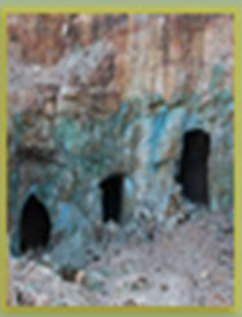
REPORT: ENVIRONMENTAL IMPACT ASSESMENT SCOPING REPORT AND ENVIROMENTAL MANAGEMENT PLAN

Environmental Assessment Scoping Report



TITLE OF PROJECT:

PROPOSED MINERAL EXPLORATION ACTIVITIES ON EPL 7719 , KAMANJAB CONSTITUENCY, KUNENE REGION-NAMIBIA ENVIRONMENTAL SCOPING REPORT AND ENVIRONMENTAL MANAGEMENT PLAN

REPORT PREPARED FOR

Office of the Environmental Commissioner
Ministry of Environment and Tourism
Namibia

APPLICATION NO:
003746

(Proponent))
JG Mining PTY(LTD)

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PROJECT APPLICANT

JG Mining PTY (LTD) is the applicant for the Environmental Clearance Certificate (ECC)

ENVIRONMENTAL ASSESMENT PRACTITIONERS (EAPs)

Cuvepalm Consulting cc as an independent Environmental Assessment Consulting company that undertook the EIA project.

Table 1: Details of the EAPs

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Name	Qualifications & Experience	Responsibility
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ACRONYMS:

Table 2 Acronyms

TERMS	DEFINITION
Ag	Silver
BID	Background Information Document
Cu	Copper
CE,V, E	Critically Endangered, Vulnerable, Endangered
CPC	Cuvepalm Consulting cc
EAP	Environmental Assessment Practitioner
ECC	Environmental Clearance Certificate
ECO	Environmental Control Officer

EIA (R)	Environmental Impact Assessment (Report)
ESIA	Environmental and Social Impact Assessment
EMP	Environmental Management Plan
EMPr	Environmental Management Plan Report
GHGs	Greenhouse Gasses
IUCN	International Union for Conservation Network
ISO	International Organization for Standardization
I&Aps	Interested and Affected Parties
JGM	JG Mining (PTY) LTD (Proponent)
mamsl	Meter above mean sea level
mbgl	Meter below ground level
MAWLR	Ministry of Agriculture Water Land Reform (Namibia)
MEFT: DEA	Ministry of Environment Forestry and Tourism's (Directorate of Environmental Affairs)
MME	Ministry of Mines and Energy(Namibia)
NHC	National Heritage Council
ToR	Terms of Reference
UNEP	United Nations Environmental Programme
UNFCCC	United Nations Framework Convention on Climate Change
RC	Rotary Core Drilling
RWL	Rest water level
S-P-R	Source-Pathway-Receptor linkage
TOR	Terms of Reference
VMS	Volcanogenic Massive Sulphide

DEFINITION OF TERMS

Biodiversity - this refers all the different kinds of life you'll find in one area—the variety of animals, plants, fungi, and even microorganisms like bacteria that make up our natural world

The 'Consultant' – this refers to the team that is conducting the ESIA and the preparation of the EMP for the development

The 'Proponent' – this refers to the institutions/departments that are directly involved in the implementation of the project, i.e., JGM.

The 'Stakeholders' – this refers to the people, organizations, NGOs that are directly or indirectly affected and interested by the project.

The 'Environment' – this refers to the ecology, economy, society, and politics.

Purpose of This Environmental Impact Assessment Report

This Environmental Scoping Report (ESR) follows on the Scope of Work delineated by Ministry of Environment Forestry and Tourism (MEFT) and JGM for the proposed exploration activities. Existing information and input from commenting authorities, Interested and Affected Parties (I&APs) were used to identify and evaluate potential environmental impacts (both social and biophysical) associated with the proposed project.

Environmental flaws associated with the proposed project were identified through the ESR. A conscious decision was made based on the recommendations and guidelines by the Directorate of Environmental Affairs EIA guidelines to assess both significant and less significant environmental impacts proposed by the development. The Environmental Management Plan (EMP) for this proposed activity will have to be effectively implemented by the client, ensuring that adverse environmental impacts are considered and effectively mitigated.

The detailed assessment of the anticipated impacts was undertaken with the purpose of highlighting any areas of concern regarding to the proposed project during its construction, operation, and decommissioning phases. In addition, a sensitivity analysis in regard of the geohydrology connected to the project site was undertaken. This analysis characterized the development site on the significant environmental aspects to reflect the sites suitable and unsuitable (no-go) development footprint areas. This action guided the final footprint of the proposed exploration areas.

This ESR will also be used to motivate and define the previously identified, project alternatives (i.e., site, technology,) based on the findings of the environmental baseline study and the suitability of the site to the type of development. This ESR has been compiled in accordance with the regulatory requirements stipulated in the EIA Regulations (2012), promulgated in terms of the Namibian environmental legislation (Environmental Management Act (No. 7 of 2007).

The EIAR aims to:

- Provide an overall assessment of the social, physical, and biophysical environments of the areas affected by the proposed exploration activities

- Undertake a detailed environmental assessment, in terms of environmental criteria and impacts (direct, indirect, and cumulative), and based on environmental sensitive recommend sites for the establishment of staging areas or field camps.
- Identify and recommend appropriate mitigation measures for potentially significant environmental impacts; and
- Undertake a fully inclusive Public Participation Process (PPP)
- GIS sensitivity mapping to identify potential impacts, propose mitigation, and inform the sensitivity analysis.
- A systematic approach was adopted for the successful completion of the EIA in line with the regulated process.

ASSUMPTIONS & LIMITATIONS

The following assumptions and limitations underpin the approach of this EIA study:

- The information received from the stakeholders, desktop surveys and baseline assessments are current and valid at the time of the study.
- A precautionary approach was adopted in instances where baseline information was insufficient or unavailable.
- Mandatory timeframes will apply to the review and adjudication of the reports by the competent authority and other governmental departments; and
- Mandatory environmental compliance monitoring and reporting will be carried out each on a monthly basis. This ESIA Report could be upgraded if new project features are proposed.

NB: The EAP does not accept any responsibility if additional information comes to light at a later stage of the EIA process. All data from unpublished research utilized for the purpose of this project is valid and accurate. The scope of this investigation is limited to assessing the potential biophysical, social, and economic impacts associated with the proposed project

EXECUTIVE SUMMARY

JG Mining (PTY) LTD (JGM) proposes to undertake mineral prospecting and exploration activities in Kunene Region, Namibia. The Ministry of Mines and Energy (Namibia) granted the company exclusive prospecting licences (EPL) 7719. The EPL is located approximately 35 km north-east of Kamanjab, Kamanjab Constituency, Kunene Region (Namibia). The total and combined surface area of the EPL is 19 3178.6 hectares (ha). The area previously underwent earlier geological and geochemical exploration activities in the 1940s, 1960s, 1970s and early 1990s. The legacy of past mining activities in the form of rock waste dumps, tailings is still found in the proposed exploration area and particularly at now the abandoned mining site at farm Kopermyn. Based on the results of initial geophysical surveys and mineral assessment reports, the EPLs have a potential for base and rare metals, industrial minerals, non-nuclear fuel minerals, and precious metals. Mechanical excavations or trenching and RC Drilling will be assumed for the purpose of sampling and detailed analysis of exploration targets. According to JGM, commodities of interest is primarily base metals (copper). Should the exploration result prove that mineral deposits are economically viable to mine, JGM would then lodge an application for a mining licence with MME.

To satisfy the requirements of Namibia's *Environmental Management Act No.7* of *2007*, JGM appointed CPC to conduct the Environmental Impact Assessment (EIA) for mineral exploration activities and to apply for an Environmental Clearance Certificate. Based on the assessment method employed, land degradation due to exploration activities is regarded of high significance as it can adversely affect the ecological setting. Based on the analysis, most impacts are anticipated to be localized and can be effectively mitigated through the implementation of mitigation measures recommended in the Environmental Management Plan (EMP). Observance of ultimate control measures in respect of environmental pollution that may manifest is paramount to ensuring environmental sustainability and particularly, the welfare and livelihoods of the farming community. Impacts deemed to be of "*high*" significance are not expected EMP is fully implemented, a financial provision for progressive rehabilitation and the adoption of a robust monitoring program that include occupational health and safety surveys. The Report has been prepared for JGM and forms part of an application for an Environmental Clearance Certificate submitted to the Ministry of Environment, Forestry and Tourism (Office of Environmental Commissioner, Republic of Namibia).

1. CHAPTER ONE: BACKGROUND

1.1. Introduction

The proponent, JG Mining (JGM) is an indigenous Namibian enterprise that is involved in the mining sector since 2010. The company has identified the economic potential of mineral deposits found in the Kunene Region covered by Exclusive Prospecting License (EPL 7719). The latter comprises of nine (9) commercial farms. The EPLs were granted by the MME on 05 November 2019. JGM plans to undertake mineral exploration activities, primarily targeting copper ore deposits. As per section 32 of the Environmental Management Act No. 7 of 2007, an environmental clearance certificate is needed prior to commencement of exploration activities. CPC was appointed by JVM on 15 January 2022 to conduct an Environmental and Social Impact Assessment (ESIA) and develop an Environmental & Social Management Plan (ESMP) for the proposed project. This has been followed by the registration of an application (no.3746) for Environmental Clearance Certificate (ECC) with the Ministry of Environment and Tourism (MET): Directorate of Environmental Affairs (DEA). Subsequently, this document forms part of the application to be made to the DEA's office for an Environmental Clearance certificate for the proposed activity, in accordance with the guidelines and statutes of the Environmental Management Act No.7 of 2007 and the environmental impacts assessment regulations (GN 30 in GG 4878 of 6 February 2012).

1.2. Project Location

The project site is situated approximately 67 km north-east of Kamanjab (Kunene Region). Access to exploration site can be obtained by gravel roads turning off from the National Road C40 linking the towns of Kamanjab and Outjo. The map below (Fig 1) depict the area for the proposed exploration activities.

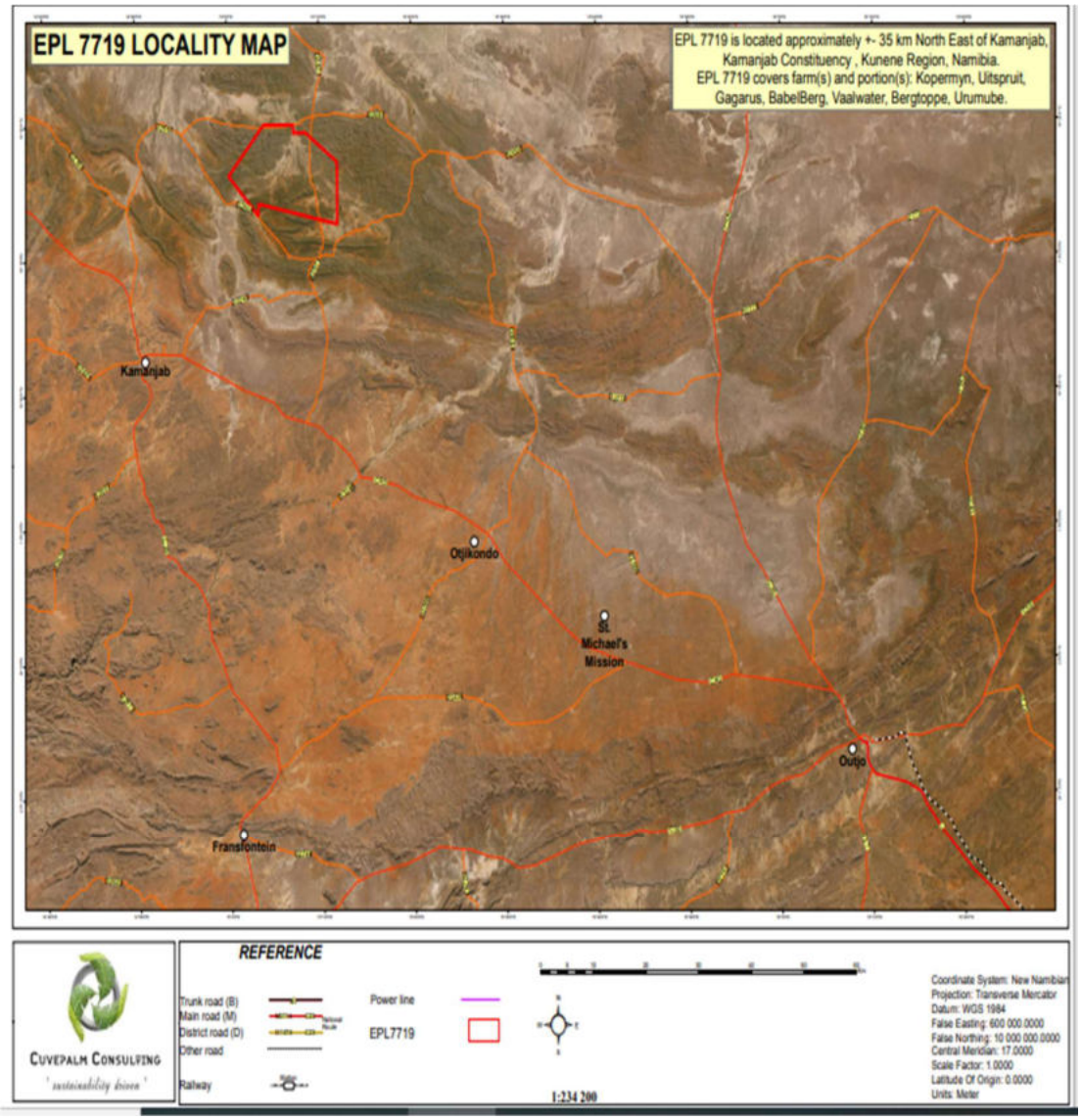


Figure 1 Overview of the project site EPL 7719

1.3. Project Activities

Explorations comprise of various phases. For this EIA, the phase-based activities were categorized to enable impact assessment and analysis. The different project sections are as follows:

Construction Phase (Site Preparation)

Access agreements will guide the working relationship between landowners and exploration teams and/or contractors. Exploration teams will undertake initial site visits to identify appropriate sites for the establishment of field camp(s). Site preparation activities will begin once surface drainage, ground water conditions and areas of heritage significance are understood. Exploration will only commence after ecological sensitive areas are known and agreed upon jointly with landowners. Proponent shall ensure that areas identified are those that present minimal disturbance to the natural environment and wildlife.

Site Offices: The formal housing structures found on farm Kopermyn 291 will be converted into an office space for the exploration teams and shall serve as the main field camp. In addition, prefabricated housing might be set up to ensure sufficient office space for exploration team.

Land clearing: Small land parcels will be cleared for the establishment of base or field camps and staging areas. The field camps will be used for the safe keep of exploration equipment and vehicles before use. Employees will be housed in the EPL area at farm Kopermyn 291 (main-exploration target).

Creation of access routes and haul tracks: Apart from the existing farm roads network leading to target areas, additional tracks (extensions from farm roads) may be created for the sole purpose of accessing exploration targets. Where deemed necessary, graveling, and compaction of vehicle tracks surfaces may be considered to allow for less track maintenance and seamless flow of traffic. No roads of bitumen standard exist in the EPL area. No permanent structures will be built.

Fencing: Where deemed feasible, fences will be erected around field camps and target areas. Fencing will serve to keep out livestock from target areas.

Operational Phase

The phase typifies an advance level of exploration. Sampling will serve to validate prior exploration results of the mineral deposits. The final objective is the acquisition of quantitative information required for evaluating the deposit and thus ultimately leading to decision making in as far future mining prospects. The following operational requirements are anticipated for the project:

Mechanical pitting & trenching: It may be necessary to undertake trenching and pitting in areas adjacent to the old mine workings (abandoned mining site at Farm Kopermyn). Subsequently, drilling may be used to examine the deeper parts of the inaccessible mineralisation. The overburden material will comprise of topsoil and rock material. Stripping will involve the removal of overburden material overlaying the ore deposits. A bulldozer will be used to move over burden material. Trenches will be excavated mechanically up to a maximum depth of 5 (five) meters, exposing the ore deposit. Trenches are expected to 50 (fifty) meters long and 5 (five) meters wide. Backhoe excavators will be used for excavations. Waste rock will be stockpiled adjacent to trenches.

Crushing: At the exploration targets (staging areas), a primary crusher unit and an ore screen is envisaged. Primary crushed ore will be crushed further to obtain a product of -150 mm and + 50mm to liberate the high-

grade ore. Existing rock waste dumps based on past exploration and mining activities will be investigated for mineral occurrence and beneficiation. Ore found on rock waste dumps will be handpicked, sized and packed in 1000 kg bags. Front end -Loaders will used to load the ore onto 30 tons haulage trucks destined for further analysis. Also, the crushed ore will be required for performing processing trials part of metallurgical testing programme.

Drilling (Reverse Circulation Drilling Technology): Drilling will serve to extract complete core samples from surface downwards to seek and locate mineral deposits and to establish geological structure . Gaining access to zones of minerlization will be achieved by means of reverse circulation drilling technique.Equipment uses compressed air. Upon completion, drilled holes will be sealed and drill core samples will be taken for laboratory analysis. The advantages of using the RC method to collect rock chippings, rather than auger, rotary or percussion drilling, are that the entire sample is collected, the method is extremely quick (up to 40 m per hour can be drilled) saving time , little contamination and limited water use is expected. Figure 2 below provide a schematic diagram for RC Drilling.

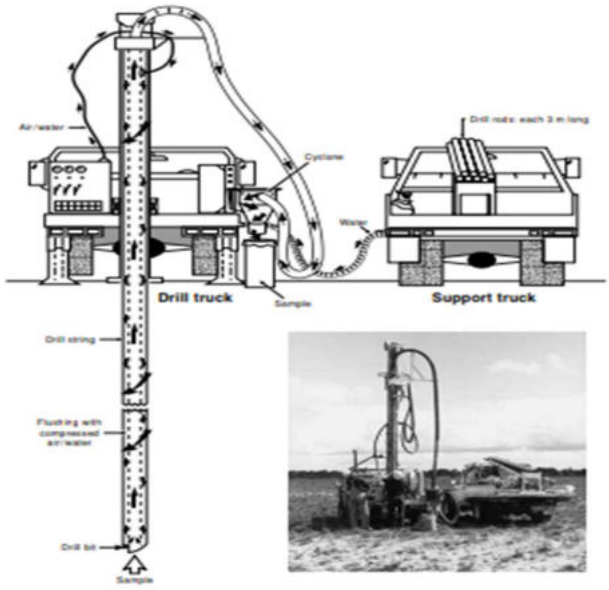


Figure 2: Schematic diagram RC drilling (Source Moon et al. 2009)

Water Abstruction: Water will be sourced from existing boreholes. Approximately 5000 liters of domestic water will be needed per daily. This amount of water is also aimed at suppressing dust around tipping areas and vehicle tracks.

Waste management: Waste material generated will be in the form of rock material (non-mineral) and derived from trenching and drilling activities. Insignificant amounts of domestic waste will be generated by the exploration team. Domestic or general waste will be transported out of the EPL area disposed at an approved land fill site. There are no licensed waste disposal sites in the project area.

Sewage Management: During exploration, sufficient portable chemical toilets will be provided for workers and appropriately emptied according to their manufacturer's operational standards and legislated occupational sanitary provisions. Licensed waste contractors will provide sewage removal services.

Exploration equipment, Materials and Services: Construction equipment will be sourced from contractors proximate to the project site. Were deemed essential, equipment will need to be sourced from elsewhere in the country and/or abroad as per the required and approved operating standards.

Labour sourcing: Temporary employment opportunities will be created during the duration of exploration activities. Most labourers will be sourced from Kamanjab, approximately 35 km (horizontal distance) from the project site. The exact number of people to be employed could not be secured at the time of preparing this report as work will be outsourced to contractors as per JGM procurement policy. Contractors will determine the exact number of the workers required. However, employment of locals is encouraged.

Site Rehabilitation: Dug out trenches will be back filled with waste rock (gangue). Stockpiled top soil will be returned to the backfilled areas. Where feasible, working areas deemed will be re-vegetated and returned to a pre-exploration state. Rehabilitation will be done concurrent with exploration activities.

[redacted]

This phase will involve the removal of equipment and dismantling of facilities and safe closure. The surface affected by exploration will be rehabilitated in accordance with applicable standards and the adopted rehabilitation plan. All relevant parties including landowners connected to EPL 7719 area will be informed well in advance about plans to cease exploration activities.

1.4. [redacted]

The schedule of activities that may be undertaken for the project is presented in Table 3 below.

Table 3: Proposed schedule

PHASE	DATE	ACTIVITY DESCRIPTION
Phase 1	Exact commencementdate unknown	Planning – Detailed planning for the exploration program will require about –two (2) weeks.
Phase 2	Commencement date unknown	Reverse circulation or core drilling will be conducted over period of one to two months. Any expansion on the number of holes will be based on information acquired during the drilling period. Depending on progress made, an application for the renewal of the EPL may be required.

2. CHAPTER TWO: NEEDS AND DESIREBILITY

Namibia's economic model continues to be influenced amongst other by the exploitation of mineral resources. According to the National Planning Commission Report (2021), the average contribution of the mining sector to GDP between 1990 and 2018 is significant and favourably stand at 11.1 %. Mining remains the largest earner of Namibia's foreign exchange at about 45%. Mineral prospecting is enshrined in National Development Plan (NDP V), Vision 2030. The Harambee Prosperity Plan II plan (Pillar 2) place emphasis on economic advancement with the view to enhance the productivity of priority sectors such as mining. However, mining development can be constraint by insufficient investment in mining exploration. The project inherently promotes economic socio- advancement through employment creation. The 2018 Labour Force Survey 2018 indicates that about 1.7% of the formal labour force of Namibia is directly employed by the mining sector. Mineral exploration is thus encouraged, so that the sector can contribute more to the Namibian economy (NPC, 2021). The multiplying effect of income from employment in the mining sector is deemed significant – not only is it estimated that each employed person provides for four other persons, but the mining industry contributes in various ways to the national economy by means of taxes and royalties, a strong service-support base and specialized contractors. At a global level, Industrialization continues to drive a high demand for industrial minerals. Notably mineral production continues to contribute significantly towards job and wealth creation amongst various nations. According to the Chamber of Mines (Namibia), in 2021, the mining sector grew by 13.6 % helping the national economy bounce back from a retraction of 8.5% in 2020 to achieve a growth of 2.4 % in 2021. Copper prices traded at US 10 747 per tonne in May 2021 (Malango, 2021). Enabling the availability of mineral sources in combination of favourable prices worldwide has a positive effect on the world's economy. It is anticipated that base minerals such as copper, lead, and zinc will be Namibia's top performing exports in the immediate future. The proposed project presents an exciting market opportunity. Explorations relating to base and earth metals such as copper can contribute to national income as achieved through direct and indirect tax income (corporate, personal, VAT, secondary, others) levies and customs. Nonetheless, several long-term trends are presently driving growth in mineral demand and are expected to continue to do so in the coming decades. According to the World Bank (2017), a ten-fold rise in demand for metals by 2050.

The economy of Kunene is centered on the production of livestock and mining. Exploration presents an interesting prospect for expanding and diversifying the regional economy that remains largely dependent on agriculture. Living conditions are expected to improve through economic spinoffs/investments. Equally the proposed development can have an impact on direct and induced employment realized through the supply chain and provision of support services. The project would require approximately 15 to 20 employees during the initial phase. Indirect jobs will emanate from the out-sourcing of short-term services (maintenance, transportation) to sub-contractors. Highly skilled workforce may be sourced from outside region. Based on the assumption that exploration takes place over a period of six (6) months with a possibility for an extension, this can create additional income for local and distant communities alike. However, the impact of exploration is expected to be felt at household level with people in fulltime employment. The positive impact of job creation is considered to be of high significance due to the high unemployment prevalence rate amongst unskilled or semi-skilled population group of the Region.

3. CHAPTER THREE: POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

3.1. Applicable legislation

To ensure that the proposed development complies with the legal requirements of environmental stewardship, a review of applicable Namibian and international legislation, policies and guidelines have been consulted. This review serves to inform the project Proponent, Interested and Affected Parties and relevant decision makers of requirements in respect of the proposed development. Legislation and policies and their inclusion in the proposed project assessment are further presented in Table 4 below.

Table 4 : Policies, Legal and Administrative Regulations

LEGISLATION/POLICY	PROVISION/SUMMARY	PROJECT APPLICABILITY
The Constitution of the Republic of Namibia (1990)	The articles 91(c) and 95 (i) commits the state to actively promote and sustain environmental welfare of the nation by formulating and institutionalizing policies to accomplish the Sustainable objectives which include: Guarding against overutilization of biological natural resources, Limiting over-exploitation of non-renewable resources, Ensuring ecosystem functionality, Maintain biological diversity.	Exploration activities can interfere with ecological processes. Attention should be given to the state of water resources and biodiversity
Environmental Assessment Policy of Namibia 1994	The Environmental Assessment Policy of Namibia states Schedule 1: Screening list of policies/ plans/ programmes/ projects subject to environment must be accompanied by environmental assessments. "The development activities" are on that list.	The activity triggers an environmental impact assessment prior to commencement
	The policy provides a definition to the term "Environment" broadly interpreted to include biophysical, social, economic, cultural, historical, and political components and provides reference to the inclusion of alternatives in all projects, policies, programmes, and plans.	The proposed development requires the assessment of all possible environmental and social impacts to avoid, minimise or compensate environmental damage associated with the activities.

LEGISLATION/POLICY	PROVISION/SUMMARY	PROJECT APPLICABILITY
Environmental Management Act No. 07 of 2007	Requires that activities with significant environmental impact are subject to an environmental assessment process (Section 27). Requires for adequate public participation during the environmental assessment process stakeholders to give their opinions about a project (Section 2(b-c)). According to Section 5(4) a person may not discard waste as defined in Section 5(1)(b) in any way other than at a disposal site declared by the Section 3 (2) (b) states that "community involvement in natural resources management and the sharing of benefits arising from the use of the resources, must be promoted and facilitated" is key. Section 3 (2) (e) states that "assessments must be undertaken for activities which may have a significant effect on the environment or the use of natural resources".	The nature of the proposed exploration and interrelated activities has potential to cause adverse environmental impacts to the surrounding environment. Activities such as trenching can cause significant environmental impacts. Therefore, proper assessments should guide project planning The EIA study considered full stakeholder participation. Stakeholder consultation was fully conducted. The proposed development is involving the utilisation of natural resources (water and land). Environmental cost relating to project shall not be borne by communities found in the project area and surroundings. Project shall not commence without an environmental clearance certificate
EIA Regulations GN 57/2007 (GG 3812)	Details requirements for public consultation within a given environmental assessment process (GN No 30 S21). Details the requirements for what should be included in an Environmental Scoping Report (GN No 30 S8) and an EIA report (GN No 30 S15).	The implementation of the project triggers the need for consultation of all affected and interested stakeholders regarding the development at all project development phases from planning to exploration. A public consultation meeting are held in respect to this, and all the concerns and issues are noted and addressed in this report.
The Water Act 54 of 1956	The Act was formulated to consolidate and amend the laws relating to the control, conservation and use of water for domestic,	The proposed development has a daily requirement of approximately 5 000 liters (5m3). The activities might directly The

LEGISLATION/POLICY	PROVISION/SUMMARY	PROJECT APPLICABILITY
	agricultural, urban, and industrial purposes; to make provision for the control, in certain respects, of the use of sea water for certain purposes; for the control of certain activities on or in water in certain areas.	yield of local aquifers could be affected, hence the need to implement strict water conservation measures.
Minerals (Prospecting and Mining) Act, 1992 (Act no. 33 of 1992)	Act provides the licensing procedures, the rights of holders, the administration, and the ownership of minerals. In addition, the Act requires mining companies to provide detailed studies on the potential impact of the operations to the surrounding environment, how to mitigate them and rehabilitations plans	Prospecting or mining operations shall not commence except in accordance with license granted. Renewals of EPLs are accommodated twice for two-year periods, with the area decreasing by 25 per cent with each renewal
Pollution Control and Waste Management Bill	The bill aims to "prevent and regulate the discharge of pollutants to the air, water and land" Of particular reference to the Project is: Section 21 "(1) Subject to sub-section (4) and section 22, no person shall cause or permit the discharge of pollutants or waste into any water or watercourse." Section 55 "(1) No person may produce, collect, transport, sort, recover, treat, store, dispose of or otherwise manage waste in a manner that results in or creates a significant risk of harm to human health or the environment."	The proposed activity triggers Section 21 and 22 of the bill. Activities such as trenching transportation, primary crushing may require the robust adoption of in-situ pollution mitigation measures. Contractors of the civil works of the project should make it mandatory that they manage their waste in a manner that do not cause environmental harm and risk both to the surroundings and the local communities.
Atmospheric Pollution Prevention Ordinance 11 of 1976	The law provides for the prevention of atmospheric pollution, and for matters incidental thereto. The law regulates and prohibit pollution from industries particularly smoke and dust. The ordinance considers air pollution from point sources but does not address air quality standards,	Mineral exploration processes will most likely affect ambient air quality. Efforts to suppress and monitor dust should be adopted as recommended in the EMP.

LEGISLATION/POLICY	PROVISION/SUMMARY	PROJECT APPLICABILITY
National Solid Waste Management Strategy	The Strategy ensures that the future directions, regulations, funding, and action plans to improve solid waste management are properly coordinated and consistent with national policy, and to facilitate co-operation between stakeholders Waste disposal presents a challenge to solid waste management in Namibia. The top priority is to reduce risks to the environment and public health from current waste disposal sites and illegal dumping in many areas of Namibia.	Exploration activities can potentially generate significant amount of waste material that need careful management. The obligation to meet waste management objectives should be borne by both proponent and contractors. The proponent should limit the exposure of waste to the natural environment and surrounding. In-situ waste management plans should be adopted and implemented prior the commencement of operations. Rock waste and other non-mineral waste should be stored and disposed in an environmental friendly manner. Waste should be carted away to licensed waste disposal sites.
Soil Conservation Act 76 of 1969	The Act established to consolidate and amend the 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 in the Republic of Namibia.	The construction of auxiliary infrastructure such as access roads or tracks to exploration targets should include systems and mechanism for preventing erosion.
Road Traffic and Transport Act, No. 22 of 1999	The Act provides for the establishment of the Transportation Commission of Namibia; for the control of traffic on public roads, the licensing of drivers, the registration and licensing of vehicles, the control and regulation of road transport across Namibia's borders; and for matters incidental thereto.	Mitigation measures should be provided for if the roads and traffic impacts cannot be avoided. Should the proponent wish to undertake activities involving road transportation or creation new access adjoining national roads, relevant permits will be required from the Ministry of Works and Transport

LEGISLATION/POLICY	PROVISION/SUMMARY	PROJECT APPLICABILITY
Forest Act 12 of 2001	Section 10 (1) set out the aim of the forest management as to: The purpose for which forest resources are managed and developed, including the planting of trees where necessary in Namibia is to conserve soil and water resources, maintain biological diversity and to use forest produce in a way which is compatible with the forest's primary role as the protector and enhancer of the natural environment.	The proposed project will likely result in the disturbance of indigenous vegetation of conservation significance including the disruption of biological processes.
	(b) any living tree, bush or shrub growing within 100 meters of a river, stream, or watercourse.	The project will not result in the removal of living trees, bushes and shrubs growing within 100m of a river, stream, or watercourse.
	(2) A person who wishes to obtain a license to cut and remove the vegetation referred to in subsection (1) shall, in the prescribed form and manner, apply for the license to a licensing officer who has been designated or appointed for the area where the protected area is situated.	The removal of trees in the above instances would require the contractors or sub-contractors to acquire necessary permits first.
National Policy on Climate Change for Namibia (2011)	The National Policy on Climate Change pursues constitutional obligations of the Government of the Republic of Namibia, namely for "the state to promote the welfare of its people and protection of Namibia's environment for both present and future generation."	Measure should be adopted by JGM to prevent or minimize toxic emissions into the atmosphere. Dust suppression and monitoring will be employed, to ensure that air quality objective tied to climate change mitigation are met.
National Climate Change Strategy & Action Plan 2013 – 2020	The Strategy outlines Namibia's response to climate change. The strategy aims to address and plan for action against climate change, both through mitigation and adaptation actions. In its adaptation strategy, the Strategy recognizes the role of a sustainable water resource base.	The development should adopt measures that strengthen sustainable utilization of water resource The implementation should be very careful on not to cause harm to the available water resources but improve the management through various conservation technics.

LEGISLATION/POLICY	PROVISION/SUMMARY	PROJECT APPLICABILITY
	The Strategy proposed strategies that aim to: Strategic Aim 1: Further improve the overall climate change understanding and related policy responses in water resources sector. Strategic Aim 2: Monitoring and data collecting technologies of surface and underground water are developed and implemented at basin/watershed level.	The proponent should invest capital on strengthening climate change and adaptation through cleaner production systems implementation. Certification by international standards such as ISO14001 can help with climate sustainability, and is recommended.
Nature Conservation Ordinance (1996)	This ordinance relates to the conservation of nature; the establishment of game, parks, and nature reserves; the control of problem animals; and highlights matters incidental thereto.	The activities of the project are highly localized. The likelihood of project activities interference with any protected parks and nature reserves objectives is non-existent. Service infrastructure should not be in conflict with the provisions listed in the Nature Conservation Ordinance. All species of birds are protected except the huntable game birds mentioned in Schedule 6 and expect the following birds: Weavers (*All Ploceus spp*.) Sparrows (*All Passet spp.)* Mousebirds (*Colius colius*; *Urocolius indicus*) Redheaded *Quelea (Quelea quelea*) Bulbul (*Pycnonotus nigricans; P. barbatus*) Pied Crow (*Corvus albus*).

LEGISLATION/POLICY	PROVISION/SUMMARY	PROJECT APPLICABILITY
National Biodiversity Strategy and Action Plan (NBSAP2) 2013 – 2022	The action plan was operationalized in a bid to make aware the critical importance of biodiversity conservation in Namibia, putting together management of matters to do with ecosystems protection, biosafety, and biosystematics protection on both terrestrial and aquatic systems.	The proposed project during construction and operation phases, potentially triggers ecosystem threats from pollution. As such mechanisms for environmental compliance and monitoring will be put in place, ultimately aimed at protecting biodiversity.
Labour Act 11 of 2007.	Empowers the minister responsible for labour to publish regulations pertaining to health and safety of labourers (S135). Details requirements regarding minimum wage and working conditions (S39-47).	Explorations invite significant amount of laborious work. Therefore, there is need to ensure that proponent without charge to employees provide a working environment that is safe, and adequate facilities provided for the upkeep of employee welfare standards. The Ministry of Labour and Safety demands that a health management policy will be drafted and instituted.
Health and Safety Regulations GN 156/1997 (GG 1617)	Details various requirements regarding health and safety requirements.	-Occupational health and safety provisions during construction and operational phases should be clearly outlined. -Compliance monitoring and responsibilities for compliance monitoring should be clearly stated
Public Health Act 36 of 1919	Section 119 states that “no person shall cause a nuisance or shall suffer to exist on any land or premises owned or occupied by him or of which he is in charge any nuisance or other condition liable to be injurious or dangerous to health.”	Compliance with the Public Health Act will be ensured in relation to the following: - Sanitation facilities -Communicable diseases -Emergency healthcare provision - Covid workplace measures
Public and Environmental Health Act 1 of 2015.	To provide a framework for a structured uniform public and environmental health system in Namibia; and to provide for incidental matters.	

LEGISLATION/POLICY	PROVISION/SUMMARY	PROJECT APPLICABILITY
National Heritage Act 27 of 2004	Section 48(1) states that "A person may apply to the (Heritage) Council for a permit to carry out works or activities in relation to a protected place or protected object" Protects and conserves cultural heritage and cultural resources with special emphasis on places and sources of National heritage including graves, artefacts, and any objects older than 50 years.	Apart from the rock art found at farm Kopermyn, and there are no significant heritage or cultural artefacts relating to project area. However, if heritage resources (e.g., human remains etc.) discovered during implementation, guidelines dictate that a permit be acquired from the National Heritage Council of Namibia for relocation of any artefacts or specimen.
Water Resources Management Act Act(No 284 of 2004)	Construction, alteration of waterworks with capacity in excess of 20,000 L Abstraction of water other that provided by Nam Water Corporation Discharge of effluent or construction of effluent treatment or disposal site	The Acts provides provisions for the control, conservation and use of water for domestic, agricultural, urban and industrial purposes. The Act states that a license or permit is required to abstract and use water, and also discharge effluent.
National Veld and Forest Fire Act 101 of 1998	The aim of the National Field and Forest Fire Act 101 of 1998 is to prevent and combat field, forest and mountain fires and to provide for a variety of institutions, methods and practises for achieving this purpose.	The Act provides for the control of substances which may cause injury or ill-health to or death of human beings by virtue of their toxic, corrosive, irritant, strongly sensitizing or flammable nature or the generation of pressure thereby in certain circumstances; to provide for the prohibition and control of the importation, sale, use, operation, application, modification, disposal or dumping of such substance; and to provide for matters connected therewith"

LEGISLATION/POLICY	PROVISION/SUMMARY	PROJECT APPLICABILITY
Petroleum Products and Energy Act no. 13 1990	The Act provides provisions for any certificate holder or other person in control of activities related to any petroleum product is obliged to report any major petroleum product spill (defined as a spill of more than 200ℓ per spill) to the Minister. Such person is also obliged to take all steps as may be necessary in accordance with good petroleum industry practices to clean up the spill. Should this obligation not be met, the Minister is empowered to take steps to clean up the spill and to recover the costs thereof from the person. Used oil from this project will be disposed at the Walvis Bay Municipality Hazardous Waste Site. Permission will be required from the facility owner prior to the dumping of the used oil SANS 310:2011: Storage tank facilities for hazardous chemicals – Above ground storage tank facilities for flammable, combustible and non-flammable chemicals and petroleum products	A certificate should be acquired for the installation of above ground fuel storage facility
SANS 1929: 2005	Dust particulates from excavations /ore crushing that are smaller than 1mm are deemed dangerous to both plants and humans. As such a dust monitoring following the ASTM D1739 method should be used for monitoring dust emissions from any crushing plant anticipated. Dust chemical analysis and fallout quantities are specified for industrial and residential environs.	A dust emission monitoring plan should be instituted within the project area.

3.2. Permits & Licences

Exclusive Prospecting License

In terms of the Minerals Prospecting and Mining Act (Act no 33 of 1992), an EPL may be renewed. As such an extension can only be granted for a two-year period, with a reduction in the size of EPL expected. Renewals that go beyond seven years would require a special approval from the minister. Nonetheless once an EPL expires and a new EPL is issued, an environmental assessment should be conducted. Its only upon securing an ECC can mineral exploration commence. The EPL 7719 was granted on the 5th November 2019 and expires on the 04th of November 2022.

The permits and licenses that may be relevant to the proposed projects are outlined in Table 5

Table 5 PERMITS AND LICENCES REQUIREMENTS

PERMIT AND LICENCES	RELEVANT AUTHORITY	VALIDITY/DURATION
PERMIT FOR ABOVE GROUND FUEL STORAGE TANK	Ministry of Mines and Energy - Windhoek	Permit dependent
WATER ABSTRACTION PERMITS	Ministry of Agriculture, Water and Land Reform	Permit dependent
Heritage Consent	Ministry of Education	Permit dependant
EXCLUSIVE PROSPECTING LICENCE	Ministry of Mines and Energy - Windhoek	3 years
FORESTY PERMIT	Ministry of Environment Forestry and Tourism	Permit dependent
NOTICE OF INTENTION TO DRILL	Ministry of Mines and Energy - Windhoek	To be submitted prior to drilling
WASTE WATER DISHARGE	Ministry of Agriculture Water and Land Reform	Approval

4. CHAPTER FOUR: APPROACH TO STUDY

4.1. EIA Methodology

The approach was guided by the provisions of the Environmental Management Act (No 7 of 2007) and relative regulations. Potential impacts associated with the project activities were enlisted. Included is the public participation process that provided stakeholders an opportunity to express their views on the proposed project. This public participation process component is fundamental to the impact assessment process and integral to decision-making in regard of authorization (ECC). An EMP that takes account of environmental aspects and corresponding mitigation measures for all the phases of the project formed part of this EIA Report. Figure 3 sets out the impact assessment process followed.

4.2. Desktop Research

Desktop research served to establish environmental information. Information was derived from peer reviewed scientific reports, articles, maps, internet, photographs and GIS datasets.

4.3. Initial Screening and Scoping

The main purpose of scoping was to identify key issues for consideration during this EIA study. Main activities covered during the scoping phase included.

- Identification of key environmental specialist studies to be conducted
- Identifying Interested and Affected Parties (I&APs);
- Announcing the EIA process / registration of I&APs;
- Distribution of the BID.

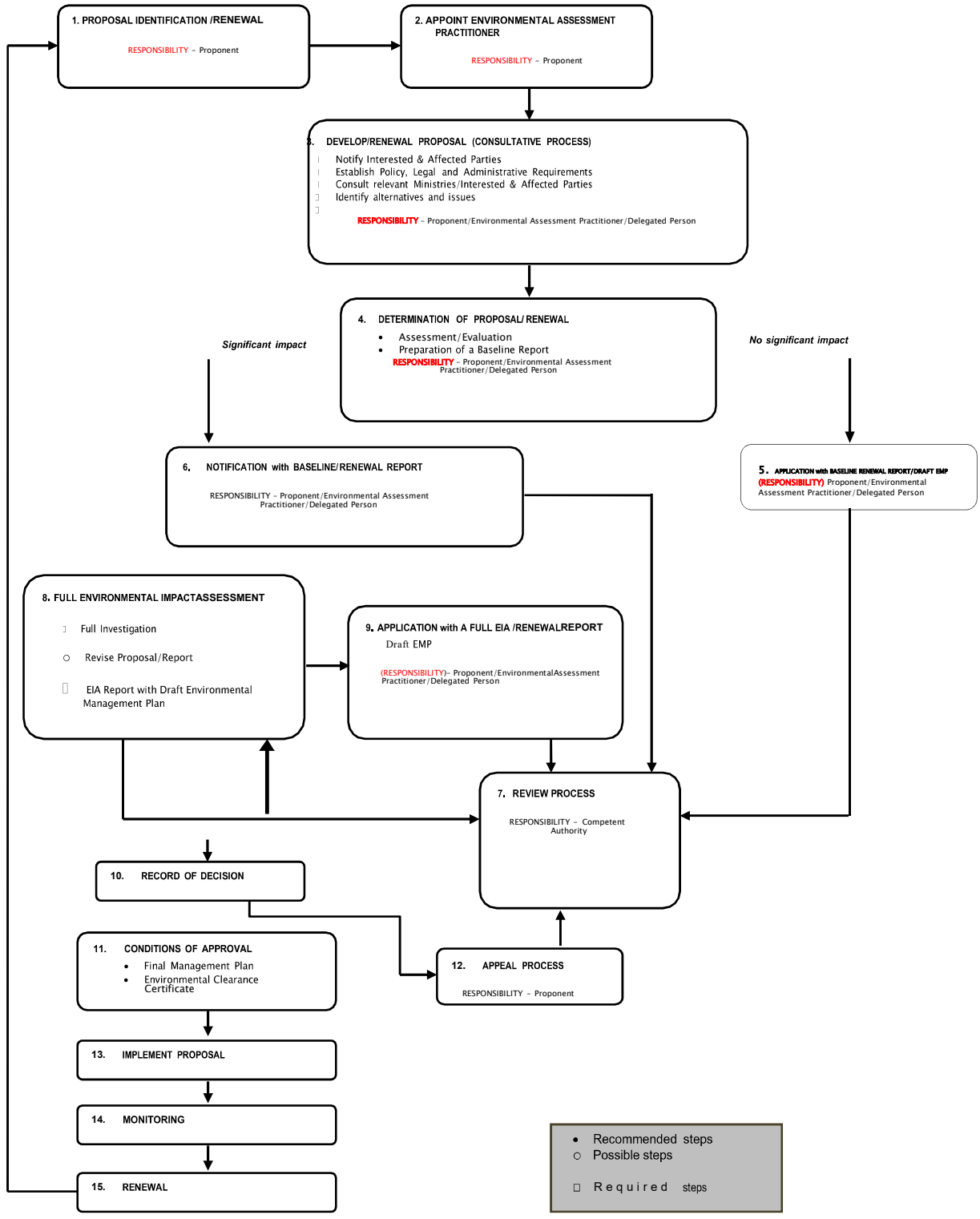


Figure 3: A process flow of the EIA Namibia

5. CHAPTER FIVE: RECEIVING ENVIRONMENT

Baseline conditions relating to the project area are expounded in the following sections.

5.1. Climate

Namibia is one of the largest and driest countries in sub-Saharan Africa and is characterized by high climatic variability through persistent droughts, unpredictable and variable rainfall patterns, variability in temperatures and water scarcity. The climate is generally hot and dry with sparse and erratic rainfall. In this report the climate of the exploration zone is understood with the meteorological data available from the meteorological station at Okaukuejo, which is 80 km, in the North East direction of the proposed project area. The Namibian climate is defined by evaporation rates which are much higher than the precipitation rates, resulting in very low humidity. The project area has a semi-arid climate that is associated high temperature during summer months, which are from December to February, and lowest temperature in winter months, which are from June to August. EPL 7719 falls within a very arid zone of average annual precipitation of 200mm to 300mm. The region is with frequent clear skies and average 344 days of sunshine per year. The winter or May – October is generally dry. It rains mostly between December and April; however, February is the wettest month. The annual rainfall in the region during last 13 years varied from 363 to 1325mm and the average annual rainfall range between 200mm and 300 mm of which about 42% of total annual rainfall is reported during January – February.

Table 6 Yearly and Monthly Variations in Rainfall

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2009	159	375	52	4	0	-	-	-	10	29	100	61
2010	174	89	114	47	3	-	-	-	-	4	180	174
2011	213	332	225	136	6	-	-	-	2	12	115	283
2012	325	264	100	5	-	-	-	-	0	24	110	91
2013	82	64	97	-	1	-	-	-	2	14	66	257
2014	56	163	121	33	1	-	-	-	7	22	72	20
2015	130	34	150	14	-	-	-	2	0	13	11	97
2016	38	59	66	22	0	-	-	-	1	10	70	68
2017	161	181	164	30	-	-	-	-	5	16	63	129
2018	133	69	114	14	-	-	-	-	0	25	21	51
2019	133	28	37	6	-	-	-	-	-	10	43	124
2020	153	91	230	18	-	-	-	-	-	7	22	95
2021	108	85	142	10	10	-	-	-	-	1	2	6

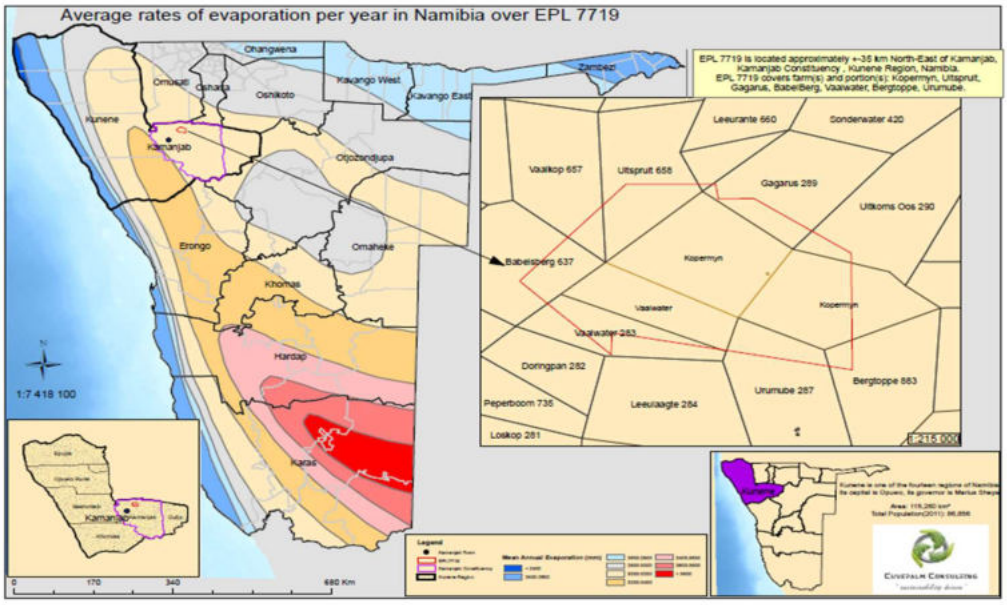


Figure 4 Average evaporation rate over EPL 7719

Rainfall increases from an average 0 – 100 mm per annum in the southwest to 400 – 500 mm per annum in the northeast with most of the precipitation occurring during the summer months.

The climate is therefore arid as desert conditions prevail with hot summers and relatively cold winters. The average annual temperature for the area is 30°C. It is dry more than 70% of the year with an average humidity of 34% and an UV-index of 6. The area furthermore falls within the zone of mean annual evaporation ranging from 3000mm to 3200mm, which is more than 10 times higher than the mean annual precipitation. As a result of the arid climate the vegetation is locally dominated by dwarf shrub savanna of the western Owambo basin margin (Atlas of Namibia/SWA, 1983).

5.1.1. Climate Sensitivity

The following (Table 8) is a depiction of the area's climatic condition as well as potential sensitivities and impacts associated with the identified features.

Table 7 Climate Sensitivity Index

Environmental Features	Description	Sensitivities	Potential impacts of features on project
Rainfall	Average rainfall – 200 to 300mm per year. Evaporation averages 2800 – 3200 mm annually, exceeding precipitation by approximately 93%. Typically, sporadic, and unpredictable. Localized storm events.	Capacity of the environment to absorb impacts is lower than in wetter areas. Groundwater is an important source of water for farming community and wildlife	Exploration activities causes an increase in water demand. Run-off from cleared areas causes erosion
Temperature	In summer, the highest temperature range between 30 C° and 34 C°. Winter temperatures, measured in July with an average daily maximum of 20°C and minimum of 8°C	Contributes to high evaporation rate. Semi-arid climate. Water resource is a scarce commodity. High temperatures in summer.	Wellness, health, and safety of the workforce.
Wind Direction	The wind predominantly blows mostly from EAST to WEST	Dust can be a nuisance to sensitive receptors approximate to target areas.	Dust particles as a nuisance

5.1.2. Wind Pattern

Typically, the averaged wind speed varies between 6.5 kmph and 17.9kmph. The annual average wind speed is 12.5kmph. The hourly wind data for the year 2019 indicates that the average wind speed where 8.5 kmph and wind speeds were mostly more than 1.8kmph. In the region wind predominately blow from EAST to WEST having a resultant vector ESE. The annual wind rose is presented in Figure 6.There are no significant seasonal variations in wind directions except the related vector is SE in wet season. Also, higher percentage of low winds (0.5 – 2.1 m/s) were higher in wet season compared to dry season.

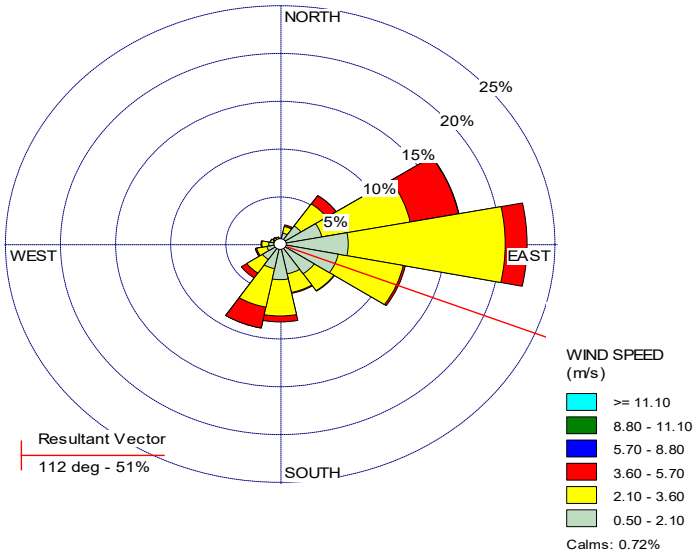
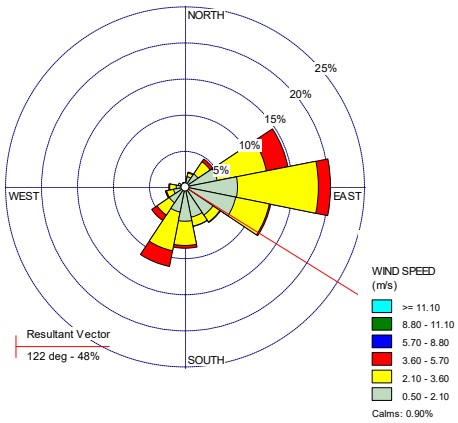
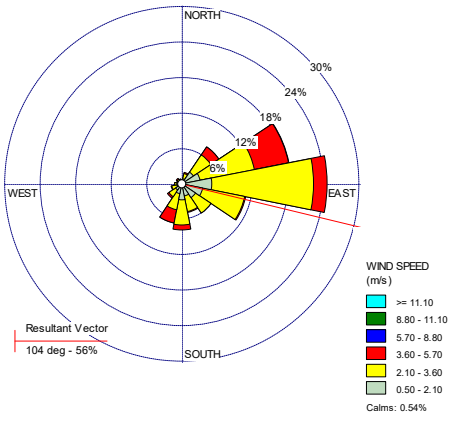


Figure 5 Annual Wind-rose Plot



Wet Season



Dry Season

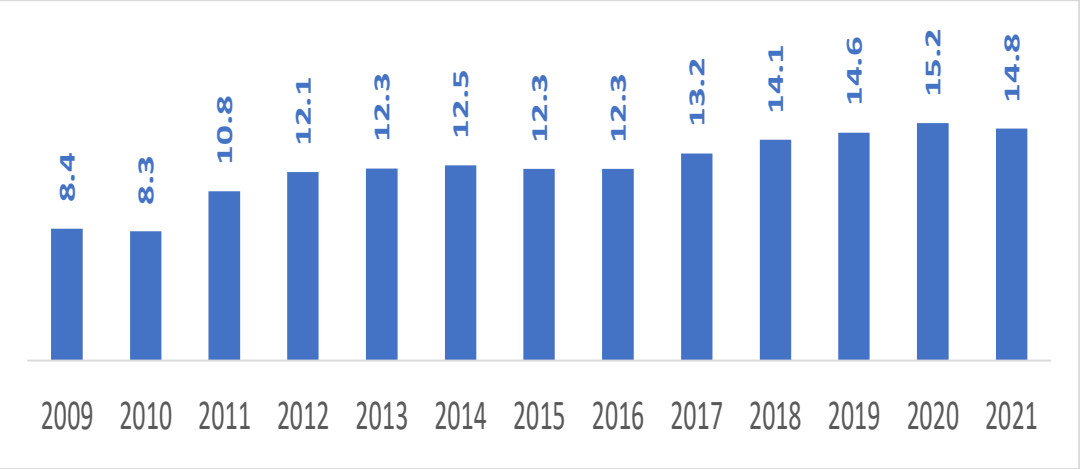


Figure 6 Wind speed over time

The monthly variations in wind speeds over last 13 years (Table 9) indicates that wind speed continues to increase in the region over time.

Table 8 Monthly Variation in Wind Speed

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2009	7.5	6.5	7.7	8.9	7.6	8.0	11.2	9.4	9.7	8.5	8.9	7.4
2010	7.4	7.2	7.1	7.3	8.1	9.4	9.8	8.9	9.4	9.3	8.1	7.2
2011	7.4	7.3	7.5	7.3	10.7	11.6	13.4	12.1	13.2	14.7	12.5	12.4
2012	11.5	10.1	12.3	13.7	12.6	12.4	12.1	11.4	11.9	13.5	12.1	11.1
2013	12.4	11.4	12.1	12.2	12.3	11.9	12.2	11.4	13.3	14.9	11.1	12.4
2014	13.3	12.4	10.1	12.9	12.1	13.0	12.6	11.4	13.5	14.1	11.2	13.3
2015	13.1	12.1	9.6	10.4	12.1	11.3	12.1	12.3	13.3	13.9	15.6	11.2
2016	12.9	10.8	11.0	11.8	12.1	12.9	13.2	13.1	13.4	14.0	10.7	11.1
2017	12.6	10.5	13.0	12.8	12.8	11.6	11.9	11.7	15.0	16.7	15.5	14.8
2018	14.0	13.5	12.4	11.8	11.7	11.4	16.1	13.0	14.8	17.9	15.9	17.0
2019	15.2	14.3	13.2	12.2	13.5	13.8	13.2	15.6	16.6	17.7	14.9	14.9
2020	14.1	14.4	14.8	12.2	14.2	15.3	16.9	14.5	17.2	17.9	14.6	15.8
2021	15.2	15.5	12.8	14.5	12.7	13.3	15.3	13.6	16.5	16.7	16.7	15.1

5.2. Geology

Two ancient cratons, Congo and Kalahari, existed in southern African Tectonic Province during the Archean and early Proterozoic periods (Tarkhanov, 2005). Namibia lies across the fold belts that separated the two cratons, with the Congo craton lying to the north of country and Kalahari to the south (Figure 7). The Congo craton is composed mainly of Archean gneisses and is mainly located in Angola and only its southern peripheral parts are located in the northern Namibia. The Kalahari Craton is mainly located in Botswana with its western and southwest flanks extending into and covering the eastern parts of Namibia. It is composed of various Archean gneisses of granodiorite and tonalite compositions of amphibolite and granulite metamorphism facies. The fold belts, which are the main tectonic structures, make up the Damara Orogen, which was formed from sediment deposition into the Khomas Sea and the collision of the Congo and Kalahari Cratons during the "pan-African" Orogenesis 920–550 million years ago. During the collision the Kalahari Craton was subducted north-westwards beneath the Congo Craton and the Khomas Sea was closed. The final locking of the Cratons has been dated at 542m.y (Miller, 1983). The Damara Orogen consists of three zones, which are distinguished based on geological structure, grade of metamorphism, intrusive formations and other features (Hoffmann, 1987).The Central zone(Damara),striking WSW-ENE within the central area of Namibia, composed of quartzite, arkosic sandstone, conglomerate, and phyllite, and underlain by metavolcanic rocks, such as alkaline ignimbrite, rhyolite, felsite, bostonite, and foyalite. The Southern zone (Gariep), striking SSE-NNE in southern to western areas of Namibia. This sequence is composed of amphibolite metamorphic facies which range from garnet-staurolite-biotite-and alusite to staurolite-kyanite to the north and south, respectively.

The Northern zone (Kaoko), striking SSE-NNW in northern to western areas of Namibia. It consists of two zones: eastern magmatic zone with weak grade of metamorphism and western zone composed by carbonate and pelitic sediments and is intruded by ultramafites. Remnants of pre-Damara ancient complexes are commonly found within the entire Damara Fold Complex. The Congo and Kalahari Cratons, as well as the northern and eastern parts of the fold complexes have been deeply eroded into large sedimentary basins where the younger Kalahari and Karoo sediments have been deposited.

EPL 7719 is located on the north-western edge of the Damara Orogen and on the south-western peripheral parts of the Congo Craton. Hydrogeological and hence geological settings of the area, in relation to the impacts of the proposed exploration activities on EPL 7719 are the focus of this report.

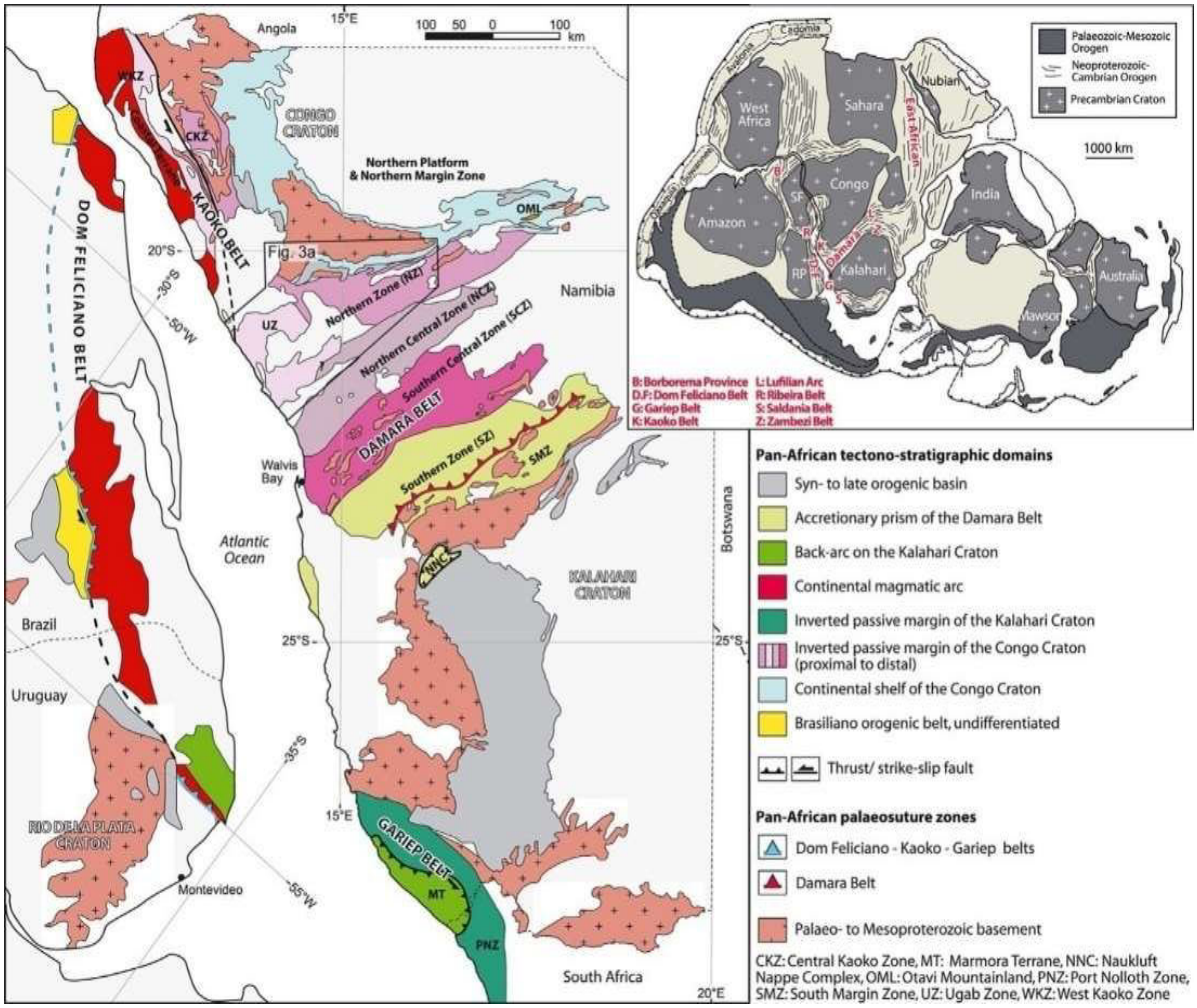


Figure 7 Namibian Regional geology and the ancient Cratons

EPL 7719 area is underlain by basement rocks of the Huab Metamorphic Complex, which are further overlain by Neoproterozoic metasedimentary and subordinate metavolcanic rocks of the Damara Supergroup. The Damara Super group is succeeded by the sedimentary and volcanic rocks of the Karoo Supergroup, which are mostly buried under the Etosha Calcrete Formation of Kalahari Group.

The Huab Metamorphic Complex consists of well foliated gneisses, amphibolites, and meta-sedimentary rocks, as well as granite and minor gabbro, which intrude the gneisses. The gneisses make up the oldest unit of the Keilberg Anticline. Cut by the amphibolite dykes, the granite is highly variable in texture, grain size and composition.

Rocks of the Damara Super group were deposited between 900 and 600 Ma (Miller, 1983) and underwent deformation and metamorphism, which vary within different orogenic zones (see chapters 1.2 and 7). Grades of metamorphism and deformation are relatively low in the area of EPL 7719 within the northern zone. The Damara Orogen is comprised of rocks of the Nosib, Otavi and Mulden Groups, which are exposed to the south and west, and continue below the Karoo and Kalahari cover of the Owambo Basin to the north.

Table 9: Stratigraphy of EPL 7719 area

E ON	E R A		SUPERGROUP/ COMPLEX	GROUP	SUBGROUP	FOR MAT ION	MEMBER / IN FOR MAL U N IT	LIT H OLOGY	APP. T HICK-NESS
PHA N E-R OZ OIC	CENOZOIC						Unconsolidated Quaternary sediments, etc. (Q*)	Sand, soil, calcrete, alluvium, scree	
				KALAHARI		Andoni	Etosha Pan Clay	Halite-bearing clay, minor silt	50 m
						Etosha Calcrete		Calcrete	0 - 120 m
	CRETACEOUS		Okorusu Carbonatite Complex (KcOu)**					Syenite, foyaite, carbonatite, fenite, nephelinite	
			Kersantite dykes (Jks)**						
	JURASSIC		KAROO			Rooiwal (JRW)		Basalt	< 183 m
						Etjo (JEJ)		Aeolian sandstone	60 - 430 m
	Cambrian to Triassic (no deposition)								
P R O T E R O Z O I C	N A M I B I A N	ED I ACAR AN	DAMARA NMZ - Northern Margin Zone, NZ - Northern Zone, NP - Northern Platform	MULDEN - NMD (NMZ, NP)	ETOSHAFONTEIN	Kombat (NKt)		Phyllite	0 - 800 m
						Tschudi (NTd)		Feldspathic sandstone, subgreywacke	~800 m
				SWAKOP - NSW (NZ)	NAVACHAB	Kuiseb (NKs)		Mica schist	< 1000 m
						Karibib (NKb)		Marble	
						Ghaub (NGh)		Diamictite	
					USAKOS	Chuos (NCh)		Diamictite	
				OTAVI - NOT (NP, NMZ)	TSUMEB (NTM)		NT8 (NHt_u)	Bedded light-grey dolostone	300 m
						Huttenberg (NHt)	NT7 (NHt_m)	Bedded dark-grey dolostone; minor limestone, shale, chert	290 m
							NT6 (NHt_l)	Bedded light-grey dolostone with abundant chert	300 - 800 m
						Elandshoek (NEl)	NT5 (NEl_u)	Bedded and massive light-grey dolostone	1200 m
							NT4 (NEl_l)	Massive light-grey dolostone	< 745 m
							NT3 (NMa_u)	Bedded dolostone	200 m
						Maieberg (NMa)	NT2 (NMa_l)	Bedded limestone	~ 700 m
							Keilberg (NMaKb)	Dolostone	20 - 40 m
		CR YOGEN I AN				Ghaub (NGh)	(= NT1)	Diamictite	2000 m
					ABENAB (NAB)	Auros (NAo)		Dolostone, limestone, shale	350 m
						Gauss (NGa)		Massive to laminated dolomicrite	< 1200 m
						Gruis (NGu)			
						Berg Aukas (NBa)		Banded dolostone	100 - 200 m
						Chuos (NCh)		Diamictite	
		TONIAN			OMBOMBO (NOB)*			?Argillaceous limestone; dark, gritty limestone?	< 850 m
				NOSIB - NNS (NZ, NMZ, NP)		Nabis (NNb)		Feldspathic sandstone, conglomerate	< 1200 m
						Askevold (NAv)		Mafic lava/ tuff	310 m
							Devon (NAvDe)	Carbonate rock	
	Namaquan (no deposition)								
	KHEISIAN		HUAB METAMORPHIC COMPLEX (MHU)					Paragneiss, orthogneiss, metasedimentary rocks	

The Karoo rocks in area are part of the southwestern extension of the Waterberg Basin, which is a NE-trending half graben containing approximately 700 m of Karoo strata and made up of three parallel sub-basins separated by basement highs or ridges (Gunthorpe, 1987). The stratigraphic units present in the area are the aeolian Etjo Sandstone and volcanic Rooiwal Basalt Formations. The Kalahari Group, consisting of Cenozoic sediments, is part of the Owambo Basin, which includes the extensive calcrete cover, alluvial deposits along river courses, and widespread surficial sediments. The Kalahari succession was deposited over a deeply dissected Pre-Kalahari terrain, forming a huge inland sedimentary basin called the Kalahari Basin. In Namibia the Kalahari Basin has been subdivided into Owambo, Omaheke and Aranos Basins. The area of the EPL 7719 is covered by the Etosha Calcrete Formation of the Kalahari Group. The geology around the key exploration target /zone i.e around Farm Kopermyn can be prescribed to be Upper rhyolitic Volcanic breccia (hosting Cu mineralisation) with lower quartz feldspar porphyry, considered to be a felsic Volcanic Centre with a mafic Volcanic pile-similar to a volcanogenic massive sulphide deposit found in Canada.

5.2.1. Topography, Soil, and Elevation

Namibia is divided into three main topographic elements, (a) An extensive plateau, b) A narrow coastal plain and (c) an eroded escarpment that is characterized by dissected and rugged topography. The EPL 7719 is located on an elevation varying from three sides (NW, S and NE), the area is surrounded by the elevated terrain. The minimum and maximum elevations are about 1220 meter and 1516 meter respectively. The

topography of the exploration zone is mixed flat and elevated (Figure 9). Towards the centre of the zone, it is almost flat with a gentle slope towards NE.

Topsoil is largely absent where the surface is covered with rocky outcrops throughout the EPL, with leptosols covering the largest part of the flatter central area (Figure 9). Mollic leptosols, typically associated with eroding hilly and undulating landscapes, is the dominant soil type near the mountainous areas, and also the central part of the EPL. These soils are marked by a shallow soil profile (indicating little influence of soil-forming processes) and contain large amounts of gravel. Leptosols are coarse-textured, underlain by solid rock within 30 cm from the surface. The soil is thus poorly developed and thin, lacks appreciable quantities of accumulated clay and organic material and is susceptible to erosion during the rainy season, especially in the beginning of the rainy season when vegetation cover is sparse. As the topsoil is loose and thin, it is also susceptible to wind erosion, especially when the vegetation cover is sparse (Mendelsohn et al, 2002).

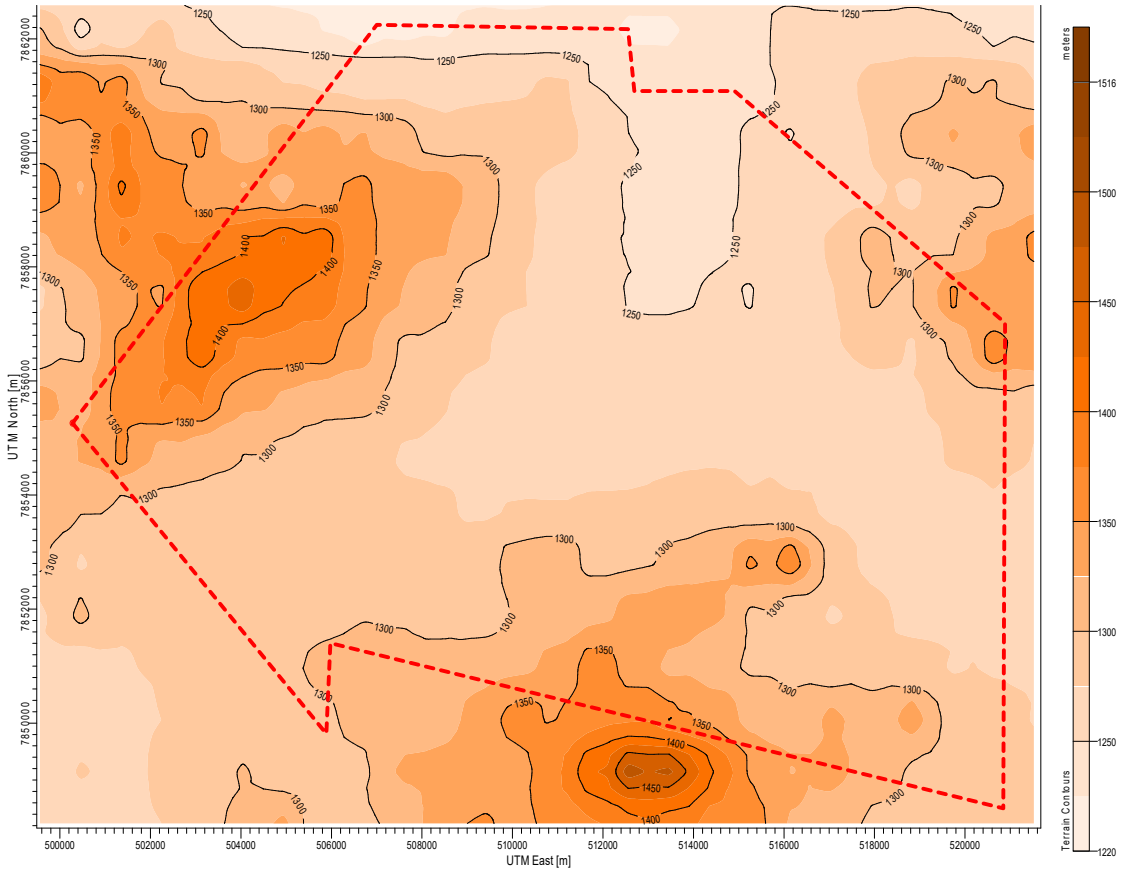


Figure 8 Topography of the Exploration Zone (EPL 7719)

5.2.2. Mineral Occurrence

Noteworthy and in relation to the proposed exploration works is the mineral deposits located at farm Kopermyn 291 (Outjo District), on the northern limb of a dome shaped inlier of the volcano sedimentary sequence of the Khoabendus Group. The 1970s represented a time where significant deposits were located with up to 100,000 tonnes of copper ore extracted at farm Kopermyn. The mining activities eventually ended in the late 1970s with mining area at farm Kopermyn abandoned Copper mineralization is expected to occur in the form of primary commodities Chalcopyrite, Pyrite (Cu, Ag), covellite, chalcolite and borite in fractures, voids and along fragmented edges. Mineralization is mainly confined to a course , ill sorted breccia consisitng of fragments , boulders and pebbles of quartz , -feldspar porphyrry and quartzite(Scneider et all 1999). Hence , the quartz porphyry buried below overlying sediments will be mainly pursued.

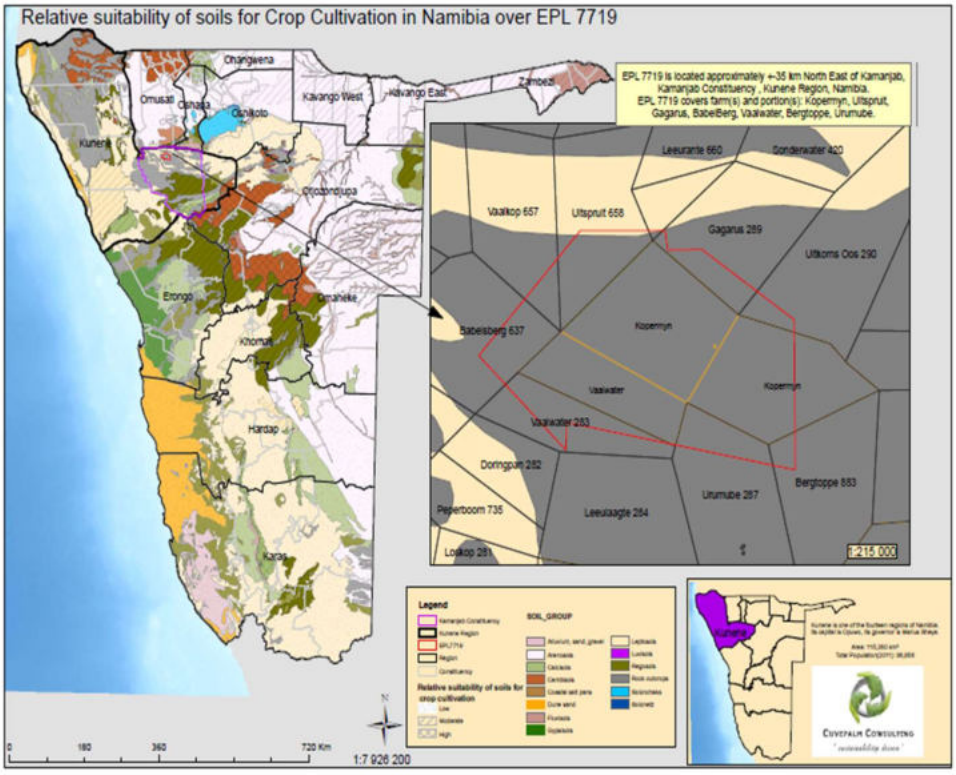


Figure 9 Soil associated with EPL 7719

5.3. Hydrology

Surface-Water Hydrology and Drainage

The area covered by EPL 7719 is devoid of significant drainage systems, as there is no major surface water stream stretching through it. However, the area contributes runoff through a local network of minor streams to the tributaries of the Huab River, which ultimately drains to the Atlantic Ocean. Efficient rainfall (Runoff and Infiltration) is significant only for rainfall events with high intensities since most of the precipitation is lost to evapo-transpiration. There are no natural groundwater discharges on the EPL, and hence the area is devoid of surface water bodies.

Groundwater Hydrology - Occurrence and Aquifer Types

During the subduction of the Kalahari Craton the Northern Zone of the Damara Orogen, on which the EPL 7719 lies, underwent several phases of deformation and metamorphism, (De Thierry, 1987) resulting in folding, fracturing, and faulting. The Northern Zone, especially, is characterized by synclines, anticlines, and basement-cored nappe structures due to compressional forces which were perpendicular to the strike of the Damara Orogenic belt. The average yields and rest water levels are 5.51 m3/h and 82.76mbgl, respectively (Figure 20 and Table 10).

Since the local geology is dominated by sequences that have been subjected to some grades of contact – regional metamorphism associated with the Damara Orogenesis, rocks do not bear primary porosity. Groundwater is, therefore, mainly hosted in secondary porosities such as fractures, faults, and karst structures, which all resulted from post-depositional processes, and is locally restricted to Northern Platform, whose extent is determined by the distribution of the shallow-water facies of the Otavi Group. The dolomites and limestones of the Otavi Group form the western extent of the Otavi Mountain land. Similarly, the deep water of the Otavi carbonates south of the Nosib Anticline also falls within the Northern Zone of the Damara Orogen.

Table 10 Borehole information on and around EPL 7719

Borehole No.	Lat	Long	Yield (m3/hr)	RWL (mbgl)	Depth (mbgl)	Diameter (m)
77341	-19.6148	15.6298	9.10		154.00	150.00
77389	-19.5985	15.8235	6.80	114.00	131.00	150.00
77383	-19.5964	15.7895	6.00		114.00	0.00
77388	-19.5885	15.8728	11.40	44.00	53.30	150.00
77382	-19.5648	15.7984	14.50		114.00	0.00
77381	-19.5581	15.8337	5.00		114.00	0.00
12052	-19.5452	15.3238	0.00		182.90	0.00
78618	-19.5187	15.4821	7.00	63.00	114.00	150.00
76509	-19.5171	15.2691	2.60	115.80	142.60	0.00
78617	-19.513	15.4435	2.30	94.00	183.00	150.00
29701	-19.5124	15.1816	13.50	77.00	105.00	160.00
76508	-19.5121	15.2804	1.40		100.00	0.00
76459	-19.5067	15.247	1.10	88.00	103.00	150.00
78616	-19.5056	15.336	3.60		246.90	0.00
30657	-19.504	15.2469		48.30	122.00	0.00
76507	-19.5034	15.3067	5.50	98.00	109.00	150.00
76623	-19.4998	15.2152	1.80	70.10	87.80	0.00
12152	-19.4988	15.5258	1.10	79.20	103.60	0.00
76627	-19.4975	15.1655	13.60	61.00	97.00	150.00
76681	-19.4972	15.1119				
14940	-19.4921	15.4184	3.30		212.80	0.00
76722	-19.4904	15.4636	18.20	140.00	215.00	150.00
29754	-19.49	15.0694			102.00	168.00
29755	-19.4892	15.0703			105.00	165.00
31283	-19.4705	15.4021	1.00	186.00	198.00	150.00
6309	-19.4694	15.4014	4.10	141.20	151.50	150.00
76724	-19.4634	15.3211				
76682	-19.4576	15.0575				
76723	-19.4539	15.359	0.20			
76634	-19.445	15.0483	10.90		70.70	0.00
76725	-19.4391	15.2745				
76619	-19.43	15.2363	3.60	85.00	96.00	150.00
17754	-19.4244	15.0061	1.10	30.00	65.00	150.00
76616	-19.4217	15.226	1.60	70.00	82.00	150.00
76628	-19.4178	15.0095				
13046	-19.4167	15.1809	1.30		76.20	150.00
78599	-19.4126	14.9882				
13047	-19.4071	15.1919	1.60	76.00	91.00	150.00
76617	-19.4065	15.2138	1.60	73.00	91.00	150.00
20421	-19.4043	15.0522	5.40	78.00	107.60	0.00
76629	-19.4029	15.0852				
76615	-19.3973	15.1527	23.70	43.00	59.00	150.00
76618	-19.3927	15.1491	1.80	43.00	61.00	150.00
13044	-19.3925	15.0966	3.60	46.00	87.00	150.00
20377	-19.39	15.2708	0.00		152.40	0.00
78598	-19.3819	14.9885				
76695	-19.378	15.2998	9.10	146.00	177.00	150.00
76697	-19.378	15.3146	5.90	137.00	163.00	150.00
76614	-19.3766	15.2238	2.00	177.00	183.00	150.00
13045	-19.3701	15.1177	0.50	53.30	91.40	0.00
13048	-19.3609	15.2631	6.80	81.00	122.00	150.00
76694	-19.3579	15.2962	2.30	37.00	55.00	0.00
4693	-19.3562	15.0218	8.20	26.50	85.60	150.00
22487	-19.3551	15.2025	1.50	143.30	167.60	0.00
14501	-19.3533	15.0436				
76612	-19.3491	15.1519	22.70		131.00	0.00
76693	-19.3461	15.2803	2.70	37.00	61.00	0.00
78580	-19.3229	14.9498	2.30	12.00	23.00	150.00
	Average		5.51	82.76	117.91	-

Since the local geology is dominated by sequences that have been subjected to some grades of contact – regional metamorphism associated with the Damara Orogenesis, rocks do not bear primary porosity. Groundwater is, therefore, mainly hosted in secondary porosities such as fractures, faults, and karst structures, which all resulted from post-depositional processes, and is locally restricted to Northern Platform, whose extent is determined by the distribution of the shallow-water facies of the Otavi Group. The dolomites and limestones of the Otavi Group form the western extent of the Otavi Mountainland. Similarly, the deep water of the Otavi carbonates south of the Nosib Anticline also falls within the Northern Zone of the Damara Orogen.

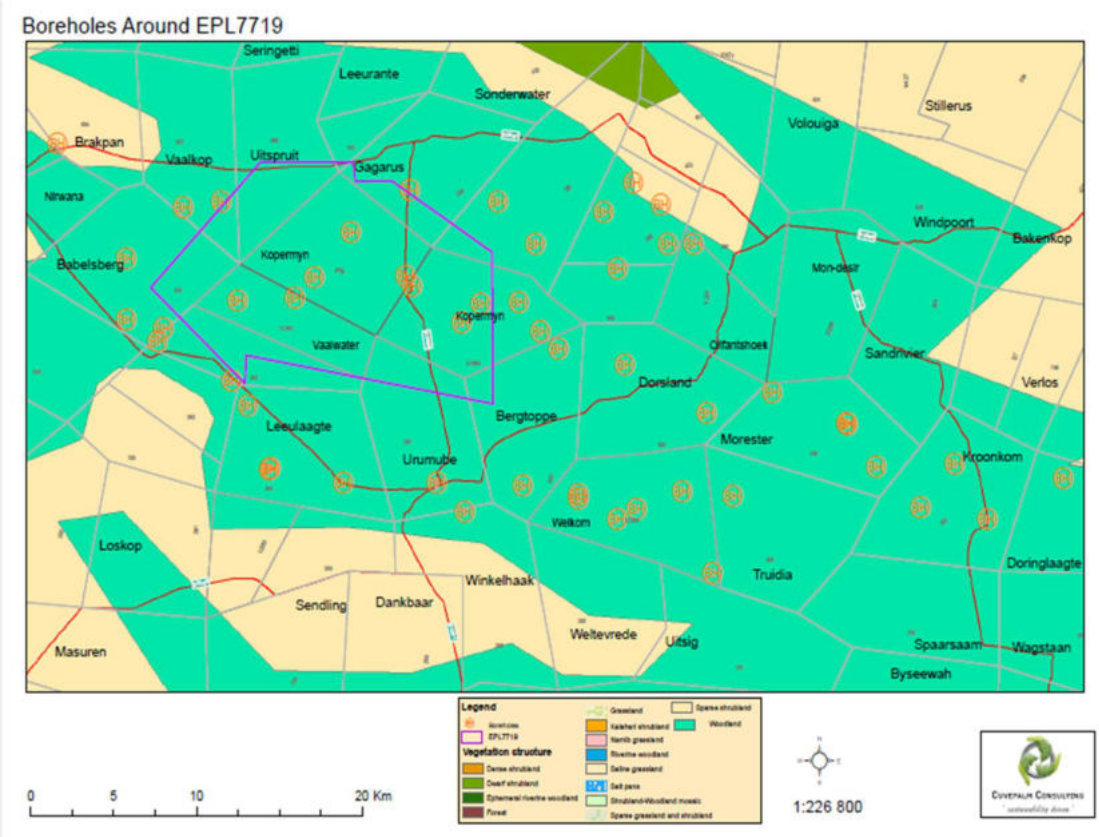


Figure 10 Borehole information on and around EPL 7719

Groundwater Potential and Vulnerability

Down-warping of the Southern Foreland due to tectonic loading by the approaching Damara and Gariep Orogens caused faults and other secondary structures, which generally host groundwater as fractured aquifers in rocks like schist, sandstones, marbles, quartzite and phyllites. However, schists are incompetent and so they weather faster producing clayey residues in faults and fractures, hence reducing permeability in these fractured aquifers.

This has been proven by borehole logs, which indicated clogging of shallower fractures by fine-grained residues from weathered schists, rendering shallower water strikes low-yielding and deeper water strikes (around 100 mbgl) moderate-yielding. The area is therefore classified as of moderate to very low groundwater potential (Figure 12).

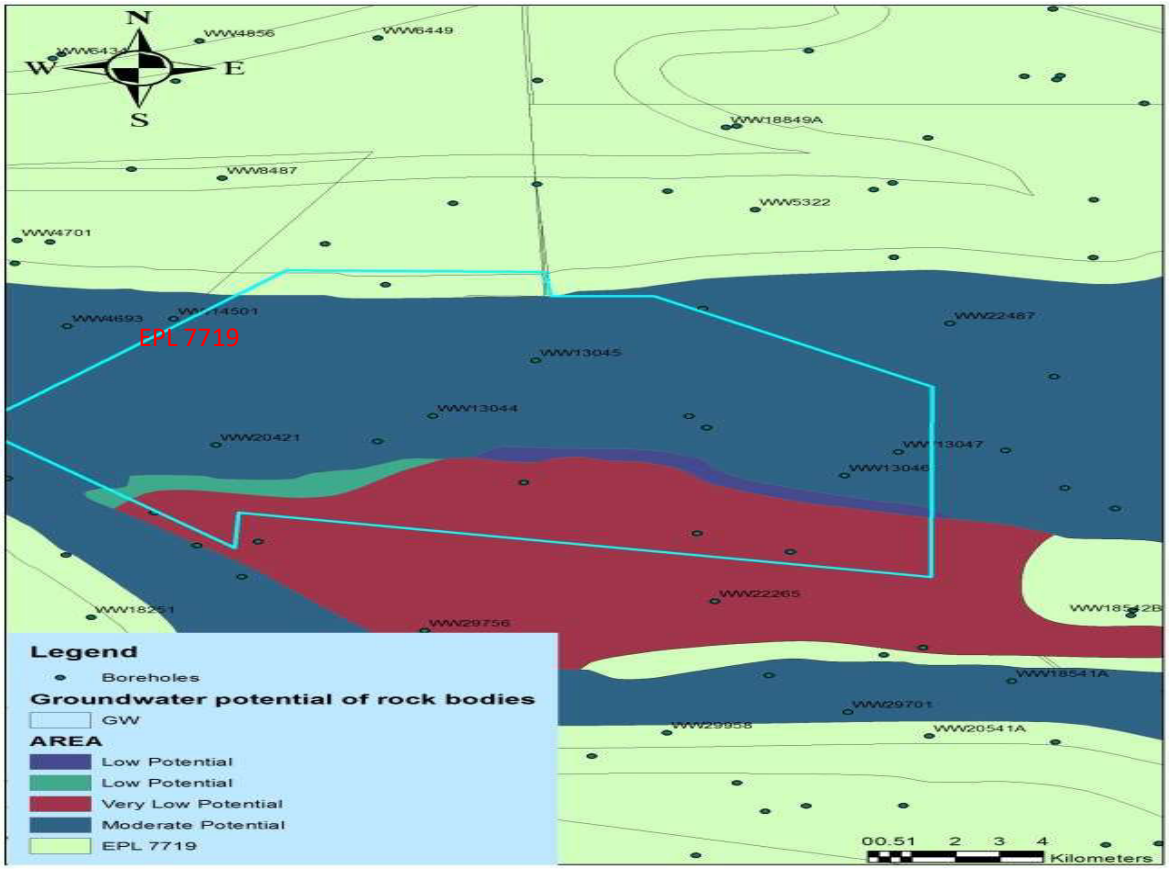


Figure 11 Groundwater potential on and around EPL 7719

Groundwater flows generally faster in secondary porosities than in primary porosities. The basement fractured aquifers of the area are overlain by a thin layer of low-permeability Kalahari sediments resulting in high net infiltration rates and reduced residence time in the unsaturated zone. It is, therefore, against this background the EPL 7719 area is considered to be high vulnerability to pollution.

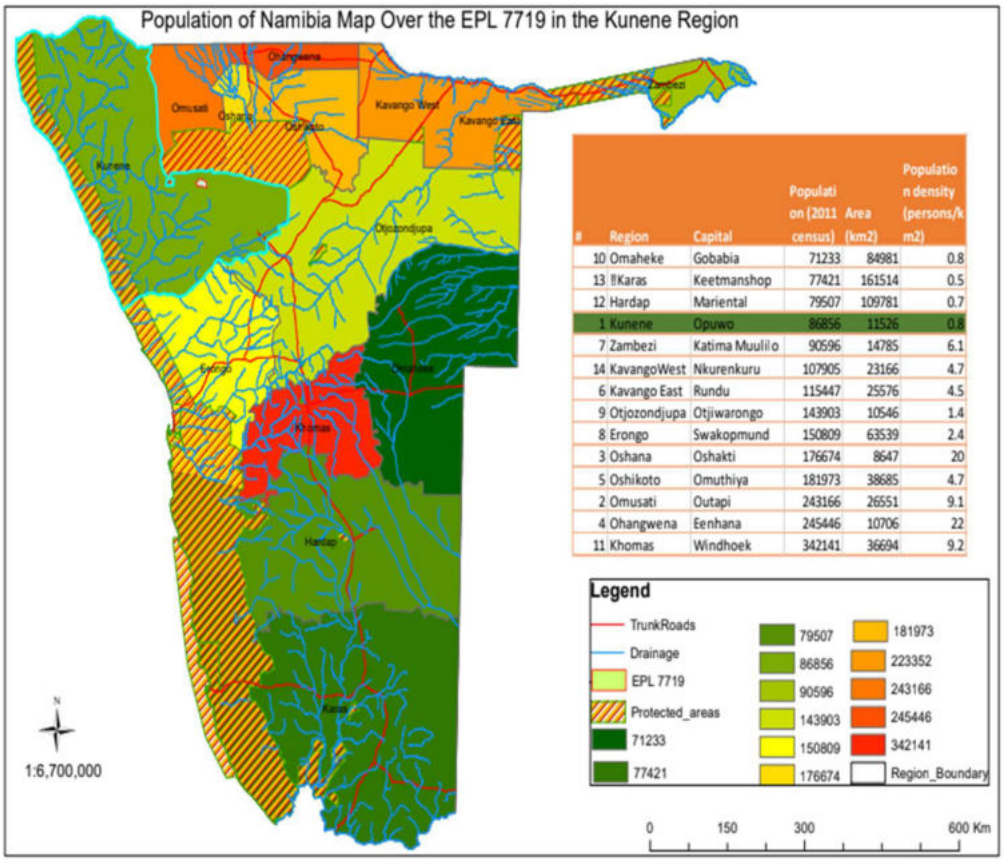
5.4. Socio-Economics

5.4.1. Governance

Namibia is divided into 14 regions, subdivided by 121 constituencies. Each region has a regional council, elected during regional elections per constituency. Towns are governed through local authorities, in the form of town or village councils. The Kunene Region is divided into six constituencies. Opuwo town serve as the administrative capital of the region and is the largest local authority in the region. Relevant to EPL is the two closest towns, Kamanjab and Outjo which are all local authorities.

5.4.2. Demographics, Historic & Culture Context

The population of Kunene is estimated at 85856 (NSA 2011) and 102 485 (NSA, 2018). The population growth in the entire Kunene Region is expected to decrease gradually. To illustrate, a reduction from 3.21% in 2001 to 1.37% in 2021 was observed. In 2011 the population within the Kamanjab area was counted at 8 441 persons. Opuwo is the major urban centre in the region, recording 27 272 residents in 2011 and growing at an average of 2.7 % per annum. The population growth in rural areas is however negative because most of the productive age groups have moved to urban areas, leaving behind the elderly and very young people. By comparison, the region has more males (52.9%) than females (47.1%), as well as the low population density (about 0.8 persons per km^2). Given the growing households population, it is projected that there are about 17613 households in the region, equating to a household size of about four (4) people (NHIES, 2015). The Kamanjab Constituency i.e the administrative boundary within which project will take place has a population of approximately 8555 inhabitant. The literacy rate for the age group between 15 and above is estimated at 71.8%. Most of the inhabitants are of Herero descent, but there are Damara, Ovambo, Herero, and inhabitants of mixed ethnicity. Otjiherero and Damara Nama are languages predominantly spoken in the region.



#	Region	Capital	Population (2011 census)	Area (km2)	Population density (persons/km2)
10	Omaheke	Gobabia	71233	84981	0.8
13	!Karas	Keetmanshop	77421	161514	0.5
12	Hardap	Mariental	79507	109781	0.7
1	Kunene	Opuwo	86856	11526	0.8
7	Zambezi	Katima Mululilo	90596	14785	6.1
14	KavangoWest	Nkurenkuru	107905	23166	4.7
6	Kavango East	Rundu	115447	25576	4.5
9	Otjozondjupa	Otjiwarongo	143903	10546	1.4
8	Erongo	Swakopmund	150809	63539	2.4
3	Oshana	Oshakti	176674	8647	20
5	Oshikoto	Omuthiya	181973	38685	4.7
2	Omusati	Outapi	243166	26551	9.1
4	Ohangwena	Eenhana	245446	10706	22
11	Khomas	Windhoek	342141	36694	9.2

Figure 12 Population Data (Source: NSA, 2011)

5.4. 3. Economic Activities

The regional economy continues to be dominated by two (2) economic drivers i.e. livestock production and tourism. In Namibia livestock production is the largest and contributes to the total agricultural output. Extensive subsistence livestock farming is an important livelihood for many rural communities in Kunene and is one of the reasons for the low intensity land use over much of the region.

Kamanjab constituency is predominantly agriculture and tourism -based. On free-hold farm land, cattle ranching and tourism dominates land-use. Farms within the EPL area stocking density ranges between 0-19 per km². In recent times, commercial livestock farmers have increasingly diversified their income strategies by expanding into game farming, hunting and charcoal production. On both commercial and communal land, bush encroachment decreased the carrying capacity of the farms strikingly over the last four decades. Charcoal production remains a source of income, especially for farmers combating bush-encroachment driven by invader bush due to lack of game browsers and overgrazing by cattle. Charcoal and wood is sold at about N$ 1100 per tonnage. Namibia ranks amongst the world's top 12 charcoal producing countries contributing 2.6 % of the world's output.

A total of 77, 6% of the population is economically active in the Kamanjab constituency. About 75% of the population derives its main source of income from wages and salaries from formal employment, followed by farming 9% and pension 7%. Agriculture and tourism are the major economic activities. Animal husbandry is the largest agricultural activity and there are three animal auction kraals at Kalkrand, Loskop and Witklip. Animals sold at auctions are mostly live cattle, goats, sheep and donkeys. Crop production is practiced on a very small scale due to low rainfall. The arid, mountainous, and rocky landscape, and lack of crop farming skills are the major contributing factors towards low crop farming yields.

Figure 13 Cattle Farming (Dry Season): Farm Garagus EPL 7719 (Source: CPC-2021)

Figure 14 Small stock farming - EPL 7719 (Source: CPC-2021)

Due to water scarcity, rain-fed agriculture is not viable in the EPL area. As indicated above, Investments have been made on farms to supplement income derived from cattle production. Additional income is made through firewood sales and charcoal production as seen at Farm Kopermyn (Figure 16). In recent times, consumptive tourism (trophy hunting) and non-consumptive (eco-tourism) tourism has been negatively affected by the Covid pandemic. Landowners are generally regarded economically affluent. Farm workers and their respective families receive monthly income. Circumstantial evidence suggests that monetary resources (wages) of farm works are relatively small when compared to that of more effluent landowners such that little or nothing is left for investment. Farm workers have to manage with extremely small amounts of cash for most days of the month.

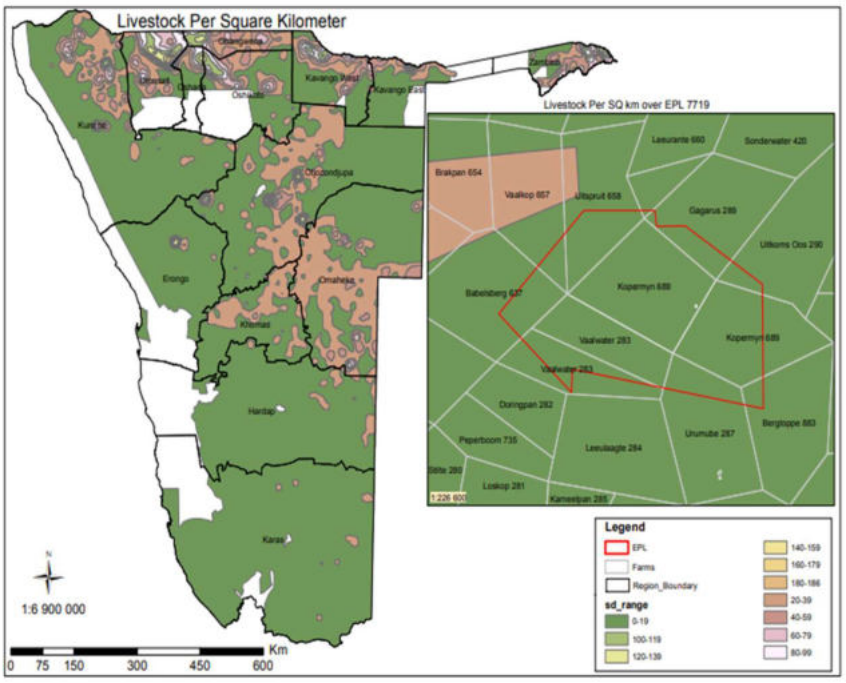


Figure 14 Livestock density (number of livestock per km²)

Figure 16 Charcoal and firewood production- Farm Kopermyn (Portion of EPL 7719. Source-CPC, Oct 2021

5.4.4. Employment

The economically active population in Kunene is estimated at 65 %, of which 42.3 % is unemployed. About 45% of the employed population is in the agriculture sector. Tourism accounts for 5 % of the employed population in the region, agriculture 2 %. Construction is a key sector, yielding about 7 % of the region's employment. The National Labour Survey (2018) revealed a 65.2% unemployment rate amongst the youthful age group (15 to 24 years).

5.4.5. Poverty levels

Kunene has a high poverty prevalence rate. The severe poverty rate is above the national average of 10.7%.

5.4. 6. Infrastructure and Services

Roads: An open road network exists in proposed exploration area. Primary access to the proposed exploration site can be gained via the existing D2671. The roads width is adequate for transportation services and two-way vehicular traffic. Access to the pre-identified targets (exploration areas) will secured through access agreements prepared in conjunction with the landowners.

Water supply: Safe drinking water is available and accessible to most households. Water for domestic use and livestock is sources from boreholes. The proponent will make use of existing borehole to source water for dust suppression and domestic use.

Sanitation: There are no centralized sewage treatment plants in the project area. Most landowners have constructed French drains (sewage facilities) or dry toilets on their properties. The proponent plans to introduce mobile chemical toilets.

Energy sources: No network of power lines transverse the proposed project site. Charcoal and firewood is a common source of energy for cooking. According to the National Census Report (2011), approximately 83% of the communities in Kunene use wood/charcoal for cooking and heating and only 33% use electricity. Solar installations are a common feature at farmhouses and boreholes. Exploration teams will mainly make use of diesel fuel to power equipment. Solar power will be used to light field camps and to meet other daily energy needs of exploration teams.

Telecommunication Services: The proposed project site is connected to the rest of the country and world via local network service providers. Full network coverage within the project area is however not available. The main providers of this service in the area are Telecom Namibia and Mobile Telecommunications Company (MTC Namibia). Communication between onsite and offsite personnel will be achieved by way of communication services provided by the aforementioned service providers.

5.5. Archaeological and Heritage Context

Early investigations by MacCalman (1972) and MacCalman and Grobbelaar (1965), drew attention to the presence of late Pleistocene evidence from the area, and more spectacularly, observations on stone tool use by contemporary hunter-gatherer groups. Early investigations draw reference to the Kunene's archaeological potential, particularly with respect to the history of the OvaHimba, the last remaining traditional pastoralist society in southern Africa. The interest of 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).

Evidence relating to early human occupation date 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 mountant. More recent investigations have documented a late Holocene occupation sequence (Albrecht et al, 2001) and some of the detailed archaeological characteristics of nomadic pastoral settlement patterns in the area (Kinaham, 2001). The Peet Alberts Rock engravings site located southwest of the EPL is evidence of early habitation in this area (Kinaham,2021). According to the National Heritage Council of Namibia, Kunene Region has about (seven) 7 known heritage sites which are listed as national

monuments (Declared Sites/Lists of National Heritage). No known proclaimed heritages are identified with EPL 7719.

5.6. Past Explorations & Mining Activities

The area previously underwent earlier geological and geochemical exploration activities in the 1940s, 1960s, 1970s and early 1990s. The 1970s represented a time where significant deposits were located with up to 100,000 tonnes of copper ore were particularly extracted at farm Kopermyn 291 situated in EPL 7719 area. The mining activities eventually ended in the late 1970s with mining site at farm Kopermyn abandoned. Remnants of past mining activities are still visible today as shown in (Fig 16 & Fig 17). The proponent has preliminarily identified key exploration targets within the EPL area and equally plans to resituate the abandoned mine at farm Kopermyn. The latter remain un-rehabilitated. Based on results of initial geophysical survey and mineral assessment reports, the rock waste dumps found at farm Kopermyn may contain 4000 tons @ 6.3 % copper (*Cu*).

Figure 15: Abandoned mining site, farm Kopermyn (Source: CPC 2022)

Surface Stock Piles

Old Workings

Waste Dumps

Waste Rock

Old Mine Adits

Tailing Dust

Figure 18 Legacy of historic mining activities at farm Kopermyn (Source: CPC- 2022)

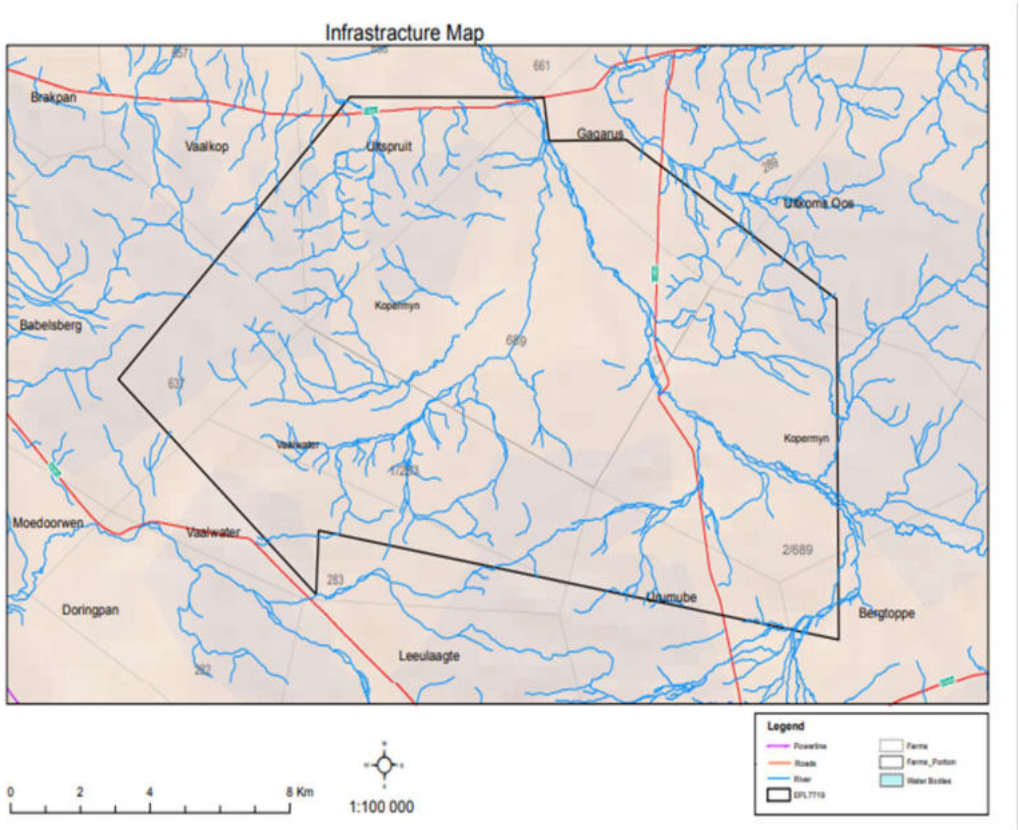


Figure 17 Map denoting civic infrastructure found within EPL 7719

5.7. Biodiversity

5.7.1. Habitat

EPL 7719 is located in the mopane biome. The vegetation structure is predominantly woodland (Fig 19 & Fig 20) Dominant vegetation forms are woody tree species, dense thickets of shrubs. Riverine thickets are common as defined by a network of shallow drainage channels. The broader landscape is gently undulating with many flat areas. The water-holding capacity is low to moderate, and the area has low to medium average vegetation biomass production that supports livestock farming

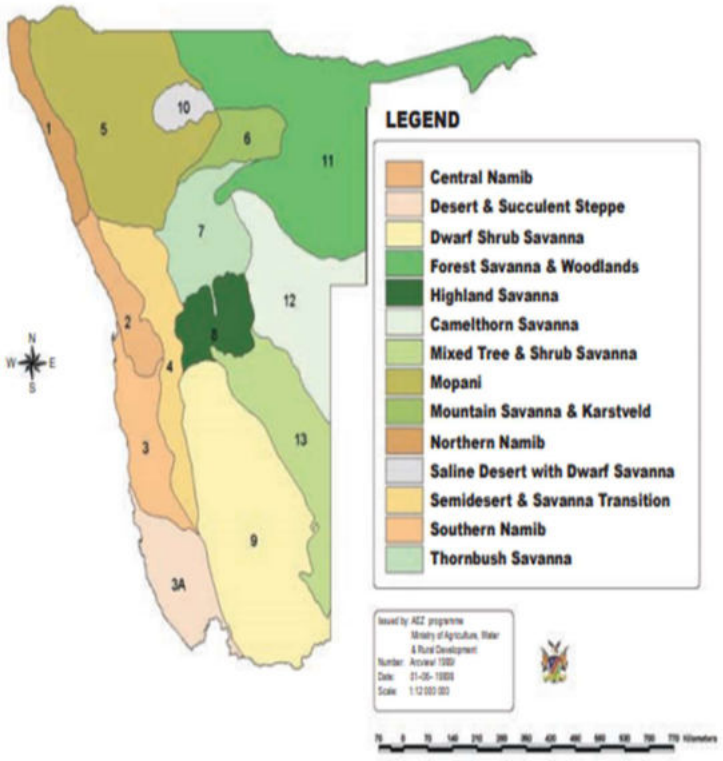


Figure 18 Biomes and broad vegetation types (Adapted from Giess,1971,MAWLR)

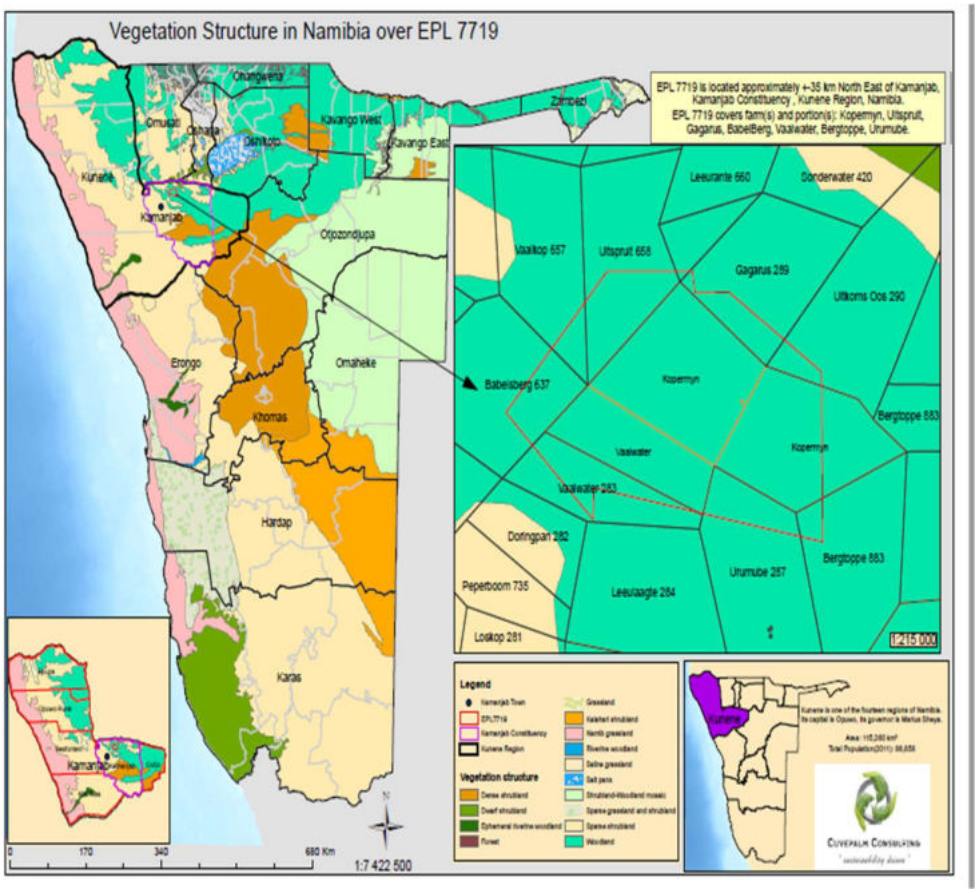


Figure 2.8: Depiction of vegetation Structure – EPL 7719

Figure 20 Mopane infested drainage channels (Source: CPC, 2021)

The most important environmental variable affecting the vegetation is rain, but micro-habitat conditions and rangeland management practices determine bush density and grass composition (Environmental Compliance Consultancy, 2021). Based on the latter, encroachment has led to a decreased carrying capacity on many farms and the invader bush is managed in several ways such as the production of charcoal for export.

Based on the Normalised Difference Vegetation Index (NDVI) derived from Sentinel 2A satellite imagery (16 February 2022), utilizing a high resolution (10 m,) NDVI values ranged between 0.09 and 0.6. The latter is a general indication of a low to medium amount of green vegetation biomass present in the areas. Higher values of NDVI represent areas with a higher density of green vegetation while lower values represent areas with a low density of green vegetation.

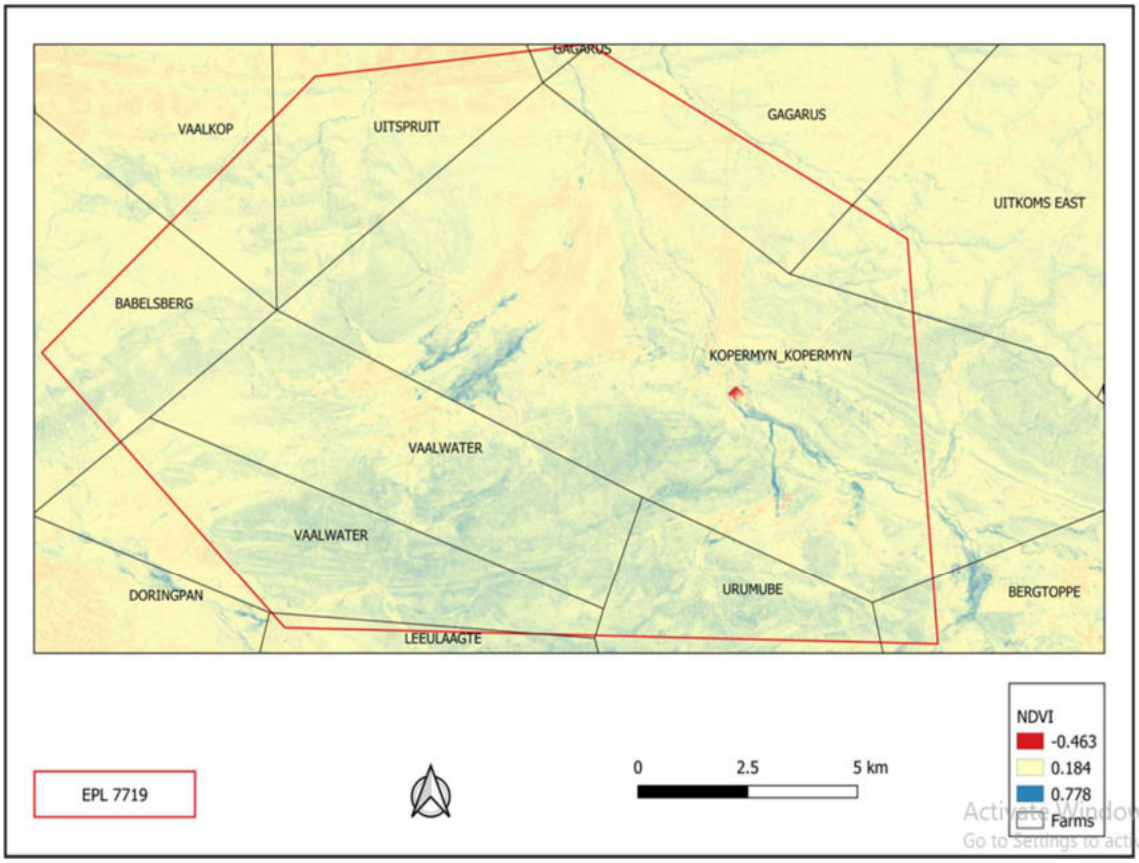


Figure 21 A map of the NDVI for the EPLs. Warmer colors show poor/ dry vegetation conditions while the blue colour shows areas with healthy or green vegetation.

5.7.2. Fauna

The wildlife found in the proposed project area comprise of birds, reptiles, and amphibians with a limited number of mammals. Due to human encroachment; reduced vegetation patches at the proposed project site and surrounding environs have resulted in habitat loss for most mammals that used to inhabit the area. The number of mammal species ranges between 76 and 90, the number of bird species is between 201 and 230, with 61 – 80 reptile species, 12 – 15 frog species and 12 – 13 scorpion species couldbe expected (Mendelsohn et al, 2002).

There are no known species of rare or endemic status in the proposed exploration area. Ungulates that occur in the area such as Duiker (*Sylvicapra grimmia*), Warthog (*Phacochoerus africanus*), Zebra (*Equus quagga*), and Steenbuck (*Raphicerus campestris*), Kudu (*Tragelaphus strepsiceros*), Oryx (Oryx gazella), Girrafe(*Girrafa girrafa*). Medium sized predators include cheetah, spotted hyena (*Crocruta crocruta*, leopards (*Panthera pardus*), cheetahs (*Acinonyx jubatus*), and black-backed jackals (*Canis mesomelas*).

Birds' species that are found there include *Falco chicquero* (red necked falcon), *Apus coffer* (little swift), *Oena Namaqua* (Namaqua dove), *Falco rupicolis* (Rock kestrel) and *Vidua regio* (Shaft-tailed whydah).

Insects

A total of 821 species, 296 genera, and 69 families on non-acarine arachnids (Araneae, Solifuga, Scorpiones, Pseudoscorpiones, Opiliones and Amblypygi) are presently known in Namibia (Griffin,1998). The area is also associated a high number of reptiles such as black mamba *Python notalensis* (Southern african python), *Heliobolus lugubris* (Bushveld lizard), *Pedioplanis nomaquensis* (Namaqua sand lizard) and *Bitis orietons (*Puff adder)

Amphibians & Reptiles

About 263 reptiles occur in Namibia (Cunningham, 2018). Large scale clearing as envisaged in the worst case scenario would have major impacts on arboreal reptiles, (M. Griffin, pers comm In: Cunningham, 2018).

Avifauna- Birds

Approximately 155 bird's species are likely to occur in the EPL area. Thirty-one (31) species were sighted during the field excursion. Species observed were the Helmeted Guinea fowl, Ring-necked Dove, Namaqua Dove, Gray Go-away-bird, Crowned Lapwing, Pale Chanting-Goshawk, Red-crested Bustard, Great Rufous Sparrow, Common Scimitarbill, Crimson-breasted Gonolek, Mariqua Sunbird, Red-billed Francolin, Blacksmith Lapwing, Crimson-breasted Gonolek, Blacksmith Lapwing, Red-faced Mousebird, Southern Pied-Babbler, Rufous-eared Warbler, Laughing Dove, Red-crested Bustard, Pale Chanting-Goshawk, Waxbill. Species that also carry IUCN threatened status but with a rare sighting in the project area include, Ruppels Korhaan (Eupodotis rueppellii, NT), Black Eagle (Aquila verreauxii; EN), the Ludwig's Bastard (Neotis ludwigii, EN), Martial eagle (Polemaetus bellicosus NT).

5.7.2. Flora

As indicated earlier, the EPL is characterized by a woody vegetation and shrub land vegetation structure. Plant diversity in the general area is estimated to be 400 - 499 species (Mendelsohn et al, 2002. Common woody plants found in EPL 7719 includes *Collospernum mopane, Ziziphus mucronata, Combretum apiculatum, Terminalia prunoides, Terminalia sericia, Albizia anthelmentica, Catapractes alexandrii, Commiphora spp*. Also, common is *Acacia spp* i.e the Black thorn (*Acacia mellifera*), Red umbrella thorn (*Acacia reficiens*) and Umbrela thorn (*Acacia tortilis)*. The latter three (3) are classified as encroacher bushes. Common bushes observed during the study include *Grewia flava, Grewia flavensis*. Grass species observed include *Eragrostis biflora, Mariscus squarrosa , Sporobolus spicatus* with *stipagrostis uniplumis and Eragrostis rigidior* being dominant grass species. A species inventory (checklist) of species observed and likely to occur in the project area is attached as (Appendix F to this report).

Table 11 Common plant species occurring on the project area

SPECIES	COMMON NAME	STATUS
Colospernum mopane	Mopane	Protected
Acacia mellifera	Black thorn	Not threatened
Acacia tortilis	Umbrella thorn	Not threatened
Boscia albitrunca	Shepherds tree	*Protected*
Terminalia sericea	Silver cluster-leaf	Protected

Figure 22 Mopane trees (*Colospernum mopane*)

6. CHAPTER SIX: PROJECT ALTERNATIVES

6.1. Drilling Technique (Auger Drilling)

Drilling generally represent the largest cost associated with mineral exploration. The objective is to drill a precise number of holes within budget, safely and provide exact number of intersections needed to demonstrate grade, tonnage (dimensions) and mineralization at an appropriate level of accuracy and precision. Thus, drilled holes can be effective in defining the boundary and evaluation of the quality of an orebody. Decreasing the number of drill holes, increasing the drilling rate, or reducing the energy requirements for drilling would have a substantial impact on the mineral exploration and development cost. In this context, directional drilling (reverse core) could significantly reduce the number of drill holes to discover a resource in the ground. The Auger method however might not be appropriate given the hard, rocky and rugged terrain associated with EPL 7719. Also, Auger drilling may also present logistical challenges given the limited time available for exploration teams and the huge energy requirements associated with Auger drilling.

6.2. Trenching (Hydro-excavation)

Trenching by Hydro excavation (Hydro Vac) method uses the power of pressurised water to breakdown overburden. The power of vacuum is used to extract the generated slurry and to deposit the waste material in special containers or holding tanks. After the work is complete, slurry is released from the holding tank back onto the ground to cover once again the exposed subsurface. Given the low ground water potential in the proposed project area, this method of trenching is not recommended.

6.3. Blasting

Blasting is associated with the use of explosives (dynamite) to liberate overburden and ore bodies. Blasting operations can cause several adverse environmental effects such as ground vibrations, air blast, fly rock, generation of fines, fumes and dust. Noise generated by blasting can create emotional stress for humans and a potential cause of acute and chronic stress to resident wildlife. Unexploded explosives or by-products can be hazardous to the natural environment. This method is not recommended as it can be disruptive to ecological processes.

6.4. 'No Go' Alternative

The no go alternative may negatively affect regional economic development, potentially stagnating the local economy centred on agriculture. Also 'No Go' Alternative might not be a favourable preposition for Kunene region as this could restrict economic diversification. As such, reducing the high un-employment rate, ensuring greater social cohesion and reduction in poverty will remain a protracted challenge.

7. CHAPTER SEVEN: PUBLIC CONSULTATION

Overview

The public consultation process, as set out in Section 21 of Regulation No 30 of EMA (Act no 7 of 2007, has been followed during this assessment. The stage at which the public was involved is illustrate in Figure 24 below.

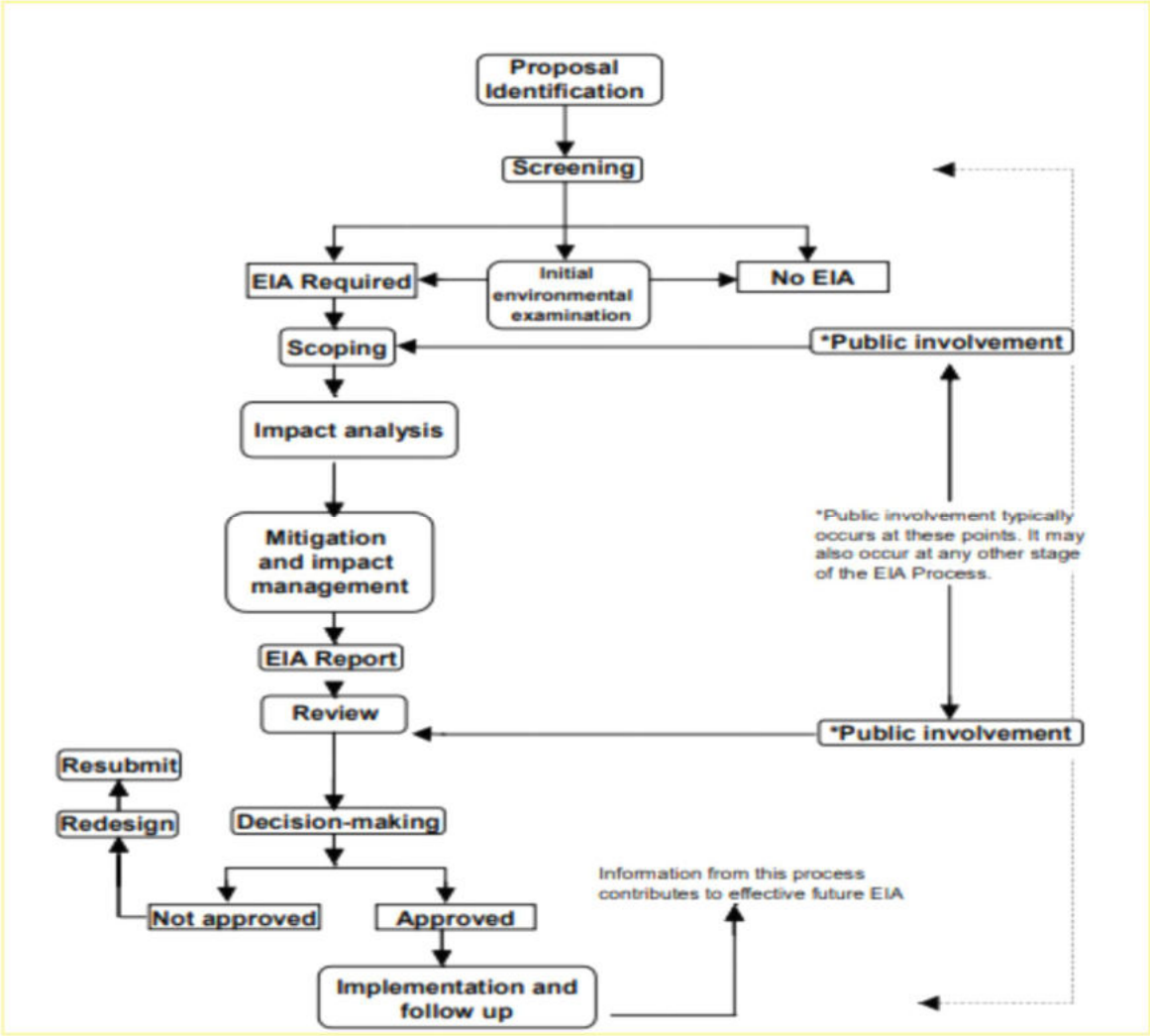


Figure 23: Public involvement (Source: UNEP)

7.1. Background Information Document (BID)

The BID provides an overview of the project; a description of the manner in which the EIA was undertaken and indicates how Interested and Affected Parties (I&AP) became involved in the EIA process. This document was advertised for availability various means (newspaper articles, public meeting, and electronic mail).

7.2. Newspaper Advertisements

Newspaper notices were circulated in two daily newspapers over two consecutive weeks (Table 12). These notices appeared in the "Namibian" and "New Era) newspapers **(Appendix C).**

Table 12 Newspaper & Site Notices

Newspaper	Area of Distribution	Language	Date placed
The New Era	Country Wide	English	04-03-2022 11-03-2022 19-04-2022
The Namibian	Country Wide	English	04-03-2022 11-03-2022
Site notice	Farm Koperymyn	English	25-02-2022
Preliminary Meeting with Local residents	Farm Kopermyn	English/Afrikaans	17-10-2021

7.3. Site Notices

Site notices were placed at key entrances and major routes of the EPL area (**Appendix C)**. Notices displayed information about the project, EIA process together with contact details of the EAP.

7.4. Building a Stakeholder Database

A stakeholder list was developed. The list was continually updated as Interested & Affected Parties (I&AP) registered to partake in the EIA process. Contact details of key stakeholders were also updated.

7.5. Public Meeting

A public meeting was held on the 19th of April 2022 at 11h00. The meeting took place at the Kamanjab Village Council - Community Hall (Kamanjab Town). Minutes of public meeting are attached to ESR report **(Appendix C).**

7.6. Consultations with land owners (relating to EPL 7719) & other Key Informants

Again, the BID formed the basis for the initial consultation with the directly affected farmers or landowners. This provided an opportunity to landowners with properties connected to EPL 7719 to participate in the EIA process and express their concerns regarding the project. Informal consultations were held with community members adjoining the project site. The Kunene Regional Council and Constituency representatives were engaged telephonically.

Comments and review period

The public commenting period from the first Newspaper advert spanned for thirty (30) days and the Scoping Report and Environmental Management Plan was made available to the public and stakeholders for comment and review. Given the degree of overlap that may exist on the issues uncovered during the public consultations and for convenience, issues are divided into broad categories. Appendix C (attached to the report) exemplify key issues and concerns raised by I&APs.

8. CHAPTER EIGHT: ASSESSMENT OF POTENTIAL IMPACTS

Overview

Explorations are associated with a wide array of potential environmental impacts, both positive and negative. Exploration activities could be shifting both horizontally and vertically therefore fixing all sensitive receptor would be difficult. However, based on the existing settlement communities (sensitive receptors) found within and around the exploration zone (Table 14), the following locations were identified for possible integration in the monitoring program.

Table 13 Location of Sensitive Receptors & Potential Pollution Sources

Sensitive receptors	Location/Farm Name	Feature	Coordinates
	Kopermyn	Farmhouse -North	-19.3979808, 15.1530358370
	Kopermyn	Livestock shed	-19.3923288, 15.1506165370
	Garagus	Farmhouse	-19.3496313, 15.1505038740
	Uitspruit	Farmhouse	-19.3396145, 15.08781521479
	Vaalwater	Farmhouse	-19.4002425, 15.08521891479
	Bergtoppe	Farmhouse	-19.451521, 15.2287677739
	Urumube	Farmhouse	-19.4950868, 15.16804781478
	Kopermyn	Workers Quarters	-19.4209223, 15.17280251478
Potential air pollutant sources	Kopermyn	Emissions from Abandoned Mine Edits	-19.4221241, 15.1644057370
	Kopermyn	Waste Rocks	-19.422847, 15.1639214185
	Kopermyn	Old Tailings	-19.4242924, 15.1624911185
	Kopermyn	Old Mine Workings	-19.4222917, 15.1636853

The potential positive and negative impacts that have been identified from the proposed activities are provided as per below.

Impact Identification (Positive and Negative) and Description

The potential beneficial and adverse impacts stemming from the proposed development onto the bio-physical and socio-economic environment during various phases of project are listed under this section and were assessed. JGM has committed to sustainability and environmental compliance by coming up with a corrective action for all anticipated environmental impacts associated with the project. This is in line with the Namibian Environmental Management legislation and International best practices. As the proponent, JGM will implement an Environmental Management Plan (EMP) to prevent, minimize and mitigate negative impacts. The environmental management plan developed address all the identified expected impacts, the plan will be monitored and updated on a continuous basis with aim for continuous improvement to addressing impacts. The main conclusion of the overall assessment was that the proposed project would result in environmental and social impacts, however management and monitoring measures will be put in place to minimize these impacts to insignificant levels. Summaries of study findings are provided below.

8.1. Positive impacts

- Improvement the country's GDP because of mineral beneficiation
  The project has the potential to yield favorable economic benefits at national level.
- Socio-economic advancement: The proposed development will create several employment opportunities for individuals and their families within the project area and surroundings
- Income Diversification
  The project can provide an opportunity for the redevelopment of the area and proximate environs. The proposed project to bring about positive changes in the local economy i.e diversifying the economy.

8.2. Negative impacts

- Aesthetics /Visual Degradation (operational and decommissioning phases)
- Habitat Fragmentation /Biodiversity Loss/Wildlife disturbance/(all phases)
- Destruction of archaeological and cultural significant sites/objects
- Decrease in ambient air quality (operation and decommissioning phases)
- Over abstraction of water and contamination (operation phase)
- Damage to private property (all phases)
- Noise nuisance from drilling and vehicular activities (all phases)
- Physical hazard posed by abandoned drill holes
- Public and environmental health impacts (operation and decommissioning phases)
- Social pathology: Influx of people into the area, commercial sex, alcohol abuse, economic losses due to poaching (construction and operational phases),
- Waste generation and management (all phases)

Some of the potential negative impacts are anticipated to only occur in one phase, while others occur in various phases. To avoid repetition, impacts that occur in more than one phase will be described and assessed once. In other words, if for instance health and safety impact occurs in both the pre-exploration

and operational phase, it will only be described and assessed once under the pre-exploration phase (since pre-exploration phase precedes the operational phase) and mitigation measures clearly provided. The negative impacts are assessed in detail under Table 20.

8.2.1. Biodiversity loss / Habitat Fragmentation

Vegetation clearing may result in biodiversity loss. Clearing may lead to the manifestation and proliferation of alien invasives on barren patches. Wild animals likely to be affected significantly include burrowing mammals and reptiles. Vehicles can trample reptiles and animals traversing vehicle routes. Natural migratory routes and passages can be disrupted by exploration activities affecting wildlife movement patterns. The abrasiveness caused by heavy contact onto the ground (rock), drilling and dumping of waste rock could produce sparks and potential cause veldfire leading to vegetation and animal loss. Burrowing animals rely on bush cover for safety (predation aversion) and food. Shrubs prevent burrows from being trampled by cattle and large game. Reptiles' dependent on microclimatic conditions and litter beneath trees and shrubs can be negatively affected by bush clearing activities. Habitat fragmentation occurs when areas of land are broken up into smaller and smaller patches, making dispersal by native species from one patch to another difficult or impossible, and cutting off migratory routes. Isolation may lead to local decline of species, or genetic effects such as inbreeding. Species that require large patches of forest simply disappear. The presence of construction workers may result in an increase in usage of fuel wood.

8.2.2. Degradation of Air Quality

Air quality impacts of are not limited to the exploration area. Assessing potential impacts requires examining a larger region, including adjacent lands as well. The operation and associated activities are potentially air polluting, and the major air pollutant can be the suspended particulate matter. Most of the air pollution problems are due to fugitive dust emission, which is more prominent in surface exploration in comparison to underground or subsurface explorations.

The following is a list of common potential emission sources:

- Gas exhaust from equipment used in perforation, loading, and transportation of materials
- Dust from drilling ,excavation, loading materials
- Dust from grinding and segregation of materials

The U.S. Environmental Protection Agency defines 'fugitive emissions' as "those emissions which could not reasonably pass through a stack, chimney, vent or other functionally equivalent opening." Common sources of fugitive emissions include storage and handling of materials; ore processing; fugitive dust, construction activities, and roadways associated tailing piles and ponds; and waste rock piles. Sources and characteristics of fugitive emissions dust vary in each case, as do their impacts. Impacts are difficult to predict and calculate but should be considered since they could be a significant source of hazardous air pollutants.

Specific activities that could affect ambient air quality includes:

Unpaved Surfaces: Dust emissions from unpaved surfaces are caused than from paved surfaces are usually much greater. Chemical stabilization can also be used in association with wet suppression. This involves the use of chemical additives to the water, which help to form a crust on the surface and bind the dust particles together.

- Revegetation of exposed surfaces. This should be done wherever practicable.
- Surface improvements may be done with concrete or asphalt, or the addition of gravel or chemical dust suppression to the surface for stabilization.

Wet suppression of unpaved areas can achieve dust emission reductions of about 70 per cent or more, and this can sometimes be increased by up to 95% using chemical stabilization.

Vehicle: Vehicles travelling over paved or unpaved surfaces tend to crush surface particles and other debris. Particles are lifted and dropped from the rolling wheels, and the road surface is exposed to strong air currents due to turbulent shear between the wheels and the surface. Dust particles are also sucked into the turbulent wave created behind the moving vehicles. The loads carried by trucks are also potential source of dust, either through wind entrainment or spillages. Mud and dust carry out from unpaved surfaces is another potential problem. Dust emissions due to vehicles can be minimized by:

Material stockpiles

Topsoil or overburden is susceptible to wind erosion speeds more than 5 m/s. Dust emissions can also occur as material is dropped on the stockpile from a conveyor or during loading or unload by track / shovel / front-end loading by track / shovel / front-end loaded. There are a number of methods by which dust can be reduced from the stockpiles which are as follows:

- Wet suppression by using water sprinklers.
- Covered storage of mined out overburden or topsoil. This is an expensive option but should be seriously considered
- Limiting the height and slope of the stockpiles can also reduce wind speed.
- Limiting drop heights from conveyors.

A flat shallow stockpile will be subject to less wind turbulence than one with a tall conical shape. However, while designing the stockpile due consideration should be given to the effect of other site features such as most prominent wind direction.

Drilling: Exploration drilling leads to high dust generation and is risk of occupational hazard. The recommended control measures are:

- Dry drilling fitted with bag filter.
- Driller shall be equipped with closed cabin personal protective gear to reduce occupational hazard.

No ambient air quality or emission standards exist for Namibia. Also, no occupational exposure limits exist for dust emissions in Namibian environmental legislation. Although dust mitigation measures will be adopted, dust emissions proximate to sensitive receptors should be strictly monitored. All the dust monitoring stations can be selected based on wind direction. The project area is surrounded by elevated terrain (Figure 9) from three sides therefore, it is likely that the ***impact will be restricted*** within the area. It also means the settlement within the area will be highly affected, therefore, it would be important to properly plan exploration and mineral processing activities. The air dispersion modelling can be useful in this respect.

Trenching & Crushing: Crushing produces mainly coarse (TSP and PM10) dust particles, which settle near the dust source. In quarries operating with secondary crushing for example, background concentrations can

be achieved approximately from a 350 m distance for coarse particles. An increase in particulate matter particulate matter (dust) due to excavations and operation of diesel power equipment (volatile organic carbons) can be expected. Additional fugitive particulate emissions occur from materials handling (crushing of mined out ores) including the dumping or stockpiling of waste rock.

8.2.3. Health Risks & Public Safety

Employees may be severely exposed to health and safety risks, when not properly inducted or trained on the use of certain machinery or equipment. Trenching can result can cause occupational injuries and fatalities due to the collapse of unstable trench walls. The presence of predators (e.g spotted hyena) and venomous snakes (e.g. cobras, puff adders) in the study area may present a considerable threat to workers safety. Unstable waste rock dumps may pose a safety risk to workers. Abandoned drill holes if not carefully decommissioned can pose safety risk to wildlife and humans. Hence physical hazard which may result from an open hole in the ground should be eliminated. Trenching when conducted during the rainy season can create a ponding effect as rain water percolates in dugout areas. Abandoned trenches can provide a breeding ground for mosquitos potentially causing the spread of Malaria Disease. It is imperative that trenches be backfilled as soon as the ore material is removed.

The risk of transmission of communicable diseases (HIV, hepatitis, measles, Covid 19) cannot be underscored. Most common forms of spread may include fecal-oral (lack of sanitation, open defecation) and sexual intercourse (unprotected sex). As of the latter, the influx of people into the immediate (proximate to project site) can potentially lead to sexual relations between employees and locals, consequently leading to the spread of sexual transmitted diseases (i.e., HIV/AIDS) and pregnancies when engaging in unprotected sex. Namibia has a high generalized mature HIV epidemic with a HIV prevalence of 14%, high antiretroviral coverage of 90% and teenage pregnancies (18%). To comply with legislation, an occupational health and safety plan (OHSP) and emergency preparedness plan should be prepared and implemented.

8.2.4. Ground water and water resources

Water contamination may result from the dumping of debris or excess soil from land levelling, road construction, runoff from construction vehicle, maintenance of exploration equipment(oil change, refueling, washing) and lack of sanitation facilities for field camp. Exploration drilling can expose aquifers to pollution. Aquifer vulnerability may arise due to degradation and contamination by potentially allowing seepage (surface run-off) to enter the aquifers. Over abstraction of subterranean water sources can negatively impact water security. A significant drop in ground water levels due to over-abstraction can affect the ability of farmers to meet water requirements for domestic use which includes livestock and wildlife.

8.2.5. Heritage and Archaeological Resources

Historical sites:

The site survey conducted by archaeologist observed some ruins within the area of interest, these were mapped and documented accordingly (Appendix D- Archaeological Specialist Report). Most of the historical findings are old buildings which are in ruin state, to great extent these structures carry some important historical background that goes back to the pre-colonial era, for instance the old building in farm Bergtoppe has some historical family background attached to it. However, there are no significant national historical

sites observed in the study area, only the sites which are deemed to be of national historic significance are situated in Kamanjab town, Khorixas and Outjo town of which their presence is reported in this report (refer to Appendix D), and therefore the impact is expected to be LOW.

A number of built heritage resources occur but none is deemed to have more cultural significance outside their locality due to either because of age, architecture or condition, at the family levels were these places have more than important historical, architectural, and social values attached. There are some few historical farmsteads *within the study area.* These old structures are occurring mostly in the same locality which is close to the residential structures. Despite the fact that the proposed project will avoid adverse impacts, chances are disturbances and damage due to proximity built up areas could occur during the construction phases especially if the abnormal vehicles will be using the same road to off-load heavy materials. However, with the recommended mitigation measures in place the significance will drop to LOW. Graves and burial sites are deemed to have high cultural significance at the local level for their social value and cultural norms. Graves and burial sites were found in farm Bosveld and Bergtoppe. Archaeologically, these places are of high significance and should be fully protected and avoided for any development. However, since graves can occur anywhere, mitigation is possible and will entail a pre-construction survey to locate any more of visible graves that might still be present within the footprint. Therefore, if the status quo remains unchanged there will be unlikely or zero impact to the graves since there are none.

8.2.6. Nuisances/Social pathology

Vehicles may damage fences due to driver recklessness or poor visibility. Livestock may be hit by moving construction vehicles and haulage trucks. Noise pollution will emanate from drilling, crushing, grinding and stockpiling, vehicle engines, loading and unloading of ore or waste rocks into dumpers. Noise and vibration sensitive receptors can include households residing in project area, wildlife, and livestock. The vibrations and operation of exploration equipment can increase ambient noise. Noise levels can also be aggravated due to removal of vegetation. Generally, vegetation cover and wind speed influence ambient noise levels. Mitigation measures for adopt can include the scheduling of work to minimize noise and the use of less noisy construction and exploration techniques.

The news of the proposed project may cause the immigration and increase of people into the project area. Given the current unemployment rate, the project may attract many out of area people to come look for jobs. This influx of out-of-area people during construction and operational phase may lead to social annoyance to the local farming community. Inbound persons from diverse backgrounds and culture may exhibit behavioral traits (social norms, culture, and values), potentially antagonizing locals. This may lead into social clashes between the locals and “outsiders”. Livestock losses due to theft may increase as criminals become opportunistic due to increased presence of people in the area. Property also likely to be negatively affected are farm houses, wildlife (game) , farm implements or any other properties of value to farm owners and their workers..

8.2.7. Land Degradation

The removal of vegetation may result in soil erosion as the topsoil becomes exposed. Heavy equipment can compact the soil affecting topsoil (texture) causing soil degradation. Topsoil loss can increase with increased surface run-off. Soil loss can also trigger the creation of dongas and gullies. Run-off from vehicle tracks can

create degrade landscape. Mine or dug out areas can be aesthetically unpleasant affecting the visual characteristic the natural landscape.

8.2.8. Waste Generation

Exploration activities can bring about stockpiles of waste rock and pilling of debris (cleared vegetation matter). Sanitary waste and domestic household waste is expected to build-up especially around staging areas/field camps.

8.3. Assessment of Impacts

The EIA Regulations require a description of the significance of potential effects, including cumulative effects that may occur because of undertaking the activity. The significance of the identified impacts of the project activities were assessed. The below sections outline the overall approach and assessment criteria that was adopted to assess the potential environmental and social impacts associated with the project. The definitions and explanations for each criterion are set in Table 15 below.

Table 14 Assessment Criteria

Duration – What is the length of the negative impact?	
None	No Effect
Short	Less than one year
Moderate	One to ten years
Permanent	Irreversible
Magnitude – What is the effect on the resource within the study area?	
None	No Effect
Small	Affecting less than 1% of the resource
Moderate	Affecting 1-10% of the resource
Great	Affecting greater than 10% of the resource
Spatial Extent – what is the scale of the impact in terms of area, considering cumulative impacts and international importance?	
Local	In the immediate area of the impact
Regional / National	Having large scale impacts
International	Having international importance
Type – What is the impact	
Direct	Caused by the project and occur simultaneously with project activities
Indirect	Associated with the project and may occur later or wider area
Cumulative	Combined effects of the project with other existing / planned activities
Probability –likelihood of impact arising	
Low	<25%
Medium	25-75%
High	>75%

Table 15 Impact Significance

Class	Significance	Descriptions
1	Major Impact	Impacts are expected to be permanent and non- reversible on a national scale and/or have international significance or result in a legislative non- compliance.
2	Moderate Impact	Impacts are long term, but reversible and/or have regional significance.

3	Minor	Impacts are considered short term, reversible and/or localized in extent.
4	Insignificant	No impact is expected.
5	Unknown	There are insufficient data on which to assess significance.
6	Positive	Impacts are beneficial

Table 16 Criteria used to determine the significance of impacts and their definitions.

CRITERIA	DESCRIPTION
NATURE	This criteria indicates whether the proposed activity has a Positive or negative impact on the environment (environment comprise both socio-economic and biophysical aspects). Reviews the type of effect that the proposed activity will have on the relevant component of the environment and includes "what will be affected and how.
EXTENT	100km radius); national (limited to within the borders of Namibia) or International (beyond Namibia's borders).
DURATION	This criterion looks at the lifetime of the impact, as being short/temporal (days, less than a year), medium (1-5 years), long (5-10 years but cease after operation), or permanent (more than 10 years)
INTENSITY	This criterion is used to determine whether the magnitude of the impact is destructive or innocuous and whether it exceeds set standards, and is described as none (no impact); low (where the natural/social environment functions and processes are negligibly affected); medium (where the environment continues to function but in a noticeably modified manner); or high (where environmental functions and processes are altered such that they temporarily or permanently cease and/or exceeds legal standards
PROBABILITY	Considers the likelihood of the impact occurring and is described as uncertain, Improbable (low likelihood), probable (distinct possibility), highly probable (most likely) or definite (impact will happen regardless of prevention measures).
SIGNIFICANCE	Significance is given before and after mitigation. Low if the impact will not have an influence on the decision or require to be significantly

	accommodated in the project design, Medium if the impact could have an influence on the environment which will require modification of the project design or alternative mitigation (the route can be used, but with deviations or mitigation) High where it could have a "no-go" implication regardless of any possible mitigation.
STATUS OF THE IMPACT	A statement of whether the impact is positive (a benefit), negative (a cost), or neutral. Indicate in each case who is likely to benefit and who is likely to bear the costs of each impact.
DEGREE OF CONFIDENCE IN PREDICTION	This is based on the availability of information and knowledge used to assess the impacts.

The significance of the potential impacts identified for this project was determined using a combination of the criteria discussed in Table 18 and Table 19. The significance of potential impacts identified is described in the Table19 below.

Table 17 Definition of significance ratings criteria

Significance	Criteria
Low	Where the impact will have a negligible influence on the environment and no mitigations are required
Medium	Where the impact could have an influence on the environment , which require some modifications on the project activities and /alternative mitigation
High	Where the impact could have a significant influence on the environment and in the case of a negative impact the activity should not be permitted

To fully understand the significance of each of the potential impacts raised through stakeholder engagements, impacts were evaluated and assessed as per criterion in the next sections.

Table 18 Impact Rating

Aspect	Proposed Mitigation Measures	Significance rating of impact if **un-mitigated**	Significance rating of impact if mitigated
Socio-Economic/Socio pathology	• Promote the employment of locals. • Ensure due consideration is given to matters regarding the cultural and general wellbeing of the affected community and matters incidental thereto. • Install a Camera Surveillance System at key entrance to the exploration area and key intersections in order to combat livestock theft • Introduce visitor permits. • Maintain regular communication between and exploration teams. • Adopt a dispute resolution mechanism • Communicate uniformly all planned activities. Information regarding activities and related timing should be communicated community communication channels • Land owners should be given a list containing names and photographs of exploration teams for identification purposes	High	Moderate
Biodiversity loss / Habitat Fragmentation	• Erect fences around work areas to prevent human wildlife encounters • Adoption alternative energy sources to reduce over dependence on firewood	High	Low
Heritage and Archaeological /Culture	• Prospecting and exploration works should try avoid graves if possible but any that cannot be avoided will require exhumation and possibly reburial but for this to happen a permit is required from National Heritage Council of Namibia. Project Proponent is cautioned that 'Chance find' is mandatory and should be complied throughout the operational phase of the project. • Create a 5 km buffer around any rock paintings and areas of that with a potential for heritage conservation.	Moderate	Low
Ground Water Resources	• Adopt water conservation measures.	Moderate	Low

	• Abandoned drill holes need to be sealed and decommissioned appropriately in order prevent pollution of groundwater by the entry of poor-quality water and other foreign substances down the drill holes. • Avoid spillage from moving vehicles. • Optimize travel distances through appropriate site layout and design. • Vehicular emission of particulate matters, SO2, NOx, hydrocarbons can be minimized by proper training and maintenance of vehicles and other oil - operated equipment. • Suppress dust emissions by: - Water sprinkling on unpaved areas during dry wind periods, using a water tanker/or fixed sprinklers. - Speed controls on vehicles have an approximately linear effect on dust emissions. In other words, a speed reduction from 30 km/hr to 15 km/hr will achieve about 50 per cent reduction in dust emissions.		
Public, Occupational Health & Safety	• Conduct First Aid Training and safety Drills	High	Moderate
Waste Generation	• Implement Waste Management Plan or Guideline • Waste management guidelines should be implimented to counter potential adverse impacts of waste generated. Waste skip storage areas should be properly positioned, roofed and bunded in the case of used oil or hazardous waste residues being stored	High	Low

Table 19 Environmental Aspects & Impact Assessment

Environmental Aspect	Valued Ecosystem Component	Impact	Project Phase	Duration	Magnitude	Extent	Type	Probability	Significance
Visual Impacts /amenities /nuisance	Landscape Scenery	Visual aesthetic impact	Construction and Operation	Moderate	Moderate	Local	Direct	Medium 25 - 75%	Moderate
	Topography and Landscape	Alternation of existing topography	Construction & operation	Short term	Small	Local	Direct	High>75%	Moderate
	Topography and Landscape	Visual impacts due to infrastructure and unsustainable handling and disposal of waste.	Construction and Operations	Short	Small	Local	Direct	Low <25%	Minor
	Landscape/Civic amenities	-Visual impacts due to use of unsustainable disposal methods -Excavations could pose a visual impact and complete change scenery	Construction and Operations	Long term	Small	Local	Direct	Medium 25 - 75%	Moderate
Land degradation/fragmentation	Soil	Contamination to soil from solid and sanitary waste disposal	Construction and Operations	Moderate	Small	Local	Direct	Low <25%	Minor
	Soil	Spillages of fuel, oil, and lubricants.	Construction	Short	Small	Local	Direct	Low <25%	Minor

	Soil	Erosion	Construction	Moderate	Small	Local	Direct	Low <25%	Minor
	Soil	Loss of usable topsoil material	Construction	Long term	Small	Local	Direct	High>75%	Moderate
	Terrestrial ecology	Change in land use	Construction and Operations	Permanent	Great	Local	Direct	Low <25%	Moderate
	Terrestrial ecology and biodiversity	Decreased in vegetated land (areas of biodiversity, pasture significance) in and around the project area.	Construction and Operations	Long term	Low	Local	Direct	High>75%	Low
Ground Water & Water Resources	Ground water quality	Water pollution from oils and lubricants from vehicles and drilling equipment.	Construction, operation and decommissioning	Moderate	Moderate	Local	Direct	Low <25%	Low
	Surface water quality	Turbidity and high sediment load	Construction, operation and decommissioning	Moderate	Small	Local	Direct	Low <25%	Low
	Groundwater quality	Pollution of underground aquifers because of unsafe	Construction, operation and	Long term	Great	Local	Direct	Medium 25 - 75%	Low

		storage or disposal of hazardous waste	decommissioning						
	Groundwater quality	Groundwater source and soil may be polluted by construction activities	Construction, operation and decommissioning	Short term	Great	Local	Direct	Medium 25 - 75%	Moderate
	Ground water quality	Groundwater source potentially contaminated by poor sanitary service infrastructure	Construction, operation and decommissioning	Long term	Moderate	Local	Direct	Medium 25 - 75%	Low
	Surface water quality	Increase in surface water run- off from barren and waste stockpile areas.	Construction, operation and decommissioning	Short term	Moderate	Local	Direct	Low <25%	Low
	Vehicular Movement	Increase in vehicular movement can displace local wild animals and cause nuisance to nearby homesteads	Construction, operation and decommissioning	Moderate	Moderate	Local	Direct	Medium 25 – 75%	Low
DUST EMMISSIONS/AIR QUALITY	Ambient Air Quality	Potentially release the following: emissions.	Operations	Short term	Moderate	Local	Direct	Medium 25 -75%	Moderate

		-PM2.5 -PM10 -Fallout dust							
WASTE GENERATION	Ground water quality	Hazardous waste from the waste storage site	Operations	Long term (operation)	Small	local	Direct	Medium 25 - 75%	Low
	Groundwater quality	Leaching of hazardous substance or chemicals laden water into the sub-terrenian water sources	Construction and Operations	Long term	Small	Local	Direct	Medium 25 - 75%	Low
BIODIVERSITY (*FAUNA*)	Terrestrial ecology and biodiversity	-Operational dust fallout, soil disturbance can affect nutrient recycling process effected by soil living organisms	Construction, Operations	Moderate	Small	local	Direct	Low <25%	Minor
		Destruction of vertebrate fauna (e.g., road kills; fence and construction /land clearing mortalities)	Construction and Operations	Long	Moderate	Local	Direct	Low <25%	Minor
BIODIVERSITY (*FLORA*)	Terrestrial ecology and biodiversity	Proliferation of invasive plants	Construction and Operations	Long	Moderate	Local	Direct	High >75%	Moderate

	Terrestrial ecology and biodiversity	Loss of unique flora and special habitats in the local environment because of general nuisance and animal migrate.	Construction and operations	None	Moderate	Regional	Direct	Low <25%	Moderate
	Terrestrial ecology and biodiversity	Dust fallout may adversely affect some sensitive plants and could prompt stunted growths.	Construction and Operations	Long Term	Small	Local	Direct	Medium 25 - 75%	Low
	Terrestrial ecology and biodiversity	Clearing of land may lead to destruction of protected vegetation and loss of biodiversity.	Construction	Long Term	Moderate	Local	Direct	High >75%	low
	Terrestrial ecology and biodiversity	Uncontrolled/accidental fires	Construction and Operations	Long Term	Great	Local	Direct	Medium 25 – 75%	Moderate
SOCIO-ECONOMIC	Noise Pollution	Increase in noise levels	Construction, Operation	Moderate	Small	Local	Direct	Low <25%	Minor
	Socio Economic Activities	Temporary and permanent employment prospects.	Construction and operations	Long	Moderate	Regional	Direct	Medium 25 – 75%	Positive
	Community health and morals	Increased potential of social evils such as prostitution proliferation and abuse of the vulnerable	Construction, Operation	Moderate	Small	Local	Direct	Low <25%	Minor

		groups (Children and women). Also potential for increased HIV infections, alcohol abuse							
	Community wellness	Increase in vehicular movement can cause emotional stress to resident communities	Operation	Moderate	Moderate	Local	Direct	Medium 25 – 75%	Low
	Contribution to National Economy	Employment, local procurement, duties, and taxes.	Construction and Operations	Short	None	Regional / National	Direct	Low <25%	Positive
HERITAGE/ARCHAEOLOGY	Artefacts, archaeological high value components, cultural sites , burial sites	Destruction or affecting paleontological and archaeological artefacts	Construction and Operation	Moderate	Moderate	Local	Direct	Medium 25 – 75%	Moderate
PUBLIC HEALTH AND SAFETY	Sanitation	Poor sanitation can be detrimental to human health.	Construction , Operation and Decommissioning	Moderate	Moderate	Local	Direct	Medium 25 – 75%	Moderate

	Employee Health and Safety	Potential accidents when operating exploration equipment. Old mine workings can present a safety hazard in the form of falling rocks , dust blown from tailings , dilapidated or relic buildings , abandoned mining equipment , geological instability	Construction , Operation and Decommissioning	Moderate	Moderate	Local	Direct	Medium 25 – 75%	Moderate
	Respiratory illnesses	Dust Emissions such as PM10, PM 2.5 and PM 0.1 can be highly dangerous to the respiratory system and as such residential areas in close proximity to exploration targets will be strictly monitored dust fallout.	Operation	Moderate	Moderate	Local	Direct	Medium 25 – 75%	Moderate
CLIMATE	Greenhouse Gases	Drilling and trenching on old mine working areas (tailings, waste dumps) could trigger the release of GHGs such as, S0x, CO2, CH4	Operation	Moderate	Great	Local	Direct	Medium 25 – 75%	Minor

		Increase in vehicular traffic can cause an increase in GHGs	Construction & Operation	Moderate	Moderate	Local	Direct	Medium 25 – 75%	Low

9. CONCLUSION & RECOMMENDATIONS

Distant and proximate environs in relation to predefined exploration targets are less likely to be adversely affected by the project as alluded in the Impact Assessment Matrix. Attention was drawn to ensure that potential adverse impacts are prevented, and mitigation measures are stringently implemented during the project. An Environmental and Social Management Plan has been developed to ensure that it addresses all potential negative impacts anticipated for the project and enhance all positive impacts for a more beneficial impact. An assessment of the aforementioned alternatives suggest that trenching and drilling may be more advantageous than other exploration techniques in terms of operational efficiency, productivity and nuisance abatement. Reclaiming minerals from the old mine works has the potential to offer sustained and diversified socio-economic benefits to resident communities and those in the broader region. The proposed exploration activities are desirable and highly recommended, because of the pressing need for socio-economic advancement. The latter is a mainstay of sustainable development. A 'no go' alternative can have dire consequences to job security at least in the immediate future. The EAP recognizes that well-established eco-webs specifically of the associated proposed project site remain significant. The proponent shall ensure that a good working relationship and communication is maintained with the local community, as the first step in gaining their support for proposed exploration or probable future mining. Based on the findings of the ESR, CPC recommends that MEFT (Department of Environmental Affairs) approve the Environmental Clearance Certificate Application on basis of full compliance to the developed Environmental and Social Management Plan for the proposed mineral exploration activities. If authorised, the developed EMP that takes account of adaptive rehabilitation requirements should be strictly implemented by proponent together with monthly compliance monitoring and Quarterly reporting.

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APPENDIX 3: CONFIRMATION OF SCREENING NOTICE

SECTION 35(1) (A) (B) OF EMA (ACT NO.7 OF 2007)

Your application is verified - mi2bsam@gmail.com - Gmail Page 1 of 2

Your application is verified

Dear Martin Shikongo,

This email serves to inform you that your application APP-002746 has been verified.

Taking the following into considerations:

- Location of the project
- Pollution potential
- Scale of operation of the project

Please upload the following documentations:

- Scoping Report
- EMP
- Inputs from Competent Authority
- Project Site Area (map) with clear coordinates, e.g -22.5642937 14.551272°
- Curriculum Vitae of designated EAP to manage the assessment process as per Regulation 3 & 4
- Consent from the National Heritage Council (NHC) in relation to archaeological heritage landscape protection
- Confirmation of screening notice received (through email) in terms of assessment procedures (Section 35 (1)(a)(b) of the Environmental Management Act, No 7 of 2007).

Please login into our portal to upload required documents, if any https://ea.met.gov.na

Thank you

mhtml:file://C:\CovePalm Consulting cc\Kamanjab EPL 7719\Your application is verified - mi2b... 5/8/2022

REPUBLIC OF NAMIBIA
Ministry of Environment, Forestry & Tourism

2022-04-14

Dear Martin Shikongo,

Thank you for applying for an Environmental Clearance Certificate.

Your application has been registered with application number **APP-003746**

Thank you

Phillip Troskie Bulding
P/Bag 13306, Windhoek | Tel: +264 61 284 2111 | DEA: +264 61 284 2701

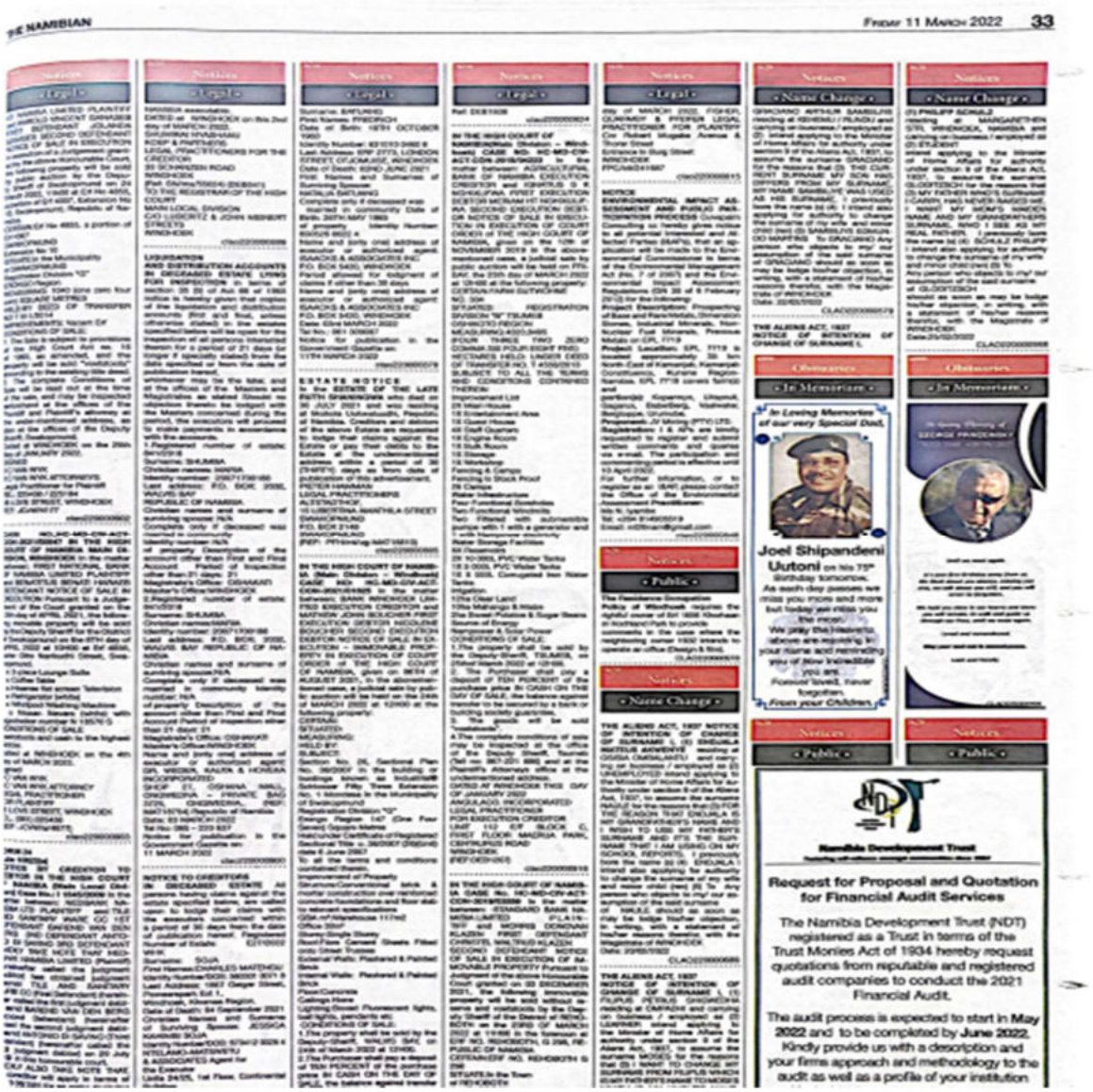
Please do not reply directly to this email. It was sent from an unattended mailbox. Correspondences can be done on the portal or please use

APPENDIX B: CVs OF ENVIRONMENTAL ASSESSMENT PRACTITIONERS

APPENDIX C: I&AP'S CONSULTATIONS

i. PRESS NOTICES & SITE NOTICES
ii. BACKGROUND INFORMATION DOCUMENT
iii. STAKEHOLDERS CONSULTED & COMMENTS RECEIVED

Newspaper Notices

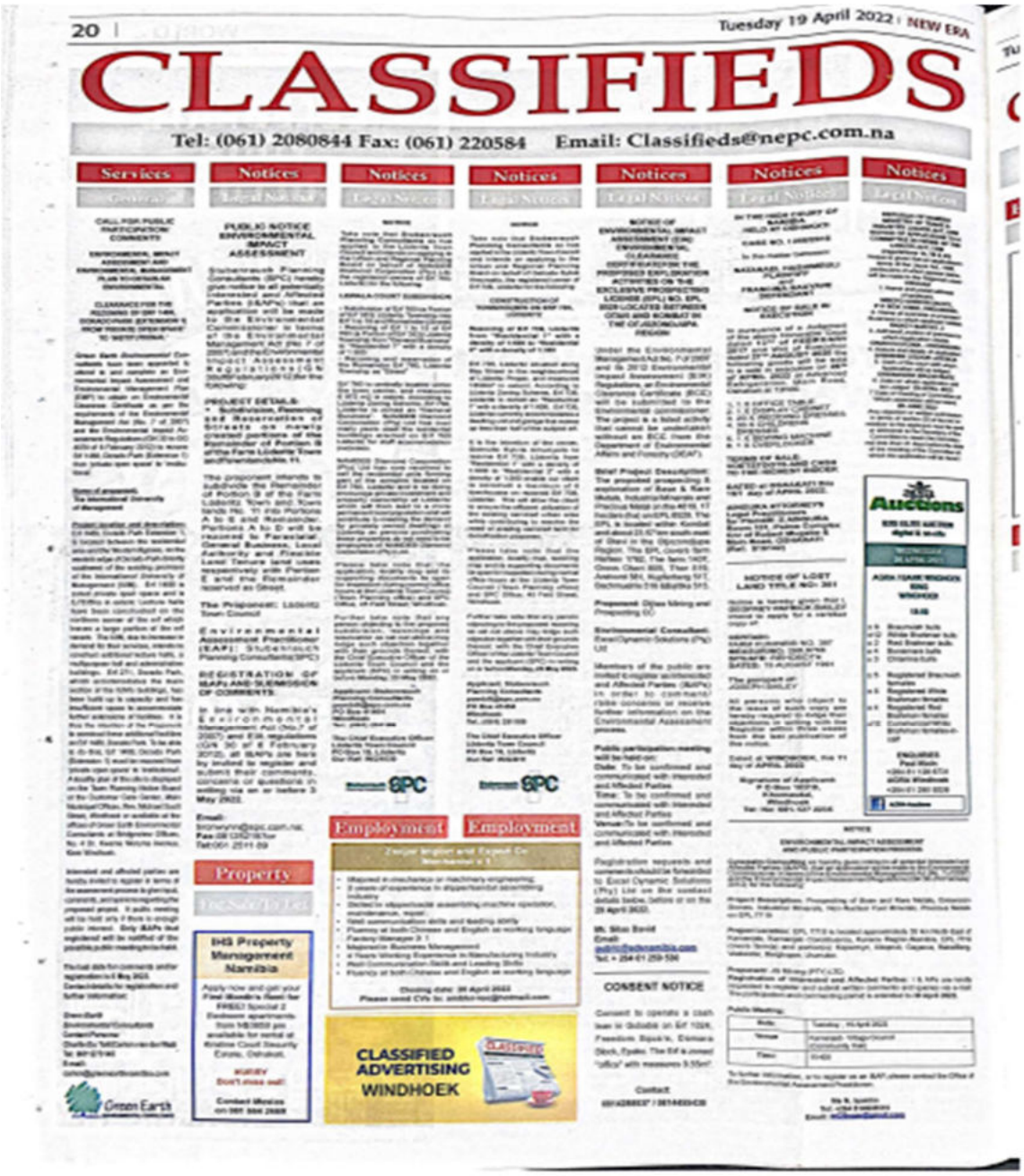


THE NAMIBIAN — FRIDAY 11 MARCH 2022 — 33

Request for Proposal and Quotation for Financial Audit Services

The Namibia Development Trust (NDT) registered as a Trust in terms of the Trust Monies Act of 1934 hereby request quotations from reputable and registered audit companies to conduct the 2021 Financial Audit.

The audit process is expected to start in May 2022 and to be completed by June 2022. Kindly provide us with a description and your firms approach and methodology to the audit as well as a profile of your institution



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Public Meeting

MINUTES

PUBLIC PARTICIPATION

Public participation meeting for the proposed Mineral Exploration Activities on Exclusive Prospecting License (EPL) 7719 , Kamanjab Constituency , Kunene Region

Date: 19 April 2022

Venue: Community Hall (Kamanjab Village Council), Kamanjab Town ,Kunene region.

Acronyms

BID- Background Information Document

EIA - Environmental Impact Assessment

EMA- Environmental Management Act no 7 of 2007

IAPs- Interested and affected parties

JGM- JG Mining (PTY) LTD

MEFT- Ministry of Environment Forestry & Tourism

1. INTRODUCTION

The meeting commenced at about 11h00. The EIA Team was introduced to meeting attendees.

2. MEETING

2.1 *Purpose of meeting*:

Mr Shikongo from Cuvepalm Consulting cc explained in detail the purpose of the meeting. During his presentation Mr Shikongo gave an insight on the EIA process. The role of interested and affected parties in terms of EMA (Act no 7 of 2007) was explained to attendees.

2.2 Attendees

Sixteen (16) interested and affected parties (IAPs) registered for the meeting. All the attendees signed the attendance register and were given the comments registration form to complete.

2.3 *Questions and Answers Session*.

The BID was used as basis for the question and answer session. Majority of the questions were answered by representatives of CPC. For convenience, issues raised were clustered and corresponding answers were provided as per Table 1 below.

Table 1: Comments and Responses

ISSUE CATEGORY	COMMENTATOR	COMMENT /QUERY/REMARK	RESPONSE
a) Access to Information/ Due diligence	Charton Shituleni	Why was the Kopermyn mining project closed down?	The information we have is that commodity prices fell and it was no more cost effective /feasible to continue with mining operations.
		Who are the investors? What is the monetary value of the project	JG Mining (PTY) LTD is the EPL holder. Concrete feedback will be provided at a future date in regard of ownership
	Lesley Kaunashe	What is the duration of the drilling programme? .	4000m of drilling will be conducted. Approximately one to two months of drilling is anticipated.
b) Cooperative governance	DF Uirab	When project of this nature pop up there's a lot of hype and excitement. At times communities and their concerns are captured during the initial phases of project. Later on communities are left in the dark as the project progress	Noted. Issues will be structured within the confines of the project planning phase. The views of the traditional will be noted through this. Social Investment proposals will be investigated as the project progress.
c) Socio-Economic	Kingsley Hipandulwa	How many people will be employed and from where will they be sourced from?	12-15 people will be employed during the initial phase of project. Concrete feedback will be provided at a future date in respect of labour hire provisions.
	DF Uirab	How will the communities benefit?	Apart from employment opportunities, no other immediate benefits will

		Will there be a benefit sharing agreement	accrue to the community at this stage.
		The Kamanjab Constituency largely comprise of farming communities One would want to see how the traditional leaders are involved	The EIA process farmers will be consulted We would welcome the contact details of traditional leaders and any farmers associations found in the project area
		How sure are we that our issues will be considered by investor?	The EIA report will be compiled and will be available for public scrutiny. The MEFT website can also serve as an avenue for soliciting stakeholder comments.
		The onus is on the Kamanjab Constituency community to lobby with the local leader ship to advance our concerns	Noted
d) Utility Demands/Constraints	Kingsley Hipandulwa	How much water will be used?	5000 liters per day
		How much fuel will be used for drilling and excavations?	Unknown at this stage

3. WRITTEN COMMENTS

Written comments were collected. The majority of the comments related to:

Access to information, Employment opportunities, Health Risks, Cooperative Governance

4. CLOSURE

Meeting participants were thanked the participants for their inputs and contributions. It was agreed that minutes with concrete feedback on matters raised will be provided to all attendees. Comment registration forms (Annexed) were collected from the participants.

5. ADJOURNMENT

The meeting was adjourned at 14:00 pm.

6. ANNEXURES

- Attendance register
- Photographs
- Comment Registration Forms

Participants at public meeting (Venue: Kamanjab Village Council community Hall, Kamanjab)

Participants at public meeting (Venue: Kamanjab Village Council community Hall, Kamanjab)

Comments Registered

STAKEHOLDERS CONSULTATION REGISTER:

PROPOSED MINERAL EXPLORATION ACTIVITIES ON EPL 7719 IN KAMANJAB CONSTITUENCY , KUNENE REGION-NAMIBIA

Venue: Kamanjab Village Council – Community Hall **Time: 11:00 AM**

Date: 19 April 2022

NAME	ORGANIZATION/LOCATION	PHONE NUMBER	SIGNATURE
Eveline Gurirab		0818095869	
[illegible]		081269302	
Gongo Dio Daniels	Kamanjab	0813415584	
Challen Shibukeni	Kamanjab	0812382111	
Selvanus Shivolwe	Kamanjab	0816139397	
Tevin R Haoseb		0812976360	
Sacky Tjaritje		0812976360	
KONARSO TJIVEZG		0817266115	
Lesley Kaunokje	Kamanjab	0814051767	
NAMBJAB NATHANIEL	KMJB	081372553	

CUVEPALM CONSULTING CC
P.O. Box 41858
Ausspannplatz
ml26nam@gmail.com

NAME	ORGANIZATION/LOCATION	PHONE NUMBER	SIGNATURE
Kingsley Hipondoka	Kamanjab	081555430	
Wilhelm Kotze	Kamanjab	081701 2225	
Uemupingena Kaupeshi	Kamanjab	0813175859	
Abiola Kaunga	Kamanjab Village Council	0812199517	
THEODROS AMAGETAB	KJ	0816738 3407	
Silvester Kauriangua	Kamanjab	0812458965	

ENVIRONMENTAL IMPACT ASSESSMENT

ENVIRONMENTAL IMPACT ASSESSMENT (EIA) FOR ENVIRONMENTAL IMPACT ASSESSMENT (EIA) FOR THE PROPOSED MINERAL EXPLORATION ACTIVITIES, EPLS 7719,KAMANJAB CONSTITUENCY, KUNENE REGION-NAMIBIA

REGISTRATION AND COMMENTS FORM

I request to be registered as an Interested and Affected Party for the proposed project. Please provide me all relevant information regarding the project throughout the EIA process and invite me to all meetings. My particulars are as follow:

Name: THOUROB G. Telephone: 081628 3407

Organization: DF UIRAB PRIMARY SCHOOL Designation: TEACHER

E-mail: thaenobgabe@gmail.com Postal address: BOX 92 KAMANJAB

My interest in this project:

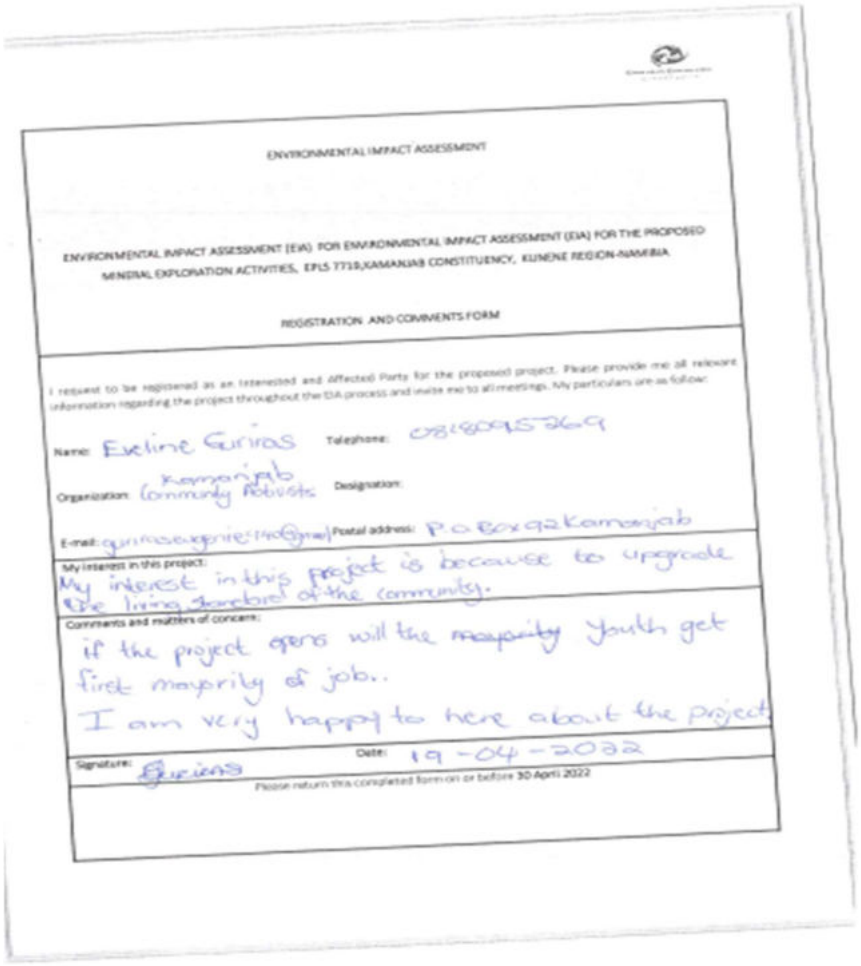
COMMUNITY ACTIVIST

Comments and matters of concern:

FARMERS RESSETLEMENT/REHABILITATION
COMMUNITY STAKE/PROFIT SHARING

Signature: Date: 19 APRIL 2022

Please return this completed form on or before 30 April 2022



ENVIRONMENTAL IMPACT ASSESSMENT

ENVIRONMENTAL IMPACT ASSESSMENT (EIA) FOR ENVIRONMENTAL IMPACT ASSESSMENT (EIA) FOR THE PROPOSED MINERAL EXPLORATION ACTIVITIES, EPLS 7719,KAMANJAB CONSTITUENCY, KUNENE REGION-NAMIBIA

REGISTRATION AND COMMENTS FORM

I request to be registered as an Interested and Affected Party for the proposed project. Please provide me all relevant information regarding the project throughout the EIA process and invite me to all meetings. My particulars are as follow:

Name: Eveline Guiras Telephone: 0816099452649

Organization: Kamanjab Community Activists Designation:

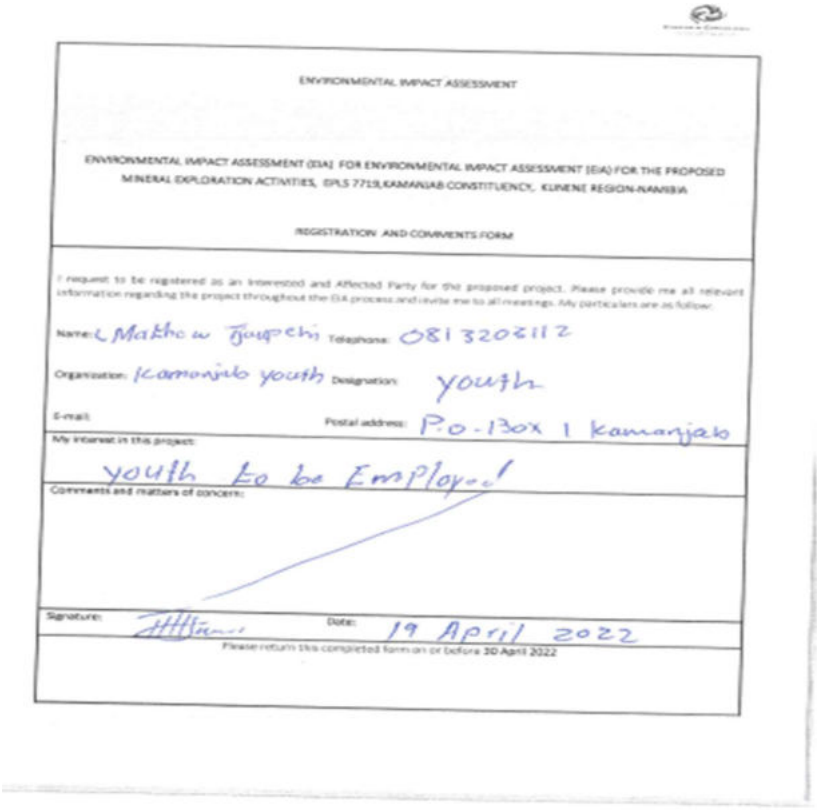
E-mail: guirasevgirie@gmail Postal address: P.o Box 92 Kamanjab

My interest in this project:
My interest in this project is because to upgrade the living standard of the community.

Comments and matters of concern:
if the project opens will the maxpority Youth get first mayprity of job..
I am very happy to here about the project

Signature: Guiras Date: 19-04-2022

Please return this completed form on or before 30 April 2022



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REGISTRATION AND COMMENTS FORM

I request to be registered as an Interested and Affected Party for the proposed project. Please provide me all relevant information regarding the project throughout the EIA process and invite me to all meetings. My particulars are as follow:

Name: Matthew Tjupechi Telephone: 0813202112

Organization: Kamanjab youth Designation: youth

E-mail: Postal address: P.O-130x 1 Kamanjab

My interest in this project:
youth to be Employ..!

Comments and matters of concern:

Signature: Date: 19 April 2022

Please return this completed form on or before 30 April 2022

ENVIRONMENTAL IMPACT ASSESSMENT

ENVIRONMENTAL IMPACT ASSESSMENT (EIA) FOR ENVIRONMENTAL IMPACT ASSESSMENT (EIA) FOR THE PROPOSED MINERAL EXPLORATION ACTIVITIES, EPLS 7719,KAMANJAB CONSTITUENCY, KUNENE REGION-NAMIBIA

REGISTRATION AND COMMENTS FORM

I request to be registered as an Interested and Affected Party for the proposed project. Please provide me all relevant information regarding the project throughout the EIA process and invite me to all meetings. My particulars are as follow:

Name: ROMARIO TJIEZE Telephone: 081726611 5

Organization: STUDENT Designation: /

E-mail: Bpongyromario@gmail.com Postal address: P.O Box 32, HENTIES BAY

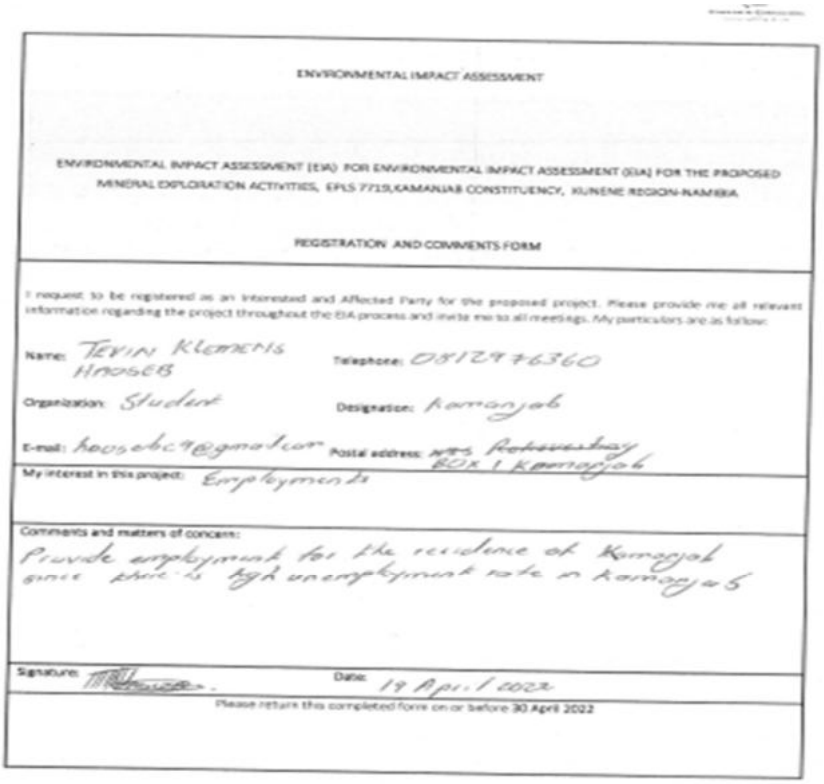
My interest in this project: JOB CREATION OPPORTUNITIES FOR THE COMMUNITIES SURROUNDING.

Comments and matters of concern:

IMPACT COMES FROM EVERY PART, BUT FROM THE POSITIVE POINT OF VIEW THIS IS A GREAT OPPORTUNITY FOR THE COMMUNITY AND MOST FOR THE YOUTH OF THE SURROUNDING COMMUNITIES. THE MISSING PROGRESSION AND DEVELOPMENT WILL DEFINITELY MAKE POSITIVE

Signature: Date: 19/04/22

Please return this completed form on or before 30 April 2022



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ENVIRONMENTAL IMPACT ASSESSMENT (EIA) FOR ENVIRONMENTAL IMPACT ASSESSMENT (EIA) FOR THE PROPOSED MINERAL EXPLORATION ACTIVITIES, EPLS 7719,KAMANJAB CONSTITUENCY, KUNENE REGION-NAMIBIA

REGISTRATION AND COMMENTS FORM

I request to be registered as an Interested and Affected Party for the proposed project. Please provide me all relevant information regarding the project throughout the EIA process and invite me to all meetings. My particulars are as follow:

Name: TEVIN KLEMENS HAOSEB Telephone: 0812976360

Organization: Student Designation: Kamanjab

E-mail: haosebc9@gmail.com Postal address: ERS Rehoboth BOX 1 Kamanjab

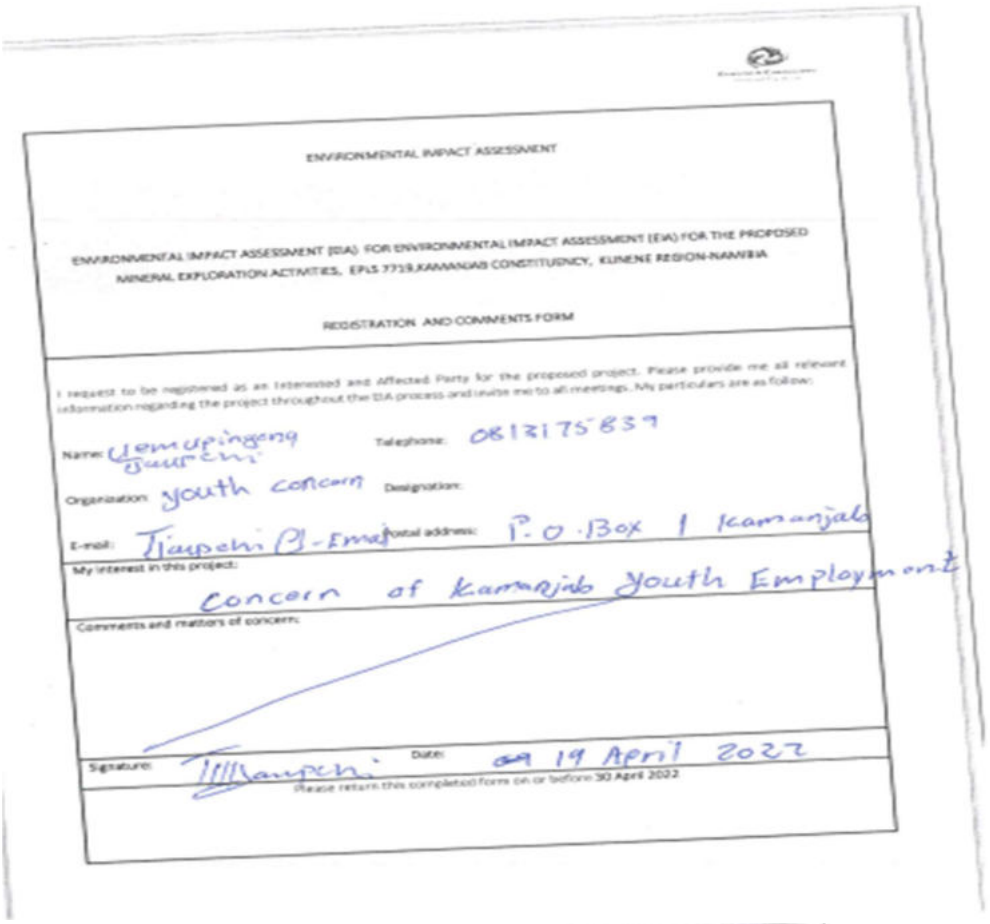
My interest in this project: Employments

Comments and matters of concern:

Provide employment for the residence of Kamanjab since there is high unemployment rate in Kamanjab

Signature: Date: 19 April 2022

Please return this completed form on or before 30 April 2022



ENVIRONMENTAL IMPACT ASSESSMENT

ENVIRONMENTAL IMPACT ASSESSMENT (EIA) FOR ENVIRONMENTAL IMPACT ASSESSMENT (EIA) FOR THE PROPOSED MINERAL EXPLORATION ACTIVITIES, EPLS 7719,KAMANJAB CONSTITUENCY, KUNENE REGION-NAMIBIA

REGISTRATION AND COMMENTS FORM

I request to be registered as an Interested and Affected Party for the proposed project. Please provide me all relevant information regarding the project throughout the EIA process and invite me to all meetings. My particulars are as follow:

Name: Uamupingeng Jauretu Telephone: 0813175839

Organization: youth concern Designation:

E-mail: Tjaupehi@-Email Postal address: P.O.Box 1 Kamanjab

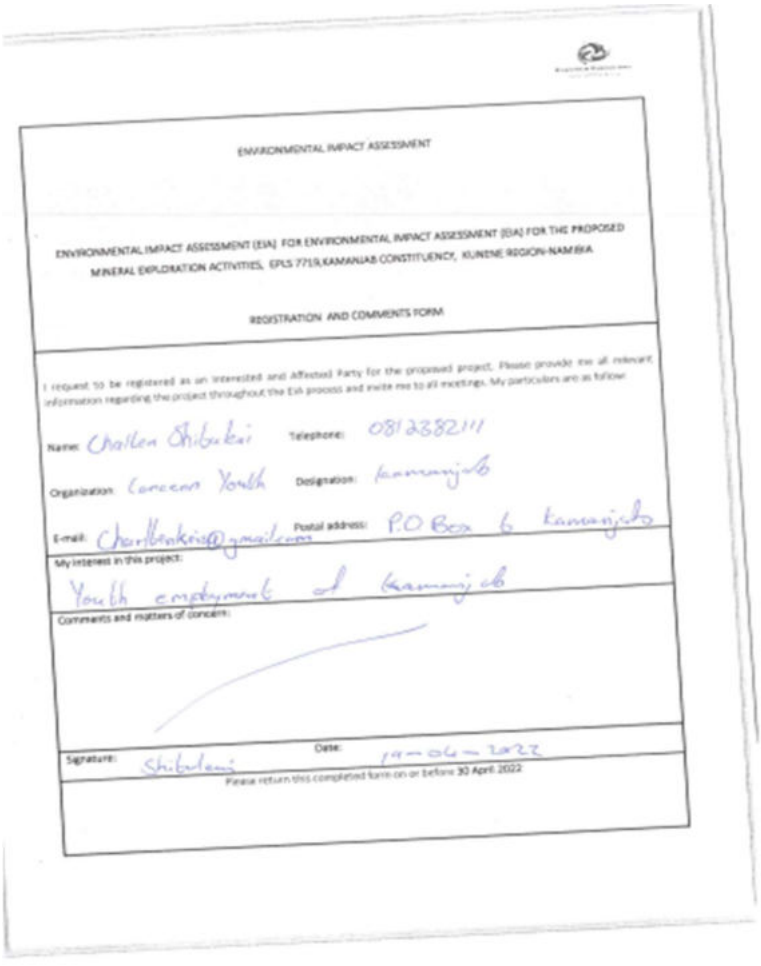
My interest in this project:

concern of Kamanjab Youth Employment

Comments and matters of concern:

Signature: Date: 19 April 2022

Please return this completed form on or before 30 April 2022



ENVIRONMENTAL IMPACT ASSESSMENT

ENVIRONMENTAL IMPACT ASSESSMENT (EIA) FOR ENVIRONMENTAL IMPACT ASSESSMENT (EIA) FOR THE PROPOSED MINERAL EXPLORATION ACTIVITIES, EPLS 7719,KAMANJAB CONSTITUENCY, KUNENE REGION-NAMIBIA

REGISTRATION AND COMMENTS FORM

I request to be registered as an Interested and Affected Party for the proposed project. Please provide me all relevant information regarding the project throughout the EIA process and invite me to all meetings. My particulars are as follow:

Name: Challen Shibukai Telephone: 0812382111

Organization: Concern Youth Designation: Kamanjab

E-mail: Challenshikis@gmail.com Postal address: P.O Box 6 Kamanjab

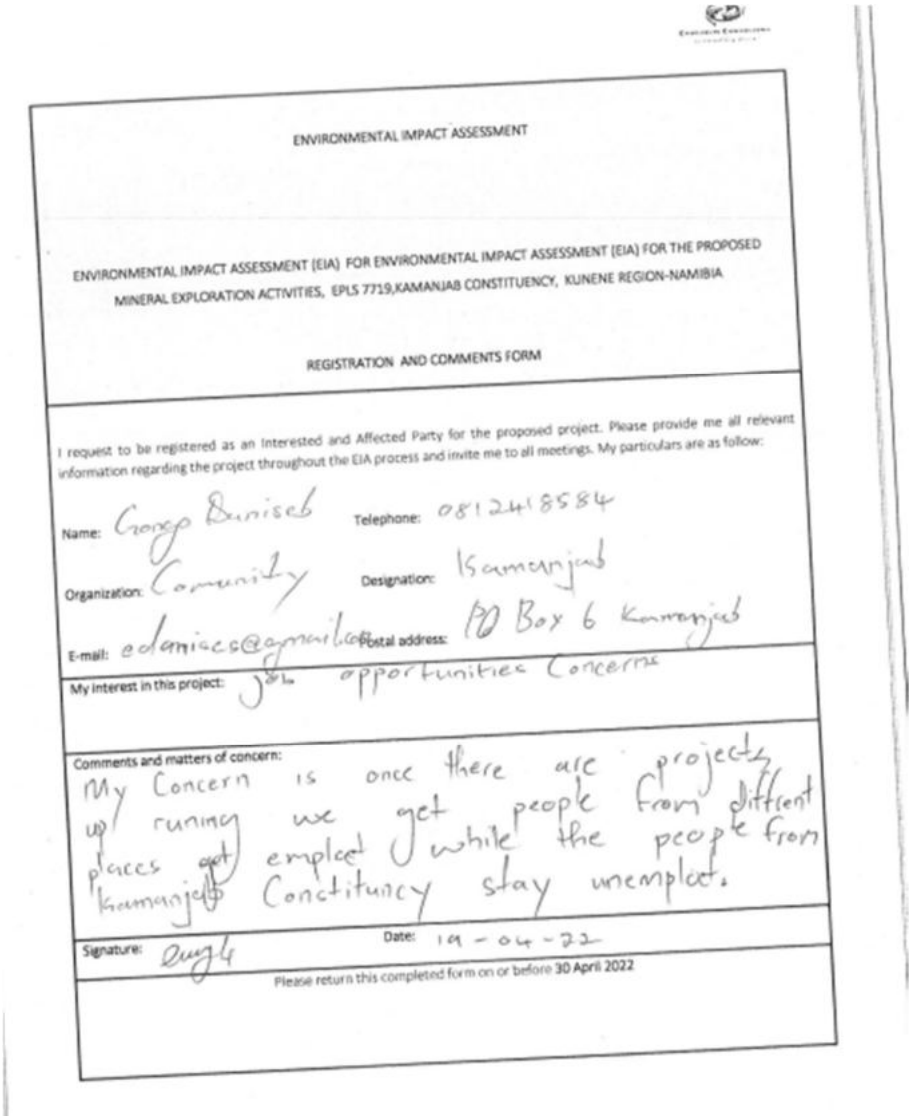
My interest in this project:

Youth employment of Kamanjab

Comments and matters of concern:

Signature: Shibukai Date: 19-04-2022

Please return this completed form on or before 30 April 2022



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REGISTRATION AND COMMENTS FORM

I request to be registered as an Interested and Affected Party for the proposed project. Please provide me all relevant information regarding the project throughout the EIA process and invite me to all meetings. My particulars are as follow:

Name: Gorgo Daniseb Telephone: 0812418584

Organization: Community Designation: Kamanjab

E-mail: edaniaes@gmail.com Postal address: PO Box 6 Kamanjab

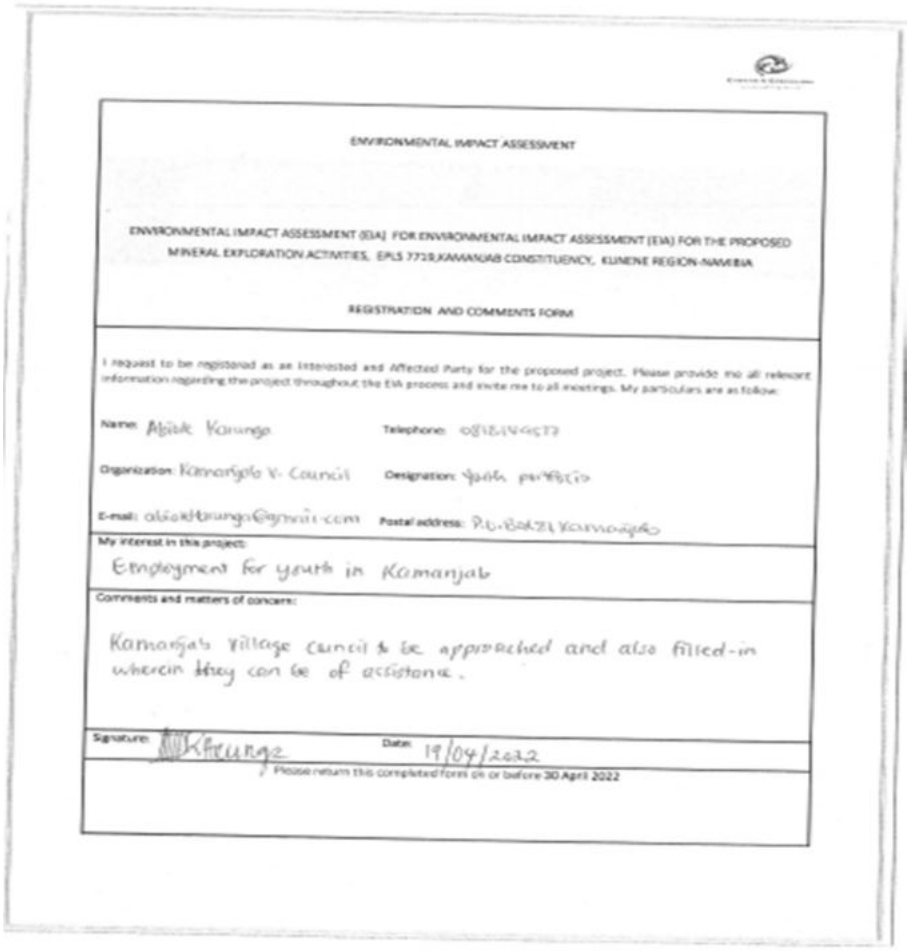
My interest in this project: Job opportunities Concerns

Comments and matters of concern:

My Concern is once there are projects up runing we get people from different places get emplet while the people from Kamanjab Constituncy stay unemplet.

Signature: Date: 19-04-22

Please return this completed form on or before 30 April 2022



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REGISTRATION AND COMMENTS FORM

I request to be registered as an Interested and Affected Party for the proposed project. Please provide me all relevant information regarding the project throughout the EIA process and invite me to all meetings. My particulars are as follow:

Name: Abiah Kaunga Telephone: 0813149677

Organization: Kamanjab V. Council Designation: Youth portfolio

E-mail: abiahkaunga@gmail.com Postal address: P.O. Box 21, Kamanjab

My interest in this project:

Employment for youth in Kamanjab

Comments and matters of concern:

Kamanjab village council to be approached and also filled-in wherein they can be of assistance.

Signature: Kaunga Date: 19/04/2022

Please return this completed form on or before 30 April 2022

ENVIRONMENTAL IMPACT ASSESSMENT

ENVIRONMENTAL IMPACT ASSESSMENT (EIA) FOR ENVIRONMENTAL IMPACT ASSESSMENT (EIA) FOR THE PROPOSED MINERAL EXPLORATION ACTIVITIES, EPLS 7719,KAMANJAB CONSTITUENCY, KUNENE REGION-NAMIBIA

REGISTRATION AND COMMENTS FORM

I request to be registered as an Interested and Affected Party for the proposed project. Please provide me all relevant information regarding the project throughout the EIA process and invite me to all meetings. My particulars are as follow:

Name: Alfred Hipandulwa Telephone: 081555143 0

Organization: NIMT (community) Designation: Kamanjab

E-mail: hipandulwakingsley@gmail.com Postal address: POTJUSEIINGA 150 Kamanjab

My interest in this project:

Growth economically of Kamanjab and locally for the youth

Comments and matters of concern:

Signature: Date: 19/04/2022

Please return this completed form on or before 30 April 2022

ENVIRONMENTAL IMPACT ASSESSMENT

ENVIRONMENTAL IMPACT ASSESSMENT (EIA) FOR ENVIRONMENTAL IMPACT ASSESSMENT (EIA) FOR THE PROPOSED MINERAL EXPLORATION ACTIVITIES, EPLS 7719,KAMANJAB CONSTITUENCY, KUNENE REGION-NAMIBIA

REGISTRATION AND COMMENTS FORM

I request to be registered as an Interested and Affected Party for the proposed project. Please provide me all relevant information regarding the project throughout the EIA process and invite me to all meetings. My particulars are as follow:

Name: Looky Kaunatje Telephone: 0814051767/0812540507

Organization: student Designation: Kamanjab

E-mail: mlookaunatje@gmail.com Postal address: Po Box 180 Kamanjab

My interest in this project:

It can benefit us as it provide raw materials. development to the communities, change living standard

Comments and matters of concern:

- Kamanjab consistency should be employed in order to remove high rate of unemployment
- PAll the plan/documentation should be returned Safety and health should take place

Signature: Date: 19/04/2022

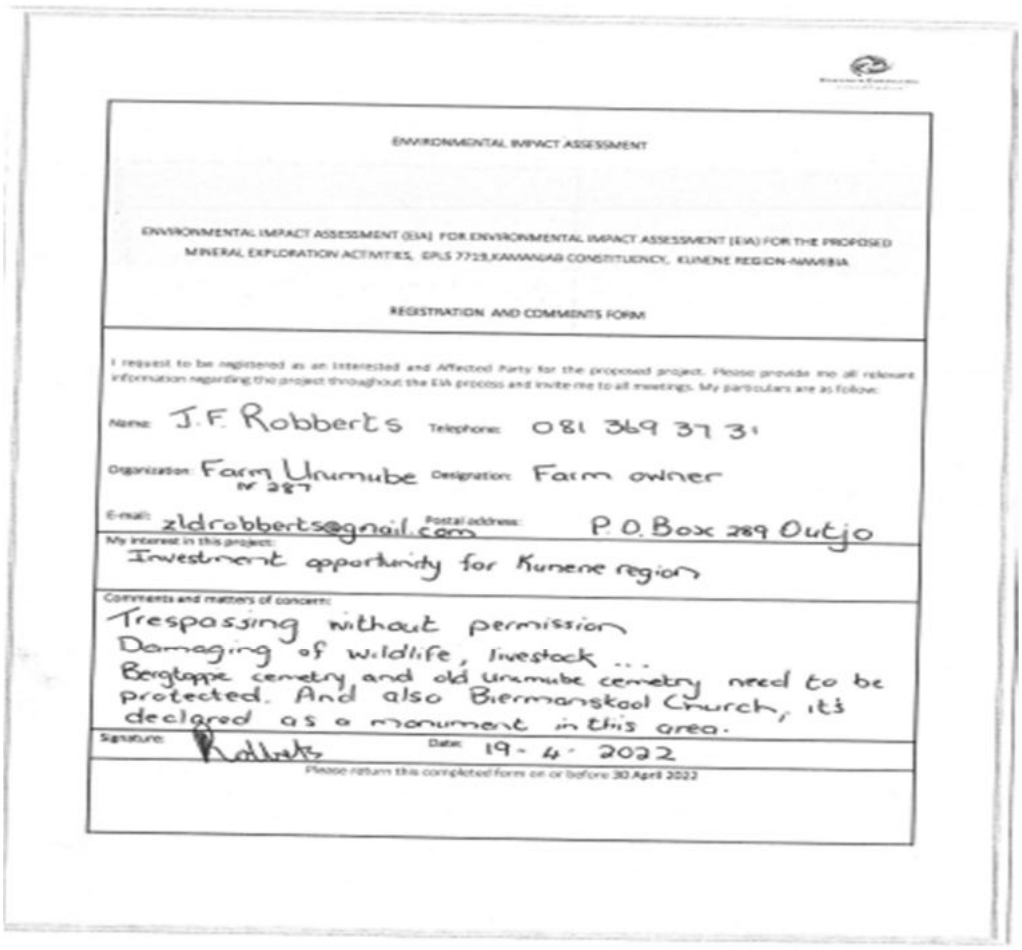
Please return this completed form on or before 30 April 2022

:STAKEHOLDERS CONSULTATION REGISTER:

PROPOSED MINERAL EXPLORATION ACTIVITIES ON EPL 7719

KAMANJAB CONSTITUENCY , KUNENE REGION-NAMIBIA

NAME	ORGANIZATION/LOCATION	PHONE NUMBER	DATE	SIGNA
George Kauchingwa	Kamanjab	0812940779	19/04/22	
H.J. Robberts	Farm Bergkoppe	0813175358	19/04/22	Robberts
J.F. Robberts (Owner Frans)	Farm Urumube	081 369 37 31	19-4-22	
Francois Robberts	Farm Urumube	081 7303728	19-4-22	
Uno Tjiseruka	Farm Rooiveld	0812567213	19/04/22	



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REGISTRATION AND COMMENTS FORM

I request to be registered as an Interested and Affected Party for the proposed project. Please provide me all relevant information regarding the project throughout the EIA process and invite me to all meetings. My particulars are as follow:

Name: J.F. Robberts Telephone: 081 369 37 31

Organization: Farm Unumube No 287 Designation: Farm owner

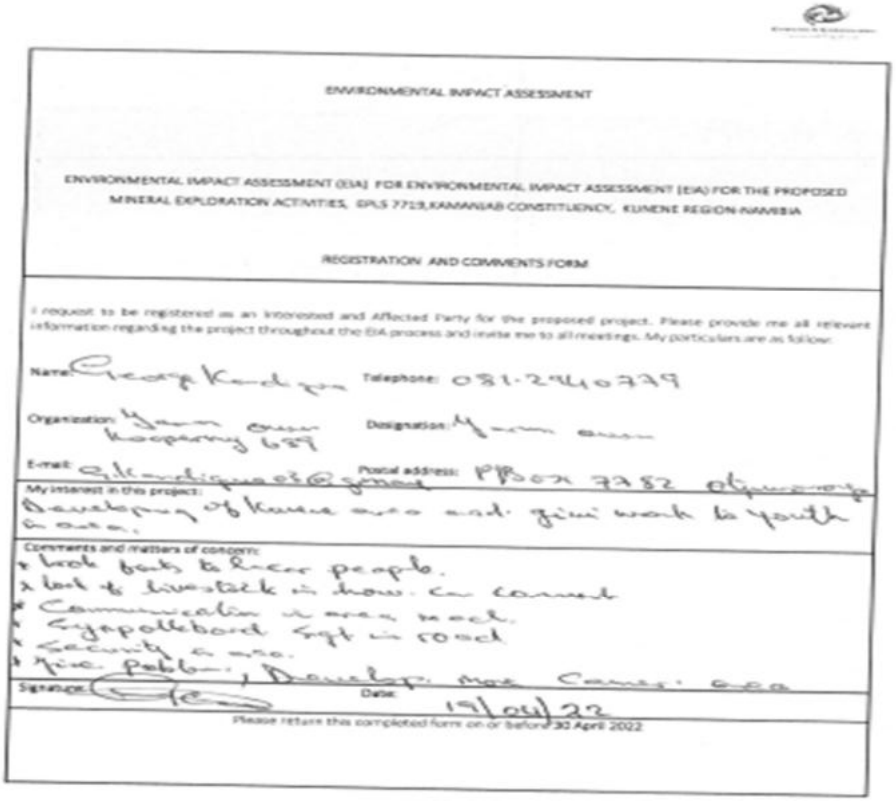
E-mail: zldrobberts@gmail.com Postal address: P.O. Box 289 Outjo

My interest in this project:
Investment opportunity for Kunene region

Comments and matters of concern:
Trespassing without permission
Damaging of wildlife, livestock ...
Berglappe cemetry and old Unumube cemetry need to be protected. And also Biermanskool Church, it's declared as a monument in this area.

Signature: Roberts Date: 19-4-2022

Please return this completed form on or before 30 April 2022



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REGISTRATION AND COMMENTS FORM

I request to be registered as an Interested and Affected Party for the proposed project. Please provide me all relevant information regarding the project throughout the EIA process and invite me to all meetings. My particulars are as follow:

Name: George Kandjou Telephone: 081-2940779

Organization: Farm owner keeping 689 Designation: Farm owner

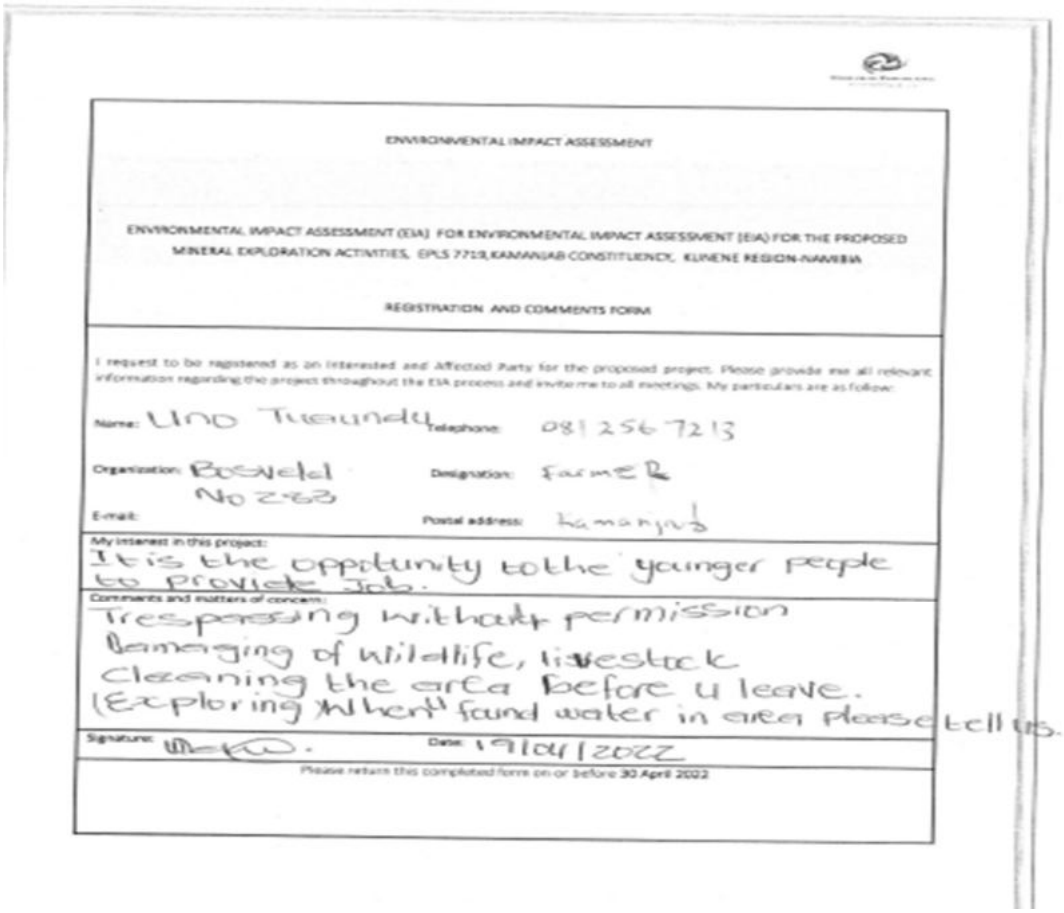
E-mail: [illegible] Postal address: PO Box 7782 Otjiwarongo

My interest in this project:
Developing of Kunene area and give work to youth in area.

Comments and matters of concern:
* Look back to River people.
* Lost of livestock in show. Can control
* Communication in area need.
* Signpostboard left in road
* Security in area.
* Give public, Develop more Camps. area

Signature: [signature] Date: 19/04/22

Please return this completed form on or before 30 April 2022



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REGISTRATION AND COMMENTS FORM

I request to be registered as an Interested and Affected Party for the proposed project. Please provide me all relevant information regarding the project throughout the EIA process and invite me to all meetings. My particulars are as follow:

Name: Uno Tweunda Telephone: 081 256 7213

Organization: Boskelel No 2-63 Designation: Farmer

E-mail: Postal address: Kamanjab

My interest in this project:
It is the oppitunity to the younger people to provide Job.

Comments and matters of concern:
Trespassing without permission
Damaging of Wildlife, livestock
Cleaning the area before u leave.
(Exploring) When found water in area please tell us.

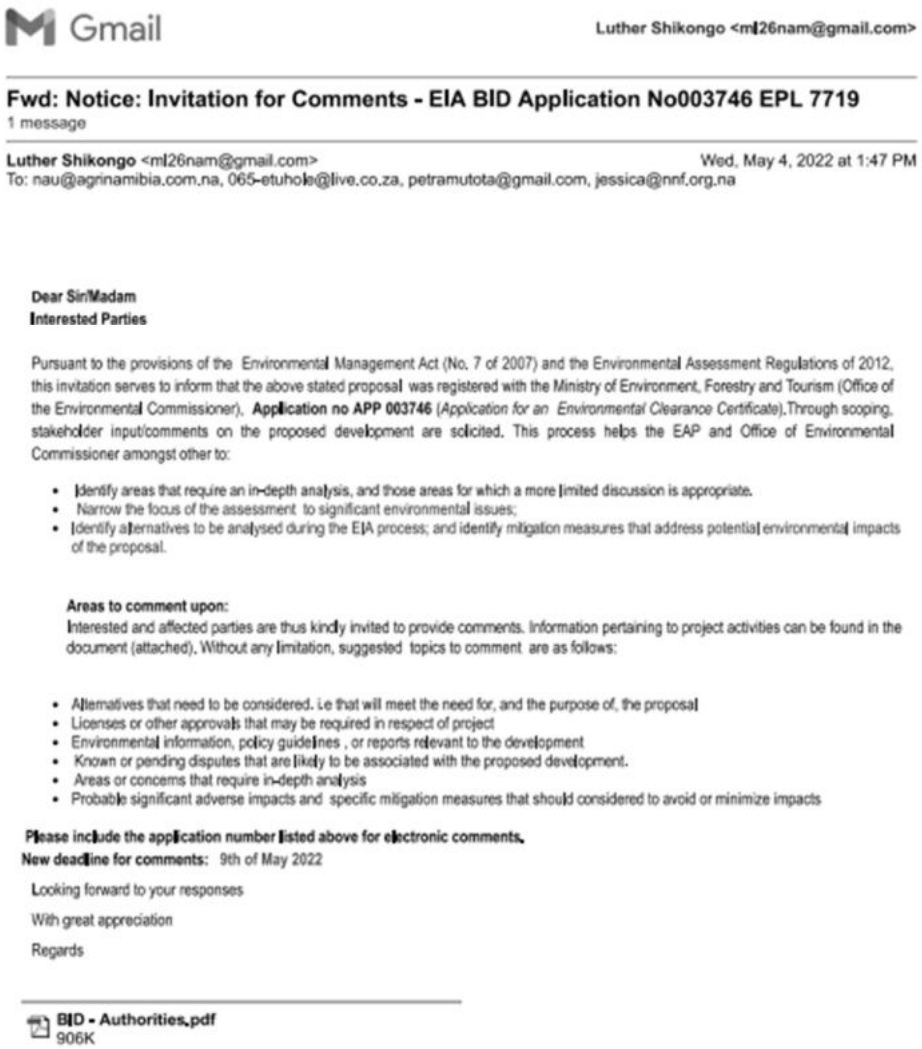
Signature: Date: 19/04/2022

Please return this completed form on or before 30 April 2022

STAKEHOLDERS CONSULTED

Name	Organization/Department /Role	Contact Details	Consultation Mode
1. Jessica Nowotes	Namibia Nature Foundation	jessica@nnf.org.na or Tel 061-248 345	e-mail
2. Simeon Negumbo	Ministry of Mines & Energy(Executive Director)	Simeon.Negumbo@mme.gov.na	e-mail
3. Abraham Iilende	Ministry of Mines and Energy	Abraham.IIlende@mme.gov.na	Telephonically & e-mail
4. Lucia Namushinga	National Heritage Council	luciapermitsnhc@gmail.com	e-mail
5. Erica Ndalikokule	National Heritage Council	Erica-nhc-nam.org	e-mail
6. Hon Hendrik Gaobaeb	Kunene Regional Council (Chairperson of Council)	gaobaebh@gmail.com or Tel:065-273950	e-mail
7. Giesberta Shaanika	Ministry of Mines and Energy	Giesberta.shaanika@mme.gov.na or 0813723269	Telephonically
8. H. Mukendwa	NamWater	mukendwah@namwater.com.na	e-mail
9. Ben Stoman	North West University - Potchefstroom campus	24124826nwu@gmail.com	e-mail
10. NP du Plessis	Namwater	PlessisN@namwater.com.na	e-mail
11. P. Hamukwaya	SASSCAL	panduleni.hamukwaya@sasscal.org	e-mail
12. Leevi Nanyeni	Namibia Herbarium of Namibia	lnanyeni@gmail.com	e-mail
13.	Legal Assistance Centre	info@lac.org.na	e-mail
14. Barbara Curtis	Natural Scientist	curtis.namibia@gmail.com	e-mail
15. Tuyakula Kaundinge	Kunene regional Council (Division of Water Supply and Sanitation)	sempetrus30@gmail.com or 065-etuhole@live.co.za or 065-273950	e-mail
16. T.Shapumba	Kunene Regional Council (Directorate of Health and Social Services)	tshapumba@yahoo.com 065-272801	e-mail
17. Gary Nekongo	MAWLR -Kunene	gary.nekongo@mlr.gov.na	e-mail

	(Division of Land reform)	065-273374	
18. P. Mutota	NUST	petramutota@gmail.com	e-mail
19. P Genis	MURD	pgenis@mrlgh.gov.na	e-mail
20. Maria Amakali	MAWLR	amakalim@mawf.gov.na	e-mail
21. Ms Tanja Dahl	Namibia Agricultural Union	nau@agrinamibia.com.na	
22. Nicole Schwandt	Namibia Professional Hunting Association	info@napha.com.na	
23. Bernard Beukes	Ministry of Mines and Energy	Brain.Beukes@mme.gov.na	



Gmail Luther Shikongo <ml26nam@gmail.com>

Fwd: Notice: Invitation for Comments - EIA BID Application No003746 EPL 7719
1 message

Luther Shikongo <ml26nam@gmail.com> Wed, May 4, 2022 at 1:47 PM
To: nau@agrinamibia.com.na, 065-etuhole@live.co.za, petramutota@gmail.com, jessica@nnf.org.na

Dear Sir/Madam
Interested Parties

Pursuant to the provisions of the Environmental Management Act (No. 7 of 2007) and the Environmental Assessment Regulations of 2012, this invitation serves to inform that the above stated proposal was registered with the Ministry of Environment, Forestry and Tourism (Office of the Environmental Commissioner), **Application no APP 003746** (*Application for an Environmental Clearance Certificate*).Through scoping, stakeholder input/comments on the proposed development are solicited. This process helps the EAP and Office of Environmental Commissioner amongst other to:

- Identify areas that require an in-depth analysis, and those areas for which a more limited discussion is appropriate.
- Narrow the focus of the assessment to significant environmental issues;
- Identify alternatives to be analysed during the EIA process; and identify mitigation measures that address potential environmental impacts of the proposal.

Areas to comment upon:
Interested and affected parties are thus kindly invited to provide comments. Information pertaining to project activities can be found in the document (attached). Without any limitation, suggested topics to comment are as follows:

- Alternatives that need to be considered. i.e that will meet the need for, and the purpose of, the proposal
- Licenses or other approvals that may be required in respect of project
- Environmental information, policy guidelines , or reports relevant to the development
- Known or pending disputes that are likely to be associated with the proposed development.
- Areas or concerns that require in-depth analysis
- Probable significant adverse impacts and specific mitigation measures that should considered to avoid or minimize impacts

Please include the application number listed above for electronic comments.
New deadline for comments: 9th of May 2022

Looking forward to your responses

With great appreciation

Regards

BID - Authorities.pdf
906K

Gmail **Luther Shikongo <ml26nam@gmail.com>**

Fwd: Notice: Invitation for Comments - EIA BID Application No003746 EPL 7719
1 message

Luther Shikongo <ml26nam@gmail.com> Wed, May 4, 2022 at 1:47 PM

To: nau@agrinamibia.com.na, 065-etuhole@live.co.za, petramutota@gmail.com, jessica@nnf.org.na

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New deadline for comments: 9th of May 2022

Looking forward to your responses

With great appreciation

Regards

BID - Authorities.pdf
906K

Gmail Luther Shikongo <ml26nam@gmail.con

Notice: Invitation for Comments - EIA BID Application No003746 EPL 7719

Luther Shikongo <ml26nam@gmail.com> Thu, Apr 28, 2022 at 1:41 P
To: info@lac.org.na, info@napha.com.na, pgenis@mrlgh.gov.na, lnanyeni@gmail.com, erica@nhc-nam.org, luciapermitsnhc@gmail.com, Abraham.Illende@mme.gov.na, jessica@mnf.org.na, 24124836nwu@gmail.com, giesberta.shaanika@mme.gov.na, info@sasscal.org.na
Cc: Simeon.Negumbo@mme.gov.na, Brain.Beukes@mme.gov.na

Dear Sir/Madam
Interested Parties

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- Identify areas that require an in-depth analysis, and those areas for which a more limited discussion is appropriate.
- Narrow the focus of the assessment to significant environmental issues;
- Identify alternatives to be analysed during the EIA process; and identify mitigation measures that address potential environmental impacts of the proposal.

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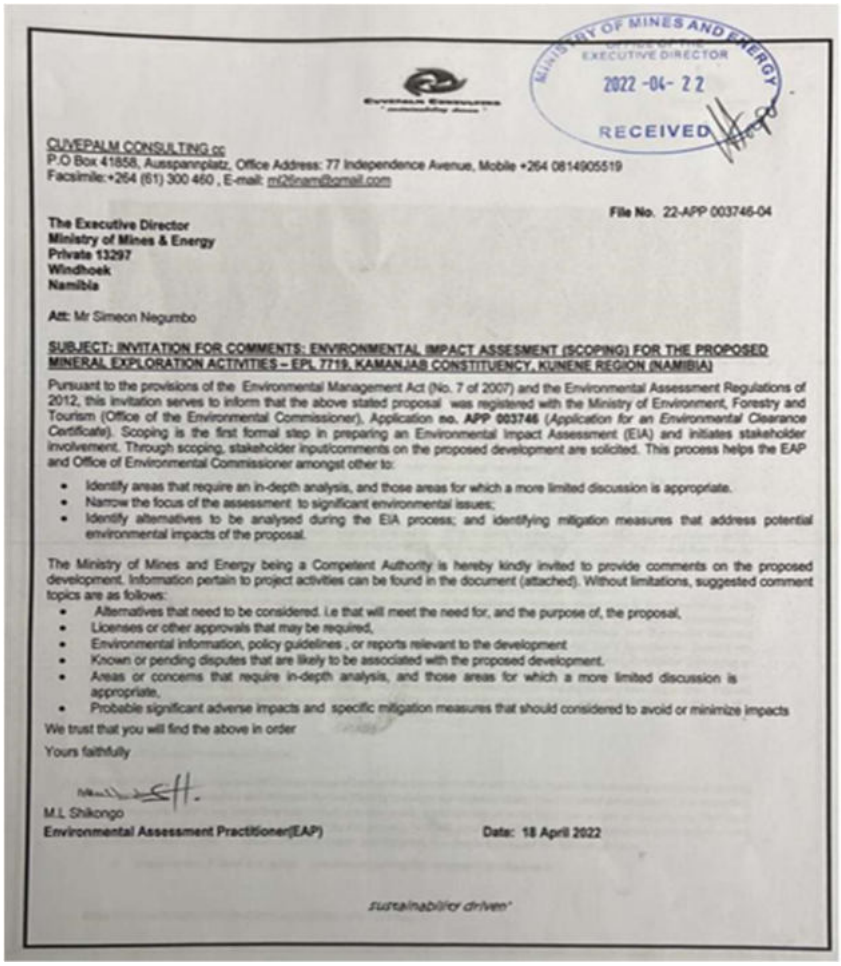
Please include the application number listed above for electronic comments.

Looking forward to your responses

With great appreciation

Regards



MINISTRY OF MINES AND ENERGY
EXECUTIVE DIRECTOR
2022 -04- 22
RECEIVED

CUVEPALM CONSULTING cc
P.O Box 41858, Ausspannplatz, Office Address: 77 Independence Avenue, Mobile +264 0814905519
Facsimile:+264 (61) 300 460 , E-mail: ml26nam@gmail.com

File No. 22-APP 003746-04

The Executive Director
Ministry of Mines & Energy
Private 13297
Windhoek
Namibia

Att: Mr Simeon Negumbo

SUBJECT: INVITATION FOR COMMENTS: ENVIRONMENTAL IMPACT ASSESMENT (SCOPING) FOR THE PROPOSED MINERAL EXPLORATION ACTIVITIES – EPL 7719, KAMANJAB CONSTITUENCY, KUNENE REGION (NAMIBIA)

Pursuant to the provisions of the Environmental Management Act (No. 7 of 2007) and the Environmental Assessment Regulations of 2012, this invitation serves to inform that the above stated proposal was registered with the Ministry of Environment, Forestry and Tourism (Office of the Environmental Commissioner), Application **no. APP 003746** (*Application for an Environmental Clearance Certificate*). Scoping is the first formal step in preparing an Environmental Impact Assessment (EIA) and initiates stakeholder involvement. Through scoping, stakeholder input/comments on the proposed development are solicited. This process helps the EAP and Office of Environmental Commissioner amongst other to:

- Identify areas that require an in-depth analysis, and those areas for which a more limited discussion is appropriate.
- Narrow the focus of the assessment to significant environmental issues;
- Identify alternatives to be analysed during the EIA process; and identifying mitigation measures that address potential environmental impacts of the proposal.

The Ministry of Mines and Energy being a Competent Authority is hereby kindly invited to provide comments on the proposed development. Information pertain to project activities can be found in the document (attached). Without limitations, suggested comment topics are as follows:

- Alternatives that need to be considered. i.e that will meet the need for, and the purpose of, the proposal,
- Licenses or other approvals that may be required,
- Environmental information, policy guidelines , or reports relevant to the development
- Known or pending disputes that are likely to be associated with the proposed development.
- Areas or concerns that require in-depth analysis, and those areas for which a more limited discussion is appropriate,
- Probable significant adverse impacts and specific mitigation measures that should considered to avoid or minimize impacts

We trust that you will find the above in order

Yours faithfully

M.L Shikongo
Environmental Assessment Practitioner(EAP) **Date: 18 April 2022**

Sustainability driven

APPENDIX D: ARCHAEOLOGICAL SPECIALIST REPORT- PROOF OF SUBMISSION

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: johanna@nhc-nam.org

Secretariat Receipt No. 5806

CASH RECEIPT

Customer

Date 06/05/2022

Name JG MINING PTY LTD
Address ERF 81554, Olympia
City + 264 811282636, Olympia
Phone Email: benbiwa@hotmail.com

Quantity	Description	Unit Price	TOTAL
1X	APPLICATION FOR CONSENT FEES FOR EPL NO: 7719, AT KAMANJAB		N$ 150-00
			N$ 150-00

Amount in Words: ONE FIVE ZERO N$ ONLY

Receipt Issued by:

vkadio print 22253

EPL 7719

National Heritage Council of Namibia
7170 Lazarette House • Private Bag 12043, Ausspannplatz • Windhoek, Namibia
(061) 244 375 • Fax: (061) 246 872 • E-mail: ...

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

JG Mining PTY LTD
Contact person: Ben Biwa
Postal address: 81554, Olympia
Telephone: +264 811 28 26 36
Email:benbiwa@hotmail.com

Received (06/05/2022)

2. Full name and designation of the person in charge of undertaking the works or activities:

Contact person: Ben Biwa
Position of the contact person: Director
Email address: benbiwa@hotmail.com

ARCHAEOLOGICAL AND HERITAGE IMPACT ASSESSMENT REPORT

FOR THE PROPOSED MINERAL EXPLORATION ON EXCLUSIVE PROSPECTIVE LICENCE (EPL) NO. 7719 LOCATED NORTH-EAST OF KAMANJAB IN THE KUNENE REGION, NAMIBIA.

Compiled by:

Roland Mushi (Archaeologist)

Prepared for:

JG Mining PTY LTD

Received (04/05/2022)

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

APPENDIX E: ENVIRONMENTAL MANAGEMENT PLAN

APPENDIX F: SPECIES CHECKLISTS

Checklist of Birds occurrence				
Common name	Family	Scientific Name	Expected	Observed
Shikra	Accipitridae	*Accipiter badius*	Yes	No
Sparrowhawk	Accipitridae	*Accipiter minullus*	Yes	Yes
Little sparrowhawk	Accipitridae	*Accipiter minullus*	Yes	No
	Accipitridae	*Accipiter ovampensis*	Yes	No
Great reed warbler	Acrocephalidae	*Acrocephalus arundinaceus*	Yes	Yes
	Accipitridae	*Acrocephalus baeticatus*	Yes	No
	Acrocephalidae	*Acrocephalus gracilirostris*	Yes	No
	Scolopacidae	*Actitis hypoleucos*	Yes	No
	Otididae	*Afrotis afra*	Yes	No
Rosy-faced lovebird	Psittacidae	*Agapornis roseicollis*	Yes	Yes
Red-headed finch	Estrildidae	*Amadina erythrocephala*	Yes	Yes
Red-headed weaver	Ploceidae	*Anaplectes rubriceps*	Yes	No
	Anatidae	*Anas hottentota*	Yes	No
	Remizidae	*Anthoscopus caroli*	Yes	No
	Remizidae	*Anthoscopus minutus*	Yes	Yes
African pipit	Motacillidae	*Anthus cinnamomeus*	Yes	Yes
	Motacillidae	*Anthus leucophrys*	Yes	No
	Motacillidae	*Anthus vaalensis*	Yes	No
	Cisticolidae	*Apalis flavida*	Yes	No
	Anatidae	*Apus apus*	Yes	No
	Apodidae	*Apus caffer*	Yes	No
	Apodidae	*Apus melba*	Yes	No
Tawny eagle	Accipitridae	*Aquila rapax*	Yes	No
African hawk-eagle	Accipitridae	*Aquila spilogaster*	Yes	No
Verreaux's eagle	Accipitridae	*Aquila verreauxii*	Yes	No
	Otididae	*Ardeotis kori*	Yes	No
	Platysteiridae	*Batis molitor*	Yes	No
Pririt batis	Platysteiridae	*Batis pririt*	Yes	No
Chat flycatcher	Muscicapidae	*Bradornis infuscatus*	Yes	Yes
Marico flycatcher	Muscicapidae	*Bradornis mariquensis*	Yes	Yes
Red-billed buffalo weaver	Ploceidae	*Bubalornis niger*	Yes	No
Spotted eagle-owl	Strigidae	*Bubo africanus*	Yes	No
	Strigidae	*Bubo lacteus*	Yes	No
Spotted thick-knee	Burhinidae	*Burhinus capensis*	Yes	Yes
	Cristolidae	*Calamonastes fasciolatus*	Yes	No
The red-capped lark	Alaudidae	*Calandrella cinerea*	Yes	No
Fawn coloured lark	Alaudidae	*Calendulauda africanoides*	Yes	Yes

Sabota lark	Alaudidae	*Calendulauda sabota*	Yes	Yes
	Scolopacidae	*Calidris ferruginea*	Yes	No
Little stint	Scolopacidae	*Calidris minuta*	Yes	Yes
Green-backed camaroptera	Cristolidae	*Camaroptera brachyura*	Yes	Yes
Checklist of Mammals occurrence				
Common name	**Order and family**	**Scientific name**	**Expected**	**Observed**
	Carnivora			
Cheetah	Felidae	*Acinonyx jubatus*	yes	no
Black-backed jackal	Canidae	*Canis mesomelas*	yes	yes
Caracal	Felidae	*Caracal caracal*	yes	no
Spotted hyena	Hyaenidae	*Crocuta crocuta*	yes	no
Yellow mongoose	Herpestidae	*Cynictis penicillata*	yes	no
Wildcat	Felidae	*Felis silvestris*	yes	no
Gray mongoose	Herpestidae	*Galerella pulverulenta*	Yes	no
Common slender mongoose	Herpestidae	*Galerella sanguinea*	yes	no
Genete	Viverridae	*Genetta genetta*	yes	no
Common dwarf mongoose	Herpestidae	*Helogale parvula*	yes	no
Brown hyena	Hyaenidae	*Hyaena brunnea*	yes	no
Striped Polecat	Mustelidae	*Ictonyx striatus*	yes	no
African wild dog	Canidae	*Lycaon pictus*	no	no
Bat-eared fox	Canidae	*Otocyon megalotis*	yes	no
Lion	Felidae	*Panthera leo*	yes	no
Leopard	Felidae	*Panthera pardus*	yes	no
Aardwolf	Hyaenidae	*Proteles cristata*	yes	no
Cape fox	Canidae	*Vulpes chama*	yes	yes
	Primates			
Chacma baboon	Cercopithecidae	*Papio ursinus*	yes	yes
	Chiroptera			
House bats	Vespertilionidae		yes	no
Sundevall's roundleaf bat	Hipposideridae	*Hipposideros caffer*	yes	no
Cape serotine	Vespertilionidae	*Laephotis capensis*	yes	no
Striped leaf-nosed bat	Hipposideridae	*Macronycteris vittatus*	yes	no
Natal long-fingered bat	Miniopteridae	*Miniopterus natalensis*	yes	no
Common bent-wing bat	Miniopteridae	*Miniopterus schreibersii*	yes	no
Slit-faced or hollow-faced bats	Nycteridae	*Nycteris thebaica*	yes	no
Geoffroy's horseshoe bat	Rhinolophidae	*Rhinolophus clivosus*	yes	no
Darling's Horseshoe Bat	Rhinolophidae	*Rhinolophus darlingi*	yes	no
Rüppell's horseshoe bat	Rhinolophidae	*Rhinolophus fumigatus*	yes	no
white-bellied yellow bat	Vespertilionidae	*Scotophilus leucogaster*	yes	no
Free-tailed bats	Molossidae	*Tadarida aegyptiaca*	yes	no

	Macroscelidea			
Bushveld elephant shrew	Macroscelididae	*Elephantulus intufi*	yes	no
Western rock elephant shrew	Macroscelididae	*Elephantulus rupestris*	yes	no
	Artiodactyla			
Impala	Bovidae	*Aepyceros melampus*	yes	no

Checklist of Reptiles and Amphibians occurrence				
Common name	**Order and Family**	**species**	**expected**	**observed**
Squamata				
Kalahari burrowing skink	Scincidae	*Acontias kgalagadi*	no	no
Percival's lance skink	Scincidae	*Acontias percivali*	yes	no
Ground agama	Agamidae	*Agama aculeata*	yes	yes
Red-headed rock agama or rainbow agama	Agamidae	*Agama agama*	yes	yes
Anchieta's agama	Agamidae	*Agama anchietae*	yes	no
Southern rock agama	Agamidae	*Agama atra*	yes	no
Etosha agama	Agamidae	*Agama etoshae*	yes	no
Spiny agama	Agamidae	*Agama hispida*	yes	no
The Namib rock agama	Agamidae	*Agama planiceps*	no	no
Cape coral cobra	Elapidae	*Aspidelaps lubricus*	no	no
Puff adder	Viperidae	*Bitis arietans*	yes	no
Horned adder	Viperidae	*Bitis caudalis*	yes	no
Many-horned adder	Viperidae	*Bitis cornuta*	yes	no
African house snake	Lamprophiidae	*Boaedon fuliginosus*	yes	no
Flap-necked chameleon	Chamaeleonidae	*Chamaeleo dilepis*	yes	no
Giant ground gecko	Geckonidae	*Chondrodactylus angulifer*	yes	no
	Geckonidae	*Chondrodactylus laevigatus*	yes	no
Turner's thick-toed gecko	Geckonidae	*Chondrodactylus turneri*	yes	no
Blue-black plated lizard	Gerrhosauridae	*Cordylosaurus subtessellatus*	yes	no
Common egg eater,	Colubridae	*Dasypeltis scabra*	yes	no
Black mamba	Elapidae	*Dendroaspis polylepis*	yes	no
Boomslang	Colubridae	*Dispholidus typus*	no	no
The Black Lined Plated Lizard	Gerrhosauridae	*Gerrhosaurus nigrolineatus*	yes	no
Bushveld lizard	Lacertidae	*Heliobolus lugubris*	yes	yes
Cape rough-scaled lizard	Lacertidae	*Ichnotropis capensis*	no	no
Namibian girdled lizard	Cordylidae	*Karusasaurus jordani*	no	no
Dwarf gecko	Geckonidae	*Lygodactylus lawrencei*	yes	no
Giant plated lizard	Gerrhosauridae	*Matobosaurus validus*	yes	no
Savanna lizard	Lacertidae	*Meroles squamulosa*	yes	yes
Sundevall's writhing skink	Scincidae	*Mochlus sundevallii*	yes	no
Anchieta's worm lizard,	Amphisbaenidae	*Monopeltis anchietae*	yes	no
Anchieta's cobra,	Elapidae	*Naja anchietae*	yes	no
Zebra snake	Elapidae	*Naja nigricincta*	yes	yes
Black-necked spitting cobra	Elapidae	*Naja nigricollis*	no	no

Cape cobra	Elapidae	*Naja nivea*	yes	no
Fischer's Thick-toed Gecko	Geckonidae	*Pachydactylus laevigatus*	yes	no
Pointed thick-toed gecko	Geckonidae	*Pachydactylus punctatus*	yes	no
	Geckonidae	*Pachydactylus scutatus*	yes	no

Checklist _Plants occurrence				
Common name	Order and Family	Scientific Name	expected	observed
	Fabales			
	Fabaceae	*Chamaecrista mimosoides*	yes	yes
Mopane	**Fabaceae**	***Colophospermum mopane***	**yes**	**yes**
	Fabaceae	*Crotalaria argyraea*	yes	no
	Fabaceae	*Crotalaria aurea*	yes	no
	Fabaceae	*Crotalaria barkae*	yes	no
	Fabaceae	*Crotalaria damarensis*	yes	no
	Fabaceae	*Crotalaria dinteri*	yes	yes
	Fabaceae	*Crotalaria flavicarinata*	yes	no
	Fabaceae	*Crotalaria heidmannii*	yes	no
	Fabaceae	*Crotalaria leubnitziana*	yes	no
	Fabaceae	*Crotalaria pisicarpa*	yes	no
	Fabaceae	***Crotalaria platysepala***	**yes**	**no**
	Fabaceae	*Crotalaria podocarpa*	yes	yes
	Fabaceae	*Crotalaria spartioides*	yes	no
	Fabaceae	*Crotalaria sphaerocarpa*	yes	no
	Fabaceae	*Crotalaria steudneri*	yes	no
	Fabaceae	*Crotalaria virgultalis*	yes	no
	Fabaceae	***Cullen tomentosum***	**yes**	**no**
	Fabaceae	***Delonix regia***	**yes**	**no**
	Fabaceae	***Dichrostachys cinerea***	**yes**	**yes**
	Fabaceae	***Faidherbia albida***	**yes**	**no**
	Fabaceae	*Indigastrum candidissimum*	yes	no
	Fabaceae	***Indigastrum costatum***	**yes**	**no**
	Fabaceae	*Indigastrum parviflorum*	yes	no
	Fabaceae	*Indigofera alternans*	yes	yes
	Fabaceae	*Indigofera astragalina*	yes	no
	Fabaceae	*Indigofera auricoma*	yes	no
	Fabaceae	*Indigofera bainesii*	yes	no
	Fabaceae	***Indigofera charlieriana***	**yes**	**no**
	Fabaceae	*Indigofera cryptantha*	yes	no
	Fabaceae	*Indigofera daleoides*	yes	no

	Fabaceae	*Indigofera filipes*	yes	no
	Fabaceae	*Indigofera flavicans*	yes	no
	Fabaceae	*Indigofera hololeuca*	yes	no
	Fabaceae	***Indigofera holubii***	**yes**	**no**
	Fabaceae	*Indigofera holubii*	yes	no
	Fabaceae	*Indigofera inhambanensis*	yes	no
	Fabaceae	*Indigofera sordida*	yes	no