via D3701	gravel

Opuwo to Kamanjab	262	km	via C35	bitumen
Kamanjab to Outjo	157	km	via C40	bitumen
Outjo to Otjiwarongo	72	km	via B1	bitumen
Otjiwarongo to Omaruru	140	km	via C33	bitumen
Omaruru to Karibib	65	km	via C33	bitumen
Karibib to Usakos	33	km	via B2	bitumen
Usakos to Swakopmund	138	km	via B2	bitumen
Swakopmund to Namport	45	km	via D1984	bitumen
Total	**1042**	**km**		
Full cycle	**2084**	**km**		

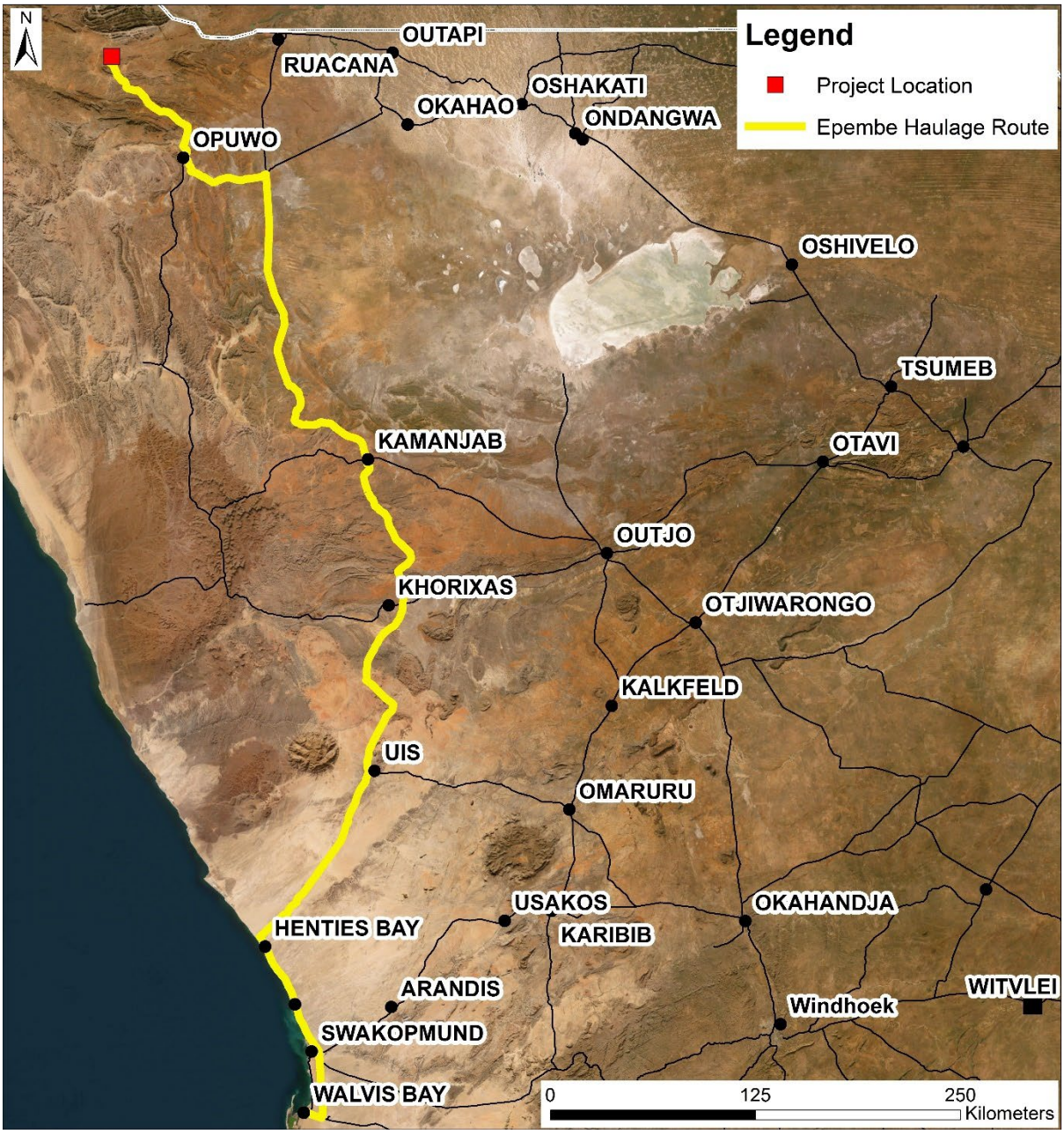

Figure 15. The preferred haulage route for transporting various product to the Walvis Bay port.

Water supply

It is suggested that amounts of water can be sourced from the nearest NamWater supply scheme or from one of the surrounding neighbours or community boreholes and then be trucked to the MCs, as there is no existing infrastructure on site for the water utility company, this is the preferred option.

If for any reason more water is required then the proponent suggests abstraction of ground water, which can be done at minimal extraction cost, a borehole can be sunk to augment supply volumes. However, for this option groundwater exploration would need to be undertaken following the required permit application process.

Power Supply

Power required during the operation phase will be provided by direct connectivity from diesel generator equipment. Diesel will be stored at the mine site.

On-Site Fuel and Lubricant Storage

Diesel storage at the mine site will consist of a bunded fuel tank system, conveniently placed and accessible for the frequent deliveries. In addition to this it is feasible for a few bunded mobile facilities to be placed conveniently for use by the mining equipment at the various active mining areas. These facilities will be of modern construction, either double-skinned or bunded to ensure spills are prevented.

Delivery systems will use sealed fittings to prevent spillage. The fuel facilities should be actively manned. Lubricants will be stored in a double bunded facility which is designed for this purpose. Lubricants will be transferred to machines via reticulated network within the heavy vehicles workshop or mobile lubrication trucks.

Standardised spill kits and reporting systems will be in place to deal with hydrocarbon spills. Contaminated soils will be transferred to a remediation section on site specifically designed for soil remediation.

Explosives Magazine and Use of Explosives

In terms of the proper use and storage of explosive material on site, the Explosives Act of 1956 states that the proponent can only keep, store or possess explosives in such a manner and in such quantities as have been approved in writing by an inspector and shall only be stored on premises where there is an explosives factory or explosives magazine. The proponent should obtain a permit issued by an inspector of the explosive police unit and the explosives need to be kept in quantities not exceeding 500 kilograms and be stored in an isolated place. Every 120 days the proponent should furnish the Chief Explosive Inspector with information in writing as from the said date regarding the quantity of explosives in the company's possession or custody. The proponent should bear in mind that the inspector may enter any explosives facility or explosives magazine at any hour of the day or night for the purpose of inspection and for making inquiries relative to the compliance with the provisions of this Act and its regulations, or relative to the means used therein for preserving the safety of the public or employees or for purposes of analysis or test, ask for samples of explosives or ingredients of explosives from the proponent.

Security of the Mining Sites and Accessory Works Area

Various locations and infrastructure may need to be fenced in order to control the access to the various hazardous or potentially unsafe facilities so as to prevent unauthorised persons and vehicles from entering these areas, and to keep out animals from the surrounding communal farming area. Public safety is the guiding principle behind this aspect. Security personnel may be needed from time to time.

Decommissioning Phase

If all mineral resources are spent, or the proponent has other reasons to no longer continue operations, then the proponent will be required to cease operations on the MCs. This decommissioning phase includes the following activities:

- removal of infrastructure constructed for the purpose of the small-scale mining operations on site,
- potential sale of any permanent office and ablution infrastructure for residential use
- Rehabilitation of waste rock dumps and the tailings storage facility to encourage natural revegetation
- Secure the quarry areas and tailing facility for long term public safety (i.e. by fencing, revegetation or physically changing the angle of quarry sides.

- Rehabilitate roads where necessary.
- Re-assign electrical and water infrastructure for use by the residents.

These and other aspects are addressed in the EMP of this study. This is necessary so that rehabilitation and landscaping can be conducted as the quarries, trenches and pits are created during the mining activities. This saves money in the long term so that the rehabilitation works do not get left to the time of closure of operations when costs might be more. The temporal length of the operations would be based on the expected demand and the size of the resource. However, this may vary significantly as the demand may fluctuate.

In accordance with the EMA, the proponent is required to make funds accessible which will specifically be available and allocated for rehabilitation efforts. This fund should continually be available during the mining operations and yet also be sufficient to cover all decommissioning activities at decommissioning. The rehabilitation of the various sites on the MCs is to encouraging vegetation growth to reduce the effects of soil erosion and to re-establish normal ecosystem functionality after the mining activities cease.

➢ EMP OBJECTIVES

The main purpose of the Environmental Management Plan ("EMP") is to provide a strategy for the identified socio-economic and biophysical impacts in order to provide measures that mitigate, as far as practicably possible, the effects of significant adverse impacts while providing strategies for maintaining or enhancing positive impact effects.

This mode of environmental protection is implemented in all the activities associated with the Proponent operations, ensuring that time and national resources are not wasted and that problems occurring during all operations are identified and rectified to prevent damage to the environment.

The overall environmental objectives have been set for the management of the following main activities on the mining claims:

- Continued exploration within the mining claims;
- Mineral ore extraction by open cast mining;
- Mineral processing.

If any issues were overlooked, the plan must be amended in consultation with the Proponent and regulatory authorities. The EMP objectives are:

- To comply with national legislation and standards for the protection of the environment.
- To limit potential impacts on biodiversity through the minimisation of the footprint and the conservation of residual habitat within the mine area.
- To ensure the Proponents operations are managed efficiently and effectively to reduce or avoid negative impacts and enhance positive impacts of the operations
- To keep surrounding communities informed of the mining activities through the implementation of forums for communication and constructive dialogue between the Proponent and all those affected
- To conserve soil resources by stripping, stockpiling and managing topsoil where practicably possible.

- To minimise the potential for dust emissions through the implementation of dust control measures.
- To minimise the potential for noise and vibration disturbance in surrounding areas.
- To undertake rehabilitation wherever possible during the life of the mine.
- Prevent and minimise all forms of pollution.
- To include all components of the operations of the project.
- To prescribe the best practice control methods to lessen the environmental impacts associated with the operations of the project.
- To monitor and audit the performance of operational personnel in applying such controls.
- To ensure that appropriate environmental training is provided to responsible operational personnel.

The Environmental Management Act and Regulations require that an EMP for the proposed project be developed (see Legal Section of EIA Scoping Report). The Management Programmes within this EMP have therefore been compiled to satisfy requirements based on the regulations for all developmental projects in Namibia.

➢ ENVIRONMENTAL MANAGEMENT ROLES AND RESPONSIBILITIES

The main parties that are responsible for specific aspects of the EMP's implementation or to whom the responsibility reports are:

- The **Proponent**- Nina Smit;
- **Project Manager** (PM);
- The **Environmental Assessment Practitioner** (EAP)
- The **Environmental Control Officer** (ECO)

➢ Proponent

The Proponent bears the ultimate responsibility for the mining and processing operations and is thus responsible for environmental performance. Must be informed of environmental issues and impacts of all operations (existing and future) and the resultant effect that such activities have on the environment.

➢ Environmental Assessment Practitioner

Undertakes Environmental Impact Assessment ("EIA") and generates a draft Environmental Management Plan, completes EIA and EMP reports, ensures overall compliance of the EMP and undertakes periodic external environmental audits.

➢ Environmental Control Officer

Monitors the implementation of the EMP as well as identifies potentially detrimental impacts not identified in the EMP so that the EMP can be reviewed and updated. The following list outlines the ECO's responsibilities:

- Responsible for maintaining compliance to the EMP and any other relevant legal requirements e.g. permits and authorisations.
- Implementation of the Environmental Management System ("EMS").
- Coordination, monitoring and consultation with stakeholders and personnel, including the promotion of environmental management competence and providing risk assessment expertise.
- Undertake Environmental Risk Assessments (ERAs).

- Set environmental objectives and targets.
- Monitoring of systems to ensure compliance to legislation and company policies.
- To facilitate updating of the environmental management process and ascertaining the state of environmental risk and performance.
- Compile biannual reports for MEFT.
- Ensuring that all personnel undergo environmental awareness training as per company environmental standards on an ad hoc basis.
- Coordinate internal and external environmental audits.
- Submit required information to relevant authorities such as reporting related to monitoring and with regard to compliance with the EMP, permit and relevant authorisations.
- Liaise with the Proponent's management team and various external stakeholders such as authorities and interested and affected parties on environmental management

➢ ENVIRONMENTAL TRAINING AND CAPACITY BUILDING

The Proponent is responsible to ensure all personnel are trained on all the company Health, Safety and Environment (HSE) policies relevant to the site. The plant equipment technical team must be trained to maintain the plant. Equipment manuals and data sheets must be supplied. HSE manuals must be available on site at all times. Material Safety Data Sheets ("MSDS"), where required, are to be available.

Where the capacity of the personnel is insufficient the Proponent must take up the responsibility to build capacity especially where compliance to HSE issues is lacking. For this EMP to be successful, compliance monitoring is essential. Reporting the data from the monitoring to the environmental authority will be necessary in order to show that capacity building and training have been carried out.

➢ ENVIRONMENTAL IMPACTS

The key environmental impacts described and discussed in the scoping report for construction and operations were identified by site visits, consultation with the Proponent and an impact assessment.

➢ Key Positive Environmental impacts

The following key issues and potential positive impacts associated with the proposed operations are:

- The operations help to create jobs and long-term employment.
- The local economy benefits; through direct contribution to Gross Namibian Income (GNI) of the mine.
- Reducing income inequality, increasing job creation and economic growth.
- Implementation of environmental management measures to mitigate negative impacts.
- Environmental awareness created for all the mine personnel through training.
- Improve the standard of living of the Proponent's employees.

➢ Key Negative Environmental Impacts

- Potential decrease in the road surface integrity due to increased haulage frequency could incur more frequent spending on road repairs.
- Potential air pollution from vehicle fumes and during windy conditions from dust generating activities.

- Potential decrease in aesthetic value of the area earmarked for mining as vegetation and topsoil will be cleared as it is prepared for mining expansion and operations.
- Potential increases in waste and sewerage generation.
- Potential increase of soil erosion because of stripping of topsoil during the mining operations.
- Natural resource depletion, loss of land (habitat), change in land-use potential.
- Potential impact on health and safety (security) of personnel and public.
- Potential water pollution and poor water quality.
- Public safety on National Roads and at the Port of Walvis Bay.

➢ EMP IMPLEMENTATION GUIDELINES

The potential impacts resulting from the proposed operations were evaluated in the scoping report with assessment. The suggested mitigations for potentially negative impacts if implemented, will reduce the impacts on the biophysical and socio-economic environment so that their significance is negligible. The mitigation measures are included in the EMP implementation guidelines below. **Table 21** to **Table 33** describe the management programmes for the main potential impacts to mitigate and/or enhance the potentially significant environmental and socio-economic impacts.

This document may need to be periodically reviewed and updated due to new insights or operational changes to ensure that all the environmental impact aspects are included. It categorises aspects into loosely defined phases of planning, construction, operational, and decommissioning phases. These phases are applicable in the following ways:

- elements of the **Planning Phase** apply to the current scoping report preparation, the review process, permit and certificate renewal periods;
- the establishment of new activities on site and the upgrading of infrastructure or equipment is covered under the **Construction Phase**;
- extraction, blasting, crushing, milling and haulage of the resource and supplies and transport of product to port and various accessory components falls under the **Operational Phase**;
- should any of the activities discussed ever end then the **Decommissioning Phase** section will be applicable in particular the application of the fund to the rehabilitation of the mine.

The following programmes are discussed in detail in the tables that follow:

- Air quality Management Programme
- Noise Management Programme
- Health & safety Management Programme (includes Security)
- Visual Management Programme
- Stakeholder Communication Management Programme (include socio-economic and cultural heritage aspects)
- Waste Management Programme
- Ecology Management Programme
- Water Resource Management Programme: a. Water Resource Management (Utilisation) b. Water Quality Management (Contamination)
- Traffic Management Programme
- Port Handling and Storage Management Programme
- Mine Closure & Rehabilitation Management Programme

The Port Handling and Storage Management Programme has a stand-alone EMP that is to be approved by the Port's Authority. It is included at the end of the EMP.

Table 21. Air Quality Management Programme

<table>
<tr><td>Impact Event</td><td colspan="6">Disturbances to soil, rock and ore resulting in excessive dust in the atmosphere</td></tr>
<tr><td>Description</td><td colspan="6">Dusty atmospheric conditions do prevail in the arid northwest of Namibia particularly during the winter months when dry easterly winds blow and during early summer months when south westerly winds blow. Mining activities will generate dust as follows:
➢ Movement of vehicles along road network hauling ore to the plant on site are likely to lift dust into the air
➢ Trucks transporting product along the dirt roads create dust trails as they travel south to the port along the preferred route as per the EIA and the project description above.
➢ Drilling and blasting will most definitely cause dusty conditions.
➢ Crusher, sizing screens and conveyor functioning will result in dusty conditions.
➢ The TSF and waste rock dump (WRD).
➢ Product handling & storage areas

The surrounding habitats receive the dust that emanates from the mining activities and may potentially be affected. Fauna and flora alike could be impacted as ecosystem functioning is possibly affected.

Negative effects of dust on personnel working at the quarry site are likely to occur if dust suppression techniques are not employed and personal protection equipment is not used to safeguard the health of personnel.</td></tr>
<tr><td>Nature</td><td colspan="6">Negative</td></tr>
<tr><td>Phases</td><td colspan="6">Phases during which sources of dust apply are highlighted below; Significance assessment was carried out on the operational phase which presents a long-term risk.</td></tr>
<tr><td>Construction Phase</td><td colspan="2">Operational Phase</td><td colspan="2">Decommissioning Phase</td><td colspan="2">Post Closure</td></tr>
<tr><td>Crushers & screens</td><td colspan="2">Crushers & screens</td><td colspan="2">Dismantling crushers & screens</td><td colspan="2" rowspan="6">Background levels will most likely resume soon after closure.</td></tr>
<tr><td>Conveyor construction</td><td colspan="2">Conveyor functioning</td><td colspan="2">Dismantling conveyors</td></tr>
<tr><td>Road network establishment</td><td colspan="2">Road use and maintenance</td><td colspan="2">Demolishing buildings</td></tr>
<tr><td rowspan="2">Building construction</td><td colspan="2">Drilling & blasting</td><td colspan="2">Rehabilitation of slopes</td></tr>
<tr><td colspan="2">Ore haulage from quarry pit</td><td colspan="2">Constructing fences</td></tr>
<tr><td></td><td colspan="2">Product handling & storage</td><td colspan="2"></td></tr>
<tr><td>Severity</td><td colspan="6">Moderate / measurable deterioration (discomfort). Recommended level will occasionally be violated.</td></tr>
<tr><td>Duration</td><td colspan="6">Reversible over time. Life of the project. Medium term</td></tr>
<tr><td>Spatial Scale</td><td colspan="6">Fairly widespread – Beyond the site boundary. Localised at best. Though this does depend on mobility of particles and prevailing weather conditions. Dust trails are also created outside the local area along the gravel road between the mine and Opuwo or Ruacana and then again between Kamanjab and Henties Bay via Khorixas.</td></tr>
<tr><td>Probability</td><td colspan="6">Definite and continuous</td></tr>
<tr><td>Mitigation</td><td>Severity</td><td>Duration</td><td>Spatial Scale</td><td>Consequence</td><td colspan="2">Probability of Occurrence</td><td>Significance</td></tr>
<tr><td>Unmitigated</td><td>M</td><td>M</td><td>M</td><td>M</td><td colspan="2">H</td><td>M</td></tr>
</table>

Significance of Consequence	Unless it is mitigated the generation of dust should have an influence on the decision to carry out the activity or not. Natural weather conditions can create very dusty atmospheric conditions regardless of the existence of the mine. However, mining and processing activities on site will contribute significantly to local atmospheric dust levels and could potentially affect the ecosystem functioning. Company personnel could be affected depending on the content of the atmospheric dust and how great the exposure is.
Prevention	Dust creation cannot be prevented completely. Water is normally used to suppress dust on the roads. However, this scarce resource cannot be applied continuously and indiscriminately without impacting the groundwater resource.
Mitigation Action	Dust suppression techniques will be necessary when dust becomes an issue during the dry winter months. The following can be done to reduce exposure of the environment and personnel to continuous and excessive dust plumes: ➢ Avoid dust generating activities that create excessive dust during windy conditions. ➢ The new and refurbished roads should have a hard surface whose integrity will not be easily compromised. ➢ Personnel are required to wear personal protection equipment if excessive dust should be created. ➢ All vehicles transporting product material off site should be covered with a tarpaulin when travelling on the national road network of tar and gravel roads. ➢ Windbreaks and covers can be used to reduce lifting of dust from crushers, screens and conveyors. ➢ Water spays at the various plant components will effectively keep dust from blowing into the atmosphere (only if water sources are sustainably used) ➢ The road network within the mine site can be sprayed with water and other dust suppressants during dry dusty conditions (only if water sources are sustainably used) ➢ Waste rock dumps (WRDs) and the TSF should be landscaped and compacted where necessary to supress erosion of soil and dust emission on windy days. ➢ Natural revegetation of the WRDs and the TSF side walls would mitigate the amount of dust that these sources could generate. ➢ To mitigate gaseous pollutants released from the combustion of hydrocarbons, use of high-quality fuels will ensure quantities released per unit weight of product are at levels within environmental limits. ➢ In order to know for sure whether the dusty conditions created by mining activities will exceed the limits or standards set for the southern African context it would be necessary to set up a monitoring network of dust fallout buckets. The merits of such monitoring could be motivated by local authorities should complaints be received by nearby residents. The results of any monitoring would confirm the ambient air quality during baseline pre-construction conditions, and this would provide a gauge by which the site-specific conditions compare to the industry standards used.

Mitigation	**Severity**	**Duration**	**Spatial Scale**	**Consequence**	**Probability of Occurrence**	**Significance**
Mitigated	**L**	**L**	**M**	**L**	**L**	**L**

Significance of Consequence	The dust suppression techniques if applied diligently and consistently will result in a low significance impact for both the biophysical and social environment.
Confidence Level	High, provided management implements the mitigation action and the company provides the necessary financial support to implement the measures required
Monitoring	A dust bucket network is recommended so that **monthly dust fallout** can be documented. However, the setting up of a monitoring network could be delayed if the conditions are perceived to be excessive and complaints from residents are received. Acceptable limits as proposed by the Ministry of Environment Forestry & Tourism must be complied with. In the

	absence of such guidelines, typical ambient conditions prior to operations can be compared to guidelines used by RSA and Botswana and limits can be set for this project. A **complaints register** must be kept

Table 22. Noise Management Programme

Impact Event		Disturbance of sense of place and the effect on tranquil ambient noise levels				
Description		Potential noise sources during the mining and processing activities could originate from vehicles, earthmoving equipment like excavators and graders, generators, drilling and blasting, crushers, screens, and conveyors. The irritation issue of these noise sources will depend on the closeness of the mining activities to various receptors. For rural districts the day-time ambient noise level requirement outlined in SANS 10103 (2008) between 6am and 10pm is 45dBA (A-weighted decibel). This is in line with the guidelines published by the World Health Organisation (WHO). The noise levels should not exceed the ambient noise levels for rural settings. The residences mentioned above would fall into the rural category.				
Nature		Negative				
Phases		Phases during which sources of noise will apply are highlighted below; Significance assessment was carried out on the operational phase which presents a long-term risk.				
Construction Phase		Operational Phase		Decommissioning Phase	Post Closure	
Crushers & screens		Rock Cutters, crushers & screens		Dismantling crushers & screens	Background or baseline levels will most likely become prevalent again immediately after closure.	
Conveyor construction		Conveyor functioning		Dismantling conveyors		
Vehicles on road network		Vehicles on road network		Demolishing buildings		
Building construction		Drilling & blasting		Rehabilitation of slopes		
		Ore and blocks haulage from quarry pit		Constructing fences		
Severity		Moderate / measurable deterioration (discomfort). Recommended level will occasionally be violated. Widespread complaints.				
Duration		Reversible over time. Life of the project. Medium term				
Spatial Scale		Fairly widespread – Beyond the site boundary. Localised at best. Though this does depend on prevailing wind conditions proximity of residents.				
Probability		Definite and continuous				
Mitigation	Severity	Duration	Spatial Scale	Consequence	Probability of Occurrence	Significance
Unmitigated	M	M	M	M	H	M
Significance of Consequence		Mitigations to reduce noise levels measured at receptors will be necessary.				
Prevention		Noise creation cannot be prevented and will occur and should be mitigated. Additional traffic planned on the road for hauling product cannot be avoided.				
Mitigation Action		There are industrial standards to which the noise sources (i.e. machinery) must comply. Regular maintenance of machinery should ensure the acceptable noise levels for operators working with the machines. It is not clear whether this will produce the accepted rural standard at the homesteads. It is recommended that any complaints regarding noise be recorded and included in the environmental reports. Should complaints persist then a survey by a suitably qualified and independent occupational hygienist will be required.				

		Shields which deflect the noise away from receptors may reduce the decibels to within the rural standards. The placement of stockpiles and buildings will also play a role to ensure sources of noise are not directly in line with the farm homestead. Transportation routes should be planned for trucks such that they pass noise sensitive receivers at appropriate times. A restriction of the hours of movement, e.g. not allowing the transport of material during the noise sensitive hours of the night can mitigate noise impacts. The frequency (distance between trucks can also be planned to fall within a limited period.				
Mitigation	Severity	Duration	Spatial Scale	Consequence	Probability of Occurrence	Significance
Mitigated	L	M	M	L	L	L
Significance of Consequence		The normal maintenance may reduce the probability of noise marginally. Should the shielding of noise sources keep the noise measured at the receptors to within the limits then the significance could drop to low.				
Confidence Level		The EAP is confident that the mitigations will result in lowering the impact significance. A good monitoring system will enable the mine to document the facts and respond accordingly by enhancing any noise reduction strategies.				
Monitoring		A mechanism to monitor noise levels, record and respond to complaints and mitigate impacts should be developed. Monitoring: ➢ Keep a register of all complaints received and remediation action taken. ➢ Survey noise levels annually Performance Indicator: ➢ Number of registered complaints ➢ Noise monitoring plan is on file. ➢ Record all information in a biannual report.				

Table 23. Health & Safety Management Programme – a. Noise and Vibration Effects on Personnel

<table>
<tr><td>Impact Event</td><td colspan="6">The effects of excessive noise and vibration on the health and safety of personnel.</td></tr>
<tr><td>Description</td><td colspan="6">Noise:
➢ Long term exposure to high levels of noise can cause permanent hearing loss. Neither surgery nor a hearing aid can help correct this type of hearing loss.
➢ Short term exposure to loud noise can also cause a temporary change in hearing (your ears may feel stuffed-up) or ringing in your ears (tinnitus). These short-term problems may go away within a few minutes or hours after leaving the noisy area.
Vibration:
Different vibration types are defined as:
➢ Hand-Arm Vibration is defined as mechanical vibration that, when transmitted to the human hand-arm system, entails risks to the health and safety of workers, vascular, bone or joint, neurological or muscular disorders. Whole-Body Vibration is defined as the mechanical vibration that, when transmitted to the whole body, entails risks to the health and safety of workers lower back morbidity and trauma to the spine.</td></tr>
<tr><td>Nature</td><td colspan="6">Negative</td></tr>
<tr><td>Phases</td><td colspan="6">Phases during which sources of noise and vibration could apply are highlighted below; Significance assessment was carried out on the operational phase which presents a long-term risk.</td></tr>
<tr><td>Construction Phase</td><td colspan="2">Operational Phase</td><td colspan="2">Decommissioning Phase</td><td colspan="2">Post Closure</td></tr>
<tr><td>Crushers & screens</td><td colspan="2">Rock Cutters, Crushers & screens</td><td colspan="2">Dismantling crushers & screens</td><td colspan="2" rowspan="5">Background or baseline levels will most likely become prevalent again immediately after closure. Personnel no longer on site.</td></tr>
<tr><td>Conveyor construction</td><td colspan="2">Conveyor functioning</td><td colspan="2">Dismantling conveyors</td></tr>
<tr><td>Vehicles on road network</td><td colspan="2">Vehicles on road network</td><td colspan="2">Demolishing buildings</td></tr>
<tr><td rowspan="2">Building construction</td><td colspan="2">Drilling & blasting</td><td colspan="2">Rehabilitation of slopes</td></tr>
<tr><td colspan="2">Ore haulage from quarry pit</td><td colspan="2">Constructing fences</td></tr>
<tr><td>Severity</td><td colspan="6">Substantial deterioration (permanent damage to spine from vibration or hearing). Recommended level will often be violated. Personnel potentially unable to work any longer.</td></tr>
<tr><td>Duration</td><td colspan="6">Permanent. Beyond closure. Long term.</td></tr>
<tr><td>Spatial Scale</td><td colspan="6">Localised - Within the site boundary.</td></tr>
<tr><td>Probability</td><td colspan="6">Definite and continuous</td></tr>
<tr><td>Mitigation</td><td>Severity</td><td>Duration</td><td>Spatial Scale</td><td>Consequence</td><td>Probability of Occurrence</td><td>Significance</td></tr>
<tr><td>Unmitigated</td><td>M</td><td>M</td><td>L</td><td>M</td><td>M</td><td>M</td></tr>
<tr><td>Significance of Consequence</td><td colspan="6">Mitigations to reduce noise levels and exposure to vibrations for personnel are imperative.</td></tr>
<tr><td>Prevention</td><td colspan="6">Engineering controls that reduce sound exposure levels are available and technologically feasible for most noise sources. Engineering controls involve modifying or replacing equipment or making related physical changes at the noise source or along the transmission path to reduce the noise level at the worker's ear. The same goes for vibration. The following should be considered:
➢ Choose low-noise tools and machinery.
➢ Maintain and lubricate machinery and equipment (e.g. oil bearings).
➢ Enclose or isolate the noise source.</td></tr>
</table>

Mitigation Action	**Noise:** The **Occupational Safety and Health Administration** (OSHA) guidelines set legal limits on noise exposure in the workplace. These limits are based on a worker's time weighted average over an 8 hour day. With noise, OSHA's **permissible exposure limit** (PEL) is 90dBA for all workers for an 8 hour day. The OSHA standard uses a 5dBA exchange rate. This means that when the noise level is increased by 5dBA, the amount of time a person can be exposed to a certain noise level to receive the same dose is cut in half. The WHO guideline on maximum noise levels to prevent hearing impairment set noise level limits at an average of 70 da over a 24-hour period with maximum noise levels not exceeding 110 dBA during the period. These limits would apply if the day-time shift is prolonged beyond the 8-hour day. **Mitigation actions include:** ➢ Limiting the amount of time, a person spends at a noise source. ➢ Providing quiet areas where workers can gain relief from noise sources. ➢ Where possible, restricting worker presence to a suitable distance away from noisy equipment. (Controlling noise exposure through distance is often an effective, yet simple and inexpensive administrative control.) ➢ In open space, the further the distance from the source of noise, the worker may experience a decrease in noise levels to be about 6dBA less for every doubling of the distance (nonlinear relationship). ➢ Hearing protection devices, specifically earmuffs for long periods of exposure near sources and at all times use plugs for all places outside offices within the claims not near noise sources for extended periods ➢ PPE is considered an acceptable mitigation, but a less desirable option to control exposures to noise. ➢ Entrance and exit medicals to test hearing should be carried out as a minimum requirement. **Vibration:** Meet industry vibration regulations; set daily exposure limit values and action values for both hand-arm and whole-body vibration for eight-hour shifts. Personnel can work shorter shifts where excessive vibration conditions exist.

Mitigation	**Severity**	**Duration**	**Spatial Scale**	**Consequence**	**Probability of Occurrence**	**Significance**
Mitigated	**L**	**M**	**L**	**L**	**L**	**L**

Significance of Consequence	If all the mitigations listed are used then the significance of the impact will be maintained at low.
Confidence Level	The EAP is confident that the mitigations will result in low significance. A good monitoring system will enable the mine to document the facts and respond accordingly by enhancing any noise and vibration reduction strategies. Continuous training of personnel is imperative
Monitoring	A mechanism to monitor noise levels, record and respond to health-related complaints of personnel and mitigate impacts appropriately. **Monitoring:** ➢ Record all health-related incidents ➢ Survey noise and vibration levels annually **Performance Indicator:** ➢ Number of registered health complaints/incidences ➢ Occupational health policy is on file ➢ Monitoring plan is on file. Record all information in a biannual report.

Table 24. Health & Safety Management Programme – b. General Hazards and Potential Risk of Injury

Impact Event		**Injury risks due to normal working conditions**				
Description		The potential impacts on human health and safety resulting from activities in any phase could include occupational accidents and injuries, vehicle accidents, exposure to weather extremes, trips and fall on uneven terrain, adverse health effects from dust generation and emissions, and contact with hazardous materials. The potential for these impacts to occur would be low because of the limited range of activities and number of workers required during operations. KNL follows a set of industry-specific safety and health policies in the work place. Typical operational procedures that pose risks to operational personnel are: ➢ Operating heavy machinery such as, front-end loaders, excavators, and stationary processing equipment. ➢ Operating haulage trucks ➢ Snake bites, or scorpion stings, etc				
Nature		Negative				
Phases		Phases and specific activities or equipment during which personnel are exposed to health and safety risks are highlighted below; Significance assessment was carried out on the operational phase which presents a long term exposure risk.				
Construction Phase		**Operational Phase**		**Decommissioning Phase**	**Post Closure**	
Large mobile equipment		Large mobile equipment		Dismantling structures	Personnel no longer on site. Public safety ensured through restricted access though quarry pit will remain.	
Rock falls from steep and high cliff faces of quarry pit		Rock falls from steep and high cliff faces of quarry pit		Rehabilitation of slopes		
Large mobile plant equipment		Drilling & blasting		Constructing fences		
Working at heights		Fire and explosion hazards				
Severity		Substantial deterioration. Accidents can happen and injuries to personnel may potentially lead to early retirements.				
Duration		Permanent. Beyond closure. Long term.				
Spatial Scale		Localised - Within the site boundary.				
Probability		Definite and continuous				
Mitigation	**Severity**	**Duration**	**Spatial Scale**	**Consequence**	**Probability of Occurrence**	**Significance**
Unmitigated	**H**	**H**	**L**	**H**	**H**	**H**
Significance of Consequence		Mitigations to reduce exposure to health and safety risks for personnel are imperative.				
Prevention		The removal of hazards or risks will possibly prevent accidents from occurring. However, it is not possible to remove all risks.				
Mitigation Action		It is not possible to prevent all incidents from occurring completely. An accident is an unplanned incident though it could have been foreseen if the necessary precautions had been taken. Not all hazards can be removed but the risk it presents can be lowered. An integrated health and safety management system acts as a monitoring tool and mitigating tool to reduce the risks. Typical mitigating measures within the health and safety management systems are:- ➢ Draw up operational procedure manuals				

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Provide health and safety awareness training
Establish practical standard housekeeping rules
Where applicable, colour code certain areas, equipment and substances to thereby classifying the risks.
Provide signage for personal protective equipment (e.g. protective clothing like safety boots and hard hats)
Institute safe working procedures and require permits to work
Devise and implement emergency response plans
Close coordination with the traffic authorities to ensure road safety signs are strategically placed and ensure all employee drivers are well trained
Provide easy access to Material Safety Data Sheets (MSDS)
Provide first aid treatment and training
Devise emergency medical procedures for all eventualities
Undertake daily safety reminders and/or drills
Establish regulations for handling fuel

The MSDS gives health related medical responses for personnel assisting staff who are exposed to the products, i.e. fuels, chemicals, etc.
Procedures for dealing with injuries or accidents must be in place and all contact details for emergency personnel must be available.
This list is not comprehensive and could be supplemented substantially by the Health & Safety Manager
</td></tr>
<tr><td>Mitigation</td><td>Severity</td><td>Duration</td><td>Spatial Scale</td><td>Consequence</td><td>Probability of Occurrence</td><td>Significance</td></tr>
<tr><td>Mitigated</td><td>L</td><td>L</td><td>L</td><td>L</td><td>L</td><td>L</td></tr>
<tr><td colspan="2">Significance of Consequence</td><td colspan="5">If all the mitigations listed are implemented, then the significance will be maintained at low.</td></tr>
<tr><td colspan="2">Confidence Level</td><td colspan="5">The EAP is quite confident that the mitigations will result in low significance. Continuous training of personnel is imperative.</td></tr>
<tr><td colspan="2">Monitoring</td><td colspan="5">
Planning:

A register of all incidents must be maintained on a daily basis. This should include measures taken to ensure that incidents do not repeat themselves.
An Emergency Response Plan should be developed.

Construction and Operations:

Monitoring reports on file
Non-compliances reported and on file
Operators certificates on file
Schedule of road maintenance on file
A register must be maintained of all training provided to staff.
A register must be maintained for all safety equipment and medical supplies kept on site. This should include date of purchase and date of service/replacement for items that can expire or deteriorate with age.
A register of all incidents must be maintained on a daily basis. This should include measures taken to ensure that incidents do not repeat themselves.
File any incident reports.
Include all monitoring information in the biannual environmental report.

Mine Closure:
At the time of mine closure and abandonment the contractor must rehabilitate the mine site to the state agreed upon at the start of the agreement. Comparisons with the baseline report drafted at the start of the relationship must be made.

Removal of contractor's movable assets i.e., plant equipment
Demolishment of contractor's fixed immovable assets

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</table>

	➢ Removal of this demolished plant and building rubble by **contractor** ➢ **contractor** to fence off dangerously deep pits or holes in the ground that poses a threat to the public safety ➢ In accordance with the rehabilitation plan the steep side slopes may need to be blasted to change angle of repose. The **proponent** is to fulfil the same rehabilitation tasks as above for all the accessory works area, including infrastructure, pits and holes etc.

Table 6. Visual Impact Management Programme

Impact Event		**Changes to the aesthetic appeal of the area due to presence of people, vehicles and machinery. Visible changes to habitats due to human activities.**				
Description		The experience of enjoying the landscape free of human activities is considered highly desirable. Intrusions into the current scenery may be unwelcomed. The mine site is remote and no main tourism routes pass through this valley. Residents within a 5 km radius are few. Impact on visual resources would be considered unfavourable if the landscape was significantly degraded or modified. The presence of mine personnel, vehicles and other equipment may reduce the aesthetic appeal of the area.				
Nature		Negative				
Phases		Phases during which traffic, infrastructure and dust plumes which potentially play a role in visual nuisances are highlighted below; Significance assessment was carried out on the operational phase which presents the long-term risk.				
Construction Phase		**Operational Phase**		**Decommissioning Phase**		**Post Closure**
		Ore haulage and possible blasting creating dust plumes		Dismantling infrastructure with cranes		Barren mountain slopes and quarry scarring
Additional traffic on the district road and mine access roads		Processing plant, ore haulage and blasting creating dust plumes		Denuded mountain slopes and open quarry not revegetated		
Dust plumes caused by mobile equipment operating at the mine		Bare slopes, waste rock dumps, topsoil stockpiles		Demolishing structures causing dust plumes		
Severity		Moderate / measurable deterioration. Recommended level will occasionally be violated. Widespread complaints. Noticeable loss of resources. It is a remote area off the main tourism route. Only 26 residents stay within 500m of the new processing area.				
Duration		Reversible over time. Life of the project. Medium term (Except for the quarries which will remain visible for the long term.				
Spatial Scale		Fairly widespread – Beyond the site boundary. Localised at best. Though this does depend on mobility of particles and prevailing weather conditions.				
Probability		Definite (in terms of dust plume creation from blasting) and continuous (in terms of the barren mountain slopes until revegetated during post closure)				
Mitigation	**Severity**	**Duration**	**Spatial Scale**	**Consequence**	**Probability of Occurrence**	**Significance**
Unmitigated	**M**	**M**	**M**	**M**	**M**	**M**
Significance of Consequence		The two aspects for visual impact are under consideration: ➢ Unless it is mitigated the generation of dust should have a moderate influence on the decision to carry out the activity or not. However, natural weather conditions can also create very dusty atmospheric conditions. The mining activities on site will contribute to local atmospheric dust levels and will potentially affect the visual experience of the people staying nearby. Those communities staying along the transport route are affected by other road users too, so this aspect is a cumulative impact. This latter aspect is considered a minor aspect and temporary in nature.				

	➢ The aesthetic changes to the landscape can be mitigated for all phases of the mining project. Alternatives have been considered which will reduce the visual impact of the mine on any who pass through the area.
Prevention	➢ Dust creation cannot be prevented completely. Water is normally used to suppress dust on the roads. Blasting will be intermittent, and the plume will dissipate fairly rapidly. ➢ The bare slopes cannot be avoided in the medium term and the quarries will be a permanent feature of the mining area. For operations to continue, personnel, vehicles and machinery will operate within the area for the duration of the project. It is not possible to operate and have no visual presence.
Mitigation Action	Best practice methodologies for operations will be employed. These may include the following: ➢ Existing roads and tracks are used to access the mine site. ➢ Dust suppression using water will most likely not be practical due to the non-sustainability of ground water usage. ➢ Product transport should either be containerised or at least installed with covers. ➢ Careful planning to avoid disturbing significant floral and faunal habitats when accessing the mining site ➢ Training personnel regarding the visible signs of faunal and floral biodiversity and the avoidance of habitat disturbance. ➢ Minimise the footprint of personnel, vehicles and machinery ➢ Rehabilitate habitats through the removal of obvious signs of human presence. ➢ Regular removal of waste on a daily basis and disposal of waste in the appropriate manner. ➢ Removal of machinery from the mining sites if periods of inactivity are prolonged. ➢ If lighting is required at night, lights need to be strictly controlled and fixtures should be low-glare lighting with downward facing directed beams (except for quarry walls) ➢ Constructed structures should have natural colours so that they can blend in with the surrounding environment. Often, the sites that are disturbed and rehabilitated at least from an aesthetic perspective will in time be recolonized by both plants and animals. The aim is to minimise the footprint so as to achieve the least impact due to anthropogenic influence. With respect to this the following has been considered: ➢ A reduction in the size or number of the WRDs. ➢ Location and design of WRDs to make them inobtrusive. ➢ Landscaping of quarry sites to reduce visual impact.

Mitigation	**Severity**	**Duration**	**Spatial Scale**	**Consequence**	**Probability of Occurrence**	**Significance**
Mitigated	**L**	**M**	**L**	**L**	**L**	**L**

Significance of Consequence	The dust suppression techniques if applied diligently and consistently will result in a medium significance visual impact for the residents in the immediate vicinity because dust from heavy traffic on the main dirt road will not be mitigated except by reducing travelling speeds. Additionally, the visual alteration of the mountain slopes cannot be mitigated until mine closure when at that time the quarry will remain a visual reminder of the once active mine.
Confidence Level	High, provided management implements the mitigation action and the company provides the necessary financial support to implement the changes required. A commitment to rehabilitating the denuded slopes and waste rock dump with the stockpiled topsoil will need to be done where practical and necessary.
Monitoring	**Planning:** Visual baseline in the form of a photo survey should be undertaken. **Construction:** ➢ Carry out audits and report findings.

	➢ Keep a visitors' log. ➢ Maintain existing access road. **Operation:** ➢ Visual baseline (2nd) in the form of a photo survey should be undertaken. ➢ Enforce strict rules on the use of lighting by personnel on site. **Decommissioning:** ➢ Requirements for restricting or prohibiting access to the abandoned mine are implemented and records on file. ➢ Final visual baseline (3rd) in the form of a photo survey should be undertaken. A visual audit can be done prior to closure so that a landscaping plan can be drawn up for incorporation into the closure plan.

Table 25. Land use Impacts

Impact Event		**Herders could potentially experience restrictions to their grazing areas**				
Description		The MCs are situated on land belonging to the government of Namibia granted to rural people in the form of communal land. The MCs fall within the Epupa Constituency but may be under the stewardship of the Vita Royal House Traditional Authority. The community has grazing rights to the area				
Nature		Negative				
Phases		Phases during which potential conflicts may apply are highlighted below; Significance assessment was carried out on the operational phase. Aspects where potential conflicts may arise are listed. However, the long-term presence of quarries pose a safety risk. This is included in the assessment.				
Construction Phase		**Operational Phase**		**Decommissioning Phase**	**Post Closure**	
Access to site		Access to site		Access to site	Access to site	
Access to groundwater resources / boreholes		Access to groundwater resources / boreholes		Access to groundwater resources / boreholes	Public safety	
Public safety		Public safety		Public safety	Alternative uses for pit	
Asset security		Asset security		Asset security		
Waste management		Waste management		Waste management		
Severity		Moderate / measurable deterioration (discomfort). Recommended level will occasionally be violated. Widespread complaints. Noticeable loss of resources. Herders' area for grazing will be reduced marginally. Public safety must prevail, and access must be temporarily prohibited during blasting.				
Duration		Reversible over time. Life of the project. Medium term (except quarry which is long term)				
Spatial Scale		Localised. Within accessory works area and 500m boundaries around the quarries.				
Probability		Definite / continuous				
Mitigation	**Severity**	**Duration**	**Spatial Scale**	**Consequence**	**Probability of Occurrence**	**Significance**
Unmitigated	**M**	**M**	**L**	**M**	**H**	**M**
Significance of Consequence		Mitigations to ensure no conflicts with landowners occur will be necessary.				
Prevention		It is not possible to prevent all conflicts. Any unforeseen issues will be mitigated through the various mechanisms stipulated in the EMP				
Mitigation Action		The EMA requires that permission be provided by the competent authorities for the listed activity. The EIA has facilitated a transparent process by which concerns were raised. The PPP has ensured that all stakeholders have been informed. The proponent is subservient to the conditions laid down by the guidelines / conditions and the law that upholds it. The implementation of the mining programme will be in accordance with the approved Environmental Management Plan (EMP)**.** The following mechanisms should be included in the environmental management system: ➢ Correspondence and agreements - document filing system ➢ Review memoranda of understanding annually ➢ Keep complaints register up to date ➢ Update stakeholder register regularly ➢ Engage land users regularly to maintain open channels of communication ➢ Fence off mining areas to increase public safety where necessary				

		Depending on the management approach and decisions to allow access to grazing during no blasting periods and land markers or fences restricting access for safety and security the footprint and impact on normal usage of the area could be kept to a minimum thereby keeping the spatial extent localised.				
Mitigation	**Severity**	**Duration**	**Spatial Scale**	**Consequence**	**Probability of Occurrence**	**Significance**
Mitigated	**L**	**M**	**L**	**L**	**L**	**L**
Significance of Consequence		Maintaining good relationships with landowners is imperative so that the severity and duration of disputes can be kept low. This will ensure the probability is low.				
Confidence Level		The EAP is confident that a well-designed and well implemented stakeholder engagement programme will cover the land use conflicts that could potentially arise.				
Monitoring		The following mechanisms should be included in the environmental management system as monitoring tools and performance indicators: ➢ Correspondence and agreements - document filing system ➢ Review any memoranda of understanding annually ➢ Keep complaints register up to date ➢ Update stakeholders register regularly ➢ Fence off mining areas to increase public safety				

Table 26. Socio-economic impact

Impact Event		**Positive aspect of sustaining employment in the sector.**				
Description		The proponent will contract mine workers to conduct the small-scale mining activities on site. In addition, a security team may also be employed during time of operations. The immediate (radius of 3km) surrounding area is only sporadically resided upon. Herders use the area for grazing their livestock. The negative social impact is deemed negligible and the positive aspects of the project on the economic benefits outweigh any negative aspects.				
Nature		Positive				
Phases		Phases during which mining activities may contribute to the local economy are highlighted below; The significance assessment was carried out on the operational phase which represents the longest term when benefits are greater.				
Construction Phase		**Operational Phase**		**Decommissioning Phase**	**Post Closure**	
Construction personnel		Operational personnel		Demolition personnel	No employment	
Security personnel		Security personnel		Security personnel		
Support services		Support services		Support services		
Severity		Substantial improvement. Will be within or better than the recommended level. Favourable publicity.				
Duration		Reversible over time. Life of the project. Medium term				
Spatial Scale		Fairly widespread – Beyond the site boundary. Local				
Probability		Possible/ frequent				
Mitigation	**Severity**	**Duration**	**Spatial Scale**	**Consequence**	**Probability of Occurrence**	**Significance**
Unmitigated	**M+**	**M+**	**M+**	**M+**	**M+**	**M+**
Significance of Consequence		A medium positive significance is expected.				
Prevention		Economic benefits could be prevented locally if no residents are employed and all materials and equipment is imported from other towns in the region and beyond. Actions that will prevent the positive impact of employment creation for this project would be the no-go alternative due to either a fatal flaw from socio-economic or biodiversity impacts being of high significance. Retrenchment of permanently employed can be avoided by diversifying the business options in the construction industry.				
Mitigation Action		Where possible personnel should be hired from the local resident pool. At least this should apply to the unskilled vacancies. The company could start social responsibility projects to uplift the areas health and educational needs.				
Mitigation	**Severity**	**Duration**	**Spatial Scale**	**Consequence**	**Probability of Occurrence**	**Significance**
Mitigated	**M+**	**M+**	**M+**	**M+**	**H+**	**M+**
Significance of Consequence		A medium positive significance is expected.				

Confidence Level	Provided local residents are hired then one can be more confident in achieving the medium significance. Through meaningful permanent employment economic development can be secured for all concerned.
Monitoring	Include the employee statistics in the annual audit showing long term trends. Company annual production report. Ensure upgraded skills of employees during employment at mine is documented and accredited where possible so that skills are recognised with future employers.

Table 27. Heritage Impacts

Impact Event	**Heritage related impacts.**			
Description	Kaokoland is a special place and it is recognised for its world heritage and for the people who continue to live off the land there. Any existence of graves and other such important heritage aspects within the MCs area could mean that specific areas within the MCs need to be kept pristine for further study. The mining claims area has no formally registered sites of national importance from a historical and pre-historic perspective. If any unknown sites were damaged in any way during project activities, it would be considered a heritage impact and depending on the importance of the site result in a great loss were it damaged by mining activities. See the **Appendix I** for the Heritage Survey carried out with the elders of the communities where important sites were identified and mapped. See **Appendix K** for the specialist Archaeology & Heritage Impact Assessment Report. Based on the Archaeological and Heritage Impact Assessment (AHIA) report for Mining Claim No. 75205, the potential impacts of mining on heritage aspects within the claim area are expected to be low. However, it's important to note the following points: 1. Surface scatter: The report mentions that a few areas were recorded to have surface scatter, which could potentially be impacted by mining activities. 2. Buried or unseen features: While no significant features were identified that required buffering or protection, the report emphasizes the possibility of buried or unseen cultural heritage sites that could be impacted. 3. Chance finds: The specialist report strongly advises the adoption of a Chance Find Procedure throughout the mining activities, indicating the potential for discovering previously unknown heritage resources during mining operations. 4. General disturbance: Any mining activity has the potential to disturb the landscape and potentially impact undiscovered archaeological or heritage resources. The report concludes that while no major heritage impacts were identified, caution should be exercised during mining activities. The overall impact is expected to be low			
Nature	Negative			
Phases	Phases during which the significance assessment was carried out is highlighted in green. It is the various personnel who could potential come across as yet to be documented find.			
Construction Phase	**Operational Phase**	**Decommissioning Phase**	**Post Closure**	
Construction personnel	Operational personnel			
Security personnel	Security personnel			
Residents	Residents			
Severity	Negligible (minor) is expected			
Duration	Not reversible over time. long term			
Spatial Scale	Localised to within the mining claims.			
Probability	Possible because no records known to proponent			

Mitigation	**Severity**	**Duration**	**Spatial Scale**	**Consequence**	**Probability of Occurrence**	**Significance**
Unmitigated	**H**	**H**	**L**	**H**	**L**	**M**

Significance of Consequence	A medium significance is expected should significant heritage sites or artifacts exist and no mitigations are implemented.

Prevention		Well trained staff who know what to look for during the construction and operation phases could prevent any destruction of important sites.				
Mitigation Action		This study indicates no existence of archaeological resources on site. A heritage survey only identified grave sites outside the MCs (See **Appendix I**). A follow up survey and specialist study was undertaken (See **Appendix K**). The following lists the mitigations to be implemented. Based on the AHIA report for Mining Claim No. 75205, the author provides the following mitigation measures: 1. Adopt and implement a Chance Find Procedure throughout the exploration activities. 2. Exercise caution during mining activities, as archaeological material may possibly surface from underground. 3. Focus and stick only to the targeted sites that will be selected for mining. 4. Comply with and adhere to the recommended mitigation measures put forth in Section 16.2 of the specialist report. 5. Implement the recommended mitigations as part of the general Environmental Management Plan (EMP). 6. Proceed with the project only after receiving approval from the National Heritage Council of Namibia. 7. Limit activities to the areas that have been surveyed and assessed in the specialist report. The specialist emphasizes that while no significant features requiring buffering or protection were identified, these general recommendations aim to protect any buried or unseen new features/cultural heritage sites that may be encountered during mining activities.				
Mitigation	**Severity**	**Duration**	**Spatial Scale**	**Consequence**	**Probability of Occurrence**	**Significance**
Mitigated	**L**	**H**	**L**	**M**	**L**	**L**
Significance of Consequence		A low significance is expected based on the findings of the specialist and if mitigation measures are fully implemented.				
Confidence Level		Provided all personnel are trained in the procedure of chance finds the destruction of anything important could be prevented.				
Monitoring		Permit from the Heritage Council is kept on file and the stipulations on the permit are followed. Carry out an audit of the procedures being followed and compliance to the EMP.				

Table 28. Waste Management Programme

Impact Event	**Waste Production**
Description	Waste is generated during the construction, operational and decommissioning phases of the mine's life. Waste can be classified into mineralised and non-mineralised waste. Non-mineralised waste can be classified as non-hazardous and hazardous waste. Medical waste is an additional category. 5. **Non-Hazardous non-Mineralised includes:** Metal cut offs, rubber, wood, product packaging, organic materials, glass, plastics, food scraps, cardboard/paper, used PPE, etc. 6. **Hazardous non-mineralised:** Printer cartridges, sewerage, batteries, hydrocarbons (oils, grease), fluorescent, etc. 7. **Medical waste:** Syringes, material with blood stains, bandages, etc. 8. **Mineral waste includes:** waste rock, tailings from mineral processing, rejects from beneficiation or concentration of other minerals, refinery or processing discards and sludges, smelter and other furnace slags, ashes, etc. (not all apply to this site but provided as examples)
Nature	Negative

Phases		Phases during which waste will be produced are highlighted below; Significance assessment was carried out on the operational phase which presents a long-term risk. Receptors potentially affected by waste are listed.				
Construction Phase		**Operational Phase**		**Decommissioning Phase**	**Post Closure**	
Company personnel health		Company personnel health		Company personnel health	General public health	
General public health		General public health		General public health	Groundwater	
Groundwater		Groundwater		Groundwater	Biodiversity	
Biodiversity		Biodiversity		Biodiversity	Soil	
Soil		Soil		Soil	Atmosphere - dust and other volatiles emitted from waste are covered under air quality impacts but there is some overlap with waste management risks	
Atmosphere		Atmosphere		Atmosphere		
Severity		Moderate / measurable deterioration (discomfort). Recommended level will occasionally be violated. Widespread complaints. Noticeable loss of resources.				
Duration		Reversible over time. Life of the project. Medium term				
Spatial Scale		Fairly widespread – Beyond the site boundary. Localised at best.				
Probability		Definite / continuous				
Mitigation	**Severity**	**Duration**	**Spatial Scale**	**Consequence**	**Probability of Occurrence**	**Significance**
Unmitigated	**M**	**M**	**M**	**M**	**H**	**M**
Significance of Consequence		The mining activities will generate waste. Preventative and Mitigating mechanisms are imperative.				
Prevention		Some waste products of categories 1-3 that can potentially impact the listed receptors can be managed to prevent impacts. Actions and company commitments that can prevent the impacts include the following: ➢ A waste management procedure should cover recycling, re-use, storage, handling, transportation, and disposal ➢ Collection and disposal of waste must be effective enough to not impact any of the receptors ➢ If waste must be stored and separated on site then the activities must take place on sealed surfaces, within bunds and fenced areas, and made ready for transport off-site by packaging the waste in sealed containers				
Mitigation Action		Where waste product impacts on the receptors cannot be prevented the preventative measures above should still be employed to mitigate or reduce the impacts. Mitigations for the various receptors include the following: ➢ Personal protection equipment (PPE) can protect personnel from exposure to disease or toxic chemicals ➢ Awareness training for company personnel and the general public will inform them of those wastes that may cause harm, pollute the soil, groundwater or air (if particulate) ➢ Some wastes are dangerous to fauna and flora; Animals should not be able to access the waste management area; waste must be contained so that it cannot enter the naturally vegetated areas beyond the accessory works area. ➢ Containerisation of highly volatile wastes should be actioned to reduce emissions but not so effectively that creates explosive risks if pressures build up. The latter may occur if the containers are stored outside in the heat of the sun.				

		A waste management programme as outlined in the EMP should keep records in the form of an inventory of waste products collected, sorted, stored, recycled, reused or disposed. Certificates for disposal of hazardous waste should be filed. The mineral waste (category 4 above) will most likely only be waste rock and process tailings that cannot be processed for product. This waste rock will be dumped or stockpiled on site or alongside the new processing plant and could be used in the rehabilitation during decommissioning phase. The health risks associated with the process tailings is discussed under the health impacts above. Sewerage created at the camp or management offices either needs to be deposited directly into approved and permitted French drains or removed offsite. If the latter is to be done then sealed sewerage tanks are required. The regulations under the Water Resource Management Act need to be consulted with regards to the erection of French drains near water courses. They cannot to be constructed within 100m of the banks of a water course. Storage of hazardous liquid waste must by law follow industry standards. These standards will be communicated in fuller details by the fuel supplier. Ideally, self bunded containers should be brought to site and placed upon sealed surfaces with waste collection sumps. Fuel collection should be carried out upon the same sealed surface with slopes for runoff into the sumps. At the mining claim itself a similar bunded surface must be constructed where fuel from a bowser can be transferred to the mobile plant. An oil water separator and wash bay could be constructed in conjunction with fuel dispensing to reduce costs and the concretised footprint. Regardless of this the oil water separator is a requirement to ensure hydrocarbons do not enter the environment indiscriminately. The mobile plant workshop also needs to be constructed on a sealed surface and have liquid waste sumps so that spills can be collected and removed from site on a regular basis. A sealed waste oil contain should be constructed at the vehicle workshop. Regular removal of oil to recyclers is advised. All hazardous liquid waste should be stored on sealed surfaces.					
Rehabilitation		If the mitigation hierarchy is followed, rehabilitation may or may not be required. Should an accident occur during the process of collection, storage or disposal of waste and no mitigation be actioned then one of the receptors may be impacted. Consequently, the following examples of rehabilitation may be required: ➢ A person who is exposed to disease (bacteria from organic waste) or toxic waste (mineral or non-mineral), which results in harm, will need medical attention ➢ Soil which is contaminated by used hydrocarbons needs to be relocated to a remediation cell where the material after treatment, i.e. the addition of fertiliser, air and water will within a year be suitable for re-use. ➢ In the event of groundwater contamination by chemicals or hydrocarbons, the sinking of a borehole or the excavation of a pit in the vicinity of the contaminate source will allow the pumping of the groundwater into a holding dam. Through the continued pumping a cone of depression will draw the contaminated water towards the pump. The collected contaminated water can be discarded at a registered hazardous waste site or if separable the contaminant can be removed from the water before disposal. The reclaimed water could be pumped back in the pit or borehole.					
Mitigation	**Severity**	**Duration**	**Spatial Scale**	**Consequence**	**Probability of Occurrence**	**Significance**	
Mitigated	**L**	**M**	**L**	**L**	**L**	**L**	
Significance of Consequence		If the mitigation hierarchy is followed through to rehabilitation, then the resultant consequence could be insignificant.					
Confidence Level		A well designed and well implemented waste management programme will provide the necessary confidence that the risks to receptors will be of low significance.					
Monitoring		**Planning:** ➢ Waste Management Plan on file.					

	➢ Accessory works application submitted and receipt kept on file. ➢ Accessory works plan on file. ➢ Application for effluent discharge submitted to competent authority and receipt on file. ➢ Maintenance plan on file. **Construction:** ➢ Monitor compliance and file report. ➢ Hazardous waste certificate from hazardous waste dump on file. **Operations:** **Monitoring:** ➢ **Regular** inspection of waste collection and disposal areas. ➢ Check and file waste disposal slips. ➢ Compile all monitoring information in an **annual** report and audit this report against the waste management plan. ➢ Emergency Response Plan on file. ➢ Hazardous waste disposal certificate on file. ➢ Monitor maintenance workshop and wash bays for compliance and file reports. **Performance Indicators:** ➢ Availability of plan ➢ Extent to which plan is complied with ➢ Presence of litter within the area and surrounding land ➢ Availability of rubbish bins and skips ➢ Total volume of general and hazardous waste storage capacity ➢ Total volume of general and hazardous waste stored on site ➢ Degree to which different waste is separated ➢ Frequency of waste collection **Decommissioning:** Monitor compliance and report on file.

Table 29. Ecological & Biodiversity Management Programme

Impact Event	**Mining activities may affect biodiversity of fauna and flora directly or through habitat alteration.**
Description	Through mining in general there is potential for impacting the diversity of species within the various habitats by reducing population numbers of certain species. Pressures on the population numbers can potentially lead to a reduction of a population within an area causing the species to no longer exist within that area. Should a species be endemic to that same area then the risk of extinction is high. Habitats can be severely altered potentially changing the type of habitat or leading to the removal of micro habitats. No specialist fauna and flora studies have been commissioned for the MCs. Site visits, species lists for the area and reference to other studies carried out nearby and elsewhere reveal that the habitats, fauna and flora present in the area are not endemic to claims and accessory works area specifically but are either common or potentially rare throughout the Kunene Region The assessment considered all project activities and how these could potentially impact the various habitats. **Fauna:** A key habitat in the larger woodland mosaic is the rocky outcrops habitat. The physical diversity of the hills and rocky ridges leads to a higher and more specialised biodiversity than the surrounding Mopane woodland, and it supports many species that would otherwise not be present. Seeing as mineral-bearing ore is located almost exclusively in the rocky ridges, restoration of this habitat after mining operations will not be possible to any meaningful extent. Destruction of organisms and habitats and alteration of topography both have high unmitigated significance, but potentially decrease to medium significance through the application of management measures if those are carried out effectively. The cumulative nature of mining activities in the Kunene Region and in the Kaokoveld Centre of Endemism, the irreversible damage to the rocky outcrops (as the most sensitive, ecologically valuable habitat) and the persistence of the excavations after the lifespan of the mine, are three factors that decrease the likelihood of these impacts being mitigated to low significance. However, the strict implementation of mitigation measures and restoration plan can improve the situation significantly for other habitats and aspects such as the accessory works, infrastructure and any staff accommodation areas. **Fauna:** **H. Potential destruction of habitats and organisms** could take place during construction and operations, construction and use of roads by vehicles and machinery, clearing of land, building of infrastructure, within laydown areas, around water tanks, at accommodation, around human activities, during blasting and earthmoving, around vehicle movements, and the operation of machinery. A ccumulative impact of mining in the Kunene Region, especially on ecologically valuable rocky ridges and outcrops as follows: ➢ Death of animals that are struck by earthmoving equipment, vehicles and machinery. Protected and at-risk species such as bat-eared fox, Cape fox, aardwolf and brown hyena are vulnerable to roadkill. ➢ Death of animals due to poaching. ➢ Raptors, bustards and migrating birds are vulnerable to power line impacts such as collision and electrocution. ➢ Bird nests, nesting habitats and feeding habitats are destroyed, affecting the viability of bird populations. ➢ Mammal and reptile burrows, burrow habitats and feeding habitats are destroyed, affecting the viability of the populations of these taxa.

- Parts of territories and home ranges are destroyed.
- Loss of plants and decline in habitat quality.
- Dust causes a decline in air quality and creates conditions for health decline in plants and animals.
- Noise disturbs animals and causes increase in stress.

I. Potential disturbance of animals and interference with their behaviour during operations, when infrastructure and roads form obstacles to the directional movement of animals, when an increase in human and vehicle presence and movement results from mining activities, as a result of loud noises caused by blasting and the operation of heavy machinery. The potential impact could be as follows:

- Larger mammals and birds are the taxa most likely to be affected.
- The loss of migration corridors causes stress and an increased risk of death to various taxa.
- Birds and eggs could be poached.
- Animals, particularly birds, are disturbed while going about their daily activities, such as feeding, roosting and breeding.
- Dust creates conditions for health decline in plants and animals, and an increase in stress for animals.
- Noise disturbs the normal behaviour of animals, specifically mammals.

J. Potential light pollution as result of light sources that are visible outdoors in the accessory works area and in the mining area. This can impact in the following ways:

- Invertebrates that are attracted to the light provide an unnatural food source for taxa such as bats, geckos, nightjars and frogs. These insectivores are attracted to the food and then face conditions where they are more likely to die from causes such as collisions and predation.
- Invertebrates could die every night from exhaustion or predation, potentially disrupting their population numbers and causing disturbances in ecological processes.

K. Alteration of topography during construction and operational phases can occur because of excavation of the ore bodies leaving a deep, open pit or several smaller quarries on the mountain. The processing plant and waste stockpiles will create large heaps of material on the surface of the landscape. This cumulative (for mining in the Kunene Region) impact acts on the level of ecosystems and could result in the following:

- Irreversible alteration of the ecologically valuable rocky outcrops.
- This impact may affect ecosystem functioning.
- Direct destruction of habitat and organisms (see A above).
- Fragmentation of habitat, leading to the loss of migration corridors for various taxa, in turn resulting in the loss of individual organisms and potentially populations.

L. Groundwater drawdown - Abstraction of water for drilling, mining, ore processing and human consumption:

- River vegetation is dependent on groundwater to some extent..

M. Contamination of soil and water - Chemicals used in the processing of ore, e.g. radioactive thorium, escape containment and contaminate the soil, surface and groundwater

- Chemicals leach into soil, causing contamination of soil and eventually groundwater.
- Effects of chemicals are cumulative and build up in groundwater over time.
- Once in the groundwater, there is the potential for contamination to spread beyond site boundaries. The Kunene River is an internationally important ecological feature that could potentially be directly affected.
- Birds, mammals and reptiles are attracted by an unnatural source of water (open water body) and either drown or ingest contaminated water.

N. Impacts associated with accommodation of staff – During construction, operational and closure phases, vehicles can cause death of organisms, staff could be involved in poaching and plant collection, cooking and lighting practices cause fires, water use in an arid zone

	with few resources, poor sewerage practices and from cooking and cleaning cause oil spillage. ➢ Direct destruction of organisms and habitat. ➢ Oil spills and sewerage contaminate soil and water. ➢ Fires destroy habitats and cause death of animals. **Flora:** **Flora:** The habitats and flora are either common throughout the Kaokoland and if restricted in distribution or to micro habitats, they do occur outside the planned mining areas. The following potential aspects were assessed: C. Mining activities may affect the ecology of the flora directly through **habitat alteration or destruction** within the planned mining claims and accessory works area: Cumulative impact: mining in Kunene Region, especially on ecologically valuable rocky ridges and outcrops. Loss of plants and decline in habitat quality. Dust causes a decline in air quality and creates conditions for health decline in plants and animals. D. **Alteration of topography –** the sources of the impact during the construction and operational phases are from excavation of the orebodies that leave deep open pits caused by drilling, blasting and open cast mining and the use of equipment such as excavators, compressor driven drill rigs and cutting machines. The processing plant and mineral waste is deposited on the cleared ground. ➢ This is a cumulative impact of mining in the Kunene Region. ➢ Irreversible alteration of the ecologically valuable rocky ridges. ➢ This impact may affect ecosystems. ➢ Direct destruction of plants and habitat. ➢ Fragmentation of habitat, leading to the disruption or loss of colonisation pathways for seed dispersal, in turn resulting in the loss of individual organisms and potentially populations..
Nature	Negative
Phases	Phases during which mining activities may impact the ecology and biodiversity through habitat alteration or destruction are highlighted below; The significance assessment was carried out on both the construction and operational phases.

Construction Phase	**Operational Phase**	**Decommissioning Phase**	**Post Closure**
Flora	Flora	Flora	Flora
Fauna	Fauna	Fauna	Fauna
Habitat	Habitat	Habitat	Habitat
Species diversity	Species diversity	Species diversity	Species diversity

Severity	Moderate / measurable deterioration. Noticeable loss of resources.
Duration	Permanent, beyond closure, long term.
Spatial Scale	Localised - Within the site boundary for flora but beyond the site boundary for fauna
Probability	Possible/frequent

Unmitigated	**Severity**	**Duration**	**Spatial Scale**	**Consequence**	**Probability of Occurrence**	**Significance**
Fauna - A. Potential destruction of habitats and organisms						
Fauna A.	**M**	**M**	**L**	**M**	**M**	**M**

Fauna – B. Potential disturbance of animals and interference with their behaviour						
Fauna B.	**M**	**M**	**L**	**M**	**H**	**M**
Fauna – C. Potential light pollution as result of light sources						
Fauna C.	**M**	**M**	**L**	**M**	**H**	**M**
Fauna - D. Alteration of topography						
Fauna D.	**M**	**H**	**M**	**H**	**H**	**H**
Fauna - E. Groundwater drawdown						
Fauna E.	**M**	**M**	**M**	**M**	**M**	**M**
Fauna - F. Contamination of soil and water						
Fauna F.	**M**	**H**	**M**	**H**	**M**	**M**
Fauna - G. Impacts associated with the accommodation of staff						
Fauna G.	**M**	**M**	**M**	**M**	**M**	**M**
Flora – A. Destruction of plant and habitats						
Flora A.	**H**	**H**	**L**	**H**	**H**	**H**
Flora – B. Alteration of Topography						
Flora B.	**M**	**H**	**M**	**H**	**H**	**H**

Significance of Consequence	The mining activities will alter the habitats that previously existed. Soil and flora will be removed. Some fauna will relocate and compete for resources in adjacent habitats, but many will be destroyed and/or affected negatively. Dust and lighting will also impact ecosystem. Mitigating & rehabilitation mechanisms are imperative
Prevention	Not possible as at least many specimens of the most common flora taxa found in the district will be removed during construction activities and quarry creation.
Mitigation Action	***Fauna:*** **H. Destruction of organisms and their habitats:** ➢ Keep the overall development footprint as small as possible. ➢ The extent and location of the construction site should be fenced and all construction activities should take place within the fence. Adherence should be strictly enforced. ➢ The location of roads, pipelines and power lines must be planned to minimise fragmentation or disturbance of habitats. ➢ Anti-erosion measures must be taken where roads and tracks cross a wash or drainage. ➢ Carefully plan the placement of stockpiling construction material so as to avoid sensitive areas. ➢ Limit construction activities to daytime hours to reduce noise. ➢ Educate construction and permanent staff as to their environmental obligations. All contractors should be held responsible for transgressions and significant penalties should be levied in order to ensure compliance. ➢ Position temporary construction infrastructure (e.g. accommodation) in areas that will definitely be disturbed during operations. ➢ Erect linear structures (power lines, water pipelines) as close as possible to existing roads and tracks. Maintenance roads/tracks for linear structures should be built as close as possible to the structure and access should be limited to essential maintenance. ➢ Do not put water tanks, power pylons or any other large infrastructure in the river or washes.

	➢ No sewerage overflow or French drain may be placed within 100 m of a wash or river. ➢ A vertebrate specialist should identify nests, dens and other breeding locations and demarcate them before construction so that these sites can be avoided as part of the EMP. ➢ Reptiles and amphibians that are exposed during ground clearing should be captured for translocation by a qualified expert. ➢ No collection of plants should be allowed. No fires should be allowed. ➢ A comprehensive restoration plan should be drawn up by an expert BEFORE construction commences, at least at conceptual level, and should make provision for monitoring and adaptive management as the project develops. Some rehabilitation actions should be implemented during operations in order to be effective, e.g. removal and location of topsoil; location of waste rock dumps to ensure efficient restoration later; road and pipeline locations. **I. Disturbance of animals and interference with their behaviour**: ➢ The extent of the operation should be clearly demarcated on site layout plans and fenced in. The nature of a fence would be informative rather than restrictive – it is to make the boundaries of the area of operations clear to staff, visitors and contractors, and to effectively control access to undeveloped areas. ➢ Areas surrounding the mine and accessory works that are not part of the demarcated development should be considered a no-development zone. ➢ No employees, visitors or machinery should be allowed in such a zone. ➢ No off-road driving should be allowed. ➢ Limit activities to day-time hours so as to reduce noise. ➢ Only controlled and contained fires should be allowed for cooking and heating purposes. Only wood collected during the clearing of areas during the construction phase should be used for firewood. ➢ The significance of this impact is somewhat decreased by the fact that human presence and human-caused disturbance in the region is already interfering with the presence and movement of many taxa, particularly large mammals. ➢ Staff and contractors should be trained in sensitive human-wildlife interaction. **J. Light Pollution**: Not much is known about the effect of light on populations and ecosystems and the precautionary principle is applied here. ➢ Install motion detectors to limit light use to the minimum possible. ➢ Outdoor lights should be directed downwards and not up into the sky. ➢ Use yellow or amber outdoor lights because invertebrates don't detect yellow light as well as white. ➢ Install insect screens in doors and windows located in buildings that are used at night. **K. Alteration of Topography**: ➢ It may not be possible to rehabilitate the site significantly, but a comprehensive restoration plan would mitigate impacts to some extent. ➢ A comprehensive restoration plan with financial mechanisms for implementation should be drawn up by an expert during the construction phase. It is possible that some mitigation measures and rehabilitation actions should be implemented during operations in order to be effective; therefore, a restoration plan should be in place at the start of operations. ➢ Implement the restoration programme as soon as possible after the impact has ceased. **L. Groundwater drawdown:** ➢ Monitor groundwater levels. ➢ Monitor plant and vertebrate diversity downriver from the abstraction site at a minimum of once a year. **M. Contamination of Soil and Water**:

- Containment measures should be strictly enforced to the highest existing standards. Open water structures should be sealed and provide no opportunity for either leakage or entry by animals.
- Constant monitoring of open bodies of water and their associated pipes, lining and covers is essential to ens.ure that there is no malfunction, tear or opening.
- Treatment of the final discharge of water should be in such a way as to eliminate any possibility of active chemicals entering the soil or groundwater.

N. Impacts linked to accommodation of staff

- All inhabitants and visitors in the staff compound should receive environmental awareness training, including training on indiscriminate defecation.
- The staff compound should be fenced in and the only access allowed outside the fence is on the entrance road.
- All cleaning and washing should take place inside a designated area (e.g. kitchen, laundry) and fat traps should be installed at the drain outlet from these areas.
- No collection of plants or plant material should be allowed.
- No open fires or flames should be allowed in the staff compound.
- Gas cooking facilities should be provided.
- Lights should be solar, or generator powered - no candles or paraffin lamps.
- Firefighting equipment should be placed in the compound. Equipment should always be tested regularly and be in working condition. All inhabitants of the compound should be trained in the use of this equipment and know where it is.
- Water saving measures should be put in place, e.g. low-pressure shower heads and taps; daily checks of pipes and tanks; immediate repair of leaks.
- Sewerage should be of sufficient capacity for the number of people, and should be a sealed breakdown system.
- No sewerage overflow structure or French drain may be placed within 100 m of a wash, drainage line or river.

Flora::

A. Habitat alteration and destruction - The spatial extent of the infrastructure should be planned to keep it as small as possible. Then when clearing areas, where possible, do not fell the larger and older trees as they act as seed (genetic stock) sources.

Roads, pipelines and power lines must be planned in order to minimise fragmentation or disturbance of habitats

The following most important mitigations should be implemented:

- Do not put water tanks, power pylons or any other large infrastructure in the river or washes.
- Position temporary construction infrastructure (e.g. accommodation) in areas that will definitely be disturbed during operations.
- Erect linear structures (power lines, water pipelines) as close as possible to existing roads and tracks.
- Carefully plan the placement of stockpiling construction material so as to avoid sensitive areas.

Awareness training for management & other personnel must focus on:

- Training of all personnel to limit the habitat alteration during the construction and operational phases of the mine
- Teach knowledge and understanding of the flora and its ecology

The following basic rules must be adhered too:

- No littering
- Driving only on existing roads (roads created by the mine inside the mining areas.
- Firewood should come from trees that were felled within the cleared areas and no additional clearing for firewood should occur.

	➢ A restoration plan should be drawn up by an expert BEFORE operations commences, at least at conceptual level before construction starts, and should make provision for monitoring and adaptive management as the project develops. ➢ Some rehabilitation actions should be implemented during operations to be effective, e.g. removal and location of topsoil; location of waste rock dumps to ensure efficient restoration later; road and pipeline locations. **B. Alteration of Topography** ➢ It may not be possible to rehabilitate the mining sites significantly, but a comprehensive restoration plan would mitigate impacts to some extent. ➢ A restoration plan should be drawn up by an expert BEFORE operation commences. ➢ Implement the restoration programme as soon as possible after the impact has ceased.
Rehabilitation	Rehabilitation at mine closure should be applied to the accessory works areas as defined in the project description in this flora assessment. The waste rock dump should be constructed in such a way that fits in with the surrounding physical features and so that water infiltration is maximised, and erosion minimised. These latter points will allow for natural regrowth of the vegetation on the waste rock dump. The following aspects should be considered when finalising the mine closure plan: ➢ The infrastructure removal and landscaping of the accessory works area to match as far as possible the baseline conditions. ➢ Funds for rehabilitation should be set aside from the start of the operational phase. A mechanism for securing these funds should be in place during the construction phase. ➢ Reasonable and acceptable ways of rehabilitation should be implemented on an ongoing basis as well as at the time of site closure. ➢ Where the ground has been affected by spillages such hydrocarbons, these soils should be stockpiled and appropriately treated to regulate the contamination levels prior to being used for rehabilitation purposes.

Mitigated	Severity	Duration	Spatial Scale	Consequence	Probability of Occurrence	Significance
Fauna A.	**M**	**M**	**L**	**M**	**M**	**M**
Fauna B.	**L**	**L**	**L**	**L**	**L**	**L**
Fauna C.	**L**	**M**	**L**	**L**	**M**	**L**
Fauna D.	**M**	**M**	**L**	**M**	**M**	**M**
Fauna E.	**L**	**M**	**M**	**L**	**L**	**L**
Fauna F.	**L**	**L**	**L**	**L**	**L**	**L**
Fauna G.	**L**	**L**	**L**	**L**	**L**	**L**
Flora A.	**M**	**M**	**L**	**M**	**M**	**M**
Flora B.	**M**	**M**	**L**	**M**	**M**	**M**

Significance of Consequence	If the mitigation hierarchy is followed through to rehabilitation then the resultant consequence could be insignificant overall.
Confidence Level	A well designed and well implemented rehabilitation programme will provide the necessary confidence that the altered habitats could be rehabilitated at mine closure to a degree that the final footprint of the mine will be acceptable. Provided the waste rock dump is covered with the stockpiled topsoil at mine closure, natural revegetation of this area could occur in the long term.
Monitoring	**Planning:** ➢ Bush clearing permit must be applied for prior to clearing of any areas. ➢ Environmental Clearance Certificate is on file

	➢ Schedule for developing EMS documentation is on file. ➢ Visual baseline imagery to indicate which plant species preferred which habitats. ➢ Train personnel regarding the impact on the surrounding habitats. ➢ Plan mine layout to reduce the footprint size and thereby conserve more biodiversity **Construction & Operation:** ➢ Monitor compliance and file report. ➢ Mine closure plan to be developed and put on file. ➢ Rehabilitation of cleared areas to be planned and put on file. (use baseline imagery for planning) **Decommissioning:** ➢ Monitor compliance and file report.

Table 30. Water Resource Management Programme: a. sustainable water use

Impact Event	**Mining activities may affect water resources through over utilisation**					
Description	Water will be needed for drinking, and personnel ablutions and may be needed for drilling operations. It is suggested that amounts of water can be sourced from Opuwo or from one of the surrounding neighbours and then be trucked to the site, as there is no existing infrastructure on site for the water utility company, this is the preferred option. If for any reason more water is required then the proponent suggests abstraction of water from the river or ground water, which can be done at minimal extraction cost, a borehole can be sunk to augment supply volumes. The feasibility of each option must be weighed up. This depends largely on the supply capabilities of the source and the demand of the project. Water is a scarce resource and needs to be used sustainably. Groundwater reserves should not be depleted below an acceptable level if boreholes are used..					
Nature	Negative					
Phases	Phases during which mining activities may impact the water resources are highlighted below.					
Construction Phase	**Operational Phase**	**Decommissioning Phase**	**Post Closure**			
Surface water (ephemeral rivers)	Surface water (ephemeral rivers)	Surface water (ephemeral rivers)	With ceasing of abstraction, water level in the aquifer will be restored with time.			
Groundwater (via borehole abstraction)	Groundwater (via borehole abstraction)	Groundwater (via borehole abstraction)				
Severity	Recommended water level could often be violated. Interruption of supply to mine and community.					
Duration	Reversible over time.					
Spatial Scale	Fairly widespread – groundwater and surface water can potentially convey impacts beyond the boundary of the MCs.					
Probability	Definite / continuous					
Mitigation	**Severity**	**Duration**	**Spatial Scale**	**Consequence**	**Probability of Occurrence**	**Significance**
Unmitigated	**H**	**M**	**M**	**M**	**H**	**H**
Significance of Consequence	A high significance is expected if no mitigation measures are implemented.					
Prevention	Alternative water sources to be developed such as direct intake from the Kunene River or aquifer in the bank of the Kunene River are sustainable sources. Monitoring of groundwater level and water quality should serve as early warning of overexploitation of groundwater.					
Mitigation Action	With regards water abstraction from boreholes, a continuous monitoring programme for water abstraction is required so as to manage the water level fluctuations sustainably. Abstraction must be stopped if the sustainable use cannot be maintained.					
Mitigation	**Severity**	**Duration**	**Spatial Scale**	**Consequence**	**Probability of Occurrence**	**Significance**
Mitigated	**M**	**M**	**L**	**M**	**L**	**L**
Significance of Consequence	If the mitigation hierarchy is followed through to rehabilitation, then the resultant consequence could be insignificant. Groundwater levels will be restored with natural recharge over time.					
Confidence Level	The restoration of any impact of abstraction of groundwater is dependent on groundwater replenishment by river flow. Arid region river flow and recharge is episodic and not often predictable. Continuous monitoring will provide feedback on the restoration of conditions of the water resource.					
Monitoring	Monitor groundwater level, gauge river level, rainfall, and abstraction daily.					

	Groundwater levels monitoring is recommended for any existing and proposed new boreholes. Water levels are to be measured continuously, preferably by using pressure transducers. Overall the water balance of the mine and associated operations is to be monitored particularly on the following main components: ➢ Water disposal in tailings ➢ Recovered water and decrease in recovered water volumes ➢ Intake of freshwater to the mine and plant form the water supply wellfield ➢ Increase or decrease of outflow to the evaporation dam **Planning:** ➢ Water Management Plan on file ➢ Application for effluent discharge submitted to competent authority and receipt on file ➢ Water abstraction permit on file ➢ Keep water abstraction permit and effluent discharge permit on file **Construction & Operations:** ➢ Monitor compliance and file report ➢ All certificates for hazardous waste disposal filed. ➢ Checklists and schedule for auditing compliance to the EMP are filed. ➢ Reports are filed. ➢ Awareness training attendance lists signed and filed ➢ Monitor oil water separators, oil sumps, bunds and assess compliance and file reports. ➢ Monitor water use and report on file. **Decommissioning:** Monitor rehabilitation and report on file.

Table 31 Water resource quality management: b. contamination

Impact Event	Mining activities may affect water resources through contamination					
Description	The containment effluents and runoff from the tailings and waste rock dumps, particularly in the rainy season is of concern. Water diversion structures and a containment dam for the run-off and seepage need to be constructed with design capacity of the diversion and containment dam adequate for handling large rainfall events as experienced in this area. Potential impacts are as follows: ➢ Leaching of contaminants and erosion of material from the TSF and waste rock dumps into surface water channels by discarded process water and rain events are of high intensity. The leachate from the TSF and mine waste is however likely to be alkaline thus limiting the mobility of metals. ➢ Erosion of material and mobilisation of precipitates and fines is possible. ➢ Wastewater disposal reaching natural drainage					
Nature	Negative					
Phases	Phases during which mining activities may impact the water resources are highlighted below.					
Construction Phase	**Operational Phase**	**Decommissioning Phase**	**Post Closure**			
Surface water (ephemeral rivers)	Surface water (ephemeral rivers)	Surface water (ephemeral rivers)	The waste rock dump and TSF will remain exposed to risk of erosion and mobilisation into surface water channels. Wastewater disposal will cease.			
Eroded material and fines reaching the alluvial aquifer during severe rainfall events.	Eroded material and fines reaching the alluvial aquifer during severe rainfall events.	Eroded material and fines reaching the alluvial aquifer during severe rainfall events.				
Severity	The mobilisation of material from the TSF and waste rock dump into natural water channels is possible. The area experiences high intensity rainfall following extended dry periods that can mobilise sediments and material.					
Duration	The duration of the impact will continue through the development, operational and after closure of the mine.					
Spatial Scale	Fairly widespread, in the mine site and neighbouring village.					
Probability	Possible / continuous					
Mitigation	**Severity**	**Duration**	**Spatial Scale**	**Consequence**	**Probability of Occurrence**	**Significance**
Unmitigated	**M**	**H**	**M**	**H**	**M**	**H**
Significance of Consequence	A high significance is expected if no mitigation measures are implemented.					
Prevention	Reclaim of process water and reuse to limit the amount of water used. Design, construction and maintenance of TSF and waste rock dumps to prevent erosion.					
Mitigation Action	Measures to mitigate contamination of the soils, surface water and groundwater are as follows: ➢ Construction of a containment dam downstream of the processing plant, TSF, waste rock dump and other stockpiles. ➢ Evaporation of contained water that is not reused. ➢ Maintain water balance as a check on any significant water leakage from the operation. ➢ Regular inspection of TSF and WRDs. ➢ During the operation of the mine, the sediment material accumulated in the containment dam should be moved to the tailings at regular intervals so that the maximum capacity of the dam is retained and the risk of mobilising the material downstream is reduced.					
Decommissioning & Rehabilitation	Upon closure of the mine, the surface of the TSF should be graded to avoid ponding and encourage surface runoff thus limiting infiltration. Placement of a low permeability seal on the TSF is the preferred					

	measure to avoid infiltration and salt accumulation in accordance with best practice measures proposed by the British Columbia Acid Mine Drainage Task Force (1989). For establishing such top seal, a large quantity of clay rich material would be required which may not be available locally. Alternatively, other material of good compatibility or low permeability such as compacted calcrete can be used. On closure the pits should be cordoned off with berms to avoid and prevent access to the sites by animals and humans.					
Mitigation	**Severity**	**Duration**	**Spatial Scale**	**Consequence**	**Probability of Occurrence**	**Significance**
Mitigated	**M**	**L**	**L**	**M**	**L**	**L**
Significance of Consequence	The possibility of wastewater, leachate and eroded material reaching the natural river channels is significantly reduced by the construction of a containment dam. The overall risk of leaching of metals will be low due to the alkaline nature of the tailings.					
Confidence Level	Continuous monitoring and implementation of mitigation measures will significantly reduce the probability of waste material reaching the downstream natural drainage channels.					
Monitoring	Monitor field water quality parameters of downstream aquifer, seepage (TSF, waste dumps, containment dam); quarterly sampling and analyses The following recommendations are made for the water quality monitoring. ➢ Water quality monitoring will include the following well head parameters for all water points. Well head chemistry parameters would include pH, EC, temperature, and alkalinity. Monitoring will be carried out in-house at one-month intervals. ➢ The above parameters will be monitored also on the ponding on the storage /evaporation dam and outflow, if any, from the tailings and waste rock dumps. ➢ Reassessment of sampling parameters and frequency of the sampling is recommended after 1 year of operation.					

Table 32. Traffic Management Programme

Impact Event		**Transporting bulk product by trucks along national roads**				
Description		The potential impacts of the haulage of bulk product can be categorised in terms of public safety and capacity of the road to handle 67 tonne vehicles. For public safety the Proponent or contractor must abide by the rules and regulations that are enforced by the Roads Authority. The vehicles need to be routinely checked for road worthiness and the containment of the goods needs to be such that no harm may come to the public and other road users during the transit from the mine to the Port of Walvis Bay. No product may be strewn along the roadside as part of the normal transit. Covers over bulk transporters must be adequate at all times. Drivers must follow the rules of the road at all times. Additionally, the route provides for adequate visibility on hills and turns and that the road will be safe for two-way traffic at all times except where single traffic bridges exist. The capacity of the whole road should be such that the surface is not damaged beyond the normal wear as a result of the load and that the bridges to be crossed have the integrity to handle multiple crossings at the frequency expected. A route might need to be altered should a bridge not be sufficiently strong to handle the loaded vehicle. Additionally, the frequency of trucks per day is such that it does not exceed the threshold that was originally designed for the route.				
Nature		Negative				
Phases		Significance assessment was carried out on the operational phase which represents the period the road, road users and the general public are exposed to the hazard.				
Construction Phase		**Operational Phase**		**Decommissioning Phase**		**Post Closure**
		Public safety – pedestrians and road users Road design – surface integrity and bridge strength Regulations – mass of vehicles when fully laden and permits				
Severity		Moderate / measurable deterioration. Noticeable loss of resources.				
Duration		Medium term. Life of Mine.				
Spatial Scale		Widespread – Far beyond site boundary. National				
Probability		Possible/ frequent				
Mitigation	**Severity**	**Duration**	**Spatial Scale**	**Consequence**	**Probability of Occurrence**	**Significance**
Unmitigated	**M**	**M**	**H**	**H**	**M**	**H**
Significance of Consequence		Mitigations to reduce risks to Public Safety are imperative.				
Prevention		The removal of all hazards will not be possible.				
Mitigation Action		As far as public safety is concerned it is not possible to prevent all incidents from occurring completely but the probability can be reduced if the following aspects are considered:- ➢ Draw up operational procedure manual ➢ Provide road safety awareness training ➢ Establish specific rules for driving including travelling speed and rest times. ➢ Devise and implement emergency response plans				

		➢ Close coordination with the traffic authorities to ensure road safety signs are strategically placed and ensure all employee drivers are well trained ➢ Provide easy access to Material Safety Data Sheets (MSDS) for drivers ➢ Provide first aid training ➢ Devise emergency medical procedures for all eventualities ➢ Undertake daily safety reminders and/or drills ➢ Establish regulations for handling fuel ➢ Establish and implement measures to exclude discharge of minerals particulates during travel As far as capacity is concerned the frequency and of trucks must be maintained at the stated daily rate and there should be at least 2 km travelling distance between trucks. Only one truck should travel over a bridge at any one time. Avoidance of travelling during peak times on busy sections of road should be practiced.				
Mitigation	**Severity**	**Duration**	**Spatial Scale**	**Consequence**	**Probability of Occurrence**	**Significance**
Mitigated	**M**	**M**	**H**	**M**	**L**	**M**
Significance of Consequence		If all the mitigations listed are implemented then the significance will be maintained at medium.				
Confidence Level		The significance would be lower had the spatial extent not been over such a long stretch of road.				
Monitoring		A complaints register should be opened and maintained. All necessary permits should be on file and maintained in accordance with the required renewal periods.				

Table 33. Mine Closure & Rehabilitation Management Programme

Impact Event		**Abandonment of the mining site potentially exposes public and wildlife to hazards**				
Description		When a mining area is abandoned the infrastructure and altered landscape can affect the safe access of wildlife and general public if not rehabilitated. The altered habitat may or may not promote the re-establishment of organisms once found there. Visual rehabilitation to the original state is not always practical due to economic factors.				
Nature		Negative				
Phases		Phases during which decommissioning, and mine closure may impact public safety, future ecosystem functioning for domestic livestock and wildlife, economic stability and social health, and asset security. The significance assessment is carried out for the post closure phase.				
Construction Phase		**Operational Phase**		**Decommissioning Phase**	**Post Closure**	
Not applicable		Not applicable		Ecosystem functioning	Ecosystem functioning	
				Public safety	Public safety	
				Economic uncertainty	Social challenges of unemployment	
				Asset security		
Severity		Substantial deterioration after mine closure with respect to aspects listed above.				
Duration		Permanent. Beyond closure. Long term.				
Spatial Scale		Fairly widespread – Beyond the site boundary. Local				
Probability		Definite / continuous				
Mitigation	**Severity**	**Duration**	**Spatial Scale**	**Consequence**	**Probability of Occurrence**	**Significance**
Unmitigated	**H**	**H**	**M**	**H**	**H**	**H**
Significance of Consequence		A high significance is expected if no mitigation mechanisms are implemented. This is a worst case scenario where no alternative uses of the altered habitat is considered. In terms of economic benefits lost, it is important to note that the longer the mining operations go on, the longer the benefit to the community				
Prevention		The resources are finite and so decommissioning is inevitable at some point. The degree to which the impact of closure will have will depends on the mitigations that can be considered. Ecosystem functioning of the whole area cannot return to baseline conditions unless the excavated quarry is refilled and the area revegetated to baseline conditions. This is not practical Public harm can be prevented provided the area is secured and the risky hazards are inaccessible. Jobs within this sector will be lost. This cannot be prevented unless the employees move with the company to the next site. Theft and damage to equipment can be prevented during the decommissioning phase provided good security prevents any form of criminal behaviour by disgruntled employees.				
Mitigation Action		Visual impacts can be mitigated through a thorough removal of all infrastructure. The reduction in the size of the mine footprint during operations and decommissioning increases the probability that more habitat will become fully functional when the mining ceases.				

	Secure fencing or other physical objects (rock piles) around any hazardous quarry pits (i.e. height risks) could prevent accidents from occurring but the permanent and visually acceptable barrier to humans and wildlife would be required to prevent injuries due to falling from heights. Access down into the pit could be allowed provided there is no risk from falling rocks. The access road leading to the quarries and WRD areas should be closed off to the public except to those that need access to the facilities for inspection after closure. Wherever there are safe access roads that are useable by the neighbours, these should be left.. When the mining activities end, the losses of employment will have a negative economic effect on the livelihoods of the workers and the region. To mitigate this impact all stakeholders should be notified about the mine closure in good time.
Rehabilitation	Reasonable rehabilitation of the mine site should take place. The proponent will be responsible to put aside funds for rehabilitation. The mine closure plan with the mine rehabilitation or restoration plan should be written up during the first three years of the first environmental clearance. Rehabilitation of the abandoned mining area will amongst other things include the following: ➢ All movable assets to be removed off site ➢ All waste to be removed from site to prevent later potential excavation by people trying to recover any sort of usable scrap / materials ➢ All immovable machinery to be dismantled and removed from site ➢ Possibly create shallow sloped sides of quarried areas ➢ WRD material are used in landscaping ➢ All stockpiled topsoil will be re-laid on the landscaped areas. ➢ Designed landscaped areas to be revegetated with plants from the nursery ➢ Finally, erect fencing or barriers to prevent access by public or animals to cliff faces of the quarried pits

Mitigation	**Severity**	**Duration**	**Spatial Scale**	**Consequence**	**Probability of Occurrence**	**Significance**
Mitigated	**L**	**M**	**L**	**L**	**L**	**L**

Significance of Consequence	If the mitigation hierarchy is followed through to rehabilitation, then the resultant consequence could be insignificant or at worst a low significance.
Confidence Level	A well designed and well implemented mine closure plan should provide for a low significance upon mine closure.
Legal	**Risks associated with abandoning a mine without rehabilitating according to an approved plan:** **Minerals Act: Section 54** Any person who contravenes or fails to comply with the provisions of subsection (2) shall be guilty of an offence and on conviction be liable to a fine not exceeding R8 000 or to imprisonment for a period not exceeding 12 months or to both such fine and such imprisonment. **Contractual Agreements** The Contractor's failure to meet the obligations as stipulated in the contractual agreement with regards to rehabilitation will incur penalties to the value of the cost of rehabilitating the quarry and works area to a state agreed upon by the Contractor and Proponent at the start of the contractual agreement. **Minerals Act:**

	Section 54 **Abandonment of mining areas** The holder of a mineral licence may abandon the mining area by notice in writing addressed and delivered to the Commissioner who in turn will notify the license holder that the mine has been abandoned as from the date of the cancellation notice. (2) The holder of the mineral licence to which such area relates shall: ➢ demolish any accessory works erected or constructed by such person in such area, except in so far as the owner of the land retains such accessory works on such conditions as may mutually be agreed upon between such owner and person and remove from such land all debris and any other object brought onto such land; ➢ take all such steps as may be necessary to remedy to the reasonable satisfaction of the Minister any damage caused by any mining operations carried on by such holder to the surface of, and the environment on, the land in the area in question. ➢ The abandonment of a mining area shall not affect any legal proceedings instituted against such holder or any obligation or liability of such holder in terms of the provisions of the Act.
Monitoring	At the time of quarry closure and abandonment the contractor must rehabilitate the mine site.. In general as discussed above the following must be monitored: ➢ Removal of movable assets i.e. plant equipment ➢ Demolishment of fixed immovable assets ➢ Removal of this demolished plant and building rubble ➢ Fence off dangerously deep pits or holes in the ground that pose a threat to the public safety ➢ The proponent is to fulfil the same rehabilitation tasks as above for all the accessory works area, including infrastructure, tailings, pits and holes etc. which they created before the contractor began works in the quarry area. ➢ The proponent should regularly engage with the affected communities and stakeholders to record and respond to any grievances that may arise as a result of the project impacts and implement a monitoring process that seeks for feedback from stakeholders on the rehabilitation process. ➢ A **mine closure and rehabilitation plan** and associated checklists must be followed and signed off at each stage of the mine closure/rehabilitation process.

Appendix K: Archaeological & Heritage Impact Assessment

ARCHAEOLOGICAL AND HERITAGE IMPACT ASSESSMENT REPORT

FOR THE PROPOSED EXPLORATION ACTIVITIES OF SMALL-SCALE MINING ACTIVITIES ON 73283, 73284, 73285, 78286 & 75208 IN EPUPA CONSTITUENCY, KUNENE REGION, NAMIBIA.

Compiled by:

TARO ARCHAEOLOGICAL & HERITAGE CONSULTANTS

Trading as TARO INVESTMENTS CC, Reg. no: cc/2013/10742

P.O. Box 19730, Omuthiya, Namibia Email: rolandmushi@taroarchaeology.com

Tel: +264 85 333 237 3

Prepared for: Timo Smit

As required under Section 53 (7) and Section 54 (7) of the National Heritage Act (No. 27 of 2004).

- **Document Information/Project Details**

Item	Description
Report Title	Archaeological and Heritage Impact Assessment Report for proposed project MC 73283, 73284, 73285, 78286 & 75208 in Kunene Region, Namibia
Project Location & Site Name	The Proposed Project is located 80km Northwest of Opuwo
Granted Date	*Application*
Expiry Date	*Application*
Target Commodities & Minerals	The Proposed Project intends to explore Base & Rare Metals, Industrial Minerals, Precious Metals, and Semi-precious Stones.
Approximately Coordinates	*Refer to Table 1*
Purpose of the Archaeological & Heritage Assessment	The purpose of the study is to identify, record and recommend measures for mitigation in areas of archaeological and cultural heritage significance, this includes rock art sites, artefacts, graves or burial grounds features, paleontological, structures, buildings, landscapes etc. that might be impacted by the proposed project.
Address & Contacts of the Project Proponent/Developer	Timo Smit P.O. Box 8912 Swakopmund
Total size of the application areas (MCs)	Total Size for the MC mentioned above is 90 hectares (ha)
Author Identification	TARO Archaeological & Heritage Consultants Prepared by Mr. Roland Mushi (*Archaeologist & Cultural heritage Specialist*) Cell: +264 85 3332373 Email: rolandmushi@taroarchaeology.com
Site survey	Jamien Engelbracht
Report writing	Mr. Roland Mushi and Jamien Engelbracht
Heritage Research Permit	Permit No. 01/2024 *Issued under section 52(1) of the National Heritage Council Act (Act 27 of 2004).*
Competent Authority	National Heritage Council of Namibia
Report Date	11/02/2025

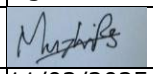
Copyright & Disclaimer

Authorship: This Archaeological and Heritage Impact Assessment Report has been prepared by TARO Archaeological & Heritage Consultants. This report is for the review of the National Heritage Council of Namibia in accordance with the National Heritage Act No. 27 of 2004.

Geographic Co-ordinate Information: Geographic coordinates in this report were obtained using a hand- held Garmin Global Positioning System device *GPSmap 60CSx*. The accuracy device as stated by the manufacturer states that these devices are accurate to within 11 feet which is equivalent to ± 3 meters. Maps: Maps included in this report use data extracted from the GIS Database, Spatial datasets, Google Earth Pro and Coordinates.

Disclaimer: Although all possible care is taken to identify sites of cultural importance during the investigation of study areas, it is always possible that hidden or sub-surface sites could be overlooked during the study. TARO Archaeological & Heritage Consultants and its personnel will not be held liable for such oversights, and inconsistencies that may result from information that may not be available at the time this report was prepared or for costs incurred as a result of such oversights. The client is advised to seek clarification on any elements which may be indistinct. Information and recommendations in this document should only be relied upon in the context of this document; any documents referenced explicitly herein should only be used within the context of the appointment.

- **Declaration of Independence**

Specialist Name/Archaeologist who prepared this report	Mr. Roland Mushi Contacts**:** +264 85 3332373 Email: rolandmushi@taroarchaeology.com
Declaration of Independence	I/we, TARO Archaeological & Heritage Consultants, hereby confirm my/our independence as an Archaeologist/Heritage specialist and declare that I/we have no interest in the business of our client, other than fair remuneration for work performed on this project/contract as well as the execution of archaeological sound fieldwork and the submission of a professional report to our client and Body of Authority (National Heritage Council of Namibia). This Archaeological & Heritage Assessment Report has been prepared according to the provisional of Section 51 (3) of the National Heritage Act, No 27 of 2004, and National Heritage Guidelines for Heritage Impact Assessment of 2021, Environmental Management Act, No 7 of 2007, and other relevant legislations.
Signature	
Date	11/02/2025

The expertise of the Specialist

Roland Mushi has several years of experience working in desert environments more specifically in Namib Naukluft National Park as a Researcher, and most recently he has been working as a full-time archaeologist since 2021. Academically, he obtained an **MSc in Natural Resources Assessment and Management** and **B. A** (***Hons***) in **History** and **Archaeology** with a special focus and interest in Lithic and Fauna Analysis in Archaeology, both degrees were obtained from the **University of Dar Es Salaam**. Roland is an accredited member of the following;

- **ASAPA** - Association of Southern African Professional Archaeologists **# 480**
- **SAfA** - Society of Africanist Archaeologists
- **SAMA** - South African Museums Association **# NCM 008**
- **MAN** - Museums Association of Namibia **# 1311556**
- **EAPAN** - Environmental Assessment Professionals Association of Namibia **# 179**
- **ICOM –** International Council of Museums **# 177513**

SUBMISSION OF REPORT

Please note that the National Heritage Council of Namibia needs to comment and review this report. The Project Proponent/Client is advised not to proceed with any action before receiving the necessary consent/comments from National Heritage Council of Namibia.

Executive Summary

TARO Archaeological & Heritage Consultants (TARO AHC) was appointed by Jacobus Petrus Smit to undertake an Archaeological Impact Assessment for the proposed small-scale mining activities on Mining Claim (MC) 75205 which is located about 80km North-west of Opuwo and covers an area of 90 (ha) in the Epupa Constituency in the Kunene Region. The overall purpose of this assessment is to assess the probability of occurrence of sensitivity of the archaeological and cultural heritage resources in and around the proposed targeted sites, to determine the potential impacts on such resources, and to avoid and/or minimize such impacts by means of management and/or mitigation measures.

This report has assessed the archaeological and heritage implications of the proposed development which is located 80km Northwest of Opuwo in the Kunene Region. This study was conducted as part of the specialist input for the Environmental Application process i.e. Environmental Clearance Certificate (ECC) and thus, which will serve to inform the Environmental Scoping Assessment Report (ESA) and Environmental Management Plan (EMP) for the proposed project. The site visits were conducted on 01 February 2025, and the following issues were identified from an archaeological and heritage point of view. The findings from the Field Assessment of the Mining Claim under study predominantly comprised river channels, surface scatters, and small rock boulders. However, the proponent is strongly advised to exercise caution during mining activities, as archaeological material possibly may surface from underground. The adoption of the Chance Find Procedure is advised in this regard.

Findings and Observation made

Identification, mapping, classification and assessment of the significance of the archaeological and cultural heritage resources in the area were conducted accordingly to the National Heritage Guidelines of 2021. The site surveys were undertaken on the 01 of February 2025. Key findings of this AHIA assessment include:

- ***Surface scatter:*** *Few areas were recorded to have open surface scatter, mostly are of MSA and LSA Period**.***
- ***Rock Outcrops and Dry River channels:*** *Outcrops, like many other surveyed areas were recorded as well, and it seemed to be the dominant natural features recorded in majority of the mining claims. Presence of dry water streams or river channels meandering through the landscape were noted. Archaeological impact expected is low to none.*
- ***Spiritual Place:*** *None were recorded.*
- ***Graves:*** *None were recorded within the surveyed mining claims, only notable graves are outside the claims*

Conclusion

The AHIA assessment conducted of the Mining Claim under study yielded findings which predominantly comprised river channels and surface scatter. An emphasis is made on the adoption of the Chance Find Procedure throughout the exploration activities. The overall impact significance of the proposed project is expected to be ***LOW.*** *Therefore, it is strongly recommended that the proposed project activities should focus and stick only to the targeted sites that will be selected, compliance and adherence to the recommended mitigation measures put forth herein (Section 16.2), and adoption of Chance Find Procedures are to be implemented as part of the general EMP, and based on approval from the Authority. The recommended mitigations contained herein are for Archaeological and Heritage Impact Assessment only, nonetheless authorization applies, and the proposed exploration project may only proceed based on the review and ultimately the approval from the National Heritage Council of Namibia.*

- **Document information**

The contents of this Heritage Assessment Report are according to compliance with the National Heritage Act, No. 27 of 2004 and the Guidelines for Heritage Impact Assessment 2021 of Namibia.

This Specialist Report is prepared in terms of the NHC Guidelines, and contains the following;	**Addressed in the Specialist Report**
A. Title Page: - Title of the report, Subheading: Property name and portion (where applicable), Area, Region; - Type of development; - Author of the AHIA; - - Name of Proponent, - Consultant and Date of the AHIA. **Details of-** - the specialist who prepared the report; and - the expertise of that specialist to compile a specialist report including a curriculum vitae and relevant documents	Page i & ii (Preliminary Section of this report) Page iv (Preliminary Section of this report)
B. Executive Summary: - The purpose of the study; - A brief development project description; - Brief methodology including desktop study - Identification and/or outline of consultations with interested and affected parties relating specifically to heritage resources; - - Findings: Brief description of heritage resources, Significance of the resources and potential impacts and; Recommendations and reasoned opinions made by the heritage consultant.	Page v (Preliminary Section of this report)
C. Declaration of Independence and CV: - Heritage consultants must provide a very brief summary of their experience, - Qualifications, - Membership affiliations and membership numbers, and accreditation level if relevant, - A detailed CV and certified copies of degree certificates and ID must be attached in the Appendix); - - Heritage consultant(s) must declare (and sign) their independence from the developer.	Page iv (Preliminary Section of this report) Appendix 2 & 3
D. Contents Page: - List of acronyms used in the report and glossary.	Page xiv & xv (Preliminary Section of this report)
E. Introduction and Background Information: - Introduction to the development project and background information; - Detailed terms of reference as provided to the heritage consultant from the commissioning body	Section 1 & 1.1 Section 1.2
F. Project Description:	Section 2

- General project area and the specifics of the development i.e. Size of farm and portions, Magisterial District, location, aerial or geographic map and co-ordinates of the project development;	
G. Legislation Requirement – A summary of which legislation (including the relevant NHA sections) and other local by-laws are relevant to the proposed project, and those identified must be subsequently outlined and quoted;	Section 3
- An indication of the scope of, and the purpose for which, the report was prepared;	Section 4
- A description of any assumptions, limitations made and any gaps in knowledge;	Section 5
H. Methodology - A description of the methodology used in undertaking a field survey including site investigation, and preparation of the report	Section 6 (including photographs, and weather conditions of the study area during the site visit)
I. Consultation and Stakeholder Engagement - A description of the result of consultation undertaken during the site visit (Relevant to heritage resources only) - Any abridged copies received	Section 8.1 N/A
Literature reviews - Summary of reports used - Description of the Study Area/topography - Geology of the project area	Section 9, 9.1.1 & 9.1.2 Table 11
J. Detailed Assessments - Site investigation details	Section 7, Table 6
K. Site Investigation	Section 6.4
L. Site Significance Rating	Section 8, Table 7, 8, 9, & 10
(i) Background and general Heritage Context of the area - Desktop Study/ Regional Archaeological & Heritage context.	Section 10, 10.1
(ii) Physical and Environmental Context of the area - Vegetation and Landscape - Site context	Sections 11 & 11.1
(iii) Assessment of the findings - On-site findings	Sections 12 , 12.1, 12.2, 12.3 & 12.4 Table 16
(iv) Potential Impacts on Cultural Heritage Resources - Archaeological, historical, built environment and cultural	Sections 13, 13.1, 13.1.1
(v) Tabulated summary of the Impact evaluation of the proposed project	Table 17
Summary of the Impact - Archaeological & Heritage consideration for inclusion in the Project EMP	Section 14 Table 18

(**vii) An identification of any areas to be avoided, including buffers;** **-** A superimposed map of the sensitivities areas of the site to be avoided, including 200m buffer zones;	Figure 25
(viii) Identification of Key Impact	Section 15
(ix) Residual Impact	Section 15.1
(x) Identification of Alternatives	Section 15.2
M. Management Plan and Mitigation Measures - Any mitigation measures for inclusion in the proposed project EMP - Conclusion and Recommendation - Recommended Mitigations **Statement and reasoned opinion of the specialist** - whether the proposed development should be authorized or not;	Section 16 Table 19 Section 16.1 Section 16.2 Section 16.3
N. References	Section 17
M. Appendices **-** Any archaeological and heritage monitoring requirements for inclusion in the EMP or Environmental Authorization;	Appendix 1

- **Table of Contents**

- **List of Figures**

- **List of Tables**

Glossary list used in this report

Abbreviation	***Description***
AHIA	*Archaeological and Heritage Impact Assessment*
AMP	*Archaeological Management Plan*
AD	*Anno Domini*
ASAPA	*Association of Southern African Professional Archaeologists*
CFP	*Chance Find Procedure*
EAPAN	*Environmental Assessment Professionals Association of Namibia*
ECC	*Environmental Clearance Certificate*
ECO	*Environmental Control Officer*
EIA	*Environmental Impact Assessment**
EMP	*Environmental Management Plan*
ESA	*Early Stone Age*
GIS	*Geographical Information System*
NHC	*National Heritage Council*
MAN	*Museum Association of Namibia*
MSA	*Middle Stone Age*
LSA	*Late Stone Age*
PM	*Project Manager*
SM/I	*Site Manager/Inspector*
SAfA	*Society of Africanist Archaeologists*
SAMA	*South African Museums Association*

Definitions of Key Concepts and Terms

Archaeological	*In relation to a place or an object, means (a) any remains of human habitation or occupation that are 50 or more years old found on or beneath the surface of the land or in the sea; (b) rock art, being any form of painting, engraving or other representation on a fixed rock surface or loose rock or stone which is 50 or more years old;*
Archaeological Site	*This means an area in which archaeological objects are situated. Archaeological remains can be defined as any features or objects resulting from human activities, which have been deposited on or in the ground, reflecting past ways of life and are either 50 years old or older than that.*
An artefact or artefact	*A general term for an item made or given shape by human culture, such as a tool or a work of art, especially an object of archaeological interest*
Isolated finds	*Occurrences of artefacts or other remains that are not in-situ or are located apart from archaeological sites. Although these are noted and recorded but do not usually constitute the core of an impact assessment, unless if they have intrinsic cultural significance and value*
In-situ	*Refers to material culture and surrounding deposits in their original location and context, for example, an archaeological site that has not been disturbed by farming.*
Built environment	*The built environment includes an array of historic buildings, structures and objects, from missions, forts and rock walls to entire town sites and settlements.*
Monuments	*Architectural works, works of monumental sculpture and paintings, elements or structures of an archaeological nature, inscriptions, cave dwellings and combinations of features, which are of outstanding universal value from the point of view of history, art or science;*

Heritage significance	*Means aesthetic, archaeological, architectural, cultural, historical, scientific or social significance;*

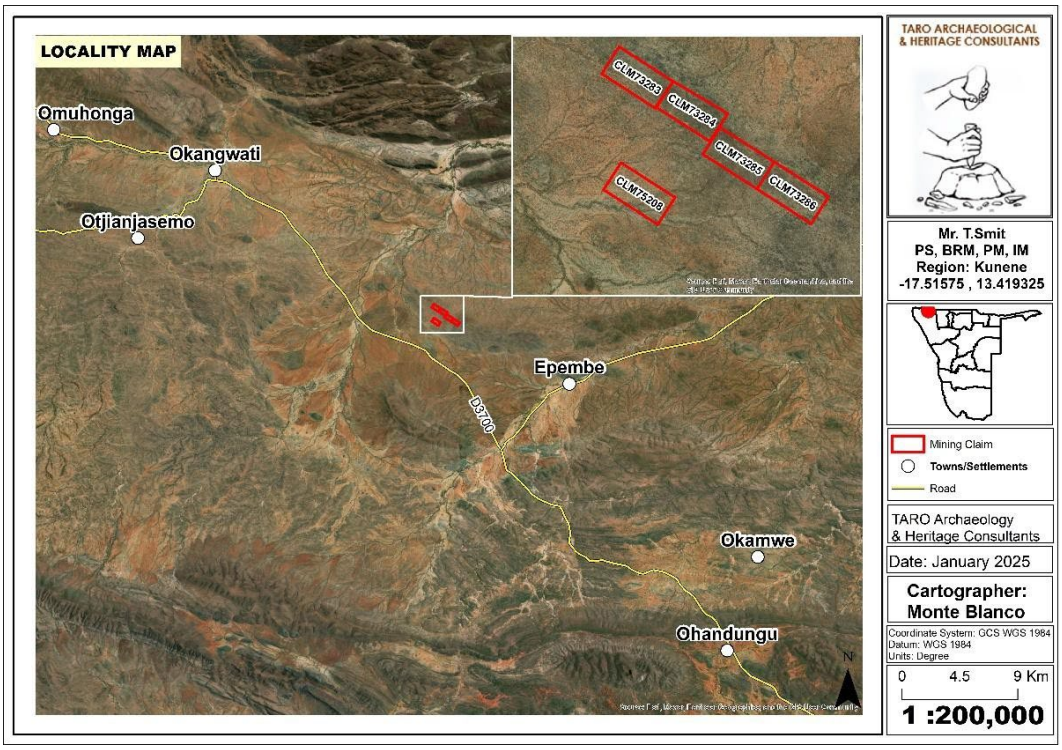
Cultural Heritage	*Encompasses the range of tangible material reflecting past and present human culture (e.g., archaeology), as well as cultural practices, performance, indigenous knowledge, and oral traditions (intangible) that is bequeathed from one generation to the next, and which each subsequent generation molds and adapts to suit the changing conditions of its time.*
Heritage, Intangible	*Aspects of culture that cannot be touched, including song, dance, oral traditions, indigenous knowledge, etc. However, most sites of material or tangible heritage are imbued with intangible elements – thus, a site where a famous battle took place is inextricably linked to the oral traditions and history surrounding the site and any material remains related to the battle itself.*
Heritage, Tangible	*Physical heritage material or sites that include buildings, graves, sacred pools, rock art and other sites, e.g., stone age pottery, tools, iron smelting sites, etc*
A grave	*A place of interment (variably referred to as burial) includes the contents, headstone or other markers of such a place, and any other structure on or associated with such place. A grave may occur in isolation or in association with others where it is referred to as being situated in a cemetery (contemporary) or burial ground (historic).*
Boulder	*A large fragment of bedrock that has detached from the mountainside.*
Historic building	*Refers to structure or building which is over 50 years or more.*
Chance Finds	*This means archaeological artefacts, features, structures or historical cultural remains such as human burials that are found accidentally in the context previously not identified during cultural heritage scoping, screening and assessment studies. Such finds are usually found during earth-moving activities.*
Study area or 'proposed project area'	*Refers to the area where the Proponent/developer wants to focus its development activities.*
Periodization	*Archaeologists divide the different cultural epochs according to the dominant material finds for the different periods. This periodization is usually region-specific, such that the same label can have different dates for different areas. This makes it important to clarify and declare the periodization of the area one is studying. These periods are nothing a little more than convenient time brackets because their terminal and commencement are not absolute and there are several instances of overlap.*
Pleistocene	*Is a basis for the Quarternary period which started around 2.58 million years ago to 11.7 thousand years ago*
Mid-Pleistocene	*A period known as the Mid-Pleistocene Transition (MPT) or The Mid-Pleistocene Revolution (MPR) was the transition that happened approximately 1.25–0.7 million years ago, in the Pleistocene epoch. In other words, this middle Pleistocene transition (MPT) began 1250 kya and was completed by 700 kya.*
Later Pleistocene	*The Late Pleistocene is an unofficial age in the international geologic timescale in chronostratigraphy, It is currently defined as the time between c. 129,000 and c. 11,700 years ago.*
Holocene	*Started from 11.7/ 10 kya to present*
ESA	*>2 600 000 years ago – 250 000/200 000 years ago*
MSA	*250 000/200 000 years ago – 40/25 000 years ago*
LSA	*25 000 years ago – AD 200 (up to historic times in certain areas)*
Iron Age Period	*AD 200 – AD 1840*
Historic Period	*AD 1840 – 1950*

1. Introduction

1.1. Project Background Information

TARO Archaeological & Heritage Consultants (TARO AHC) was appointed by Timo Smit to undertake an Archaeological Impact Assessment for the proposed small-scale mining activities on MC *No. 73283, 73284, 73285, 73286 & 75208.* The mining claims are located about 80km Northwest of Opuwo within Epembe and covers a total area of 90 hectares (ha) in the Epupa Constituency in the Kunene Region. All of these reported mining claims are within the ***EPL 10007 (Not part of the subject though)***. The targeted mineral commodities base & rare metals, industrial minerals, precious metals and semi-precious stones. The Report was herein compiled and completed by (TARO AHC) and relies extensively on the archaeological and historical records from various sources, representation and site reconnaissance conducted. This entire report is subject to the scope of work conducted as well as the assumptions made and to all other sections of this assessment.

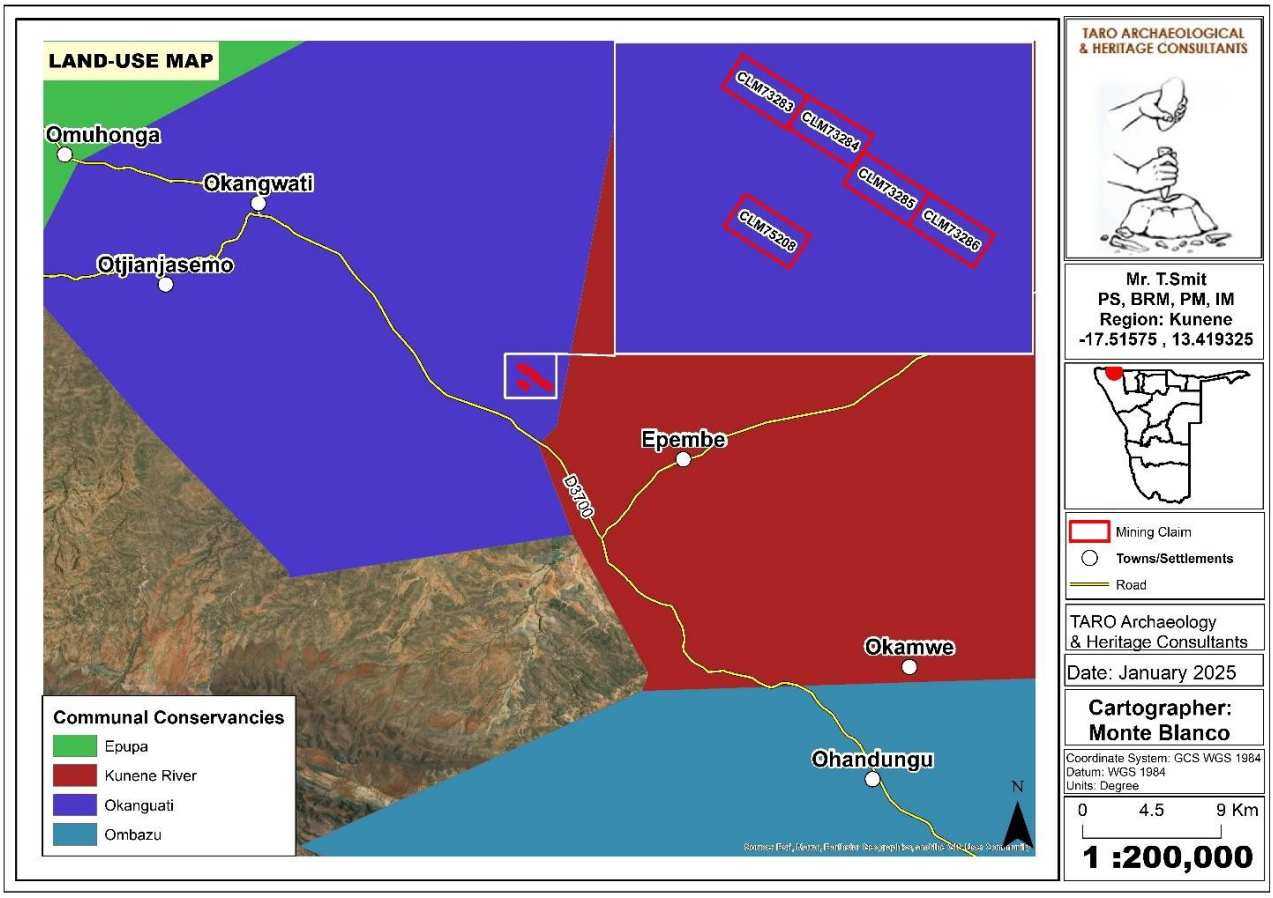
Therefore, this study aims to provide specialist input into a screening of the logged Environmental Application process for the issuance of the Environmental Clearance Certificate and thus, which will serve to inform the Environmental Scoping Assessment Report (ESA) and Environmental Management Plan (EMP). Therefore, Heritage Impact Assessments in Namibia are required in terms of the National Heritage Act (No. 27 of 2004) and under the provisions of the Environmental Management Act No. 27 of 2007.



- **Figure 1: Locality map of the area of interest**

1.2. EPL Coverage and Location accessibility

The access to the mining claims via paths along the D3700 roads, entry from the district road is via the current single-lane gravel road that were probably built manually through the removal of shrubs. Most of the mining claims were accessed and surveyed on foot due to the nature of the landscape i.e. rugged landscape.



- **Figure 2: Land-use map of the proposed project**

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- **Table 1: Approximate GPS coordinates Corners/boundaries of the Proposed Project Site**

Geographic Positioning System Points in degrees, minutes & seconds			**Total Area of the Mining Claims**
MC 73283			90 (ha)
Point A	17° 31' 15" S	13° 25' 44" E	
Point B	17° 31′ 23" S	13° 25' 39" E	
Point C	17° 31′ 34" S	13° 25' 56" E	

Point D	17° 31' 26" S	13° 26' 01" E	
MC 73284			
Point A	17° 31' 15" S	13° 25' 44" S	
Point B	17° 31' 23" S	13° 25' 39" S	
Point C	17° 31' 44" S	13° 26' 12" S	
Point D	17° 31' 36" S	13° 26' 18" S	
MC 73285			
Point A	17° 30' 51" S	13° 25' 12" S	
Point B	17° 30' 59" S	13° 25' 06" S	
Point C	17° 31' 10" S	13° 25' 23" S	
Point D	17° 31' 02" S	13° 25' 29" S	
MC 73286			
Point A	17° 31' 48" S	13° 26' 10" S	
Point B	17° 31' 40" S	13° 26' 16" S	
Point C	17° 31' 51" S	13° 26' 33" S	
Point D	17° 31' 59" S	13° 26' 27" S	
MC 75208			
Point A	17° 31' 51" S	13° 25' 44" S	
Point B	17° 31' 58" S	13° 25' 39" S	
Point C	17° 32' 09" S	13° 25' 55" S	
Point D	17° 32' 01" S	13° 26' 07" S	

1.3. Terms of Reference

Terms of reference for this archaeological and heritage impact assessment study were to;

- Locate, identify all objects, record, photograph and describe sites of archaeological, historical or cultural interest located in the area of the proposed development,
- Record coordinate points (GPS) of identified areas as significant and photographing,

- Determine the levels of significance of the various types of heritage resources that might be affected by the proposed project, and
- Suggest or propose appropriate management and mitigation measures for the archaeological and cultural heritage resources that might occur in the area proposed for exploration or mining activities which can be potentially destroyed in the course of exploration and other related development.
- Review applicable legislative requirements.

2. Project Description

Timo Smit (*hereinafter referred to as "Proponent"),* intends to conduct small-scale mining activities on MC No. *73283, 73284, 73285,* 73286 & 75208 of total areas of 90 (ha). Therefore, Archaeological Impact Assessment was conducted to identify the possible impacts on the archaeological or heritage resources on the site. Project components and the location is outlined in ***Table 2*** and ***3*** below.

Table 2: Project Area

Project Area	The proposed development site is located near Epembe
Project Site/Name of the area	The mining claims are located about 80km Northwest of Opuwo.
Magisterial District/Location	Epupa Constituency
Co-ordinate of the development	Refer to *Table 1* above
Topographic Map	Refer to *Figure 1 & 2* above

Table 3: Infrastructure and project activities

Types of Development	Prospecting Application: Small-scale mining permit for the aforementioned minerals commodities.
Size of the MC	90 (ha)
Project Components	The project activities will involve the small- scale mining of base & rare metals (copper) and lead within the mining claim. The detailed exploration methods (techniques) will be presented in the ESA Report
Prospecting and exploration methods and techniques to be used specifically for the Base & Rare Metals, Industrial Minerals, Precious Metals and Semi-Precious Stones	The Proponent intends to adopt a systematic prospecting and exploration approach of the following: • Desktop Study (Non-invasive method): Geological mapping (Non-invasive Technique): The exploration program will commence with a review of geological maps and historical drilling and / or exploration data for the area, if any. • Geophysical surveys (Non-invasive): This will entail data collection of the substrata. Ground geophysical surveys shall be conducted, where necessary using vehicle-mounted sensors. • Lithology geochemical surveys (Invasive): Rock and soil sampling from small pits/trenches.

	• Detailed Exploration Drilling (Invasive): Should analyses of soil/rock samples by an analytical laboratory be positive, holes are drilled, and drill samples collected for further analysis.
Site Clearance	Land clearing: Small land parcels will be cleared for the establishment of base or field camps and staging areas. Proponent shall ensure that areas identified are those that present minimal disturbance to the natural environment and wildlife.
Machinery and Vehicles to be used	Bulldozers, excavators, trucks, 4 x 4 vehicles etc.
Human Resources & Accommodation	Mining (mainly drilling) workers will be housed at Okanguati or a camping site will be set up within the project site to accommodate all the personnels. However, a consent from the local authority will be obtained prior to setting up these temporary accommodation structures for mining. If there are conducive local accommodation facilities, these will be rented to the Proponent workforce.
Accommodation	Accommodation: It is anticipated that project workers will be housed in onsite in camps. However, this will need to be discussed with the landowner to obtain consent.
Site Access	The area access roads D 3700 will be utilized to access the MC. If needed, further tracks that maybe required to access certain areas on the Mining Claim will be created, upon approval and in consultation with the local authority/land custodian prior to the creation of new tracks.
Expected impacts	**Positive impacts include** • Employment opportunities, boosting the local economy, infrastructural-related development, investment opportunities, and skills transfer, improved geological understanding of the area and increased support for local business. **Negative impacts include** Physical land and soil disturbance, destruction of archaeological/cultural materials through unintentional uncovering of unknown archaeological materials and objects, environmental pollution, disturbance of local habitat (flora and fauna), potential social nuisance i.e. the conflict between farmers/landowners and the project proponent due to lack of communication etc. **-**Physical land/soil disturbance resulting in compaction and erosion, -Disturbance of grazing land for wildlife -Impact on local biodiversity (fauna and flora) and habitat disturbance, -The potential impact of illegal hunting/poaching of wildlife in the area,

3. Legislative context

This chapter outlines the regulatory framework applicable to the proposed project. **Table 4** provides a brief list of applicable legislation and relevance to the project.

- **National Heritage Act of Namibia (No. 27 of 2004)**

This Act provides for the protection and conservation of places and objects of heritage significance and the registration of such places and objects. The Client should ensure that if any archaeological or paleontological objects, as described in this Act, are found in the course of the development, such findings

be reported to the line Ministry immediately. If necessary, the relevant permits must be obtained before disturbing or destroying any heritage significance as envisaged by this Act.

Therefore, this AHIA report is a component of a broader Environmental Impact Assessment (EIA)/ Scoping Assessment (ESA) study and addresses the requirements of the National Heritage Act, No. 27 of 2004 and National Heritage Regulations (Government Notice 106 of 2005, in line with EIA Terms of Reference, and regarding the assessment of impacts of the proposed development on the archaeological, cultural and heritage resources associated with the receiving environment.

In principle, the National Heritage Act, 2004 (Act No. 27 of 2004) provides for the protection and conservation of places and objects of heritage significance and the registration of such places and objects. Special provision is given for the protection and management of certain heritage resources in Namibia, these are listed in **Part VI from paragraphs (53-58)** including listed buildings which are 50 years old or more than that, archaeological objects or paleontological interest in existence which is 50 years or more years old, meteorite, historic shipwrecks and shipwreck objects (Underwater heritage) this include the remains of all ships that have been situated on the coast or in the territorial waters or the contiguous zone of Namibia for 35 years or more are historic shipwrecks for this section.; and other heritage resources.

Part I, Section1 paragraph (a) and (b) defines "archaeological" concerning a place or an object, which means (a) any remains of human habitation or occupation that are 50 or more years old found on or beneath the surface on land or in the sea; and (b) rock art, being any form of painting, engraving or other representation on a fixed rock surface or loose rock or stone which is 50 or more years old. While **Part V Section 46** of the Act prohibits the removal, damage, alteration or excavation of heritage Sites or remains. **Section 48** sets out the procedure for the application and granting of permits such as might be required in the event of damage to a protected site occurring as an inevitable result of development.

Furthermore, **Section 51 (3)** sets out the requirements for impact assessment. **Part VI Section 55 Paragraphs (3) and (4)** require that any person who discovers an archaeological site should immediately notify the National Heritage Council.

- **Table 4: Summary of the relevant Act(s) and Ordinance**

National Regulatory	Summary	Applicability to the Project
National Heritage Act, No. 27 of 2004.	The Act makes provision for the protection and conservation of places and objects with heritage significance **Section 55** compels exploration companies to report any archaeological findings to the National Heritage Council after which a permit needs to be	There is potential for heritage objects to be found during the clearance of land and operations, therefore the Stipulations in the Act have been taken into consideration and are incorporated into this A/HIA report and the overall project EMP.

	issued before the find can be disturbed.	The Proponent should ensure compliance with these Acts' requirements. The necessary management measures and related permitting requirements must be taken. This will be done by consulting with the National Heritage Council of Namibia.
National Monuments Act of Namibia (No. 28 of 1969) as amended until 1979.	No person shall destroy, damage, excavate, alter, remove from its original site or export from Namibia: Meteorites, fossils, petroglyphs, ornamental infrastructure graves, caves, rock shelters, middens, shells that came into existence before the year 1900 AD: or Any other archaeological or paleontological finds.	
Burial Place Ordinance, Act No. 27 of 1966.	To prohibit the desecration or disturbance of graves in burial places and to regulate matters relating to the removal or disposal of dead bodies. The Municipal Ordinance 13 of 1963 has been replaced by the Local Authorities Act 23 of 1992. (3) No person shall, except with the permission of the Administrator, in any way disturb, damage, remove or destroy a grave, monument, gravestone, cross, inscription, rail, enclosure, chain or erection of any kind whatever, or part thereof in any burial place.	Chances of uncovering subsurface grave(s) is not precluded, therefore this Act is very relevant, and adoption of Chance find should be mandatory for envisaged prospected works
Environmental Management Act (7 of 2007) Government Notice 232 27th December 2007	**PART I:** The definition of the environment employed by the Environmental Management Act (7 of 2007) Specifically includes "anthropogenic factors" such as archaeological remains or any other evidence of human activity. **PART II:** Environmental impact assessment (EIA) in Namibia is governed by this legislation and usually includes a specialist archaeological survey and assessment, following the stated Principles of Environmental Management which require that Namibia's cultural heritage must	Archaeological materials, heritage resources, geologic, historical, cultural landscapes or topographical settings are part of the environment in its context, hence this Act is very relevant to the proposed project and the Proponent is henceforth mandated to take into consideration all the necessary steps so as not to affect or destroy the environment where heritage resources are found.

	be protected and respected for the benefit of present and future generations.	
Environmental Assessment Policy of Namibia 1995	The policy seeks to ensure that environmental consequences of development projects and policies are considered, understood and incorporated into the planning process, and the term environment is broadly interpreted to include biophysical, political, economic, social aspects, traditional norms, cultural and historical components.	This Archaeological and Heritage Assessment study considers the term environment to be part and parcel of archaeological and cultural heritage in its contexts.

4. Scope of the Study and Objective of the Report

This Archaeological & Heritage Impact Assessment (AHIA) aims at identifying any significant heritage resources before any envisaged exploration or mining begins so that these can be managed in such a way as to allow the development to proceed without undue impacts on the heritage resources of a particular area. Also, this report aims to fulfil the requirements of the Heritage Authorities of Namibia who will review the AHIA and grant or refuse authorization. Similarly, the report will inform the EIA in the development of a comprehensive EMP to assist the project applicant/Proponent in responsibly managing the identified heritage resources to protect, preserve, and develop them within the framework provided by the National Heritage Council Act (Act No 27 of 2004). And thus, the AHIA report will outline any management and mitigation requirements that will need to be complied with from a heritage point of view and that should be included in the conditions of authorization should this be granted.

5. Assumptions, Limitations and knowledge gaps

The archaeological and heritage study reported herein was carried out at the surface levels only and hence any completely buried archaeological sites could not be readily located. Similarly, it is not always possible to determine the depth of archaeological material visible at the surface. Based on this assumption, the possibility of the discovery or unearthed of heritage resources during the clearing of vegetation, or prospecting, exploration cannot be excluded. However, this limitation can be successfully mitigated with the implementation of a chance find procedure as recommended throughout the report. As with mitigation measures recommended in this report.

6. Approach and Methodology

6.1. Literature Review

The methodology for the study includes a survey of available literature conducted to extract data and information on the area in question to provide a general heritage context into which the proposed project would be set. This literature search included published material and unpublished reports, dissertations,

papers, EIA reports, and internet search engines including online material from various websites, followed by a field assessment. The latter was conducted according to generally accepted HIA Guidelines 2021 practices and was aimed at locating all possible objects, sites and features of cultural significance in the area of proposed project sites.

6.2. Documentation

All recorded sites, features, artefacts and objects identified were documented according to the general minimum standards accepted by the archaeological standard, heritage impact assessment guidelines and profession in Namibia. Co-ordinates of individual localities were determined by means of the Global Positioning System (GPS). The information was added to the description (Table 16) in order to facilitate the identification of each locality.

6.3. GIS Spatial analysis

Google Earth and topographic maps of the area were utilized to identify the geologic, and topographic, elevation of the area and possible places where sites of heritage significance might be located. Also, the GIS spatial database was utilized to collect any useful information on any of the above-mentioned in the area, as well as for geo-referencing purposes. The GIS and mapping sources were provided by the TARO Archaeological & Heritage Consultants.

6.4. Public Consultation and Advertisements

The Public meeting was held on 03 December 2024, at Omuangete Primary School. A focus group meeting with stakeholders also took place in Opuwo on 04 December 2024.

- **Table 5: Placement of Newspaper adverts**

Newspaper	Date of placement
Namibian Sun	15 & 22 November 2024
Republikein	15 & 22 November 2024
Allgemeine Zeitung	15 & 22 November 2024

6.5. Site Investigation

The site visit aimed to; (a) survey the proposed project area to locate, identify, record, photograph and describe sites of archaeological, historical or cultural interest (*if any*); (b) record GPS points of sites/areas identified as significant areas; (c) determine the levels of significance, grading of the various types of heritage resources recorded in the project area.

TARO Archaeological & Heritage Consultants inspected the environments in which the proposed project is located including its surrounding areas from the 01st of February 2025 (***Table 6***). Sufficient and extensive surface surveys of the ground were conducted for the communal areas covered by the Mining Claim. Among others, the site surveys comprised the pre-planned foot investigation along the targeted areas for the proposed mineral exploration. Photographs were taken with a Digital Camera - Canon EOS 4000D and a representative selection of photography images are included in this report. Geographic coordinates were

obtained using a handheld Garmin global positioning unit (*Garmin GPSmap 60CSx*). ***Table 6*** below highlights the situation during the field survey on the proposed development area.

7. Detailed Assessment

Table 6: Site Investigation Details

General Site Investigation	
Date of a visit	The site visit was undertaken on the 01st of February 2025 by the TARO Archaeological & Heritage Consultants personnel. The area of interest is situated within the flat and undulating terrains, accessibility was limited to footpaths, especially within the mining claim. The project area was sufficiently covered.
Season/Weather conditions and site visibility	Summer: Hot weather conditions present during the time of field assessment.
Details of equipment used in the survey (GPS)	All readings and site positions were determined in the field by hand-held Garmin *GPSmap 60CSx* (Accuracy levels is ± 3 meters). The Global Positioning System receiver was set to the hddd^{0}mm'ss.s". Real-time aerial orientation, by means of a mobile QField application, was also employed to navigate through and survey the areas.
Details of equipment used in the survey (Camera)	Photographs were taken using a Digital Camera - Canon EOS 4000D.

8. Site Significance Rating

The presence and distribution of archaeological, historical, cultural or heritage resources define a 'heritage or cultural landscape' of an area. In this particular landscape, every site is relevant, and because heritage resources are non-renewable, heritage surveys are needed to investigate the proposed project area or a representative sample, depending on the nature of the project. In all the initial investigations and surface surveys, however, the undersigned TARO Archaeological & Heritage Consultants (TARO AHC) is responsible only for the identification of resources visible on the surface. The grading and level of significance of the identified heritage resources in the area of interest are given in the following pages in *Table 16.*

- **Table 7: Grading of Heritage Significance and Field Rating**

Level of significance	Grading	Description
Exceptional/upper higher	5	• Major national heritage resources • A rare and outstanding example • Containing unique evidence of the high regional and national significance
Considerably high	4	• Very important to the heritage of the region • A high degree of integrity/ authenticity

		• Multi-component site and objects • High research potential
Moderate	3	• Contributes to the heritage of the locality and region • Have some altered or modified elements, not necessarily detracting from the overall significance of the place • Forming part of an identifiable local distribution or group • Research potential
Low	2	• Isolated minor find in undisturbed primary context, with diagnostic materials • Makes some contribution to the heritage of the locality, usually in combination with similar places or objects
Little	1	• Makes a little contribution to the heritage resources of the locality • Heritage resources in a disturbed or secondary context, without diagnostic or associated heritage
Zero/ no significance	0	• Absence of heritage resources • Highly disturbed or secondary context, without diagnostic or associated heritage

8.1. Impact Assessment Methodology as developed by QRS Namibia

This Archaeological and Heritage Impact Assessment followed a two-based process of assessment; desktop and field-based assessments. The methodologies were adopted in line with the standards for environmental assessment and the protocol developed for archaeological heritage assessment in Namibia that reflect Namibian conditions and are accepted as a basis of evaluation by the National Heritage Council. To establish the heritage significance of the resources, and their vulnerability to possible disturbance in the course of development activities, the assessment criteria below developed by QRS (Kinahan, 2012) established parallel 0-5 scales, as summarized in (***Tables 8-10***) below.

Table 8: Archaeological Significance and Vulnerability Rankings (Kinahan, 2012)

Scale	Significance Ranking	Scale	Vulnerability Ranking
0	no significance	0	Not vulnerable
1	Disturbed or secondary context, without diagnostic material	1	No threat posed by current or proposed development activities
2	Isolated minor finds in undisturbed primary context, with diagnostic material	2	low or indirect threat from possible consequences of development (e.g. soil erosion)

3	Archaeological site (s) forming part of an identifiable local distribution or group	3	Probable threat from inadvertent disturbance due to the proximity of development
4	Multi-component site (s), or central site (s) with high research potential	4	High likelihood of partial disturbance or destruction due to the proximity of development
5	Major archaeological site (s) containing unique evidence of the high regional significance	5	The direct and certain threat of major disturbance or destruction

Table 9: Assessment criteria for the evaluation of cumulative impacts on archaeological sites devised by the QRN.

Criteria	**Category**	**Description**
The extent or spatial influence of impact	National	Within Namibia
	Regional	Within the Region
	Local	On-site or within 200 m of the impact site impact
The magnitude of impact (at the indicated spatial scale)	High	Social and/or natural functions and/ or processes are severely altered
	Medium	Social and/or natural functions and/ or processes are notably altered
	Low	Social and/or natural functions and/ or processes are slightly altered
	Very Low	Social and/or natural functions and/ or processes are negligibly altered
	Zero	Social and/or natural functions and/ or processes remain unaltered
Duration of impact	Short Term	Up to 3 years
	Medium Term Long	4 to 10 years after construction
	Term	More than 10 years after construction

Table 10: Reversibility Rating Criteria

Reversibility Ratings	**Criteria**
Irreversible	The activity will lead to an impact that is permanent.
Reversible	The impact is reversible, within a period of 10 years

8.2. Results of Public Consultation and Stakeholder Engagement

As in line with the National Heritage Act, No 27 of 2004, and National Heritage Guidelines for Heritage Impact Assessment of 2021, Environmental Management Act, No 7 of 2007, and other relevant legislations. Stakeholder engagement is a key component of any EA process, it involves stakeholders interested in, or affected by the proposed development. The Public meeting was held on 03 December 2024, at Omuangete Primary School. A focus group meeting with stakeholders also took place in Opuwo on 04 December 2024.

Concerns raised:

- Request for proper avoidance of sacred sites when planning mining and exploration works

A survey of available literature was carried out to assess the archaeological and heritage contexts into which the proposed project would be set (*Table 11*). The study focused on an in-depth review of all the published and unpublished literature relevant to the history of the Kunene Region and nearby villages. Maps of the area were used to identify the geologic, topographic, archaeological, landscape and elevation of the proposed project area.

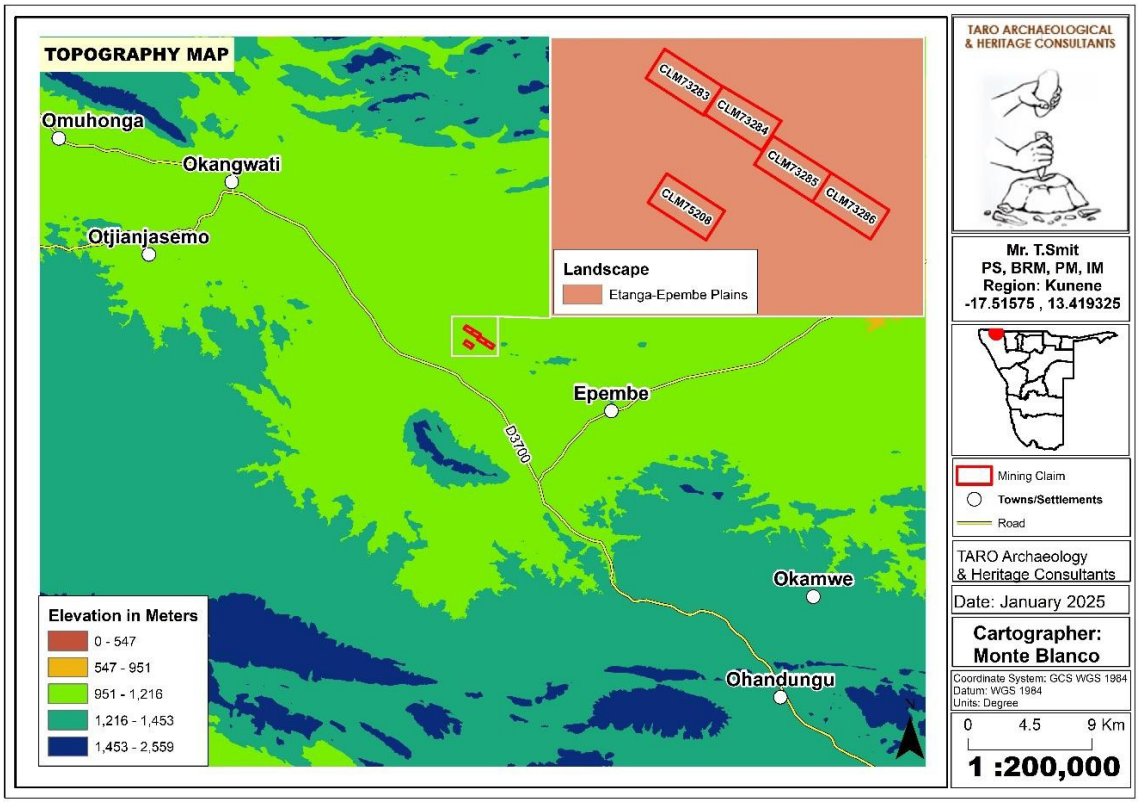
Table 11: Some of the reports consulted for Archaeological and Heritage sites

Author	Year	Project	Findings
Götz Ossendorf	2017	Two Holocene Later Stone Age stratigraphies from the Sesfontein area, northwestern Namibia	This study details two new test excavations that were carried out in 2005 at rock shelters in the northwest Namibian region of Sesfontein.
Mushi, R.	2024	For the Proposed Project Mining Activities on Mining Claims (MC). No. 72967-72971 located East of Orukwapa in the Kunene Region	Spiritual sites in Opuwo
MacCalman	1972	late Pleistocene	Evidence of late Pleistocene evidence from Kunene Region

8.3. Description of the Study Area

8.3.1. Topography and Landscape of the Project Area

Topographically, Epembe has an elevation ranging from 951 – 1 216 m.a.s.l. As depicted in *Figure 4* below and the area landscape is dominated by the Etanga -Epembe plain as shown in *Figure 3* below.



- **Figure 3: Topographic map of the area of interest**

8.3.2. Geology of the Project Area

MCs 73283, 73284, 73285, 73286 & 75208 and surrounding area is in the Eastern Kaoko Zone (EKZ) of the Kaoko Belt, in the Kunene Region, of northwestern Namibia. The northern part of the EKZ is dominated by the Kunene Anorthosite Complex (KAC). The KAC is the largest anorthosite complex in the world, with only about 10% of the KAC in Namibia, and 90% in the south-western part of Angola. The KAC in Namibia can be divided into northwestern and southeastern bodies. The northwestern body is made up of a white massive anorthosite. The southeastern part, called the Zebra Mountain lobe, is an interlayered body, subdivided into white and green anorthosite, dark leucotroctolite, and olive-bearing anorthosite. The white and green colour of the anorthosite is due to sericitisation and saussuritisation of plagioclase and the white anorthosites are older than the dark leucotroctolites. Post-dating and bordering the KAC are several, mostly mafic to ultramafic intrusions (Maier et al., 2013). These intrusions form the so-called 'Satellite Intrusions' of the KAC. The magmatic rocks of this group span from dunite, peridotite, pyroxenite, gabbro, troctolite, norites, anorthosites, to syenites and alkaline granites.

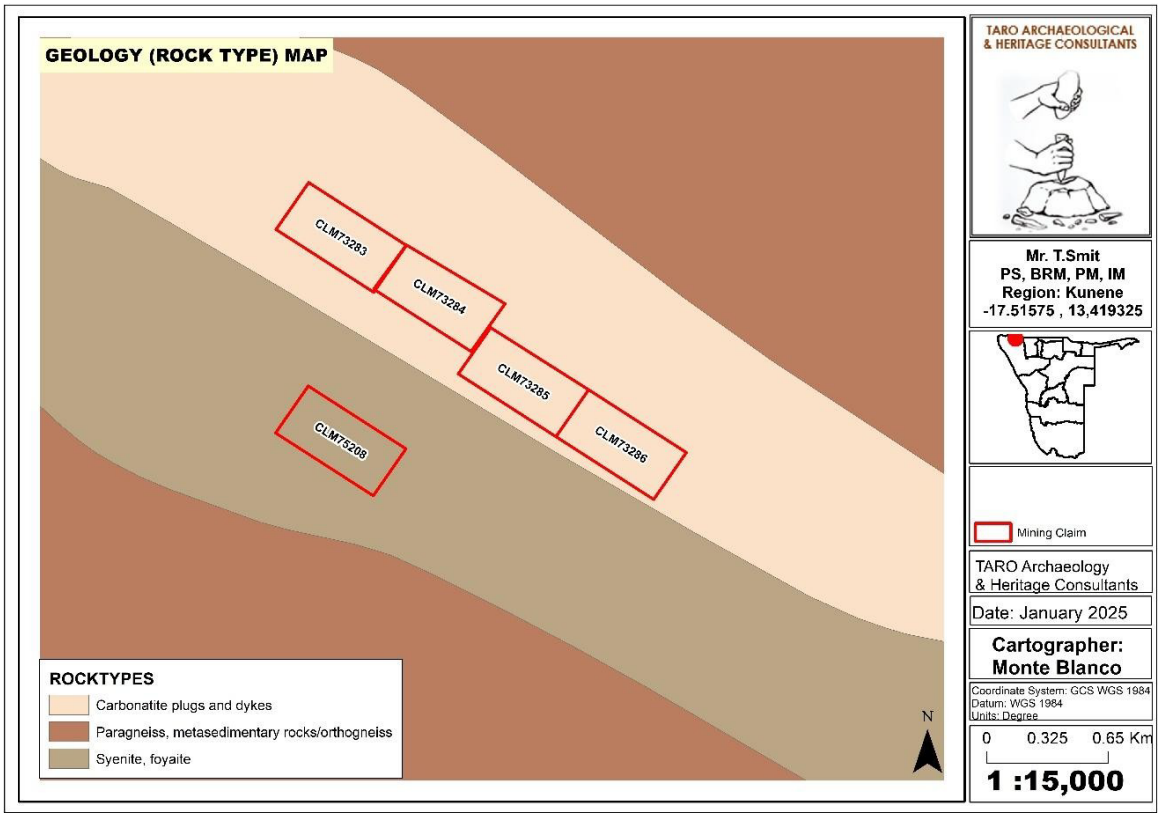


Figure 4: A Geology map of the proposed project site

9. Background and general Heritage Context of the area

9.1. Regional Archaeological and Heritage Context

The available archaeological records indicate that evidence of early humans in Namibia dates back from the Early Stone Age period, more than one million years ago as evidenced by hominin fossil records (Kinahan, 2017). The geospatial data on the distribution of archaeological sites show that sites are concentrated mainly in the central highlands, escarpment, and the Namib Desert. In summary, researchers over the past several decades have reported an abundance of archaeological data from Namib and the surrounding region. As a result, there is a reasonably good understanding of Namib's long and complex cultural history. The early and middle Holocene prehistory of the Namib is better developed relative to earlier periods and a larger number of sites have been excavated and dated (e.g. Kinahan 1991, Wadley 1993).

These investigations can only be described as preliminary, but they have indicated something of the area's archaeological potential, particularly with respect to the history of the OvaHimba, the last remaining traditional pastoralist society in southern Africa. The interest in the OvaHimba archaeology lies partly in the history of the people themselves, and partly in the comparative value of such archaeological evidence for the understanding of pre-colonial pastoralist societies in other parts of Africa (Mason, 1984). Some evidence from this part of Kunene Region for human occupation over at least the last one million years. The earliest

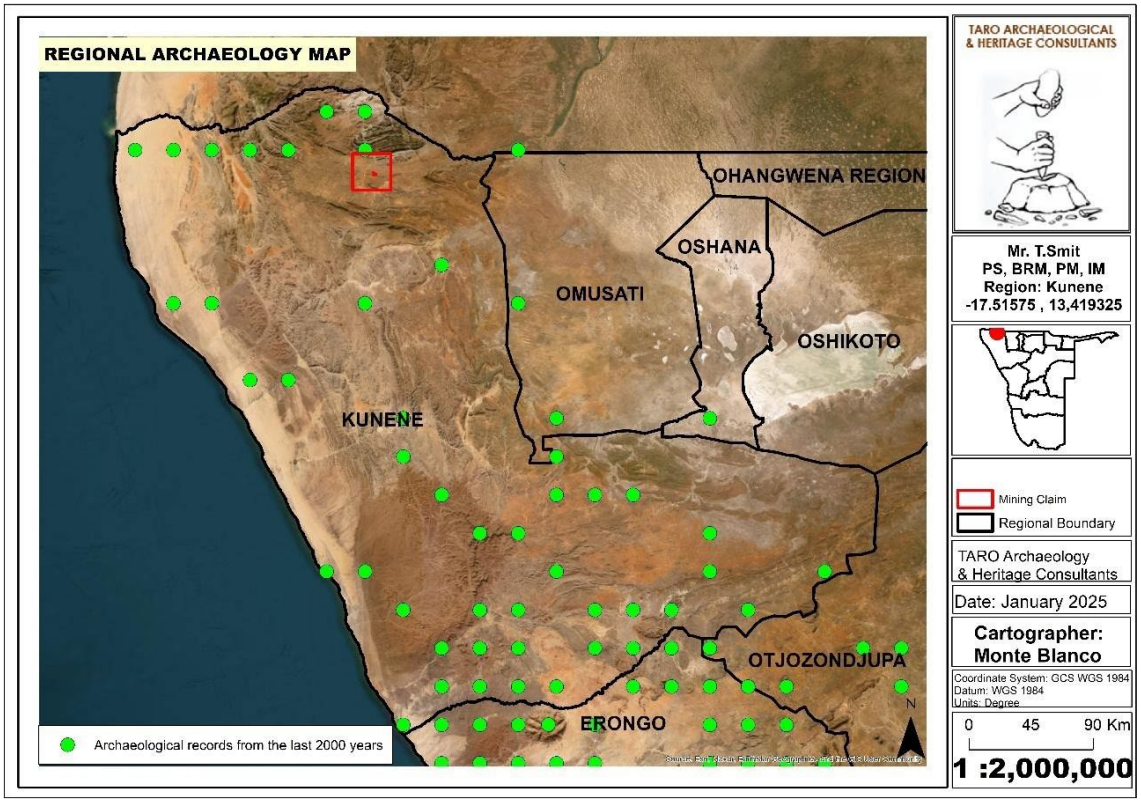
evidence, dating from the mid-Pleistocene, is primarily in the form of crude stone implements found as surface scatters in the vicinity of major drainage lines. Later Pleistocene remains include well-fashioned bifacial stone hand-axes which in the last 200 000 years were superseded by a complex toolkit of smaller artefacts that could be attached to wooden spear shafts and scraper tool handles, using vegetable resin.

Over the past decade, a variety of field surveys carried out in Kaokoland, Namibia have recorded the presence of numerous cascade tufas in the region situated between Sesfontein and Opuwo (Mocke, 2014; Pickford, 2019; Pickford et al. 2016a). Most occurrences have produced plant fossils, shells of invertebrates, and numerous microfaunal remains, as well as occasional bones and teeth from large mammals. Tufa deposits have been found to contain stone tools typical of the Middle Stone Age and Late Stone Age (Pickford, 2019, 2020). Preliminary assessments indicate that the cascade tufa in Kaokoland was formed during the Pliocene and Pleistocene epochs, with evidence suggesting that some of the older tufa lobes (mostly concealed by younger lobes) may date back to the late Miocene.

The archaeological evidence currently available suggests that the Kunene Region will contain abundant traces of Pleistocene occupation, but that much of this evidence has been displaced by sheet erosion on steep slopes. Material from the Holocene epoch is also found, including examples of rock art as engravings on outcrops close to the Epupa Falls (Sherz 1975) and in nearby regions of southern Angola (Kinahan 1997). Evidence of recent pastoralist settlement is particularly plentiful and comprises numerous grave sites, some of which are located near the river.

Throughout the African Middle Stone Age, archaeological indicators of cognitive complexity became more prevalent, marked by the regular use of red ochre, which is often seen as a key element in the evolution of modern human behavior. This research demonstrates that the utilization of ochre has played a major role in African societies, influencing areas such as communication, art, and language. Various locations in Namibia, including the Erongo and Kunene regions, were painted with red ochre.

Prior archaeological surveys in the Kunene Region have demonstrated a correlation between the location of archaeological sites and the landscape. Considered as a simplified land system (cf. Johansson & Strömquist 1978; According to Strömquist et al. (1999), the northern Kunene Region consists of five component landscape units. Steep hillslopes (Unit I), characterized by exposed rock and skeletal soils, constitute 11% of the area; colluvial footslopes (Unit II) along with outwash fans and small isolated hills make up 72% of the area; seasonal streams (Unit III) along with the associated bush constitute an additional 13%; the riparian zone of significant drainage lines (Unit IV) like the Omuhonga, Ombuku, and Oheuva constitutes 4% of the area.



- **Figure 5: Archaeological Regional Map of the Kunenes Region.**

9.2. Historical Background of the Subject land

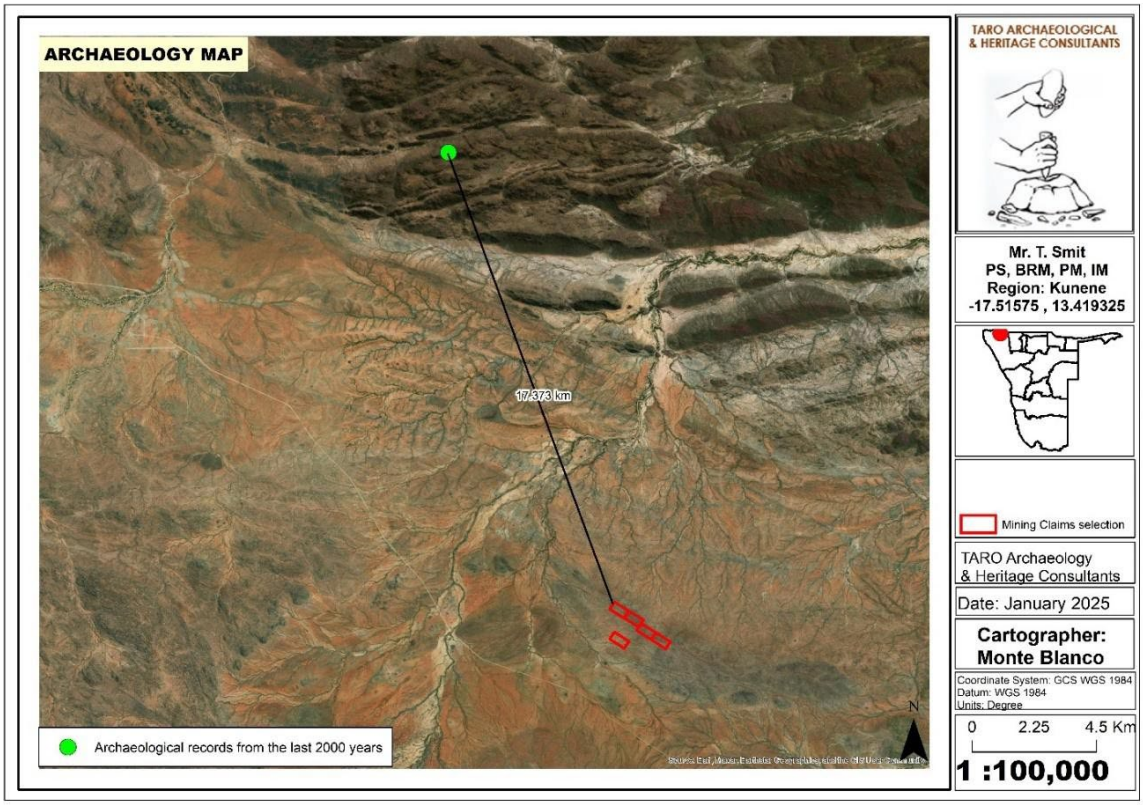
As it is known, majority of the ethnic group around the landscape of which the proposed project is located are the Himba or OvaHimba, like many others the OvaHimba are part of the wide spread Bantu group living in the so-called Kaokoveld, in the north-western part of Namibia and across the Kunene River in Angola. They speak Otjhimba, a dialect of Otjiherero, which is a Bantu language. Around 20,000 Ovahimba are currently living in the Kaokoveld. There pastoral lifestyle was and is still semi-nomadic. The Himba emerged as a distinct ethnic group toward the end of the last century. According to the oral traditions (Bollig 1997).

The Ovahimba are the original traditional Herero who crossed the Kunene and came from Angola to Namibia in the middle of the 16th century. They settled in the Kaokoveld, the north-western part of Namibia and lived a semi-nomadic, pastoral lifestyle. The early history of the Herero was fraught with severe droughts and other disasters. Large groups of the Herero people left the Kaokoveld and looked for better grazing grounds for their herds in the south-east. The remaining Herero in the Kaokoveld came under attack from the Swartbooi and Topnaar Nama in the 19th century. The Nama entered the Kaokoveld from the south, also looking for better grazing grounds. In 1850 the Nama established a base in Sesfontein from where they organized raids against the Herero of the Kaokoveld. Due to the fact that the Herero were widely scattered

and the Nama had much better weapons, large cattle herds were raided from the Herero in the next 20 years[1].

As the situation deteriorated and the loss of their material and social wealth increase the Herero of the Kaokoveld fled over the Kunene River into Angola and took shelter with the Ngambwe, which granted support to the refugees. They called the Herero "Ovahimba", which means "beggar" in the language spoken by the Ngambwe. Over the years the Herero took over this name still use it until today. Most of the Ovahimba followed a popular warrior named Vito back to Namibia in 1920. Ever since and up to the Namibian independence in 1990 the Himba were able to live their traditional lifestyle. During the recent years the Ovahimba have been more exposed to the influences of the modern world, although this mainly refers to the consumption of unhealthy foods, cool drinks and alcohol. The positive achievements of modern society

like a proper health system, modern schools, pension funds etc. did not yet reach the majority of Ovahimba[1].



- **Figure 6: Archaeological map of the landscape near the mining claims**

[1] https://www.lcfn.info/ovahimba/information/ethnology

According to the National Heritage Council of Namibia, Kunene Region has about 7 known heritage sites which are listed as national monuments (Declared Sites/Lists of National Heritage).

- **Table 12: Declared Heritage Sites in Kunene Region**

Designation	**Description**	**Built/Construction Period**	**Location**	**Monument number**
Rock Engravings at Peet Alberts Koppie	Rock engravings		Kamanjab Karte	036/1967
Naulila-Denkmal	Monument	1933	Outjo Karte	052/1971
Stone Tower	Wasserturm	1900	Outjo Karte	027/1975
Dorsland Tractor Cottage	Historic building	1878		009/1951
Petrified Forest	Petrified Wood	250 million years	Khorixas	004/1950
Twyfelfontein	Cave, rock carvings	about 4000 BC Chr	Khorixas	016/1952
Burnt Mountain	Rock Formation	80 million years	Khorixas	024/1956

10.4. The General Archaeo-Historical Context of Southern Africa.

For the sake of understanding the archaeology of Southern Africa, Namibia included and to enable the reader to understand archaeological objects, features and sites that could be unearthed and disturbed during development, it is necessary to give a background regarding the different phases of human history. It is however important to note that periods and dates are relative and only provide a broad framework for interpretation. The Southern African archaeological environment is divided into the Stone Age, the Iron Age/Farmer Period and the Historical Period. Table 13 below summarizes different periods of the chronological sequence of periods, cultural groups, technological advancement and cognitive evolution.

Table 13: The Archaeological Context: Sequence, Period and Definitions across Southern Africa

Period	**Epoch**	**Associated Cultural Group**	**Typical Material Expressions**
Early Stone Age 2.5m – 300000/250 000 kya	Pleistocene	Early Hominins: *Australopithecines Homo habilis Homo erectus*	Typically large stone tools such as hand axes, choppers and cleavers

Middle Stone Age 250 000/200000 – 25 000 kya	Pleistocene	First *Homo sapiens* species	Typically smaller stone tools such as scrapers, blades and points.
Late Stone Age 20 000 BC – present	Pleistocene / Holocene	*Homo sapiens sapiens* including San people	Typically small to minute stone tools such as arrowheads, points and bladelets.
Early Iron Age: Early Farmer Period 300 – 900 AD	Holocene	First Bantu-speaking groups	Typically distinct ceramics, bead ware, iron objects, grinding stones.
Middle Iron Age: Early Later Farmer Period 900 – 1350 AD	Holocene	Bantu-speaking groups, ancestors of present-day groups	Typically distinct ceramics, bead ware and iron/gold / copper objects, trade goods and grinding stones.
Late Iron Age: Later Farmer Period 1400 AD to1850 AD	Holocene	Various Bantu-speaking	Distinct ceramics, grinding stones, iron objects, trade objects, remains of iron smelting activities including iron smelting furnace, iron slag and residue as well as iron ore.
Historical/Colonial Period ±1850 AD to present	Holocene	Various Bantu-speaking groups as well as European farmers, settlers and explorers	Remains of historical structures e.g. homesteads, missionary schools etc. as well as, glass, porcelain, metal and ceramics.

Source: Exigo Sustainability 2021.

10.5. Archaeological Sequence in Namibia

To put Namibian heritage and archaeological contexts into perspective, the following information is crucial to the general understanding of the occurrence and the associated period in different time-frames that would represent the known human occupation sequence in Namibia and Southern Africa in general. This helps in building knowledge about past adaptations and cultural dynamics. According to Nankela (2017), the archaeological sequences of Namibia can be summarized as follow (*Table 14*).

- **Table 14: Archaeological Sequences in Namibia**

Period	Year	Area/Location	Evidence	Description
Pleistocene	400 000 - 100 000	Namib Plains, Namib Desert & Lower Kuiseb	Bone fragments of extinct elephants and stone tools	
Holocene	10 000 - 1 000	Around Namibia	Scattered artefacts, rock art sites, potsherds, beads, grave cairns, hut circles, human remains, axes,	Sites are fragile, inaccessible and due to inadequate archaeological investigations in some sites.

Period	Year	Area/Location	Evidence	Description
			pointed flakes, cleavers and blades.	
Historic Period	500	Around Namibia	Cemeteries, old mine workings, waste rock walling, architectural heritage and WWI military engagements.	Namibia has an indication of intensive settlements between indigenous people and Europeans.

11. Physical and Environmental Context of the Area (Physiography)

The project area falls within the Kaokveld vegetation area. The Kaokoveld as a whole is famous for its floristically diversity area with high levels of plant endemism ascribed to diversity in soils, topography and climate. According to Mendelsohn (2002) and what was observed on site, overall plant species richness in the general area is low to medium (approx. 300 to 400 spp.). The vegetation within the study site was found to be dominated by red thorn acacia (Acacia Reficiens), mopane (Colophospermum mopane) and purple pod terminalia (Terminalia prunioides). Various Commiphora species, Moringa ovalifolia, Sterculia africana and Sesamothamnus guerichii can also be found in the general area.

- **Figure 7: Vegetation type of the subject land**

Topographically and environmental settings of the proposed development footprints: The license area is characterized by rugged landscape, surface scatter on a flat surface, and river channels. (*Figure 8*).

Figure 8: Landscape views of the subject land

12. Assessment of the Findings within the Proposed Project

12.1. On-site findings

Heritage sites are fixed features in the environment, occurring within specific spatial confines. Any impact upon them is permanent and non-reversible. Namibia's unique and non-renewable archaeological and palaeontological heritage sites are protected in terms of the National Heritage Act No. 27 of 2004 and may not be disturbed at all without a permit from the relevant heritage authority such as National Heritage Council. A portion of data gathered during the site assessment comprised of features that can be associated with archaeological/ natural features like river, and surface scatters. Archaeological sites of this nature typically serve as hubs to conserve/preserve evidence of early human habitation. Other findings were primarily anthropological in nature, consisting of abandoned homesteads, and cattle post which were scattered throughout the mining claim discussed in this report.

12.1.1. Observation made during the Site Survey of the Subject land

The observations and assessment made during the site survey yielded the following findings that are summarized in the following Table below;

- **Table 15: Archaeological and Cultural Heritage Resources within the Landscape**

Heritage resource type	Observation and recording made
Landscapes and Natural Features	Rugged landscapes, Flat and Hill
Holy Places	None was/were recorded
Rock shelters and Caves	No
Archaeological/Geologic sites	Surface scatters, and river (streams)

Graves and burial places	None within the mining claims, only outside the Mining Claims.
Historical settlements and Buildings	None identified and recorded
Places associated with oral traditions or living heritage	None disclosed, besides folktales about the spirituality of Opuwo mountains.
Monuments	None were recorded.
Movable objects	Few Scattered Stone Tools (Surface scatters)

12.2. Photographic Documentation of the recorded features within the traversed areas

All sites, objects and features that are were identified during the surface walk over are documented according to the general standards accepted by the NHC Guidelines 2021 and Archaeological Profession. Coordinates of individual localities are determined by means of the Global Positioning System (GPS) and plotted on a map. This information is usually added to the description in order to facilitate the identification and grading of each locality. T

he majority of the findings in these mining claims are rock outcrops which are natural features, nothing of significance was recorded or found. Therefore, the expected impact is very ***LOW***.

Mining Claim 73283 Archaeological

records: ***LOW*** Cultural Heritage Sites:

None Spiritual Place; ***None***

- **Figure 9: Surface scatter**

Mining Claim 73284

Archaeological records: ***LOW*** Cultural

Heritage Sites: ***None*** Spiritual Place;

None

Figure 10: Outcrops

Figure 11: Outcrops

Figure 12: Rock outcrops

Mining Claim 73285

Archaeological records: ***LOW*** Cultural

Heritage Sites: ***None*** Spiritual Place;

None

Figure 13: Rock outcrops

Figure 14: Outcrops

Mining Claim 73286

Archaeological records: ***LOW*** Cultural

Heritage Sites: ***None*** Spiritual Place;

None

Figure 15: existing drilled holes from previous exploration works

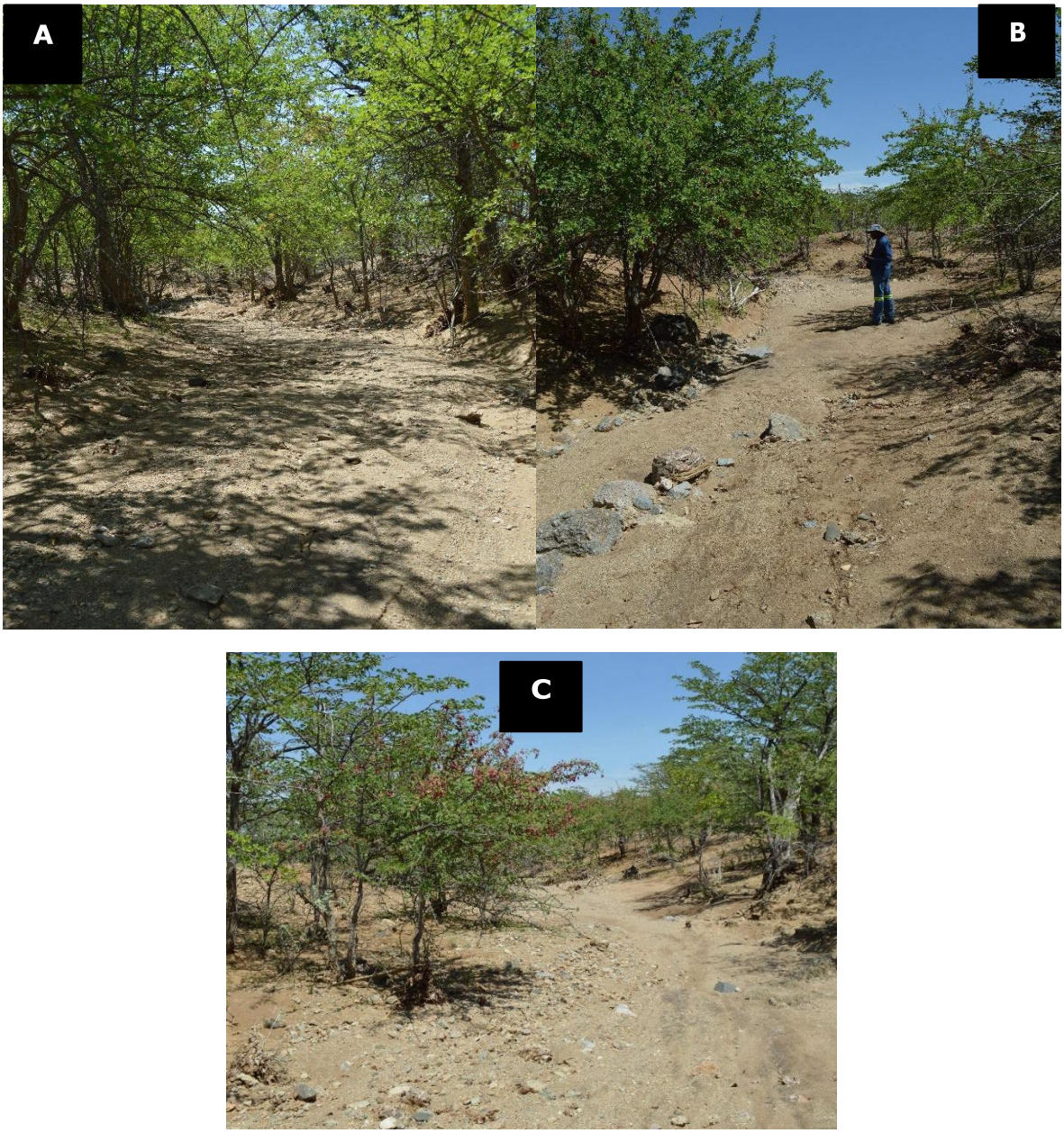
Figure 16: Rock outcrops

Mining Claim 75208

Archaeological records: ***LOW/Little to None***

Cultural Heritage Sites: ***None***

Spiritual Place; ***None***



- **Figure 17: Dry water channels within the mining claims**

Findings outside the Mining Claims Community Consultation

It should be noted that, all of these mining claims reported herein are within the larger EPL 10007. Therefore, prior to the field assessment, a public consultation meeting for the ongoing Environmental Impact Assessment (EIA) for the proposed exploration and mining activities for the Epembe Mining & Exploration Projects, was held at Omuangete Primary School on 3rd December 2024. A total of 86 members participated in this important engagement. This engagement prompted the need to identify and mark sites of cultural and historical importance to the community such as graves and other cultural heritage sites.

- **Findings**

The survey identified two significant cultural heritage sites:

- **Unmarked Grave**

A lone, unmarked grave was located approximately 60 meters outside the northwestern boundary of EPL10007 refer to *figure 19 below*. The grave has been marked for future reference with coordinates **33K 330910 8063562**.

- **Omungareva Graveyard**

A graveyard was identified at Omungareva village, situated approximately 850 meters south of the southern border of EPL10007 refer to *figure 19 below*. The graveyard has been marked for future reference with coordinates **33K 333975 8059183**.

- **Figure 18: Graveyard**

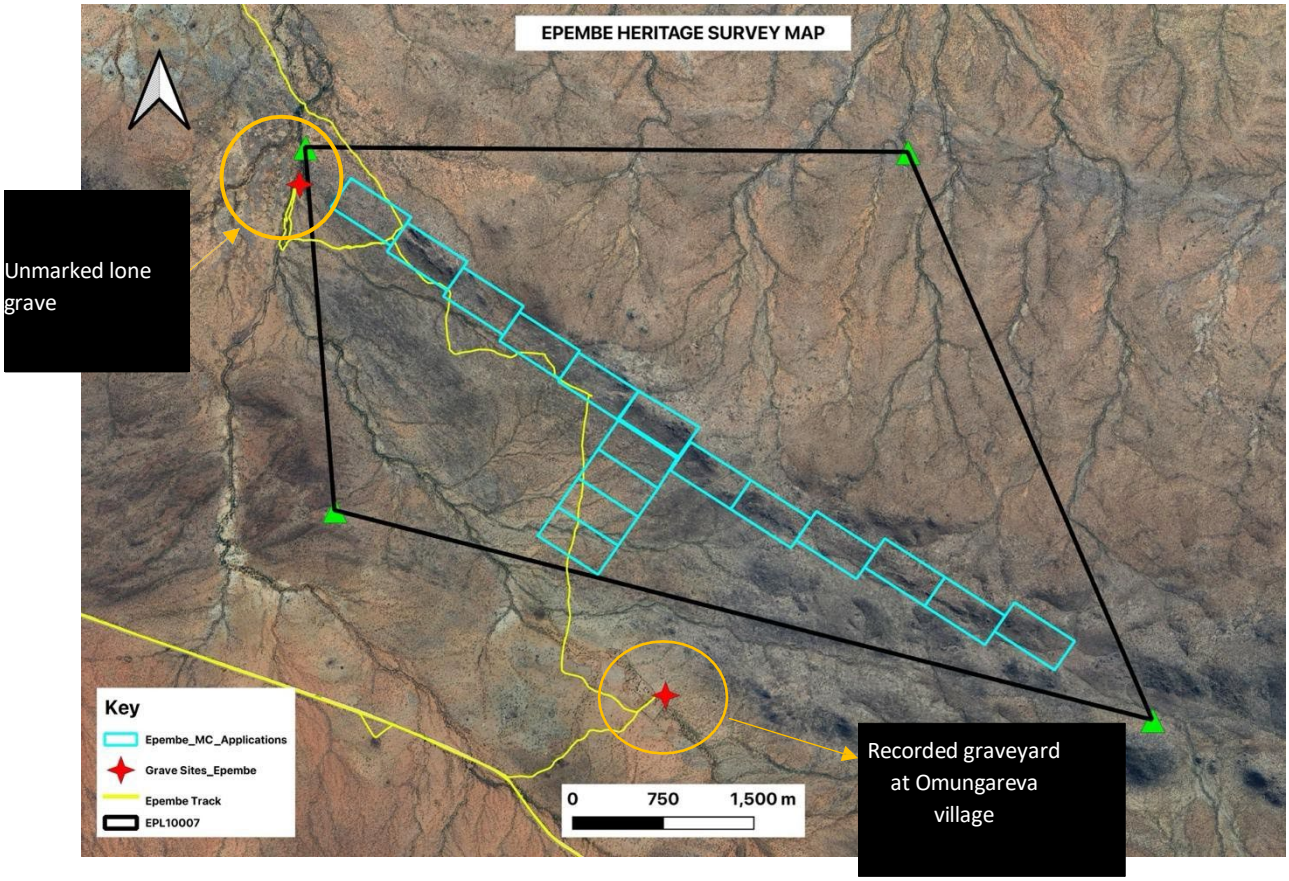


Figure 19: Map of the Epembe Project showing the marked grave sites around EPL10007

It should be emphasized that the majority of the findings within the surveyed mining claims consisted of natural features such as rock outcrops and dry river channels. However, the proponent is advised to exercise caution and adhere to the ***Chance Find Procedure*** if something surfaces of archaeological importance.

- **Table 16: Assessment of Significance and Grading of Archaeological and Heritage Resources on the Proposed Project**

Waypoint	Location	Elevation	Description of the findings	Heritage Significance	Grading	Vulnerability Description
MC 73283						
TAHC 50	S 17^0 31′ 27.8″ E 13^0 25′ 44.7″	1137 m	Surface Scatter	Low	2	3
MC 73284						
TAHC 46	S 17^0 31′ 35.6″ E 13^0 25′ 58.7″	1152m	Rock Outcrops	Low	2	3
TAHC 47	S 17^0 31′ 32.3″ E 13^0 26′ 02.8″	1175m	Rock Outcrops	Low	2	3
MC 73285						
TAHC 38	S 17^0 31′ 51.5″ E 13^0 26′ 19.5″	1161m	Rock Boulder/Outcrop	Low	2	3
TAHC 39	S 17^0 31′ 52.8″ E 13^0 26′ 18.9″	1153 m	Upstream river	n/a	n/a	n/a
MC 73286						
TAHC 41	S 17^0 31′ 54.9″ E 13^0 26′ 35.5″	1193 m	Uphill/hill top	n/a	n/a	n/a
TAHC 42	S 17^0 32′ 04.1″ E 13^0 26′ 43.7″	1174 m	Rock Outcrops	Low	2	3
			MC 75208			
TAHC 29	S 17^0 32′ 06.2″ E 13^0 25′ 49.4″	1148 m	Big River Channel	n/a	n/a	n/a
Outside Mining Claims						
TAHC 66	S 17^0 32′ 51.7″ E 13^0 26′ 09.4″		Graveyard	Considerably high	3	1

13. Archaeological Sensitivity Map.

The archaeological sensitivity map was created after the thoroughly site surveys which took place on the 01st of February 2025. Since there were no sensitive findings, the few recorded sites are presented herein on the topographic map below on *figure 13*.

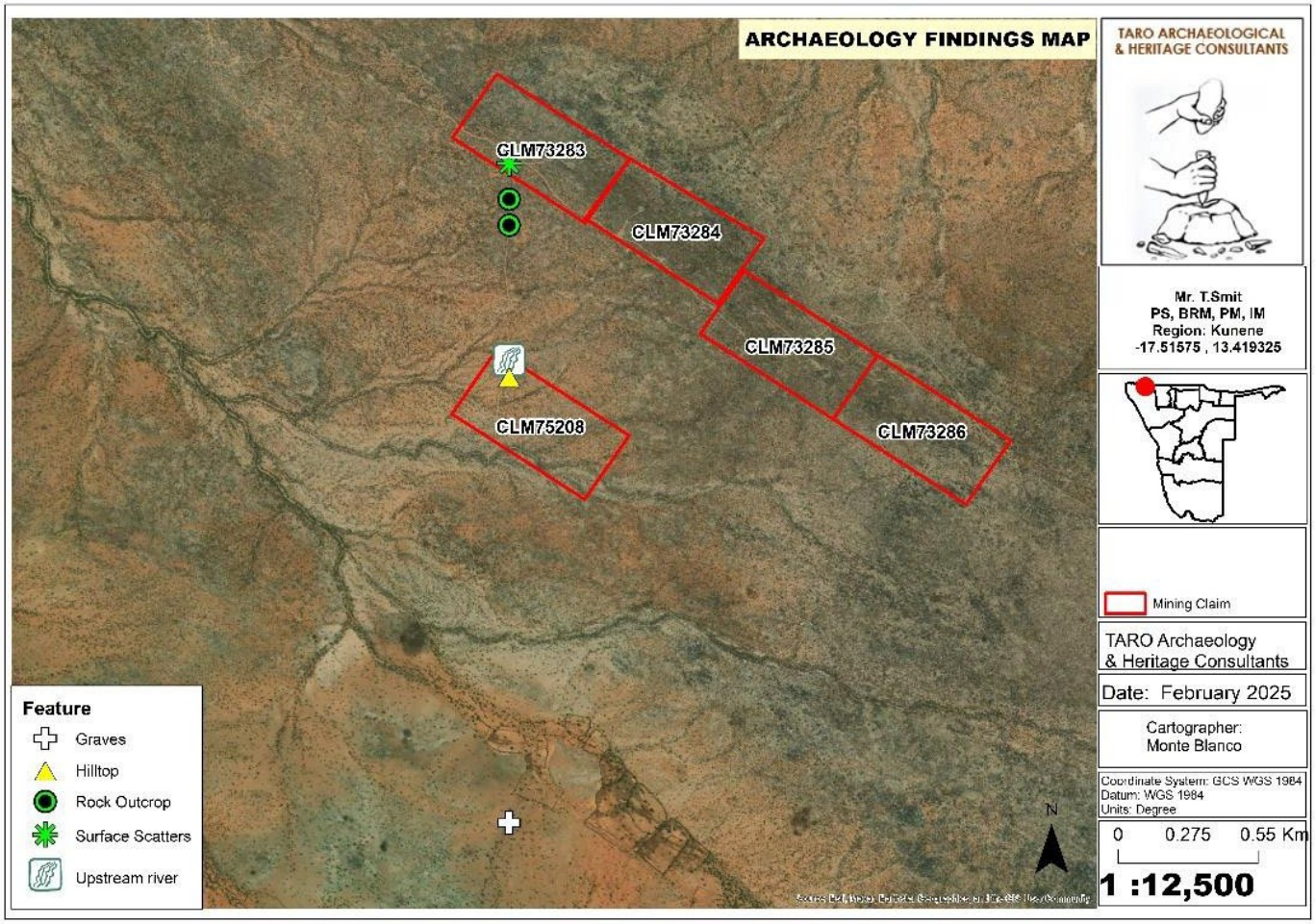


Figure 20: Archaeological and cultural sensitivity map

13.1. Identification and Description of the Potential Impact on Cultural Heritage Resources

13.1.1. Impact Assessment

Data collected during the site surveys on the archaeological and cultural heritage assessment revealed that the proposed project for exploration activities may have little to low negative if the recommended mitigation measure are to be adhered by the Project Propone. The purpose of the assessment was to identify potential sites or areas of cultural heritage importance, consider potential impacts thereof and thereafter enhance

the positive impacts and minimize or avoid the negative impacts, thereby encouraging the protection of sites in totality as the priority of this study. The potential impact of the proposed project on archaeological and cultural heritage resources is assessed as follows (*Table 17*).

- **Table 17: Impact Assessment/Impact Evaluation**

Potential Impact	**Impact Criteria**		**Significance Ranking (Without mitigation)**	**Potential Mitigation Measures**	**Significance Ranking (With mitigation)**	**Confidence Levels**
Damage/destruction of archaeological sites or materials	Extent or Spatial of impact	Local	**Moderate/high**	Quarrying and mining activities should be implemented on targeted sites only. - Minimise cut-and-fill and landscape scarring in general -Ensure less micro siting of loads to avoid the chance of impacts - Ensure effective rehabilitation of areas not needed during mining works. - Ensure proper micro-siting of mining equipment to avoid impacts -Demarcate and respect the No-Go-Zone of the identified sites. - Report any chance finds - Protect *in situ* materials	**Low**	**High**
	Duration of impact	Long-term				
	Probability (Threat)	Likely				
	Magnitude of impact	Low/little				
	Reversibility	Non-reversible				
	Can impacts be mitigated?	N/A				
Damage/destruction of graves and burial grounds	Extent or Spatial of impact	Local	**Moderate/high**	Prospecting and Exploration activities should be	**Low**	**High**

	Duration of impact	Long-term		implemented on targeted sites only. - Graves and burial grounds should be avoided at all costs. - Minimise cut-and-fill and landscape scarring in general - Ensure effective rehabilitation of areas not needed during quarrying and mining works. - Ensure proper micro-siting of infrastructure and mining equipment to avoid impacts - Report any chance finds - Protect *in situ* materials		
	Probability (Threat)	Unlikely				
	Magnitude of impact	Zero				
	Reversibility	Non-reversible				
	Can impacts be mitigated?	Yes				
Damage to the rock shelters and caves	Extent or Spatial of impact	Local	**Moderate/high**	Quarrying and mining activities should be implemented on targeted sites only. - Minimise cut-and-fill and landscape scarring in general - Ensure effective rehabilitation of areas not needed during mining works.	**Low**	**High**
	Duration of impact	Long-term				
	Probability (Threat)	Unlikely				
	Magnitude of impact	Low				
	Reversibility	Non-reversible				

	Can impacts be mitigated?	N/A		- Ensure proper micro-siting of infrastructure and mining equipment to avoid impacts - Avoid drilling or digging near rock shelters (*if any*). - Report any chance finds - Protect *in situ* materials		
Cumulative impacts	Archaeological sites are non-renewable and the impact on any archaeological context or material will be permanent and destructive.			• Ensure proper micro-siting and sitting of infrastructure of Prospecting and Exploration equipment to avoid a proliferation of archaeological sites and materials.		
Residual impacts	With the implementation of mitigation measures mentioned herein, the significance level of the impacts identified will be reduced to either minor adverse/low or negligible.			• The undertaking of the mitigation measures outlined here before and during the proposed mining and quarrying activities of the aforementioned commodities will lead to *Minor* overall residual effects on archaeology. The recommended buffer zone of known archaeological sites in the vicinity of the application area to at least a distance of 50 m radius from the visual edge of the targeted site will ensure that these sites are preserved *in situ* and thus will not be impacted by the mining activities.		

14. Summary of the Impacts

Direct or indirect impacts or risks of impact on archaeological sites located near or in the vicinity of the proposed mining project can be reduced to acceptable levels by the adoption of appropriate recommended mitigation measures including integration of the archaeological heritage record and *Chance Finds procedure* in the project EMP (see *Appendix 1, & recommended mitigations*). Special efforts should be made to reduce and avoid impacts on any discovered site, artefacts or yet-to-be-discovered archaeological sites.

However, any additional effects to subsurface heritage resources can be successfully mitigated by implementing a ***Chance Find Procedure***. Mitigation measures as recommended in this report should be implemented during all phases of the project. Impacts of the project on heritage resources is expected to be low during mining activities (Table 18).

- **Table 18: Archaeological & Heritage consideration for Inclusion in the Project EMP**

Expected Impacts	**Mitigation/management objectives & outcomes**	**Mitigation/management actions**	**Monitoring**		
			Methodology	Frequency	Responsibility
Impacts on archaeology and graves					
Damage or destruction of archaeologic al sites or graves (known or unknown)	Avoid any impacts, if not possible or locate and sample or rescue sites/burials before disturbance	Pre-construction survey, micro-siting of infrastructures & equipment	Appoint an archaeologist to conduct a survey well before construction	Once-off	Project Proponent
	Rescue information, artefacts or burials before extensive damage occurs	Reporting chance finds as early as possible, protect *in- situ* and stop work in the immediate area	Inform staff and carry out inspections of excavations	On- going basis Whenever on site (at least weekly)	Contractors ECO
Impacts on the cultural landscape					
Visible landscape scarring	Minimize landscape scarring	Ensure disturbance is kept to a minimum and does not exceed project requirements. Rehabilitate areas not needed during operation.	Monitoring of surface clearance relative to approved layout	Ongoing basis Whenever on site (at least weekly)	Construction Manager or Contractor ECO

15. Identification of Key Impacts

The key impacts of the proposed development on the archaeological and heritage resources will be the physical disturbance or destruction of sites or remaining within or close to the designated footprint of the proposed development and its associated surface works, and disruption of the landscape setting or physical context of the archaeological sites or remains. Such impacts will be both local, in the sense of the specific site, and at the landscape level where the proposed project will take place.

15.1. Residual Cumulative Environmental Effects

Although some archaeological materials such as stone artefacts and sites are likely to be lost during the clearance of land or construction of other facilities necessary for exploration works. Similarly, the focus of mitigation measures in this report is to recommend the layout of the project to avoid all known significant heritage or cultural sites and burial places and will thus make a negligible contribution to cumulative impacts. The cumulative impacts are deemed to be of **low** significance in this case but with project-specific mitigation as listed in ***Section 15.2,*** this would drop to **very low** after mitigation.

15.2. Identification of alternatives

There are no site alternatives for the proposed project but the targeted site has already been identified so as to reduce impact upfront. However, the layout will be designed accordingly to avoid any damage to the already known and located archaeological/cultural or heritage sites. This is to suggest that if the site is located already, the development project has to find an alternative location to either avoid the site completely, mitigate it or rescue it before any damage could be done, and to do this a proper permit from the National Heritage Council of Namibia will be required.

15.3. Anticipated Impacts on Visual and Landscape

All known significant archaeological and heritage resources will be/should be avoided by the proposed project (aside from the landscape where the proposed project will take place) i.e. practically the landscapes cannot be mitigated in the conventional archaeological sense, and impacts to them are contextual (visual impact affecting the sense of a place) mitigation usually involves avoidance, careful placement of the proposed project infrastructures and other development, or the creation of appropriate buffer zones to minimize visual intrusion.

16. Management Plan and Mitigation Measures

Detailed mitigation measures are given herein in the form of recommendations (refer to the bulleted list in ***Section 15.2*** below under the conclusion and recommendation section). These mitigation measures will be included and implemented along with the general EMP of the project, as well as the implementation of the *Chance Find Procedures* and *Heritage Monitoring Plan* for the proposed project as set out in *Appendix 1* below.

16.1. Conclusion and Recommendation

Generally, the surveyed areas yielded low significant in archaeological contexts, the nature of the landscape is also contributing to low/little significance, since it is a rugged terrain and mountainous. Only two graves were recorded and are outside the mining claim. To mitigate and minimize the chances of subsurface encounters the adoption of ***CHANCE FIND PROCEDURE*** is highly recommended. Therefore, the overall impact is considered to be ***LOW***. However, cognizance should be taken of heritage resources and archaeological material that might be present in surface and sub-surface deposits. If, during exploration or mining activities such as drilling, excavation or construction, any possible archaeological material culture discoveries are made, the operations must be stopped and a qualified archaeologist be contacted for an assessment of the find.

16.2. Recommended Mitigation Measures

It is extremely important for the Project Proponent, and all those involved in the project to fully understand that all archaeological and palaeontological objects and meteorites are the property of the State, except such an archaeological or palaeontological object the private possession and ownership of which (a) was acquired not in contravention of ***Section 12*** of the National Monuments Act, 1969 (Act No. 28 of 1969) or a law repealed by that Act; and thus, as part of mitigation measures, it should be noted that according to National Heritage Act No. 27 of 2004 that all activities that will involve digging or excavating the ground will require a permit from National Heritage Council of Namibia. Therefore, To prevent accidental damage to the archaeological landscape, including any potential sub-surface archaeological finds or features, the following mitigation strategies are proposed and recommended;

- If any archaeological materials or human burials or skeletal remains are uncovered during mining activities, then the work in the immediate area should be halted, the finds would need to be reported to the Heritage Authority and may require inspection by an Archaeologist. The ECO should have the area fenced off and contact NHC (**Tel: +264 61 244 375**), National Forensic Laboratory (**+264 61 240 461**) immediately.
- Under no circumstances shall any artefacts be removed, destroyed or interfered with by anyone on the site; and Contractors and workers shall be advised of the penalties associated with the unlawful removal of cultural, historical, archaeological or palaeontological artefacts, as set out in the National Heritage Act (Act No. 27 of 2004), Section 52 (2).
- Any pile of stones or mound of the earth looking even remotely like a grave should be avoided at all costs.
- Buffer zones should be maintained & respected around known significant archaeological, historical or cultural heritage sites as far as possible. Graves and areas with cultural significance are excluded from any development. A 50m radius buffer zone is highly recommended.
- A "No-Go-Area" should be put in place where there is evidence of sub-surface archaeological materials, archaeological sites, gravesites, historical, rock paintings, cave/rock shelters or past human dwellings. It can be a demarcation by fencing off or avoiding the site completely by not

working closely or near the known site. The 'No-Go Option' might have a NEUTRAL impact significance.

- Cognizance must be taken of the larger cultural & heritage landscape of the area to avoid the destruction of previously undetected heritage sites. Should any previously undetected heritage or archaeological resources be exposed or uncovered during the development phases of the proposed project, these should immediately be reported to the heritage specialist or heritage authority (National Heritage Council of Namibia).
- The Proponent and Contractors should adhere to the provisions of **Section 55** of the National Heritage Act in the event significant heritage and cultural features are discovered in the course of developmental works.
- It should be noted that the subterranean presence of archaeological and/or historical sites, features or artefacts is always a distinct possibility. Care should therefore be taken when development commences that if any of these are discovered, work on site cease immediately and a qualified archaeologist be called in to investigate the occurrence.
- Bi-annual auditing is highly recommended.

It should be taken into consideration that, according to **Part VI sub-section (1), (2)** or **(3)** A person who contravenes these provisions commits an offence and is liable to a fine not exceeding N$100 000 or to imprisonment for a period not exceeding 5 years, or to both such fine and such imprisonment. A Project Proponent should heed these recommendations and comply with the existing legislation and Act as reflected in this report.

16.3. Statement and reasoned opinion of the specialist

It is the reasoned opinion of the undersigned archaeologist that, the overall impact of the project is considered to be **LOW** and residual impacts can be managed to an acceptable level through implementation of the recommendations made in this report. The socio-economic benefits also outweigh the possible impacts of the development if the correct mitigation measures are implemented for the project. Chance Find is recommended to be implemented in all phases of explorations.

17. References

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Appendix 1: Archaeological "*Chance Finds Procedure*"

This survey is based on surface indications alone, and it is, therefore, possible that sites or items of significance will be found by chance in the course of development work. Therefore, this Chance Finds Procedure intends to provide the exploration crews with general guidelines for the appropriate response to the discovery of known, unknown or suspected archaeological materials, including human remains, during Project activities. While *Chance Find Procedures* are valuable, they are not a substitute for prior assessment and evaluation of archaeological resources. The objectives of these guidelines are to promote the preservation and proper management of heritage resources that are unexpectedly encountered during Project activities and to minimize disruption to construction activities and scheduling.

A step-by-step *Chance Find Procedure* is provided below for archaeological sites and accidental findings. Contact information is as well provided in ***Appendix 1*** and the general Archaeological and Heritage Management Plan is set in ***Appendix 2***.

- **Scope:**

The "chance finds" procedure covers the actions to be taken from the discovery of an archaeological site or item to its investigation and assessment by a trained archaeologist or other appropriately qualified people. This procedure is intended to ensure compliance with the relevant provisions of the National Heritage Act (27 of 2004), especially Section 55 (4): *"A person who discovers any archaeological object must as soon as practicable report the discovery to the Council"*. The procedure of reporting set out below must be observed so that archaeological remains reported to the NHC are correctly identified in the field.

Project Manager or ECO/Site Manager/Supervisor must report the finding to the following competent authorities:

- **National Heritage Council of Namibia (061 244 375)**
- **National Museum (+264 61 276800),**
- **National Forensic Laboratory (+264 61 240461).**

Heritage Monitoring and Management Requirements

Throughout the development phases of the proposed project, monitoring is necessary to ensure compliance with measures agreed upon in the recommended mitigation as well as to assess how effective the mitigation measures are in protecting the values and significance of the heritage resources. This can be achieved through regular monitoring of the project site or random visits the compliance with measures outlined in the recommendation section is monitored, recorded, and reported. However, in principle, heritage monitoring and management should be conducted and implemented by an archaeologist/heritage specialist or trained personnel while other activities especially day-to-day monitoring can be done by Environmental Control Officer (ECO) or in some cases a trained Site manager can be responsible for this.

Site monitoring: As most heritage resources occur below the surface, all earth-moving activities need to be routinely monitored in case of accidental discoveries. The greatest potential impacts are the initial soil removal and subsequent earthworks during the construction or development of the area. The ECO should monitor all such activities daily. If any heritage resources are found, the *chance finds procedure* must be followed as outlined in **Appendix 1 and 2**.

Monitoring is generally only considered appropriate where changes are probable or likely, and where these changes could be significant and would require remedial or specific management measures. This process can be done in all stages of the development of the proposed project, and during the actual operational phases where more impact on archaeological and heritage resources is probable.

Appendix 2: Archaeological and Heritage Monitoring Measures for Quarrying and Mining

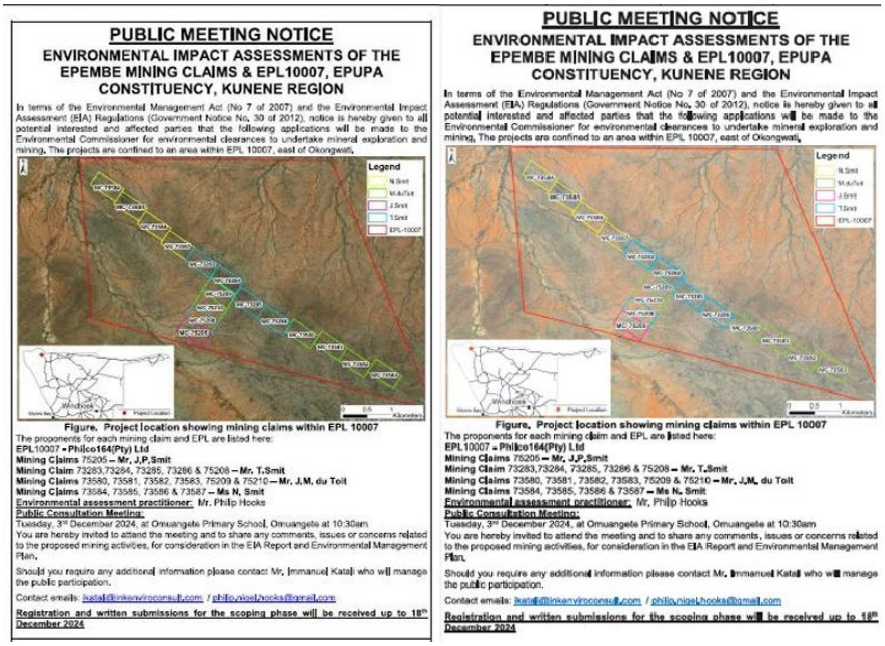
Table 19: Chance Find and Heritage Monitoring Measures

Area/Site	Archaeological/Heritage Aspect	Potential Impact	Mitigation Measures	Responsible Party	Method Statement required
Chance Find (Chance Archaeological and Heritage sites (Accidental discoveries)	General area where the proposed project is taking place (i.e. proposed development which may yield archaeological, cultural materials or human remains. This means that there are possibilities of encountering unknown archaeological sites during subsurface mining work which may disturb previously unidentified chance finds.	Possible damage to previously unidentified Archaeological and heritage sites during the mining and quarrying phase. Unanticipated impacts on archaeological sites where project actions inadvertently uncovered significant Archaeological sites. Loss of historic cultural landscape; Destruction of burial sites and associated graves (if any)	In situations where unpredicted impacts occur, Prospecting and Mining activities must be stopped and the heritage authority should be notified immediately. Where remedial action is warranted, minimize disruption in mining scheduling while recovering archaeological data. Where necessary, Implement emergency	Project Proponent-Contractor/ Mining crews, Project Manager (PM) / Environmental Control Officer (ECO) or Site Manager.	Monitoring measures should be issued as instruction within the Project EMP. PM / ECO / Site Manager / Archaeologist Should monitor development works on sites where such development projects commence within the project site.

Area/Site	Archaeological/Heritage Aspect	Potential Impact	Mitigation Measures	Responsible Party	Method Statement required
		Loss of aesthetic value due to mining work Loss of sense of place Loss of intangible heritage value due to change inland use.	measures to mitigate. Where burial sites are accidentally disturbed during quarrying and mining the affected area should be demarcated as a 'no-go zone' by use of fencing during construction, and access thereto by the construction team must be denied. Accidentally discovered burials in a development context should be salvaged and rescued to safe sites		

Area/Site	Archaeological/Heritage Aspect	Potential Impact	Mitigation Measures	Responsible Party	Method Statement required
			as may be directed by relevant heritage authorities. The heritage officer responsible should secure relevant heritage and health authorities permit for possible relocation of affected graves accidentally encountered during exploration work.		
Compliance Review	A review of archaeological and cultural heritage incidents, their impacts, mitigation used and success of mitigation should be conducted at a certain stage of the project. The review should be looking at mitigation measures in place, and ways of improvement if needed. This exercise can be done after every 6 months or whenever the Project Proponent sees fit. The overall objective is to ensure full compliance with relevant legislation, especially Under Section 5 (4) of the National Heritage Act No. 27 of 2004, Chance Find Procedure, and the recommendations made by the Heritage Specialist.				

- **Appendix 3: Site Notice and Newspaper Advert for the Mining Claims**



PUBLIC MEETING NOTICE

ENVIRONMENTAL IMPACT ASSESSMENTS OF THE EPEMBE MINING CLAIMS & EPL10007, EPUPA CONSTITUENCY, KUNENE REGION

In terms of the Environmental Management Act (No 7 of 2007) and the Environmental Impact Assessment (EIA) Regulations (Government Notice No. 30 of 2012), notice is hereby given to all potential interested and affected parties that the following applications will be made to the Environmental Commissioner for environmental clearances to undertake mineral exploration and mining. The projects are confined to an area within EPL 10007, east of Okongwati.

Figure. Project location showing mining claims within EPL 10007

The proponents for each mining claim and EPL are listed here:

EPL10007 – Philco164(Pty) Ltd
Mining Claims 75205 – **Mr, J.P.Smit**
Mining Claim 73283,73284, 73285, 73286 & 75208 – **Mr. T.Smit**
Mining Claims 73580, 73581, 73582, 73583, 75209 & 75210 – **Mr, J.M. du Toit**
Mining Claims 73584, 73585, 73586 & 73587 – **Ms N. Smit**
Environmental assessment practitioner: Mr. Philip Hooks
Public Consultation Meeting:
Tuesday, 3rd December 2024, at Omuangete Primary School, Omuangete at 10:30am
You are hereby invited to attend the meeting and to share any comments, issues or concerns related to the proposed mining activities, for consideration in the EIA Report and Environmental Management Plan.

Should you require any additional information please contact Mr. Immanuel Katali who will manage the public participation.

Contact emails: ikatali@linkenviroconsult.com / philip.nigel.hooks@gmail.com

Registration and written submissions for the scoping phase will be received up to 18th December 2024

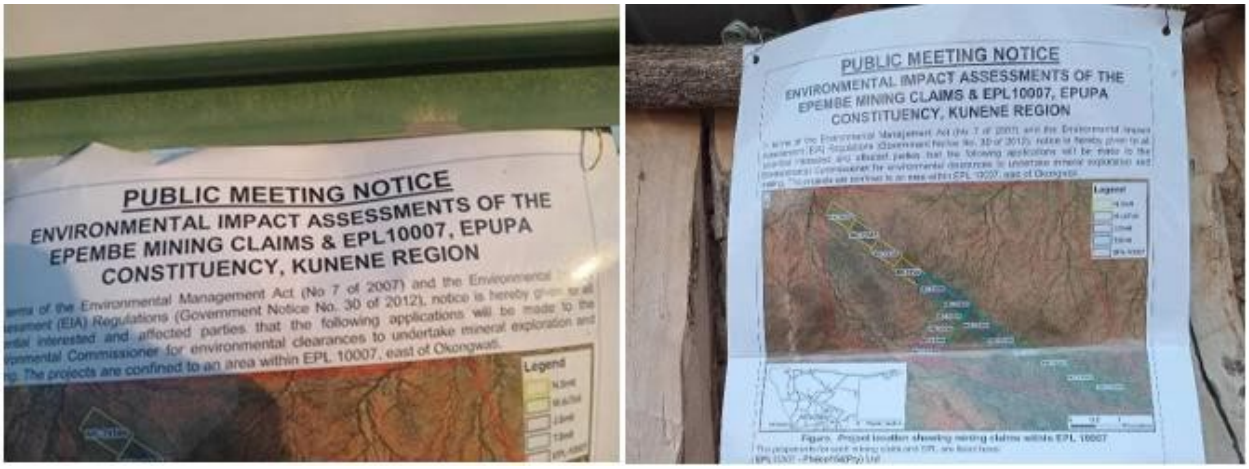


Figure 21: Site notice and snippets of Newspapers Adverts for the Mining Claims

- **Appendix 4: CV of a Specialist**

Personal Information:
Name: Roland Mushi
Address: P.O. Box 19730, Omuthiya - Namibia
Mobile phones: (+264) 813332373 (+264) 853332373
Email: rolandmushi@gmail.com/ rolandm@edsnamibia.com
Nationality: Tanzanian
Residence Status: Namibian Domiciled
Sex: Male
Marital Status: Married
Driver's license: Valid (Category B and D)

- **Educational Qualifications:**
  - Graduated from the Institute of Resource Assessment-University of Dar-Es-Salaam in **Masters of Science** in **Natural Resources Assessment and Managemen**t, September 2007-November 2009

  - Graduated from the University of Dar-Es-Salaam with **Bachelor of Arts (*Hons*) (History and Archaeology)** September 2004-June 2007

Key Qualification:
Area of expertise: Archaeology and Cultural Heritage Management, Historical studies, Anthropology and Ethnographic studies, Natural Resource Management, Environmental Assessments, Socio-Economic Livelihoods and Baseline Studies. Previously, he worked full-time as a Research Technician at Gobabeb Research and Training Centre in the Central Namib Desert within Namib Naukluft Park, as well as Part-time Researcher for Namib Ecological Restoration and Monitoring Unit (NERMU) along Kuiseb, Khan and Swakop Rivers for Swakop Uranium Project. He is currently working as a full-time Archaeologist and Heritage Specialist, based in Windhoek, Namibia.

Fieldwork and Project Experience
Roland has extensive fieldwork experience as both a Researcher and Field Coordinator throughout the Central Namib parts, as well as the north-western and southern parts of the country.

Short-course attended
- Geoheritage in Africa Online Short Course 20-24 September 2021, IGCP outreach and capacity building for African geoscientists: Linking geoheritage, artisanal mining and indigenous knowledge systems. This Course was conducted by the University of the Witwatersrand, South Africa.

Employment records/Work Experience:
Position: Archaeologist and Heritage Specialist

- **Namibia Development Trust: Consultant, February – March 2021**
  - Assist with the development of a minimum of five (5) project proposals in line with the call for Proposals by the NILALEG Project for the Ruacana Landscape (Kunene and Omusati regions).

February 2020 – March, and June 2020 – July 2020: Field Research Coordinator for Namib Ecological Restoration and Monitoring Unit (NERMU) at Gobabeb Research and Training Centre

September 2019 - December 2019: Field Research Coordinator for Namib Ecological Restoration and Monitoring Unit (NERMU) at Gobabeb Research and Training Centre

July 2019 – Research Assistant for Namib Ecological Restoration and Monitoring Unit (NERMU) at Gobabeb Research and Training Centre

March 2019 – May 2019 Research Assistant for Namib Ecological Restoration and Monitoring Unit (NERMU) at Gobabeb Research and Training Centre.

From October 2018- December 2018 (Research Assistant) Namib Ecological Restoration and Monitoring Unit (NERMU) at Gobabeb Research and Training Centre.

From 2016 - 2018 (*Full-time employee*)
Research Technician and Social Scientist at Gobabeb Research and Training Centre (Namib Desert-Namibia)

- **From February 2012 to June 2014: Research Consultant**

Employer: Ideal Consulting Group Tanzania Ltd, Dar Es Salaam, Tanzania

- **From 2009 to December 2011: Researcher (Social Scientist)**

Employer: East Africa Resource Group (EARG), Dar-Es-Salaam, Tanzania

Papers and Publications (Main and Co-Authorship)

- Frey M.M, Hase F., Blumenstock T., Dubravica D., Groß J., Göttsche F., Handjaba M., Amadhila P., **Mushi R.,** Morino I., Shiomi K., Sha M. K., Martine de Mazière, and Pollard D.F. (2021). Long-term column-averaged greenhouse gas observations using a COCCON spectrometer at the high surface albedo site Gobabeb, Namibia (*Published*)

- Rossingol, S., Napolitano, D., Giorio, C., **Mushi, R**., Maggs-Kolling, G., D'Anna, B., Coulomb, B., Buodenne, J., Piketh,S., Namwoonde, A., Forment, P., Herckes, P., Monod, A. (2017), Fog water chemical composition during the AEROCLO-sA campaign. (*Published*)

- Kaseke, K. F., Wang, L., Tian, C., Seely, M., Vogt, R., Wassenaar, T., **Mushi, R** (2017), Fog spatial distributions over the Central Namib Desert-An Isotope Approach. Department of Earth Sciences, Indiana University-Purdue University Indianapolis, Indianapolis. Published by Aerosol and Air Quality Research (ID AAQR-17-01-FOG-0062.R2)

- **Mushi, R. S.** (2011), Climate change and the Coastal Environment-Implications on Coastal Tourism in Bagamoyo District, Tanzania**,** LAMBERT Academic Publishing, Germany (Published).

- **Mushi, R. S.,** Kauzeni, A.S., Kangalawe, R.YM. (2009), Climate Change and Impacts on Coastal Tourism: A Case of Bagamoyo District. The paper was show cased, displayed and published in the book titled 'People's Perceptions and Community Responses to Climate Change and Variability. Selected Cases from Tanzania' in UNFCCC COP15 in Copenhagen, Denmark (7th -18th December, 2009).

- Mongi, H. J., Majule, A. E.**, Mushi, R. S.,** Andrew, B.**,** Ndesanjo, R. (2008), *Addressing Land Degradation in Tanzania: Contemporary issues related to policy and Strategies (published).*

- **Some conferences and Workshop attended**
  - Attended the Past, Present and Future of Namibian Heritage Conference from 28th- 31st August 2018 in Windhoek, Namibia.

  - Attended a conference on Environmental Education under the theme "Innovative Strategies to develop peaceful co-existence with endangered wildlife" held at B2Gold Otjikoto Nature Reserve from 3rd to 6th May 2018. The conference was convened by NEEN.

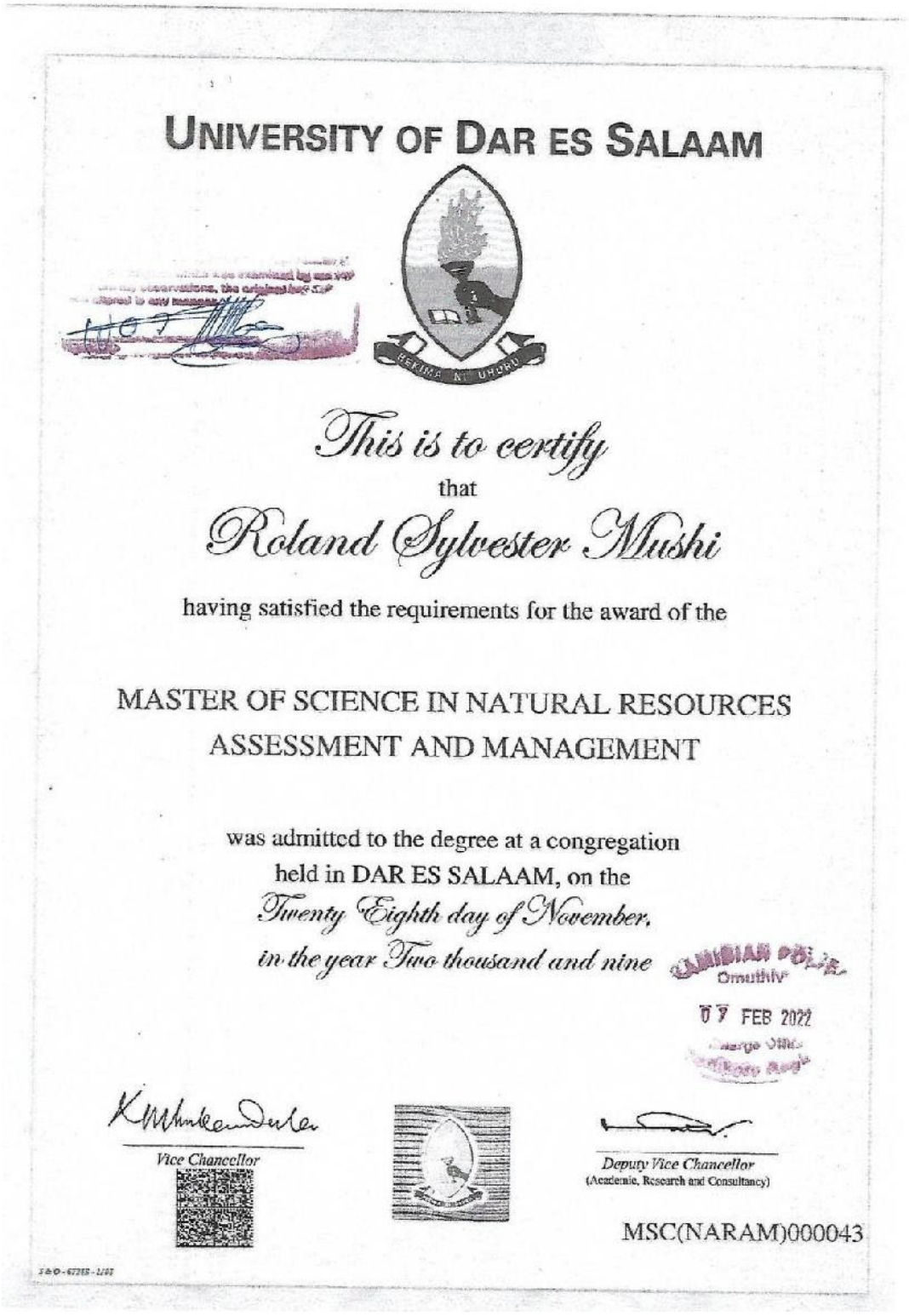
Language Skills

- Swahili (*mother tongue*)
- English (*fluent*)
- Oshiwambo (*beginner level*)
- German language (*little command*)

Membership in Professional Bodies

- Environmental Assessment Professionals of Namibia (EAPAN)-Registered as Lead Practitioner, Practitioner and Environmental Manager-Membership No. 179
- Museum Association of Namibia (MAN)
- South African Museums Association (SAMA)-Membership No. NCM 008
- Association of Southern African Professional Archaeologists (ASAPA)- Membership No. 480
- Namibian Environmental Education Network (NEEN)

- **Appendix 5: Certificates and Relevant Documents including ID and Certificate of Identity**



UNIVERSITY OF DAR ES SALAAM

This is to certify

that

Roland Sylvester Mushi

having satisfied the requirements for the award of the

MASTER OF SCIENCE IN NATURAL RESOURCES ASSESSMENT AND MANAGEMENT

was admitted to the degree at a congregation held in DAR ES SALAAM, on the *Twenty Eighth day of November, in the year Two thousand and nine*

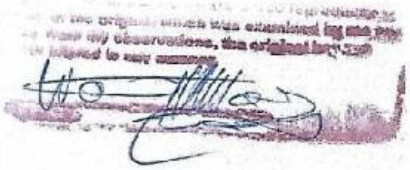
NAMIBIAN POLICE Omuthiy 07 FEB 2022

Vice Chancellor

Deputy Vice Chancellor (Academic, Research and Consultancy)

MSC(NARAM)000043

UNIVERSITY OF DAR ES SALAAM



This is to certify

that

Roland Sylvester Mushi

having satisfied the requirements for the award of the

DEGREE OF

BACHELOR OF ARTS

(HISTORY AND ARCHAEOLOGY)

WITH HONOURS,

Second Class, Upper Division

was admitted to the degree at a congregation held in DAR ES SALAAM, on the *Twenty Fourth day of November, in the year Two thousand and seven*

Vice Chancellor

Deputy Vice Chancellor
(Academic, Research and Consultancy)

BA(HA)000050

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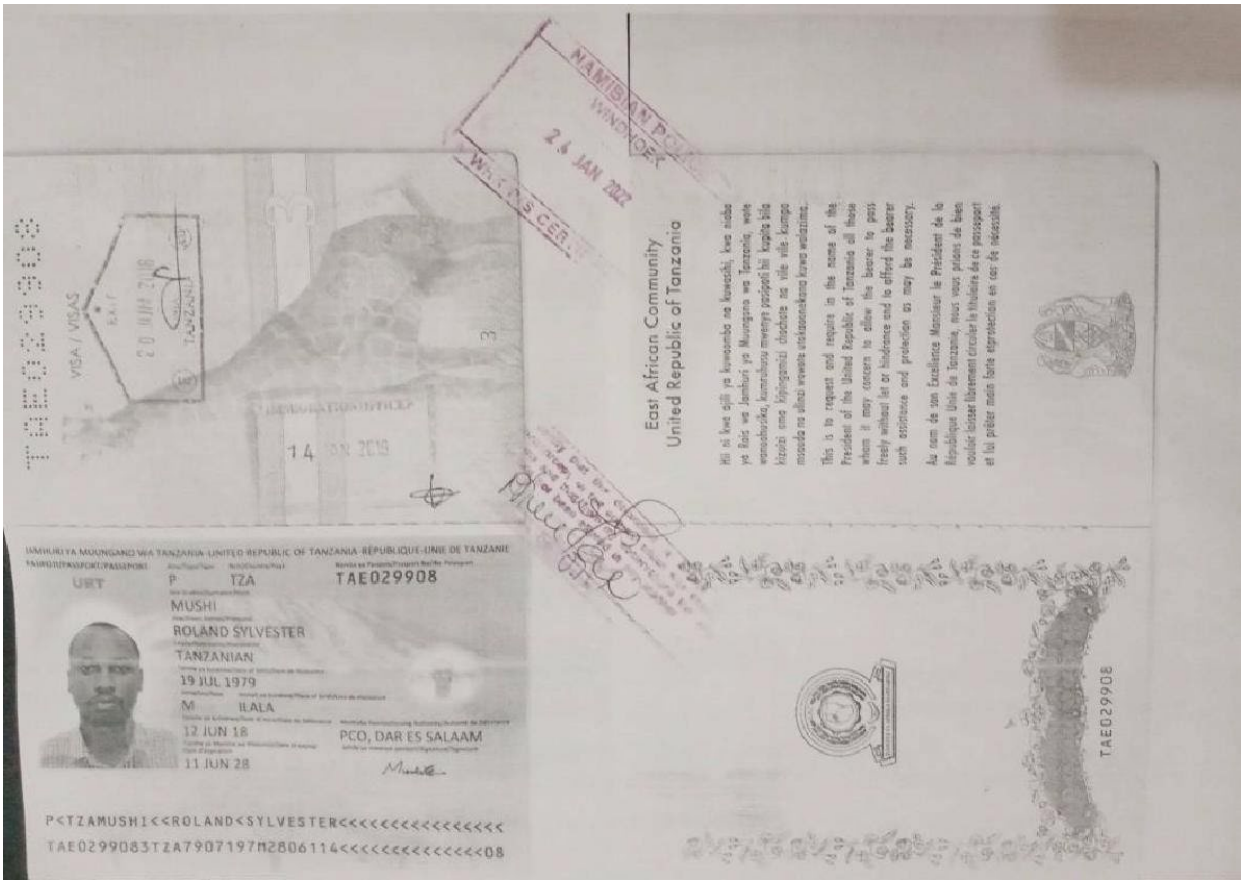
NAMIBIAN POST
WINDHOEK
24 JAN 2022
East African Community
United Republic of Tanzania
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