2023

Environmental Impact Assessment (EIA) Report to Support the Application for Environmental Clearance Certificate (ECC) for Exclusive Prospecting License (EPL) No. 8413 in the //Karas region

FINAL VERSION

Compiled by

Aligned Sustainability & Environmental Consultants (ASEC)

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TERMS AND ABBREVIATIONS	DESCRIPTION
AIDS	Acquired immunodeficiency syndrome
BID	Background Information Document
CIA	Cumulative Impact Assessment
DEA	Directorate of Environmental Affairs
EC	Environmental Commissioner
ECC	Environmental Clearance Certificate
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
EMA	Environmental Management Act, No.7 of 2007
EMP	environmental management plan
EPL	Exclusive Prospecting Licence
ESIA	Environmental and Social Impact Assessment
GDP	Gross domestic product
HIV	Human immunodeficiency virus
I&APs	Interested and Affected Parties
MME	Ministry of Mines and Energy
MEFT	Ministry of Environment, Forestry and Tourism
MAWLR	Ministry of Water, Agriculture and Land

4. EXECUTIVE SUMMARY

This executive summary summarises the environmental scoping report and Environmental Management Plan (EMP) submitted by Maria Shimhanda on behalf of the proponent, Unicar and Parts Trading (Pty) Ltd, for the exploration activities planned on Exclusive Prospecting Licence (EPL) 8413. The proposed project aims to explore the mineral groups of base and rare metals, industrial minerals, dimension stones, precious stones, and precious metals in Noordoewer in the //Karas Region.

The mining claim is located approximately 10 kilometres north of Noordoewer Town in the //Kara Region, between the C13 gravel road and the B1 road. It has a total land area of 19 372.84 hectares. An environmental clearance certificate is required for such activities under the Environmental Management Act, No. 7 of 2007, and its Environmental Impact Assessment Regulations, No. 30 of 2012. An Environmental Impact Assessment (EIA) was conducted to meet this requirement as part of the application process for the environmental clearance certificate.

The project proponent hired Miss Maria Shimhanda, an independent environmental and sustainability consultant, to conduct the required Environmental Assessment (EA) process and handle the ECC application. The goal was to ensure that the proposed project complied with the national regulatory framework outlined in the Environmental Management Act, No. 7 of 2007, and its Environmental Impact Assessment Regulations, No. 30 of 2012.

The environmental scoping report and EMP presented in this submission outline the comprehensive assessment of potential environmental impacts associated with the project. It addresses a variety of key issues, including biodiversity, air and water quality, land use, socioeconomic factors, and the area's cultural heritage. The report highlights the proposed mitigation measures, monitoring programs, and environmental management strategies that will be implemented to minimise and mitigate the identified impacts. It emphasises the proponent's commitment to responsible and sustainable exploration practices.

The submission of this report demonstrates the proponent's commitment to conducting exploration activities in an environmentally responsible manner, recognising the value of environmental protection and sustainability. The project aims to minimise negative impacts and contribute positively to local communities and ecosystems by implementing appropriate mitigation measures and adhering to the Environmental Management Plan.

Project description

The proposed exploration activities on EPL 8413 include soil sampling, ground, and airborne geophysical surveys (audio-magneto telluric, induced polarization and magnetic ground surveys), geological mapping, and exploration drilling on selected target areas. Some limited grass clearing will be carried out, for the creation of working areas and access tracks where necessary. Strict environmental guidelines shall be followed while managing all activity sites.

Agreements for access will be made with all farmers and owners of privately owned land/farmers that are part of the EPL or might be accessed.

The exploration will last for three years, during which time the activities are expected to be carried out. The exploration activities will start when the Environmental Commissioner grants an environmental clearance certificate. The duration of each exploration programme phase might differ and will be adjusted considering new geological data.

Public Consultation

Regulation 21 of the EIA Regulations details steps to be taken during a public consultation process and these have been used in guiding this process. The communication with interested and affected parties (I&APs) about the proposed prospecting and exploration activities was done as follows:

- A Background Information Document (BID) containing information about the proposed exploration activities was compiled and delivered to relevant Authoritative Ministries, and I&APs.
- The project public participation notices were published twice in two newspapers, The New Era (on September 26th and 30th, 2022) and the Namibian newspaper (on September 26th and October 3rd, 2022), as shown in **Appendix 1**. Known interested and affected parties, such as the Noordoewer settlement office, were notified directly via email and cell phone calls. The notices provide a brief explanation of the activity and its surrounding area, as well as an invitation to members of the public to register as I&APs and submit comments/concerns.
- The issues and concerns raised were noted and used to form a basis for the ESA Report and EMP.

Project site and impacts

The vegetation found in the EPL area is classified as desert and Succulent Steppe. Vegetation is sparse and is mostly limited to depressions and watercourses where run-off water collects. The dominant species are xerophytes, which have a high degree of drought tolerance. The vegetation intensity is so low that it has no potential for domestic animal grazing. Common plants include various species of vygies (Mesembryanthemum spp.), Karoo bush Dodonaea viscosa), spekboom (*Portulacaria afra*), shepherd's tree (*Boscia albitrunca*), and other drought-tolerant species.

The following potential impacts are anticipated:

Positive impacts*:* Socio-economic development through employment creation (primary, secondary, and tertiary employment) and skills transfer; Opens other investment opportunities and infrastructure-related development benefits; and small businesses that can serve

communities and may initiate related businesses; Boosts the local economic growth and regional economic development.

***Negative impacts**:* Potential disruption of the land or soil; effects on the biodiversity (fauna and flora) in the area; disruption of habitat; visual effects; potential effects of pollution on soils and water; Possible release of dust from the project is an air quality concern. Possible threats to worker's safety and health, The impact of vehicular traffic safety on service infrastructure, including local roads, and The noise and vibrations resulting from drilling operations could be annoying to nearby residents. pollution of the environment (solid waste and wastewater), impact on archaeology and cultural heritage, and potential social unrest and conflicts (theft, property damage, etc.).

The potential negative impacts were assessed, and mitigation measures were provided accordingly.

Conclusion and recommendation

This study concluded that a potential environmental risk, which may require further investigation, is related to the cumulative impacts because of visual disturbance, nuisance of noise, and the loss of sense of place.

Receptors are Noordoewer town residents, grape farm owners, neighbours, road users and visitors. The visual disturbance and loss of the sense of place are of moderate significance, however, with additional mitigation, the significance can be reduced to minor. These additional mitigation measures include:

- Positioning of drill equipment in such a way that it is out of sight from human receptors.
- Barriers or fences shall be used if drilling occurs in locations that may affect residents or livestock.
- Residents need to be informed at least two weeks in advance that drilling operations are within 1km of their property; and
- Continuous engagement with residents to identify any concerns or issues, and appropriate mitigation and management measures agreed upon.

This Report and the EMP were developed in response to issues and concerns raised by registered I&APs. Mitigation actions were provided to reduce the potential impacts from medium to low. To maintain the desirable rating, the implementation of management and mitigation measures should be monitored directly by the Proponent or their Environmental Control Officer (ECO). Monitoring will ensure that possible adverse effects are detected and addressed promptly.

Throughout the project's duration, the Proponent and their contractors are required to appropriately implement the management and mitigation strategies that have been recommended to protect the biophysical and social environment. Ensuring that the project's

operations benefit both the community and the environment, all of these would be carried out to foster environmental sustainability. Given the low potential impact of the proposed project, it is advised to obtain an environmental clearance certificate.

Disclaimer

Based on the Environmental Management Act of 2007 procedures and the scope of work, Maria Shimhanda prepared this report. After conducting in-depth interviews and a literature review, it presents its findings and conclusions while acknowledging any potential limitations. Based on the data available at the time of evaluations, the report's conclusions have a restricted scope and time frame. The consultants accept no responsibility for any damages or losses resulting from using or interpreting the information in this report.

5. INTRODUCTION

5.1. Project Background

Unicar and Parts Trading (Pty) Ltd (The Proponent) has been granted with Exclusive Prospecting License (EPL) No. 8413 by the Ministry of Mines and Energy (MME). The tenure of the license is from 15 October 2020. The EPL is granted for the base and rare metals, industrial minerals, dimension stones, precious stones, and precious metals. The proposed project area (Exclusive Prospecting License (EPL 8413) is situated approximately 10 km north of Noordoewer Town in the //Kara Region between the C13 to Aussenkehr and B1 Road from Granau to Noordoewer town. The EPL covers a surface area of 19 372.84 hectares. The approximate location of the EPL 8413 is shown in **Figure 1** in degree coordinates (28°39'40''S 17°37'21'' E) or can be located in decimals at (-28.66111111 S,17.62250000 E). The whole proposed project area is shown in **Figure 1**. More coordinates of the octagon of the proposed project area in **Figure 1** can be found in **Appendix 4** attached.

A list of activities that cannot be done without an EIA conducted and an ECC obtained as stipulated in Section 27 (1) of the Environmental Management Act (EMA) (No. 7 of 2007) and its 2012 Environmental Impact Assessment (EIA) regulations. This project's proposed activities fall under the listed activities Therefore, without an EIA completed and an ECC granted, the proponent is not permitted to engage in mining exploration activities.

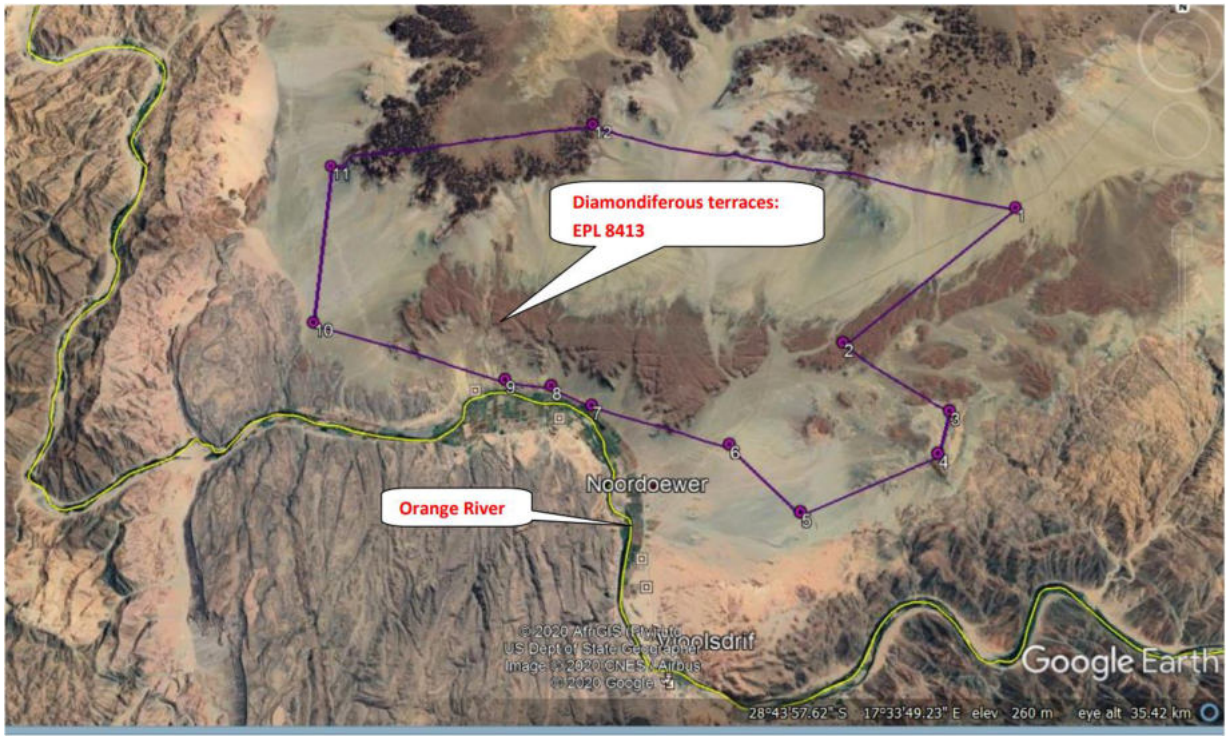

Figure 1. The project area of EPL 8413

5.2. Scope of work

To comply with the EMA and its 2012 EIA Regulations, Unicar and Parts Trading (Pty) hired Maria Shimhanda and Dr. Emillia (Independent consultant) to conduct the necessary Environmental Assessment process. On behalf of the proponent, they then applied for an ECC for exploration works on the EPL. The Proponent did not provide the consultant with an official Terms of Reference (ToR). As a result, the consultant adhered to the rules specified in the Environmental Management Act (No. 7 of 2007) (EMA) and its EIA Regulations (GN. No. 30 of 2012).

The purpose of this report is to present the findings of the scoping study for the proposed project. The ECC application is completed and submitted to the Ministry of Environment, Forestry, and Tourism (MEFT), the environmental custodian, for project registration purposes. An ECC for the proposed project will be evaluated by the Environmental Commissioner at the MEFT, Department of Environmental Affairs and Forestry (DEAF) upon submission of an Environmental Scoping Assessment (ESA) Report and drafted Environmental Management Plan (EMP) **(Appendix 2).**

The EIA study is headed by Miss Maria Shimhanda, a qualified Natural resources management, sustainability, and environmental expert. The CVs are presented in **Appendix 3.**

5.3. The proponent of the proposed project

The details of the proponent are set out in **Table 2**.

Table 1. Details of the Proponent

Name	Postal and Physical Address	Contact details
Unicar and Parts Trading (Pty) Ltd	PO Box 35361	+264811240009
(REG No: CC/2012/94870)	Kleine Kuppe	
	ERF No 469, Blinkpanstreet	
	Windhoek	
	Namibia	

5.4. Environmental Consultant

Maria Shimhanda, a Namibian consultant, has prepared this scoping report and impact assessment on behalf of the proponent. The team offers consulting services in environmental management, scientific research, and socio-economic development – focusing on promoting effective and sustainable utilization and management of natural resources (NRM). Miss Maria Shimhanda are independent of the proponent and has no vested or financial interest in the proposed project, except for fair remuneration for professional services rendered.

All compliance and regulatory requirements regarding this EIA report should be forwarded to

Email: mariashimhanda@hotmail.com

Cell: +264814296085

Location: Windhoek, Namibia

5.4.1. Details of the EIA Project Team

The EIA team of experts that were co-opted to assist and contribute to this EIA are provided. The EIA Team's CVs are attached as **Appendix 3**.

Table 2. EIA Core Team.

Specialist Name	**Expertise**
Miss Maria Shimhanda	Natural Resources Management, Sustainability and Environmental Management Specialist

5.5. Project Motivation and Potential Benefits

Namibia's economy has long been fueled by the mining industry. This investment will help to boost Namibia's and Noordoewer ailing economies because of the COVID-19 pandemic's effects. Participating in the small-scale mining industry on a local level not only creates jobs and increases revenue, but also contributes to the country's GDP, which can help to strike a balance between the creation and distribution of wealth. Mining is also critical to the National Development Plan 5 (NDP5) and the Harambee Prosperity Plan. These initiatives served as a foundation for the Vision 2030 targets. On the EPL 8413, productive exploration activity may result in small-scale mining operations that support the development goals indicated.

5.6. Assumptions and Limitations

A desktop study was conducted to gather baseline environmental information. The baseline condition is based on a review of the literature and expert input from experts in ecology, mining, and natural resource management for this report. This study does not include potential environmental and social projections, such as the effects of climate change. The information supplied by the proponent and experts during this process forms the basis of the project description. The impact assessment is based on expert judgment and a literature review. This study's likely impacts have been reported globally.

6. PROJECT DESCRIPTION: PROPOSED EXPLORATION ACTIVITY

6.1. Overview

Mineral exploration is a set of techniques used to determine whether economically viable minerals exist in each area. The process normally starts with broad-scale exploration across a large area, then narrows down to thorough investigation, usually through drilling and sampling, when prospects are found. The many exploration steps required to create a discovery can be divided into phases, with the outcomes of the previous stage determining whether to proceed to the following stage.

The first stage of a mine's life cycle is drilling, which is followed by development, extraction, and then closure and reclamation. These activities take between two and eight years to complete and entail employing a variety of geological techniques in search of mineral resources.

6.2. Prospecting Stage (Non-Invasive Techniques)

6.2.1. Community engagement and consultation

We are committed to ongoing community engagement throughout our exploration activities which involves listening to the concerns of the community, responding openly and transparently, and using community feedback to inform decision making.

6.2.2. Permits

Other than prospecting activities, most exploration activities require tenements or claims that grant the holder the mineral rights to the subsurface lands. Activities usually require further stringent government permits and approvals to complete work programs. Agreements will be obtained from farmers who have subsurface land rights in the EPL.

6.2.3. Desktop study

This mostly comprises a desktop study of the region's geological maps, ground traverses, and observations.

6.2.4. Exploration (Low impact surface activity)

The early stages of our mineral exploration program involve low impact surface activities:

- Stream sediment sampling – samples of silt and clay (up to 2kg) are gathered by hand from sites along stream courses, generally at stream junctions.
- Rock sampling – fragments of rock are chipped from rock faces using a small handheld hammer. These samples are up to 5kg in weight and are often collected during geological mapping.
- Geological mapping – a geologist records the characteristics and distribution of various kinds of surface rock. These observations are plotted on a map which forms the foundation for interpreting the geology of the area.
- Soil survey – a geologist will collect up to 1kg of sub-surface soil, using a spade or hand auger. Auger holes are backfilled, and sods are replaced afterwards. Distance between samples varies from 25m to 200m apart.
- Passive ground geophysics – a portable instrument is placed on the ground for a few minutes while it measures and records rock properties, such as gravity.
- Active ground geophysics – resistivity surveying introduces a low-voltage current into the ground at two locations and then measures the electric field these forms in the ground at a range of locations away from these points.

6.3. Exploration (Drilling)

If the results of our low-impact surface activities indicate that there may be viable mineral deposits, drilling is then required to better understand the geology and verify the results. Before drilling commences, an assessment of potential environmental effects, and cultural and safety concerns is undertaken. Stakeholders will be consulted to ensure that all relevant concerns have been appropriately addressed.

The drilling process involves using various drill rig types to drill 10-20cm wide holes to varied depths at varied angles. The rig may take up to several weeks to complete work at a site. Additional drilling may then be planned if initial drilling results are positive. When drilling work is finished all equipment is removed and all sites are rehabilitated to the same or better condition than before activities began.

The drilling process results in core or chip samples that can be studied and analysed. The results of many holes are used to measure and define the size, shape and grade of an orebody that could potentially be mined.

Two primary kinds of exploratory drilling could be used in this project. When **reverse circulation (RC)** drilling is used, the result is a crushed sample made up of cuttings from a relatively well-defined depth in the hole in comparison to **core drilling**, which produces a solid cylinder-shaped sample of the ground at an accurate depth. Due to its speed, effectiveness, and capacity to deliver precise samples for analysis, RC will be the favoured approach for early exploration, ore body development, and in-pit grade management. Core drilling may be used to estimate mineral reserves that will keep the mine operating in the future and to determine the ore grades being handled.

Table 3 provides an outline of the procedures and operations required to locate, drill, and complete a typical unconventional well

Table 3. Outline of the procedures and operations required to locate, drill, and complete a typical unconventional well.

Exploration Phase (the geology)	**Leasing Phase (the people and contracts)**	**Drilling Phase (the engineering and inspection)**	**Production Phase (the engineering and infrastructure)**
1. Basin-scale assessment (data analysis, available well information)	1. Identifying "sweet spots"	1. File for and receive Permit from state regulators (plan for drilling)	1. Production and takeaway of hydrocarbons (gathering lines)
2. Seismic data acquisition and interpretation	2. Approaching landowners/owners of mineral rights	2. Site preparation and plan for drilling,	2. Site restoration

		including a safety plan	
	3. Securing a block of leases	3. Rig setup and drilling operations (water access)	
		4. Cementing and wellbore integrity considerations (geophysical logs)	

6.3.1. Accessibility to Site

The proposed site is in far southern Namibia, about 10 km north of Noordoewer town and directly south of Windhoek (800 km), and it is connected to the capital city via B1 road. The site can be accessed from the Noordoewer town via the C13 gravel road or the B1 road from Grunau.

Source: https://ubbw.maps.arcgis.com/home/webmap/viewer.html

6.3.2. Material and Equipment

During the exploration phase, double and single-cab vehicles will be used to transport workers to, from and around the site. The contractor's camp infrastructure may include tents and portable toilets, to be temporarily set up on the site.

Vehicles and equipment needed for the exploration programme include 4X4 vehicles, a truck, water tanks, drill rigs drilling machinery, and a power generator.

6.3.3. Services and Infrastructure

- **Water sources and supply**

Water for the exploration operations on the EPL will be obtained from the nearest existing boreholes, or the proponent will drill boreholes within the EPL 8413, upon obtaining necessary permits and signed agreements with the landowners or traditional authorities in the area. Estimated monthly water consumption is at 7,000 litres but will not exceed 8,000 litres. This includes water for drinking, sanitation, cooking, dust control (if necessary), drilling, as well as washing of equipment.

- **Power supply**

Power required during the operation phase will be provided by diesel generators and solar panels. About 2500 litres of diesel will be used per day.

- **Fuel (diesel for generators and other equipment)**

The fuel (diesel) required for exploration equipment will be stored in a tank mounted on a mobile trailer, and drip trays will be readily available on this trailer and monitored to ensure that accidental fuel spills are cleaned up as soon as they have been detected/observed. Fuel may also be stored in a bunded diesel bowser on site, and in

6.3.4. Waste Management

Water will be required for various uses including human consumption during the planned exploration activities and to support any of the exploration activities. The water will most likely be sourced from an existing water source on site after permission has been obtained from the farm owner, of which they will be compensated for water usage.

The site will have secure waste bins for each category of waste (for example, residential, hazardous, and recyclable). Waste will be sorted and collected as frequently as possible, depending on the amount created, and delivered to the nearest certified dumping site. If hazardous waste is produced, an agreement must be obtained with various waste management facility operators/owners, and authorization or permits must be obtained before using these facilities.

The waste produced on-site can also be categorized as mineral or non-mineral waste:

Mineral Waste: Consists of solid products of exploration and mineral concentration to acquire the targeted minerals. Mineral waste will potentially be produced throughout the project exploration phase. This waste will be stripped and dumped in allocated areas as stipulated in the EMP.

Non-mineral Waste: Consists primarily of auxiliary materials that will support the exploration phase. This includes but is not limited to items such as empty containers, plastic, etc., and other domestic waste. This waste will be collected, sorted, and taken to the dumpsite as regularly as necessary.

6.3.5. Safety and Security

- **Health and Safety**

Adequate and appropriate Personal Protective Equipment (PPE) will be provided to every project personnel while on and working at the site. A first aid kit will be readily available on-site to attend to potential minor injuries.

- **Storage Site**

Temporary storage areas for exploration material, equipment, and machinery will be required at the campsite and/or exploration sites. Security will be supplied on a 24-hour basis at the delegated sites for storage. A temporary support fence surrounding the storage site will be constructed to ensure people and domestic animals are not put at risk.

- **Fire management**

A minimum of basic firefighting equipment, i.e., a fire extinguisher will be readily available in vehicles, at the working sites and camps. The exploration crew is required to have the contact details of the nearest fire station at hand in case of a larger scale of fires at the site.

6.3.6. Workers and Accommodation

Five to fifteen possible job opportunities are foreseen during the exploration phase and workers will be sourced from Noordoewer town and the nearest small towns such as Aussenkehr and Grunau. The workers will be deployed at various stages of exploration including soil sampling, geological mapping, geophysical surveys, and drilling operations.

The exploration crew will be accommodated in Noordoewer, or a campsite will be established near the exploration areas. If the accommodation camp is to be built on farms, relevant agreements will be made with the farm owner(s). Staff will commute to the exploration site(s) from their place of accommodation if they are not accommodated on-site. The proponent shall provide suitable living facilities during this period.

6.4. Decommissioning and Rehabilitation Phase

The lands must be restored to a condition that is as near to the original state as is practical once exploratory activities are finished. With the help of the government and landowners, rehabilitation will be decided upon during the exploration project. The success of the rehabilitation process will be tracked using before and after pictures.

Once the exploration activities on the EPL 8413 come to an end, the Proponent will need to put site rehabilitation measures in place. As a result, it is best practice for the proponent to make sure the project activities come to an end in an environmentally conscious way and the site is restored.

7. PROJECT ALTERNATIVES

7.1. Alternatives Considered

Alternatives taken into consideration should be assessed and reported in the scoping assessment and EIA report following the Environmental Management Act, No. 7 of 2007 and its regulations. This requirement makes sure that potential environmental effects, costs, and technical feasibility have been considered during the design development and decision-making process, which results in the best option(s) being chosen.

The project scope to be considered and assessed in the EIA is the 3-year exploration work programme as proposed by the applicant and described above. No reasonable and feasible alternatives have been proposed and only the preferred alternative and the no-go alternative were considered during the EIA phase.

7.2. No-go Alternatives

Should exploration activities within EPL 8413 not take place, the anticipated environmental impacts from exploration activities would not occur, however, the social and economic benefits associated with the project such as employment and diversification of the local economy would also not be materialized.

There would not be an opportunity to define resources within the project area, this would be a missed opportunity for geological mapping and data collection that would add to regional knowledge of Namibia's mineral wealth and, if found to be viable for mining, could benefit the Namibian economy.

8. LEGAL FRAMEWORK

8.1. The Environmental Management Act (No. 7 of 2007)

The Environmental Management Act, No.7 of 2007 stipulates that an environmental clearance certificate is required to undertake listed activities in terms of the Act and its regulations. Listed activities triggered by the Project in terms of the Environmental Management Act, No. 7 of 2007 and its regulations are as follows:

- 3.1 The construction of facilities for any process or activities which requires a license, right of other forms of authorization, and the renewal of a license, right, or other forms of authorization, in terms of the Minerals (Prospecting and Mining Act, 1992).
- 3.2 Other forms of mining or extraction of any natural resources whether regulated by law or not.
- 3.3 Resource extraction, manipulation, conservation, and related activities.

The Environmental Impact Assessment (EIA) Regulations GN 28-30 (GG 4878) detail requirements for public consultation within a given environmental assessment process (GN 30 S21). The EIA regulations also outline the required details of a Scoping Report (GN 30 S8) and an Assessment Report (GN 30 S15).

Other legal obligations that are relevant to the proposed activities of EPL No. 8229 and related activities are presented in **Table 4**.

Table 4. Other relevant legislations that are relevant to the proposed activities of EPL No. 8229

Legislation / Policy / Guideline: Custodian	**Relevant Provisions**	**Implications for this project**
The Constitution of the Republic of Namibia, 1990 as amended: Government of the Republic of Namibia	The Constitution of the Republic of Namibia (1990 as amended) addresses matters relating to environmental protection and sustainable development. Article 91(c) defines the functions of the Ombudsman to include: "…the duty to investigate complaints concerning the over-utilisation of living natural resources, the irrational exploitation of non-renewable resources, the degradation and destruction of ecosystems and failure to protect the beauty and character of Namibia…" Article 95(l) commits the state to actively promoting and maintaining the welfare of the people by adopting policies aimed at the: "…Natural resources situated in the soil and on the subsoil, the internal waters, in the sea, in the continental shelf, and in the exclusive economic zone are property of the State."	By implementing the environmental management plan, the establishment will be conformant to the constitution in terms of environmental management and sustainability. Ecological sustainability will be the main priority for the proposed development.
Minerals (Prospecting and Mining) Act (No. 33	Section 52 requires mineral license holders to enter into a written agreement with affected	The Proponent should enter into a written agreement with landowners before carrying out exploration on their land. On communal land, the Proponent should

of 1992): Ministry of Mines and Energy (MME)	landowners before exercising rights conferred upon the license holder. Section 52(1) mineral licence holder may not exercise his/her rights in any town or village, on or in a proclaimed road, land utilised for cultivation, within 100m of any water resource (borehole, dam, spring, drinking trough etc.) and boreholes, or no operations in municipal areas, etc.), which should individually be checked to ensure compliance. Section 54 requires a written notice to be submitted to the Mining Commissioner if the holder of a mineral license intends to abandon the mineral license area. Section 68 stipulates that an application for an exclusive prospecting license (EPL) shall contain the particulars of the condition of and any existing damage to, the environment in the area to which the application relates and an estimate of the effect which the proposed prospecting operations may have on the environment and the measures to be taken to prevent or minimize any such effect. Section 91 requires that rehabilitation measures should be included in an application for a mineral license.	engage the Traditional Authorities for land use consent. An assessment of the impact on the receiving environment should be carried out. The Proponent should include as part of their application for the EPL, measures by which they will rehabilitate the areas where they intend to carry out mineral exploration activities. The Proponent may not carry out exploration activities within the areas limited by Section 52 (1) of this Act.

The Parks and Wildlife Management Bill of 2008: Ministry of Environment, Forestry and Tourism (MEFT)	Aims to provide a regulatory framework for the protection, conservation, and rehabilitation of species and ecosystems, the sustainable use and sustainable management of indigenous biological resources, and the management of protected areas, to conserve biodiversity and contribute to national development.	The Proponent will be required to enhance the conservation of biodiversity and the maintenance of the ecological integrity surrounding and in the Project Site.
Road Traffic and Transport Act, No. 22 of 1999: Ministry of Works and Transport (Roads Authority of Namibia)	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. Should the Proponent wish to undertake activities involving road transportation or access to existing roads, the relevant permits will be required.	Mitigation measures should be provided for, if the roads and traffic impact cannot be avoided, the relevant permits must be applied for.
Labour Act (No. 6 of 1992): Ministry of Labour, Industrial Relations, and Employment Creation (MLIREC)	Ministry of Labour, Industrial Relations and Employment Creation is aimed at ensuring harmonious labour relations through promoting social justice, occupational health, and safety and enhanced labour market services for the benefit of all Namibians. This ministry ensures effective implementation of the Labour Act No. 6 of 1992.	The Proponent should ensure that the prospecting and exploration activities do not compromise the safety and welfare of workers.

Atmospheric Pollution Prevention Ordinance (1976): Ministry of Health and Social Services (MHSS)	This ordinance provides for the prevention of air pollution and is affected by the Health Act 21 of 1988. Under this ordinance, the entire area of Namibia, apart from East Caprivi, is proclaimed as a controlled area for the purposes of section 4(1) (a) of the ordinance.	The proposed project and related activities should be undertaken in such a way that they do not pollute or compromise the surrounding air quality. Mitigation measures should be put in place and implemented on-site.
Hazardous Substance Ordinance, No. 14 of 1974: Ministry of Health and Social Services (MHSS)	The ordinance provides for the control of toxic substances. It covers manufacture, sale, use, disposal and dumping as well as import and export. Although the environmental aspects are not explicitly stated, the ordinance provides for the importing, storage, and handling.	The Proponent should handle and manage the storage and use of hazardous substances on site so that they do not harm or compromise the site environment
Public and Environmental Health Act No. 1 of 2015: Ministry of Health and Social Services (MHSS)	The Act serves to protect the public from nuisance and states that no person shall cause a nuisance or shall suffer to exist on any land or premises owned or occupied by him or of which he is in charge any nuisance or other condition liable to be injurious or dangerous to health.	The Proponent should ensure that the project infrastructure, vehicles, equipment, and machinery are designed and operated in a way that is safe, or not injurious or dangerous to public health and that the noise and dust emissions which could be considered a nuisance remain at acceptable levels. The public and environmental health should be preserved and remain uncompromised.
Public Health Act (No. 36 of 1919): Ministry of Health and Social Services (MHSS)	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."	The Proponent and all its employees should ensure compliance with the provisions of these legal instruments.

Forestry Act (Act No. 12 of 2001: Ministry of Environment, Forestry and Tourism (MEFT)	The Act provides for the management and use of forests and forest products. Section 22. (1) provides: "Unless otherwise authorised by this Act, or by a licence issued under subsection (3), no person shall on any land which is not part of a surveyed erven of a local authority area as defined in section 1 of the Local Authorities Act, 1992 (Act No. 23 of 1992) cut, destroy or remove - (a) vegetation which is on a sand dune or drifting sand or on a gully unless the cutting, destruction or removal is done for the purpose of stabilising the sand or gully; or (b) any living tree, bush or shrub growing within 100 m of a river, stream or watercourse."	The proponent will apply for the relevant permit under this Act if it becomes necessary.
Soil Conservation Act (No 76 of 1969): Ministry of Agriculture, Water and Land Reform (MAWLR)	The Act makes provision for the prevention and control of soil erosion and the protection, improvement and conservation of soil, vegetation and water supply sources and resources, through directives declared by the Minister.	Duty of care must be applied to soil conservation and management measures must
National Heritage Act No. 27 of 2004: Ministry of Education, Arts and Culture (MEAC)	To provide for the protection and conservation of places and objects of heritage significance and the registration of such places and objects; to establish a National Heritage Council; to establish a National Heritage Register;	The Proponent should ensure compliance with this Acts' requirements. The necessary management measures and related permitting requirements must be taken. This was done by consulting with the National Heritage Council (NHC) of Namibia. The management measures should be incorporated into the Draft EMP.

Water Resources Management Act (No 11 of 2013): Ministry of Agriculture, Water and Land Reform (MAWLR)	The Act provides for the management, protection, development, use and conservation of water resources; and provides for the regulation and monitoring of water services and to provide for incidental matters. The objects of this Act are to: Ensure that the water resources of Namibia are managed, developed, used, conserved, and protected in a manner consistent with, or conducive to, the fundamental principles set out in Section 66 - protection of aquifers, Subsection 1 (d) (iii) provide for preventing the contamination of the aquifer and water pollution control (S68).	The protection (both quality and quantity/abstraction) of water resources should be a priority. The permits and license required thereto should be obtained from MAWLR's relevant Departments (these permits include Borehole Drilling Permits, Groundwater Abstraction & Use Permits, and when required, Wastewater / Effluent Discharge Permits).

9. BASELINE ENVIRONMENTAL INFORMATION

This section aims to document the receptors of the likely impacts that will arise from the project. The baseline information presented below is sourced from a variety of sources including reports of studies conducted in //Karas Region. Further information was obtained by the Consultant during the site visit.

9.1. Biophysical Environment

9.1.1. Climatic Conditions

The proposed project is in the //Karas region in the Noordoewer area. The area is arid and experiences a harsh climate characterized by a hot and dry climate. In summer, temperatures can easily exceed 40 °C and in the hot period, the temperature can reach 45 °C. It has a mean annual rainfall of less than 60 mm, with an ET0 of 1 570 mm. as illustrated in **Figure 2.**

Climate has a major influence on the exploration activities proposed on the EPL. Understanding climatic conditions helps to determine the appropriate and inappropriate times to conduct exploration activities.

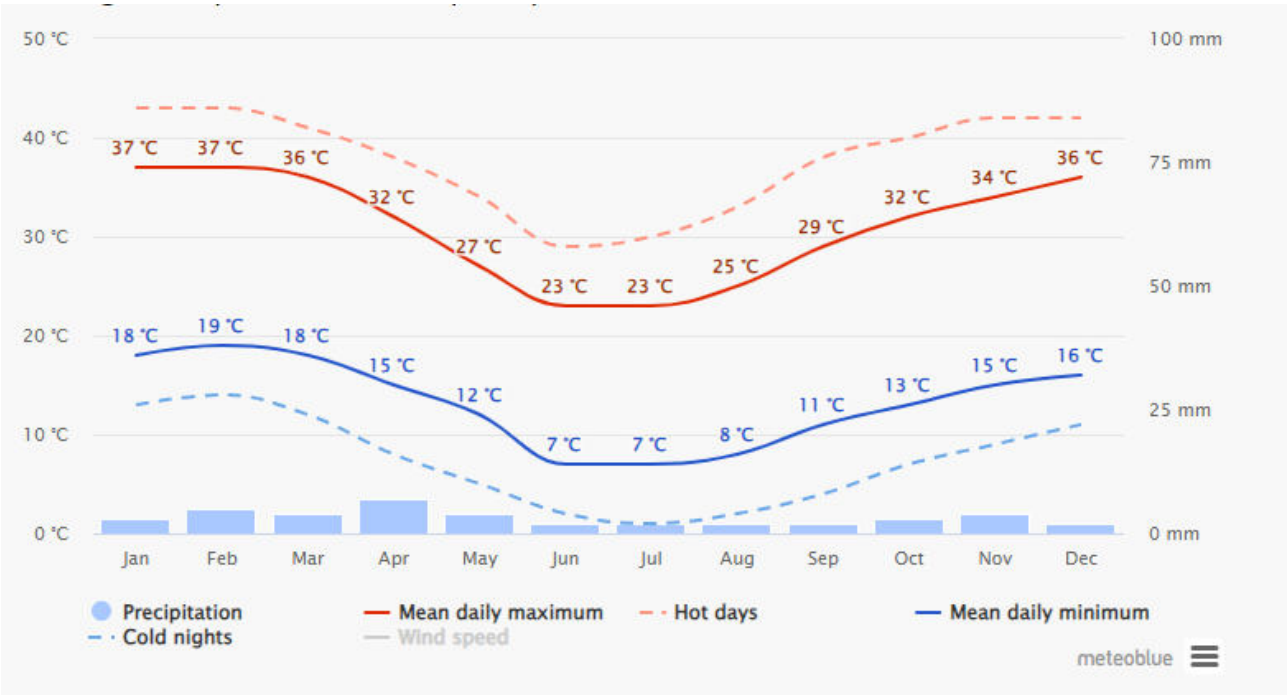

Figure 2. Noordoewer climatic conditions.

9.1.2. Local Geology and Physiography

The area is characterized by extensive mountains, hills and rock outcrops, and severely dissected terrain resulting from run-off rainwater. In some parts, hills and/or mountains separate the plain from the river. Nonetheless, there also are some flat or gently sloping areas in scattered locations. The soils are covered with gravel and stones on the surface, as well as within the calcareous soil profiles. These soils have high pH values, high sand content, low fertility, low moisture-holding capacity, and high infiltration rates, and are subject to wind erosion.

The EPL 8413 site is primarily level with a few granite hills. Geologically, the EPL area lies within the Meso-Orange terrace. The Meso-Orange terrace is parallel to the current Orange River riverbed. EPL 8413 is also located near the Orange River, which is considered an important source of diamond-bearing gravel. EPL 8413 area falls under an exclusive diamond district, located 100 km from the Diamond mining town and along the fish river where diamonds are trapped in potholes and similar depressions suites. The Orange River, the principal conduit for the transportation of diamonds from the southern African interior to the Atlantic coast, has within its lower valley two recognized suites of gravel terraces in which part of the passing diamond population has been trapped.

Both suites lie on eroded bedrock, and both are downstream thickening-and-fining coarse clastic wedges. The older and higher terrace suite, about 50m – 70m above the current river level, comprising the Arries Drift Gravel Formation, dates to the early mid-Miocene in age (19-17 Ma) and is referred to locally as the Proto-Orange terrace (**Figure 3 & 4**). The lower and younger terrace suite, about 30m – 40m above the current river level, locally known as the Meso-Orange terrace, is Plio-Pleistocene in age (5 – 2 Ma) (**Figure 3**).

Middle to Late Proterozoic bedrock, underlying both suites of terrace deposits, was deeply eroded during the incision of the Orange River which began in Late Cretaceous times. The Proto-Orange terraces, richer in diamonds than the younger Mesozoic deposits, form low-grade but large-average, diamond-size, gem-quality placers. The Meso-Orange terrace is largely parallel to the current riverbed, while the upper Proto-Orange terrace gravels are exposed on higher banks away from the river. Diamond grades vary throughout both terrace suites.

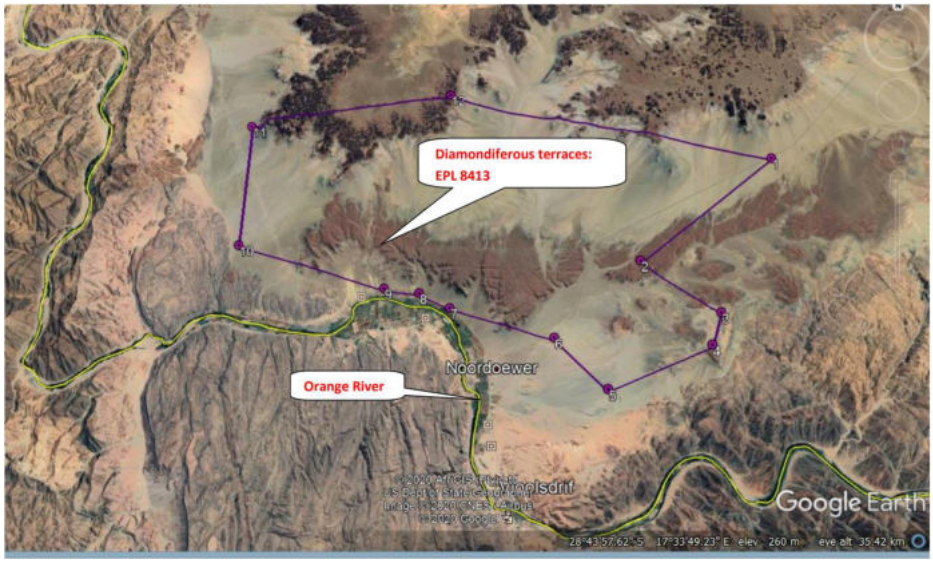

Figure 3. Diamondiferous terraces within EPL 8413 on the northern bank of the Orange River.

Figure 4. Geological features were observed during the site visit (EPL 8413).

9.1.3. Fauna and Flora

- **Fauna**

The EPL 8413 is home to a diverse range of fauna. The fauna found in this region has adapted to the arid and semi-arid conditions of the area. Some of the wildlife you may encounter in the vicinity of Noordoewer include gemsbok (*Oryx gazella*):, springbok (*Antidorcas marsupialis*), klipspringer (*Oreotragus oreotragus*), steenbok (*Raphicerus campestris*), ground squirrel (*Xerus spp*), african fish eagle (*Haliaeetus vocifer*) and the namibian rockrunner (*Achaetops*

pycnopygius). During the site visit, No big wildlife mammals were seen but small reptiles such as snakes and lizards were spotted.

- **Flora**

The project area falls within the Nama Karoo Biome. The EPL consists of the Orange River Valley and Edaphic Dry Sparse Shrublands. The Orange River Valley of Namibia is influenced by the arid and semi-arid climate of the region. Along the banks, you will find riparian vegetation consisting of plants that thrive in the riverine habitat. These plants are adapted to periodic flooding and have access to water. The vegetation near Noordoewer has adapted to survive in the arid conditions of the Orange River Valley. Plants in this region often have characteristics such as water-storing abilities, deep root systems, reduced leaf surfaces, and waxy coatings to minimize water loss. Moving further away from the river and into the semi-arid areas, the vegetation transitions to low-growing shrubs, succulents, and grasses that are adapted to the arid climate conditions. Common plants include various species of vygies (Mesembryanthemum spp.), Karoo bush Dodonaea viscosa), spekboom (*Portulacaria afra*), shepherd's tree (*Boscia albitrunca*), and other drought-tolerant species.

Based on the site visit, the most important environmental variable affecting the vegetation in this part of the country is rain. Vegetation is sparse and is mostly limited to depressions and watercourses where run-off water collects. The dominant species are xerophytes, which have a high degree of drought tolerance. The vegetation intensity is so low that it has no potential for domestic animal grazing. **Figures 5 and 6** show the vegetation cover and type, the grass as well and the landscape observed during the site visit.

(a) **(b)**

Figure 5. Landcover/landscape observed during the site visit.

(e) **(f)**

Figure 6. Vegetation cover and type observed during the site visit.

9.1.4. Water Resources: Groundwater and Surface Water

The EPL area is 10 km from the Orange River. In terms of groundwater, the EPL is entirely covered by thin soils underlain by unfractured rock bodies with little groundwater potential. The rock types in the area are poor aquifers. Due to the limited groundwater potential of the rock bodies around the EPL, it falls within a zone of low sensitivity (Vulnerability) to groundwater pollution.

Water needed for the operation phase will be obtained by water abstraction permits from nearby boreholes, off-site municipal sources, and/or any other approved water sources. For water abstraction, it is recommended for the Proponent to obtain a permit, if necessary, as required under the Water Act No. 54 of 1956 (enforced), and the Water Resources Management Act, No. 11 of 2013. A licence and agreement with the owner of the water source should be obtained if the proposal calls for the use of existing water sources.

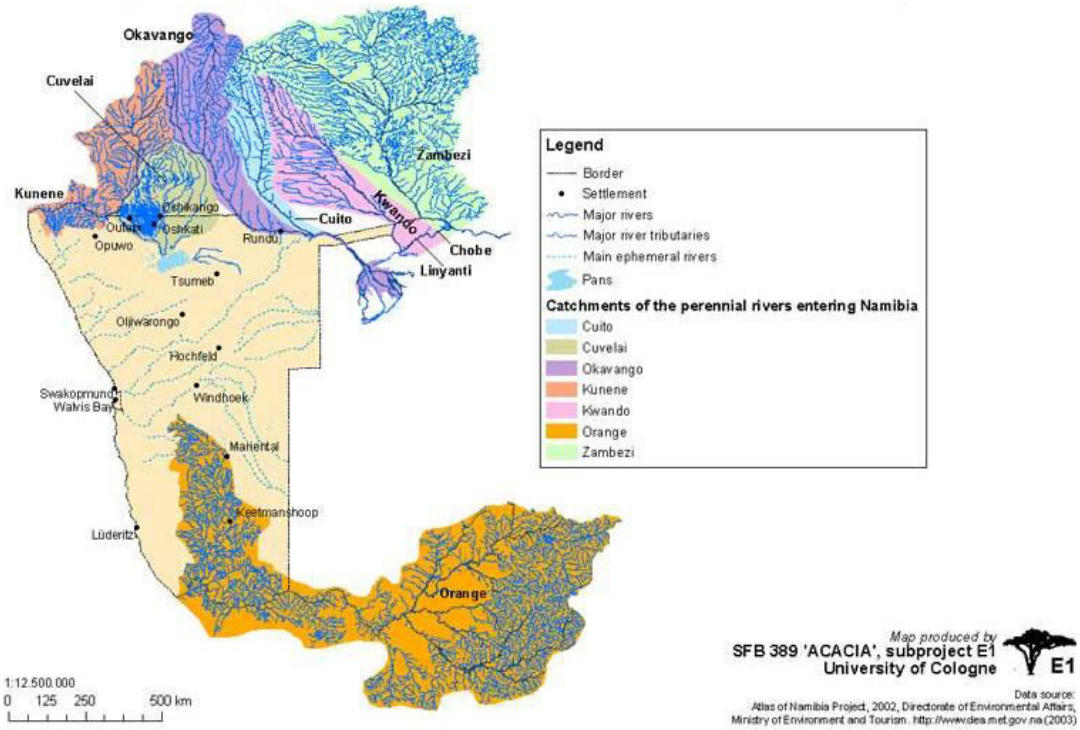

Figure 7. Hydrography of Namibia.

7.2 SOCIO-ECONOMIC SETTING

7.2.1 Socio-Economic Demographics

Noordoewer has an area of 0.611 km^2 with a population estimated at 945 in 2015 with a population density of 1,546 / km^2.

7.2.2 Land Use

- **Farming and tourism**

Noordoewer is a small town on opposite banks of the Lower Orange River (LOR), some 350 km from the river mouth. With water abundance that is used to irrigate fruit plantations as well as grape farms, Noordoewer is known for grape production and canoeing and is an important border post on a crucial transport route between South Africa and Namibia. The town is a popular stop for travellers between Windhoek and Cape Town, located exactly halfway between the two cities.

Noordoewer serves as a gateway to several tourist attractions in the region, particularly the nearby Fish River Canyon, which is one of the largest canyons in the world. Many tourists and nature enthusiasts visit Noordoewer as a base for exploring the canyon and the surrounding desert landscapes. The town also offers accommodation, camping facilities, and amenities for travellers passing through the area.

- **Services Infrastructure**

Noordoewer serves both local residents and visitors passing through the area. Retail stores, restaurants, guesthouses, petrol stations and other amenities are available in the town.

9.2. HERITAGE AND ARCHAEOLOGY

9.2.1. Local Level and Archaeological Findings

There are no nationally recognized archaeological sites recorded within the EPL. However, there is a possibility that unrecorded or undiscovered archaeological features or artefacts may be discovered during the exploration phase. In the case where an archaeological discovery is made on-site during exploration works, the procedures outlined in the National Heritage Act, No. 27 of 2004 are to be followed. Section 55 (4) of the National Heritage Act, No. 27 of 2004, requires that any archaeological or paleontological object or meteorite discovered is reported to the National Heritage Council as soon as practicable.

10. PUBLIC CONSULTATION PROCESS

Consultation is a compulsory and critical component in the EIA process, aimed at achieving transparent decision-making, and can provide many benefits. The public participation and consultation process was undertaken in accordance with the principles and requirements of section 21 of the Environmental Management Act (EMA), No. 7 of 2007 and its regulations.

In this project, the approach to the public participation process was open and participatory with the full involvement of Interested and Affected Parties (IAPs). This approach ensured that reasonable measures were taken to identify stakeholder issues and concerns.

10.1. The Methodology for Public Participation and Consultation

The public participation process commenced with a total of 4 newspaper advertisements in two widely distributed newspapers to comply with the Environmental Management Act No.7 of 2007 and its Environmental Regulations. The proposed project was advertised twice in two newspapers The New Era (on the 26th and 30th of September 2022) and the Namibian newspaper (on the 26th of September 2022 and 03 October 2022) as shown in **Appendix 1**. Known interested and affected parties were notified directly via email and cell phone calls like the Noordoewer settlement office.

The public meetings were held as follows:

Date: 16 October 2022

Meeting Venue (a): Noordoewer Settlement Office Boardroom

Time: 14h00 p.m.

Date: 17 October 2022

Meeting venue (b): Aussenkehr Community Hall

Time: 90h00 a.m.

A Background Information Document (hard copy) was compiled explaining the proposed project and was shared with the meeting attended. The PowerPoint Presentation (in hard copy) was shared with the I&APs during the public meetings.

No negative concerns were received at this stage. Should any interested and affected parties raise any concerns during the ongoing project phase, the Ministry of Environment, Forestry and Tourism (MEFT) will be immediately notified. The comments raised by the I&APs are indicated in the table below:

Table 5. Stakeholder scoping summary: major points raised.

Registered I&APs	Comments	Actions
The Principal for Noordoewer Primary School **-She raised points on behalf of the Noordoewer community**	How will the company mitigate the impacts of the project on fauna and flora?	Addressed in Chapter 8 and EMP
	Project impact on the town youth. Noordoewer high unemployment rate is a concern, therefore, the employment of local people should be a priority.	The proponent will follow all the laws and make sure locals are prioritised during the employment phase. Addressed in Chapter 8 and EMP
	The community does not want to be in the dark therefore the project should share continuously information about the project's progress with the community.	The proponent will share information with the Noordoewer settlement. as the point of contact for the local community since they have less access to newspapers and the Internet.
	The EPL boundaries are metres from Felix guesthouse and the road (C13) to Aussenkehr, Does	Addressed in Chapter 8 and EMP

	the project have an impact on Felix guesthouse and C13	
Josef Joosta (Noordoewer resident)	How will the proponent mitigate dust and blasting impacts on the town and community?	Addressed in Chapter 8 and EMP
	Will the proposed mining project abstract water from the Orange River?	Water needed for the operation phase will be obtained. by water abstraction permits from nearby boreholes, off-site municipal sources, and/or any other approved water sources. Addressed in Chapter 8 and EMP
A representative from the Noordoewer Traditional authority	The Proponent should ensure ongoing information sharing with the community.	The proponent will share information with the Noordoewer settlement. as the point of contact for the local community since they have less access to newspapers and the Internet.
	Will the project invest in the community in terms of monetary value?	The proponent will ensure to implementation of social corporate responsibility. Addressed in Chapter 8 and EMP
	How will the project address favouritism in the employment process?	The proponent will adhere to the labour laws and acts in Namibia. The proponent will also ensure a fair selection of employment procedures.

Katokora Egberth (NAFAU Organiser)	The proposed project is 10km near the town and farming projects, How will the Proponent ensure the coexistence of farming and mining?	Addressed in Chapter 8 and EMP
	The mining project should promote the capacity building of local people in mining.	The Project to invest in skill development and capacity building of its employees and the community
	The community wants the company to take seriously the corporate social responsibility to the community and the region	The proponent will ensure to implementation of social corporate responsibility. Addressed in Chapter 8 and EMP
Andreas Matias (Aussenkehr ASDC Vice Chairperson)	The project should use employment platforms that the local community has access to.	Employment process tailored for the local people who have less access to Online platforms – recruitment for un-skilled labour will be face-to-face at the settlement office. The proponent will share information with the Noordoewer settlement. as the point of contact for the local community since they have less access to newspapers and the internet.
Fenny N Matias (Aussenkehr resident)	How will the project address health, safety, and environmental issues?	Addressed in Chapter 8 and EMP

10.2. Pre-identified and Registered Interested and Affected Parties (I&APs)

Relevant and applicable national, regional, and local authorities, local leaders, and other interested members of the public were identified. Pre-identified I&APs were contacted directly, while other parties who contacted the Consultant after project advertisement notices in the newspapers, were registered as I&APs upon their request. The summary of pre-identified and registered I&APs is listed in **Table 6** below and the complete list of I&APs is provided in **Appendix 4**.

Table 6. Summary of Interested and Affected Parties (I&APs)

National I&APS
Ministry of Environment, Forestry and Tourism
Ministry of Mines and Energy
Ministry of Health and Social Services
Ministry of Land Reform
Regional, Local, and Traditional Authorities and the General Public
Noordoewer village council
Karas region councillor
Noordoewer Traditional authority
Farm owners/ Landowners /Interested members of the public

11. IMPACT IDENTIFICATION, ASSESSMENT AND MITIGATION MEASURES

11.1. Impact identification

Impact identification and evaluation involves predicting the possible environmental changes because of the development/project. The impact assessment method used for this project is in accordance with Namibia's Environmental Management Act (No. 7 of 2007) and its Regulations of 2012. The potential impacts and receptors were identified during the EPL site assessment and from the inputs from the public participation consultation.

11.2. Impact assessment methodology

The Environmental Impact Assessment (EIA) Methodology assists in evaluating the overall effect of a proposed activity on the environment. Determining of the significance of an

environmental impact on an environmental parameter is determined through a systematic analysis.

The impact assessment must consider the nature, scale, and duration of effects on the environment and whether such effects are positive (beneficial) or negative (detrimental). Each impact is also assessed according to the various project stages. Where necessary, the proposal for mitigation or optimisation of an impact should be detailed. A brief discussion of the impact and the rationale behind the assessment of its significance has also been included.

11.2.1. Rating System Used to Classify Impacts

The rating system is applied to the potential impact on the receiving environment and includes an objective evaluation of the possible impact mitigation. Impacts have been consolidated into one (1) rating. In assessing the significance of each issue, the following criteria in **Table 12** (including an allocated point system) are used.

- **EXTENT (E)**

This is defined as the area over which the impact will be expressed as described in **Table 8**. Typically, the severity and significance of an impact have different scales and as such bracketing ranges are often required. This is often useful during the detailed assessment of a project in terms of further defining the determined.

Table 7. Extend impact rating

Low (1)	Low/Medium (2)	Medium (3)	Medium/High (4)	High (5)
The impacts are localized within the site boundary: Site only	The impacts are beyond the site boundary: Local	Impacts felt within adjacent biophysical and social environments: Regional	Impacts widespreadfar beyond site boundary: Regional	Impacts extend National or international boundaries

- **DURATION (D)**

As outlined in **Table 9**, duration describes the time of the impacts on the environmental parameter. Duration indicates the lifetime of the impact because of the proposed activity.

Table 8. Impact duration rating.

Low (1)	Low/Medium (2)	Medium (3)	Medium/High (4)	High (5)
Immediate mitigating measures, immediate progress	The impacts are quickly reversible, and short-term impacts (0-5years)	Reversible over time; medium-term(5-15 years)	Impacts are long-term	Long-term; beyond closure; permanent; irreplaceable or irretrievable commitment of resources

- **INTENSITY / MAGNITUDE/SEVERITY (I / M/S)**

Describes the severity of impacts (i.e., whether the impact could alter the functionality or quality of a system permanently or temporarily). The magnitude of the change might be both positive and negative. These were also considered while determining severity. The table below displays the impact rating in terms of intensity, size, or severity (see **Table 10**).

Table 9. Intensity/Magnitude/ Severity impact rating

Type of Criteria	Negative				
	H-(10)	**M/H-(8)**	**M-(6)**	**M/L-(4)**	**L-(2)**
Qualitative	Very high deterioration, high quantity of deaths, injury of illness / total loss of habitat, total alteration of ecological processes, extinction of rare species	Substantial deterioration, death, illness or injury, loss of habitat/diversity or resource, severe alteration, or disturbance of important processes	Moderate deterioration, discomfort, partial loss of habitat/biodiversity or resource, moderate alteration	Low deterioration, slight noticeable alteration in habitat and biodiversity. Little loss in species numbers	Minor deterioration, nuisance or irritation, minor change in species/habitat/diversity or resource, no or very little quality deterioration.

- **PROBABILITY (P)**

This describes the chance of occurrence of an impact. This decision is made based on prior experience with similar projects and/or professional judgment. **Table 11** provides the impact rating in terms of likelihood of occurrence.

Table 10. Project impacts likelihood rating.

Low (1)	Medium/Low (2)	Medium (3)	Medium/High (4)	High (5)
Improbable; low likelihood; seldom. No known risk or vulnerability to natural or induced hazards.	Likely to occur from time to time. Low risk or vulnerability to natural or induced hazards	Possible, distinct possibility, frequent.Low to medium riskor vulnerability to natural or induced hazards.	Probable if mitigating measuresare not implemented. Medium risk of vulnerability to natural or induced hazards.	Definite (regardlessof preventative measures), highly continuous. High risk or vulnerability to natural or induced hazards.

- **Significance (S)**

Significance is determined through a synthesis of impact characteristics. Significance is an indication of the importance of the impact in terms of both physical extent and time scale and therefore indicates the level of mitigation required. This describes the significance of the impact on the environmental parameter. The calculation of the significance of an impact uses the following formula:

Significance = (extent + duration +magnitude/intensity) x probability

The summation of the different criteria will produce a non-weighted value. By multiplying this value with the magnitude/intensity, the resultant value acquires a weighted characteristic which can be measured and assigned a significance rating (see, **Table 12**).

When an impact has a high significance rating, mitigation steps are advised to bring it down to a low or medium importance rating, if the recommended mitigation measures can adequately control the impact with a medium significance rating. Monitoring is advised to enable the validation of the impact's significance as low or medium and under control for a period to retain a low or medium significance rating.

Table 11. Project impacts significance rating system.

Significance	Environmental Significance Points	Colour rating scale
High (positive)	>60	H
Medium (positive)	30 to 60	M
Low (positive)	1 to 30	L
Neutral	0	N

Low (negative)	-1 to -30	L
Medium (negative)	-30 to -60	M
High (negative)	-60<	H

Positive (+) – Beneficial impact

Negative (-) – Deleterious/ adverse+ Impact

Neutral – Impacts are neither beneficial nor adverse.

The assessment of the exploration phases is done for pre-mitigation and post-mitigation. The risk/impact assessment is driven by three factors:

Source: The cause or source of the contamination.

Pathway: The route taken by the source to reach a given receptor

Receptor: A person, animal, plant, ecosystem, property or a controlled water source. If contamination is to cause harm or impact, it must reach a receptor.

11.3. Assessment of Potential Impacts

This section outlines the primary negative and positive impacts that have been identified and assessed as being related to the project's operation and maintenance phase. The potential impacts and receptors were identified during the EPL site assessment and from the inputs from the public participation consultation.

11.3.1. Socio-economic Impacts

- **Social-economic issues**

The assessment has identified the following project social-economic negative:

- ❖ Increased influx of people to the area as people seek employment opportunities during the mineral exploration project's target generation and drilling phases and
- ❖ Increased informal settlement and associated problems.
- ❖ HIV/AIDS is more likely to spread when employees and contractors travel to and from the local area.

- **Social-economic benefits**

Despite the concerns mentioned above, there are many benefits to the project that will offset or nullify the concerns. These are as follows:

- **Local employment opportunities:** The project area has currently an unemployment rate, especially among youth. The project has the potential to employ 25 people, which means that the project will benefit 15 households throughout the exploration phase. The proposed project has the potential to significantly change the socioeconomic structure of the town positively and improve the livelihood of the people in and around the Noordoewer community. Currently, the residents depend mostly on grape farmers for employment.
- **Skills transfer:** Ad hoc training will be implemented by the proponent for many of its employees. Employees will receive long-term benefits from these well-structured training initiatives.
- **Stimulation of business and economic as well as local economy diversification:** The proposed project is expected to foster economic diversification in the local area, which presently primarily consists of vegetable farming, grape cultivation, and small-scale semi-precious stone mining. Moreover, the mineral exploration project will necessitate a major capital investment of at least N$ 20 million. This will be used for mapping, sampling, and drilling.
- **Data provision:** The data gathered during the exploratory stage will be made available to the public as well as the Ministry of Mines and Energy to aid in decision-making in the mining sector and for future research purposes.

The assessment of the project impact on the socio-economic aspect is of medium negative significance but with recommended mitigation measures it will be of medium positive significance as shown in **Table 13.**

Table 12. Socio-economic impact assessment rating.

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	L/M -2	M -3	M-6	M/H -5	M-55
Post mitigation	L/M -1	L/M 4	L/M -4	L/M 5	M: 45

11.3.2. Mitigation measures to minimise the negative and maximise positive socioeconomic impacts.

- For any available employment opportunities, especially for unskilled employees, the local people should be given priority.
- The proponent should seek all the required permission and agreement before carrying out any activity in the area.
- Prior announcement should be given to the town, tourism enterprise operators and farmers before activities commence.
- Establish and maintain a complainant register, to document all complaints and make efforts to address the area of concern.

11.3.3. Generation of Dust (Air quality)

The drill rig and vehicle movement will release emissions and dust that will affect the quality of the air. During this stage, dust may be produced, and it may become worse in the winter when there are strong winds. The moving vehicles in the area will produce dust. dust from fallout accumulating on plants. The air quality in the vicinity may occasionally be interfered with by dust from site access roads when supplies (water) and exploration equipment are transported to and from the site. Even though not as much, the movements of heavy vehicles like trucks may produce dust.

The hot and dry environment, hard and sandy nature of the substrate and low vegetation cover cause ambient fugitive dust levels. Additionally, activities carried out as part of the exploration works such as drilling would contribute to the dust levels in the air.

Despite the best attempts to control dust, there are areas in any mining operation where there are elevated dust concentrations. Dust from construction activities is the primary type of air pollution anticipated. Dust emanating from site access routes when transporting exploration equipment and supplies to and from the site may compromise the air quality in the area. Vehicular movements from heavy vehicles such as trucks would potentially create dust, even if it is not anticipated to be low. Additionally, activities conducted as part of the exploration works such as drilling would contribute to the dust levels in the air. The medium significance of this impact can be reduced to a low significance rating by properly implementing mitigation measures. The impact is assessed in **Table 14.**

Table 13. Impacts rating of the project impacts on air quality

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M -3	M -2	M/L-4	M/H 4	M: -36
Post mitigation	L - 2	L - 1	L- 2	L - 2	L - 10

11.3.4. Mitigation measures to minimise impacts on air quality.

- Exploration vehicles should not drive at a speed of more than 40 km/h to avoid dust generation around the area.
- The Proponent should ensure that the exploration schedule is limited to the given number of hours and days of the week. This will keep the vehicle-related dust level minimal in the area.
- When and if the project reaches the advanced stages of exploration producing high dust levels, a reasonable amount of water should be used on gravel roads, using regular water sprays on gravel routes and near exploration sites to suppress the dust that may be emanating from certain exploration areas on the EPL.

- ❖ Temporarily ceasing operations if weather conditions are such that the risks of significant releases of airborne particulate matter are unacceptably high.

11.3.5. Impacts on Biodiversity and Land

- **Fauna and Flora**

Exploration activity, particularly during site clearance and excavation activities, may result in the removal of the extremely limited vegetation on site because of the need to construct camps, access trails and roads, and survey cut lines.

During the Planning and Construction phase, mine projects (and their associated infrastructure) can cause fragmentation, degradation, or destruction of ecosystems and habitats by the clearance of vegetation and removal of topsoil. Dust blow from newly exposed substrate can lead to pollution and increased sediment levels in downstream water bodies like the Orange River. Construction activities will create noise, traffic, conveyors, fences, and powerlines which function as disturbances to wildlife and potential barriers to its movement.

The direct impact of exploration works on flora will occur through clearing for exploration access routes and associated infrastructure. The dust emissions from drilling may also affect surrounding vegetation through the fall of dust, if excessive. Loss of some vegetation is an inevitable consequence of the development. However, given the lower abundance of shrubs and site-specific areas of exploration on the EPL, the impact will be localized and, therefore manageable. The vegetation is classified as desert and Succulent Steppe. Vegetation is sparse and is mostly limited to depressions and watercourses where run-off water collects. The dominant species are xerophytes, which have a high degree of drought tolerance. The vegetation intensity is so low that it has no potential for domestic animal grazing.

Exploration sites must be rehabilitated to prevent loss of biodiversity, and damage to land and habitat and protect wildlife as well as livestock. If the mitigation measures are implemented, as per the assessment, the impact will be of low significance.

- **Land degradation**

The EPL is characterized by extensive mountains, hills and rock outcrops, and severely dissected terrain resulting from run-off rainwater. In some parts, hills and/or mountains separate the plain from the river. Digging landscapes for extraction destroys the land's physical properties at the mining site. The removal of soil layers and unearthing of soil in open pits destabilize the ground and may cause subsidence and soil erosion especially since the project area has dissected terrain resulting from run-off rainwater that forms gulleys flowing the direction of the Orange River.

Under the status, the impact can be of a medium significance rating. With the implementation of appropriate mitigation measures, the rating will be reduced to a low significance rating. The impact is assessed in **Table 15.**

Table 14. Biodiversity and land impacts assessment rating.

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M -3	M -3	M-6	M/H 4	M-48
Post mitigation	L/M -2	L/M -2	L/M-4	L/M 3	L -24

11.3.6. Mitigation measures to minimize the loss of biodiversity and land degradation.

- The Proponent should avoid unnecessary removal of vegetation, to promote a balance between biodiversity and their operations.
- Vegetation found on the site, but not in the targeted exploration site areas should not be removed but left to preserve biodiversity on the site.
- Shrubs or trees found along trenching, drilling, or sampling spots on sites must not be unnecessarily removed.
- Protected and threatened plants along trenching, drilling, or sampling spots on sites should not be unnecessarily removed.
- Movement of vehicles and machinery should be restricted to existing roads and tracks to prevent unnecessary damage to the vegetation.
- Design access roads appropriately in a manner that disturbs minimal land areas as much as possible.
- Vegetation clearing to be kept to a minimum. The vegetation of the site is largely low and open and therefore vegetation clearing should only be applied where necessary and within the EPL footprint.
- Formulate and implement suitable and appropriate operational management guidelines for the cleared areas. Incorporated in the guidelines are progressive rehabilitation measures.
- Workers must refrain from disturbing, killing, or stealing farm animals and killing small soil and rock outcrop species found on sites.
- Poaching (illegal hunting) of wildlife from the area is strictly prohibited.
- Workers must refrain from driving off-road and creating unnecessary tracks that may contribute to land degradation.
- Environmental awareness of the importance of biodiversity preservation should be provided to the workers.

11.3.7. Landscape and visual/aesthetic

The visual baseline identifies the settlements within this 5km radius study area as these settlements are the location of most of the potential residential visual receptors. These visual receptors include the residents of Noordoewer, Felix guesthouse, grape farmers, and road users of C13 where topography and land cover allow outward views towards the development site.

The main visual impact will be due to the presence of the project facilities, lighting, and equipment. The project area will potentially be visible in visual receptors' views from at least some parts of the settlements and roads. In some parts of the area, the topography of the mineral exploration site is slightly elevated. It can be concluded from the above analysis that the potential daytime visual impact for the visual receptors located at or close to the project site will be low to moderate.

During the operational period, several mitigation and restoration measures will be implemented. The rating will be lowered to a lower significance after the mitigation measures have been put in place. The influence is evaluated in **Table 16.**

Table 15. Project impacts rating on visual.

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M -3	M -3	M-5	M/H 5	M -55
Post mitigation	L/M -2	L/M -2	L/M -4	L/M 3	L-24

11.3.8. Mitigation measures to minimise the possibility of disturbance and loss of grazing area.

- The project site must be located 10km away from the Felix guesthouse and the road (C13) to mitigate the visual impacts.
- The project site should be located behind a mountain to reduce visual to the town and road.
- Upon choosing the design and specifications of lighting, technical designers and/or construction engineers should be aware of requirements to minimize light pollution beyond the perimeter of the project. Once the lighting is installed and is being tested, new measurements should be made in the sensitive locations.

11.3.9. Water Resource Use

Water resources are impacted by project developments/activities in two ways: through pollution (water quality) or over-abstraction (water quantity), or both. The extraction of more water than can be restored from low groundwater potential locations would have a severe impact on the local communities (communal and commercial farmers and livestock) that rely on the same low potential groundwater resource (aquifer).

The effect of project activities on water resources would be determined by the amount of water required by each project activity. Water is used extensively in exploration activities, particularly drilling. Reverse Circulation drilling will be used for this project's exploration efforts because it uses less water than diamond drilling. The amount of water required for exploration will not exceed 7000 litres per month. This water will be used for drilling, as well as equipment cooling and cleaning, drinking, and other domestic functions.

Given the low to moderate groundwater potential of some project site areas, the proponent may think about transporting some of the water volumes from outside the area and storing them in commercially acceptable water reservoirs/tanks on the site. The duration of the exploratory

activity and the number of exploration boreholes necessary to provide a reliable interpretation of the commodities investigated would determine the exact amounts of water needed for the projected operations. Because the exploration time is temporally limited, the impact will only persist for the duration of the exploration activities and will end once they are completed. Without any mitigating measures, the impact is assessed as medium, but with effective implementation of the proposed actions, the impact importance falls from medium to low, as shown in **Table 17**.

Table 16. Impact assessment for project water utilization.

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M - 3	M/H - 3	L/M - 4	M/H - 4	M - 40
Post mitigation	L/M - 1	L/M - 1	L - 2	L/M - 3	L - 12

11.3.10. Mitigation measures to moderate impacts on water sources

- Drinking water abstracted from boreholes or supplied by carting should be used efficiently, and recycling and re-using of water on certain site activities should be encouraged, where necessary and possible.
- The Proponent should consider carting water for drilling from elsewhere if the existing boreholes are not sustainable. Agreements on water supply should be made between the farmers/landowners and the Proponent.
- Water reuse/recycling methods must be implemented as far as practicable, e.g., the water used to cool off exploration equipment may be captured and used for the cleaning of project equipment, if possible.
- Water storage tanks must be inspected daily to ensure that there is no leakage.
- Water conservation awareness and saving measures training should be provided to all the project workers in both phases so that they understand the importance of conserving water and therefore be held accountable.

11.3.11. Soil and water source contamination

The proposed exploration activities are associated with a variety of potential pollution sources (i.e., lubricants, fuel, and wastewater) that may contaminate/pollute soils, and eventually, groundwater and surface water. The anticipated potential source of pollution to water resources from the project activities would be hydrocarbons (oil) from project vehicles, machinery, and equipment as well as potential wastewater/effluent from exploration-related activities. Consequently, water pollution may adversely affect domestic water supply.

Mobile plants and equipment on-site refuelling may lead to contamination of land and waterways. Damage to EA flood structures. Thus, no refuelling of mobile plants will be undertaken within 30m of waterways.

The spills (depending on volumes spilled on the soils) from machinery, vehicles, and equipment could infiltrate into the ground and pollute the fractured or faulted aquifers on site, and with time reach further groundwater systems in the area. However, it should be noted that the scale and extent/footprint of the activities where potential sources of pollution will be managed is small. Therefore, the impact will be moderately low.

Pre-mitigation measure implementation, the impact significance is low to moderate and upon implementation, the significance will be reduced to low. The impact is assessed in **Table 18** below.

Table 17. Impact rating of the project on soil and water pollution

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M - 3	M/H - 3	M - 6	M - 4	M - 48
Post mitigation	L - 2	M - 3	L - 3	L/M - 3	L - 24

11.3.12. Mitigation measures for soil and water sources pollution

- All personnel will conduct simple visual checks on watercourses, any evidence of pollution or contaminants will be reported to management for investigation.
- When not in use, all materials and equipment will be stored a minimum of 10m from any watercourse to avoid contamination of water and adjacent land.
- Spill kits will be available on-site and the workforce will have training in the use of the equipment. The Persons responsible for handling and re-fueling machinery and plant should always have spill kits available.
- All mobile plant will be fitted with either an external or internal drip tray to avoid Contamination of land and watercourses.
- The Proponent should ensure that the emergency response procedures are briefed during site inductions, toolbox talks, and specific briefings to the project workers.
- In the case of a spill, locations of spill kits should be identified by posters and signage.
- The oil storage and use locations should be visually inspected for container or tank condition and spills.
- Polluted soil must be removed immediately and put in a designated waste type container for later disposal or treatment.
- Washing of equipment contaminated by hydrocarbons, as well as the washing and servicing of vehicles should take place at a dedicated area, where contaminants are prevented from contaminating soil or water resources.

11.3.13. Waste generation and disposal

During the prospecting and exploration stage, domestic and general waste will be produced on-site. If the generated waste is not disposed of responsibly, land pollution may occur on the EPL or around the sites. Improper handling, storage, and disposal of hydrocarbon products and

hazardous materials at the site may lead to soil and groundwater contamination, in case of spills and leakages. Therefore, the exploration programme needs to have appropriate waste management for the site. As a waste producer, the proponent must ensure that waste is stored, transported, and treated or disposed of in a way that does not damage the environment or harm human health.

Waste is hazardous if it displays one of 15 hazardous properties. These relate to chemical and physic-chemical hazards like toxicity and flammability. All asbestos waste is classified as hazardous. To prevent any hazardous waste that may have an impact on the animals, vegetation, water resources, and the general environment should be managed cautiously.

The EPL is in an area of moderate sensitivity to pollution. Without any mitigation measures, the general impact of waste generation has a medium significance. The impact will be reduced to low significance, upon implementing the mitigation measures. The assessment of this impact is given in **Table 19.**

Table 18. Waste generation impact rating.

MitigationStatus	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	L/M - 2	L/M - 2	M - 6	M - 5	M – 50
Post mitigation	L - 1	L - 1	L - 3	L/M - 2	L - 10

11.3.14. Mitigation measures and recommendations for domestic, general, and hazardous waste management and disposal.

- General waste produced should be stored safely on site so it cannot escape until such that time it will be transported to designated waste sites.
- Check waste storage areas on your premises to ensure that bins are not overfilled and are properly covered.
- Waste storage areas should be sited a minimum of 10m from any surface drain or watercourse where practicable.
- No waste must be buried o burned on site or anywhere else.
- The Proponent should check regularly to see that the waste is being taken to waste sites with an appropriate environmental permit.
- The proponent should investigate opportunities to reduce, reuse and recycle before settling for landfill/ waste sites where practicable.
- The Proponent should raise awareness and educate workers on the principles of waste management which can be communicated to all personnel by site induction and subsequent toolbox talks and briefings.
- Hazardous waste must not be mixed with non-hazardous waste thus the proponent should ensure that there are disposal skips for general waste and hazardous waste with clear labels in local and English language.
- Hazardous waste should.be contained in sealable containers, where practicable
- Biodegradable and non-biodegradable wastes must be stored in separate containers and collected regularly for disposal at a recognized landfill/dump site.

- ❖ Sewage waste must be stored and disposed of as per the facility's manufacturer's instructions.
- ❖ Oil spills should be taken care of by removing and treating soils affected by the spill.
- ❖ A penalty system for irresponsible disposal of waste on site and anywhere in the area should be implemented.
- ❖ Potential contaminants such as hydrocarbons and wastewater should be contained on site and disposed of per municipal wastewater discharge standards so that they do not contaminate surrounding soils and eventually groundwater.
- ❖ An emergency plan should be available for major/minor spills at the site during operation activities (with consideration of air, groundwater, soil, and surface water) and during the transportation of the product(s) to the sites.
- ❖ In circumstances where the nature of the waste is unknown, chemical analysis will be undertaken. The analysis will be used to identify the waste type.

11.3.15. Occupational health and safety risks

Project workers involved in the exploration activities may be exposed to health and safety risks. These may result from accidental injury, owing to either minor (i.e., superficial physical injury) or major (i.e., involving heavy machinery or vehicles) accidents. The site safety of all personnel is the Proponent's responsibility and should be adhered to as per the requirements of the Labour Act (No. 11 of 2007) and the Public Health Act (No. 36 of 1919). The heavy vehicle, equipment, and fuel storage area should be properly secured to prevent any harm or injury to the project workers or local animals.

The use of heavy equipment, especially during drilling, and the presence of hydrocarbons on sites may result in accidental fire outbreaks, which could pose a safety risk to the project personnel, equipment, and vehicles. It may also lead to widespread veld fires if an outbreak is not contained and if machinery and equipment are not safely stored, the safety risk may be a concern for project workers and residents.

The impact is probable and has a medium significance rating. However, with adequate mitigation measures, the impact rating will be reduced to low. This impact is assessed in **Table 20.**

Table 19. Impact rating of the project on health.

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M - 3	M/L - 2	M/L - 4	M/H - 4	M – 44
Post mitigation	L/M - 2	L/M - 2	L - 2	L/M - 2	L - 12

11.3.16. Mitigation measures to minimise risks and hazards.

- ❖ Health and Safety Regulations stipulated in the Labour Act should be adhered to.

- ❖ The Proponent must commit to and make provision for medical check-ups for all the workers at the site to monitor the impact of project-related activities on the workers.
- ❖ As part of their induction, the project workers must be provided with awareness training on the risks of mishandling equipment and materials on-site as well as health and safety risks associated with their respective jobs.
- ❖ When working on site, employees must be properly equipped with adequate personal protective equipment (PPE) such as coveralls, gloves, safety boots, earplugs, dust masks, safety glasses, and hard hats.
- ❖ Heavy vehicles, equipment and fuel storage sites should be properly secured, and appropriate warning signage placed where visible.
- ❖ Drilled boreholes that will no longer be in use or to be used later after being drilled must be properly marked for visibility and capped/closed off.
- ❖ Ensure that after completion of exploration holes and trenches, drill cuttings are put back into the hole the holes filled and levelled, and trenches backfilled respectively.
- ❖ An emergency preparedness plan must be compiled, and all personnel appropriately trained.
- ❖ Workers must not be allowed to consume any intoxicants before and during working hours and must not be allowed on site when under the influence of any intoxicants as this may lead to mishandling of equipment which results in injuries and other health and safety risks.
- ❖ The site areas that are considered temporary risks should be equipped with cautionary signs.

11.3.17. Impact on roads, Vehicle traffic use and safety

The project area is connected to other towns like Aussenker, Karasburg, Grunau, and Keetmanshop by the district roads (C13, C10, and B1), which also serve as the primary routes for all vehicular traffic in the area. Because the project will require the delivery of goods and services on-site, including but not limited to water, waste removal, the purchase of exploration machinery and equipment, and others, traffic volume on these district roads will increase during the exploration phase.

Trucks, as well as medium- and small-sized cars, will make frequent trips to and from the EPL's exploration sites, contingent upon the project's requirements. The amount of heavy, slowly moving traffic on these roads might rise as a result. Traffic volume will therefore increase on these roads during exploration as the project would need a delivery of supplies and services on site (especially the C13 and B1 roads). The B1 road users are mostly travelling to Noordoewer and neighbouring country South Africa via Vioolsdrif.

The users of the C13 road are tourists, residents, and farmers travelling between Aussenkehr and Noordower, who would be the ones most affected.

Exploration projects are usually associated with the movements of heavy trucks and equipment or machinery that use local roads. Heavy trucks travelling on local roads exert more pressure

on the roads and heavy vehicles may make the roads difficult to use. This will be a concern if maintenance and care are not taken during the exploration phase. However, during exploration, the heavy trucks related to the exploration will only be used a restricted number of times per month to transport supplies and machinery to and from the site.

Therefore, the risk is anticipated to be short-term, not frequent, and therefore of medium significance. Pre-mitigation, the impact can be rated medium and with the implementation of mitigation measures, the significance will be low illustrated in **Table 21.**

Table 20. Impact rating on-road use and vehicle use safety.

MitigationStatus	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M - 4	M/H - 3	L/M - 4	M/H - 4	M - 44
Post mitigation	L/M - 3	L/M - 2	L - 2	L/M - 2	L - 14

11.3.18. Mitigations and recommendations to minimise impacts on roads and vehicle use safety.

- Transportation of exploration materials, equipment and machinery must be limited, to reduce pressure on local roads. Where practical, deliveries should be consolidated to minimise the number of road trips.
- Heavy truck loads must comply with the maximum allowed speed limit for respective vehicles while transporting materials and equipment/machinery on the public and access roads.
- The potential carting of water to the site must be done minimally, in containers that can supply and store water for relatively long periods, to reduce the number of water-carting trucks on the road.
- Drivers of all project vehicles must have valid and appropriate driving licenses and adhere to the road safety rules. The drivers must drive at 40km per hour or less and be on the lookout for residents and wildlife.
- The Proponent must ensure that the site access roads are well equipped with temporary road signs to cater for vehicles travelling to and from the site throughout the project cycle.
- Vehicle drivers must only make use of designated site access roads provided, and as agreed.
- Ensure Project vehicles are well maintained, and drivers do not operate vehicles while under the influence of alcohol to avoid accidents.
- To control traffic movement on site, deliveries from and to the site must be carefully scheduled. This would ideally be during weekdays and between the hours of 8 am and 5 pm.
- The site access road(s) must be upgraded to an acceptable standard to be able to accommodate project-related vehicles as well as farm vehicles.

- The Proponent should ensure that the C13 gravel road from Noordoewer to the EPL site is maintained regularly to ensure that the road is in good condition for local road users.

11.3.19. Noise and vibration

The noise generated by prospecting and exploration activities, particularly drilling, can cause disturbance to the nearby communities (Noordoewer town, Felix guesthouse, grape farmers, and road users of C13 and B1). Workers at a site may be exposed to health risks due to excessive noise and vibrations. The impact likelihood is low because the medium-sized exploration equipment used for drilling on-site ensures that noise levels will remain within the site. The impact has a medium significance rating in the absence of any mitigation.

To change the impact significance from the pre-mitigation significance to a low rating, mitigation measures should be implemented. This impact is assessed in **Table 22**.

Table 21. Noise and vibration generation impact rating.

MitigationStatus	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	L/M - 2	L/M - 2	M - 6	M/H - 3	M – 30
Post mitigation	L - 1	L/M - 1	L - 2	L/M -2	L - 8

11.3.20. Mitigation and recommendation to minimise noise.

- During the target generation phase, vehicles will also produce noise. To ensure that nocturnal animals can move around freely at night, it is advised that vehicle movement be restricted to regular daytime hours.
- Noise from operation vehicles and equipment on site should be kept at acceptable levels where practicable.
- Local residents are to be informed before commencement should particularly noisy activities, be undertaken.
- All reasonable and practical measures will be taken to reduce the generation and transmission of vibration caused by plant or equipment or work activities.
- Normal working hours should be 08h00 to 17h00 Mon to Thursday, 08h00 to 14h00 Friday. No work will be undertaken on a Saturday or Sunday without prior authorisation/notification or at the hours agreed upon by the Proponent and landowners, to avoid noise and vibrations generated by exploration equipment and the movement of vehicles at unfavourable hours.
- Hearing protection equipment will be made available to site operatives and visitors during these operations to reduce exposure to excessive noise.
- Mandatory signage should be displayed to the noise effected areas.

11.3.21. Disturbance to archaeological and heritage sites /resources

Even though there are currently no known archaeological sites in the project area, all necessary steps will be taken the moment any new sites are found. The National Heritage Act (2004) protects all archaeological remains, which means they can't be removed, disturbed, or destroyed. The Act mandates that the Heritage Council Windhoek be notified of any archaeological discoveries.

The Karas Region is sensitive and home to archaeologically and culturally significant sites, according to the specialist archaeological assessment that was done. If archaeological and/or cultural materials are discovered during exploration, the sensitive nature of the materials requires that the areas be marked out, with coordinates established to create "No-Go-Areas," and then documented. They can be safeguarded by creating buffer zones to prevent exploration activities from taking place close to these designated areas, or by fencing them off or demarcating them for preservation purposes. Therefore, this impact can be rated as low significance. Upon implementation of the necessary measures, the impact significance will be reduced to a lower rating. The impact is assessed in **Table 23.**

Table 22. Impact rating for disturbance of archaeological and heritage sites.

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M - 1	M/H - 4	M/L - 3	M/L - 2	L – 16
Post mitigation	L - 1	L/M - 1	L - 2	L - 1	L - 4

11.3.22. Mitigation measures to avoid and minimise distraction to archaeological and heritage sites.

- The Proponent and Contractors must adhere to the provisions of Section 55 of the National Heritage Act in the event significant heritage and cultural features are discovered while conducting exploration works.
- On-site workers and contractor crews must be trained to exercise and recognize chance finds heritage in the course of their work.
- During the prospecting and exploration works, it is important to take note and recognize any significant material being unearthed and make the correct judgment on which actions are to be taken.
- The footprint of the impact of the activities on site must be kept to a minimum, to limit the possibility of encountering chance finds within the EPL boundaries.
- There must be controlled movement of the contractor, exploration crews, equipment, and all parties involved in the exploration activities, to limit the creation of informal pathways, gully erosion and disturbance to surface and sub-surface artifacts such as stone tools and other buried materials etc.

11.3.23. Security, Safety, and social nuisance

Small tools and equipment will be used on-site during mapping and sampling. This increases the likelihood of injuries, and the responsible manager must ensure that all staff members are informed about the potential risks of injuries on the job. The manager should also ensure that adequate emergency facilities, including first aid kits, are available on site. All Health and Safety standards outlined in the Labour Act must be followed.

If a camp is required later, it should be built in such a way that it does not endanger the community members or the wildlife that roams the area. The presence of some non-resident workers may lead to social annoyance to the local community. This could particularly be a concern if they enter or damage local private property, especially grape farmers, guest houses and other private properties.

The impact is rated as of medium significance. However, upon mitigation (post-mitigation), the significance will change from a medium to a low rating. The impact is assessed as illustrated in **Table 24.**

Table 23. Impact assessment for social nuisance and safety risks.

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M - 2	M - 3	M - 4	M/H - 3	M – 27
Post mitigation	L - 1	L - 1	M/L - 4	M/L -2	L - 12

11.3.24. Mitigation and recommendation to reduce safety risks and social nuisance.

- Site security may be required, and the site is to be secured with padlocks at the end of each shift.
- Intrusion and vandalism of private property is strictly prohibited.
- Any workers or site employees found guilty of intruding on private property should be dealt with as per their employer (Proponent) code of employment conduct.
- The project workers should be advised to respect the community and local private property, values, and norms.

11.4. Cumulative impacts

According to the European Environment Agency, cumulative impacts are (positive or negative, direct, and indirect, and long-term and short-term consequences) resulting from a variety of activities taking place throughout a region, where every impact may not be significant when considered separately. The three degrees of cumulative impacts that are taken into account are localised cumulative impacts specific to the project location, regional cumulative impacts, and global cumulative impacts.

Cumulative impacts assessment is crucial to monitor and assess cumulative impacts to address the impacts of interactions among activities and the accumulation of impacts over time. The type of mining activity, the distance between mines, the scope of other contributing activities, and the characteristics of the local natural, social, and economic surroundings can all have a significant impact on the nature and scale of cumulative impacts.

According to Franks et al., 2009, Cumulative impacts, or the cumulative, incremental, and combined impacts (both positive and negative) of activity on society, the economy, and the environment, can place significant strain on social, economic, and environmental capital and render traditional mine-by-mine management approaches ineffective. Cumulative impacts can be what is most important to environments, communities and economies surrounded by multiple mining operations because cumulative impacts are what they experience.

The proposed project is close to an active exploration mining owned by Haib Minerals (Pty) Ltd as shown in **Figure 8** below.

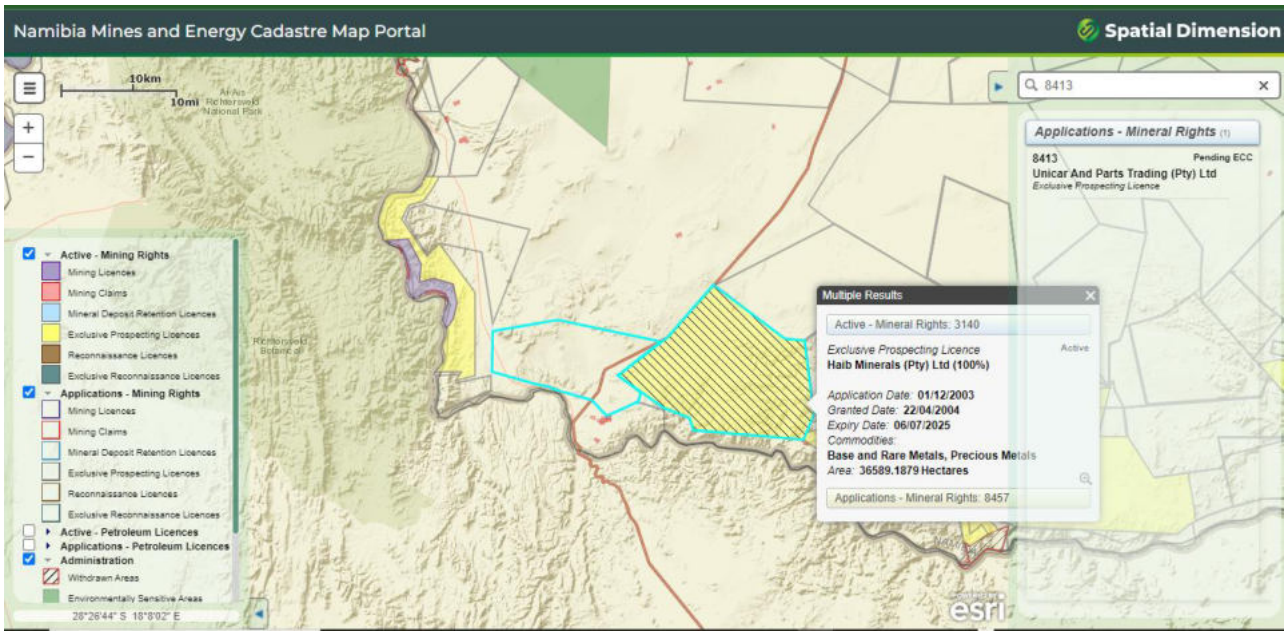

Figure 8. Haib Minerals (Pty) Ltd is an active EPL (8457) near the proposed project.

Like many other exploration projects, some cumulative impacts to which the proposed project and associated activities potentially contribute, are the:

- **Noise and air pollution**

Cumulative impacts of shovelling, ripping, drilling, blasting, transport, crushing, grinding, and stockpiling can significantly affect wildlife and nearby residents. Shocks and vibrations because of blasting in connection with mining can lead to noise, dust, and collapse of structures in surrounding inhabited areas. The animal life, on which the local population may depend, might also be disturbed.

Cumulative air quality impacts may result from increased dust generation and emissions from the nearest mining operations in the localised area. The occurrence of upset conditions will be

minimised by ensuring that adequate dust suppression measures are always maintained. Adoption of a combination of engineering controls, dust suppression measures, rehabilitation of exposed surfaces, operational procedures, and measurement of ambient air quality is expected to result in adequate management of dust emissions from the project, and the cumulative impacts of these emissions.

- **Impact on roads**

The proposed exploration activity contributes to a variety of activities, including farming activities, tourism-related travel, and local everyday routines. Given the short time and spatial breadth of the envisaged mineral exploration activities, the proposed project's contribution to this cumulative impact is not considered substantial.

- **Impacts on groundwater resources.**

The cumulative impacts may arise from water use as the area is in a semi-arid area. Even though this project's contribution will be minor, mitigation actions to reduce water use during exploration are important.

- **Social impacts**

There was strong community concern noted through consultation about the potential cumulative impacts of the growth of the mining industry in the project area and, to a lesser extent, the region. While the project will bring with it several direct impacts (both positive and negative) in isolation it is unlikely to have a significant impact on the local or regional communities. However, when combined with other growth projects the expansion of mining operations by other proponents and the general increase in focus on the mining industry in general, the impacts become more significant. The local community in the proposed EPL and surrounds is currently facing several issues including:

- ❖ Housing shortages and affordability
- ❖ Skill shortages
- ❖ Livestock theft and wildlife poaching

While these issues will be exacerbated by the project, it is considered that they are manageable.

11.5. Recommendation and mitigation: Closure and Rehabilitation

Mine closure is an integral part of the mining cycle. The proponent should have a mining closure and rehabilitation plan before the mining operation. The mine site should be rehabilitated and stabilized so it is suitable for sustainable land use that is compatible with the surroundings. The Rehabilitation activities should include the following:

- ❖ Decommissioning the mine, providing surface drainage and erosion protection across the entire site, establishing self-sustaining vegetative cover, meeting water quality standards, and minimizing post-closure maintenance requirements.
- ❖ Structures pit slopes, underground openings etc. must be stable and not move to eliminate any hazard to public health and safety or material erosion to the terrestrial or

aquatic receiving environment at harmful concentrations. Engineered structures must not deteriorate and fail.

- ❖ The closed mine site should be rehabilitated to pre-mining conditions or conditions that are compatible with the surrounding lands or achieve an agreed alternative productive land use. Generally, this requires the land to be aesthetically like the surroundings and capable of supporting a self-sustaining ecosystem typical of the area.
- ❖ Minerals and other contaminants must be stable, that is, must not leach and/or migrate into the receiving environment at harmful concentrations. Surface waters and groundwater must be protected against adverse environmental impacts resulting from mining and processing activities.

12. RECOMMENDATION AND CONCLUSION

Based on the findings of the Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) conducted for the proposed exploration activities of base and rare metals, dimension stones, and precious metals, this report presents the recommendation and conclusion for obtaining an Environmental Clearance Certificate from the competent authority. The competent authority will carefully evaluate the projected impacts and the necessary management actions to prevent, minimize, or mitigate any adverse effects while maximizing the benefits of the proposed project.

The environmental assessment process has determined that the potential social and environmental impacts resulting from the proposed exploration activities are not significant. However, through further analysis, it has been identified that certain impacts may arise, including but not limited to employment creation, economic growth, minor waste management, minimal fugitive sand and fine dust emissions, disturbance to biodiversity, and the surrounding community. By implementing best practices and employing mitigation measures, these impacts can be effectively avoided or reduced to the greatest extent reasonably practicable. Moreover, these effects are expected to be localized, short-term, and not considered significant to the overall social and environmental well-being.

Considering these findings, it is believed that an environmental clearance certificate should be granted, subject to the condition that the proponent strictly adheres to the management principles and mitigation measures outlined in the EMP and EIA. By doing so, the project will operate in a manner that ensures the protection and preservation of the environment and minimizes potential social disruptions.

13. BIBLIOGRAPHY

- Institute for Health Metrics and Evaluation (IHME) 2016. Namibia- State of the nation's health: Findings from the global burden of disease. Seattle: IHME.
- IUCN (2022). The IUCN Red List of Threatened Species. [online] IUCN Red List of Threatened Species. Available at: https://www.iucnredlist.org/.
- Mannheimer, C., & Curtis, B. (eds) (2009). Le Roux and Müller's field guide to the trees & shrubs of Namibia. Windhoek: Macmillan Education Namibia.
- Mendelsohn, J., Jarvis, A., Roberts, C., & Robertson, T. (2002). Atlas of Namibia. A portrait of the land and its people. Cape Town: David Philip Publishers.
- Mendelson, J., Jarvin, A., Robertson, T. and Roberts, C. (2002). Atlas of Namibia: A Portrait of the Land and Its People. Cape Town: David Philip Publishers.
- Nambinga, V., & Mubita, L. (2021). The Impact of the Mining sector on the Namibia economy.
- Namibia Statistics Agency (NSA). (2011). Namibia 2011: Population & Housing Census Main Report. Windhoek: NSA.