

ENVIRONMENTAL SCOPING ASSESSMENT (ESA)

The Proposed Exploration on Exclusive Prospecting License (EPL) No. 8289 Located south-east of Arandis, Erongo Region

ENVIRONMENTAL ASSESSMENT REPORT: FINAL REPORT

APP: 0697

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EXECUTIVE SUMMARY

Zoya minerals CC (The Proponent) intends to conduct prospective and exploration activities on the Exclusive Prospecting Licence (EPL) No. 8289 located south-east of Arandis in Erongo Region. An application was lodged on the 31st of July 2020. However, the approval and granting of the EPL is subject to an Environmental Clearance Certificate (ECC), thus the “pending ECC” status on the mining cadastre portal. EPL 8289 is located about 18.8km south-east of Arandis town (**Figure 1**), and covers a surface area of 4 462.0944 ha. The targeted commodities of the EPL include: **Base and Rare Metals, Industrial Minerals, Precious Metals, Nuclear Fuel Minerals and Dimension Stones.**

Prospecting, and exploration related activities are among listed activities that may not be undertaken without an ECC under the Environmental Impact Assessment (EIA) Regulations. Subsequently, to ensure that the proposed activity is compliant with the national environmental legislation, the project Proponent, appointed an independent environmental consultant, Excel Dynamic Solutions (Pty) Ltd to undertake the required Environmental Assessment (EA) process and apply for the ECC on their behalf.

The application for the ECC was compiled and submitted to the competent authority (Ministry of Environment, Forestry and Tourism (MEFT)) as the environmental custodian for project registration purposes. Upon submission of an Environmental Scoping Assessment (ESA) Report and Draft Environmental Management Plan (EMP), an ECC for the proposed project will be considered by the Environmental Commissioner at the MEFT’s Department of Environmental Affairs and Forestry (DEAF).

Brief Project Description

Planned Activities: Proposed Exploration Methods

The Proponent intends to adopt a systematic prospecting and exploration approach of the following:

1. Non-invasive Technique:

- **Desktop Study: Geological mapping:** This includes the review of geological maps of the area and on-site ground traverses and observations and an update where relevant, of the information obtained during previous geological studies of the area.

- **Lithology geochemical surveys:** Rock and soil samples may be collected and taken for analytical chemistry laboratories to determine the Nuclear Fuel Minerals content. Soil samples consist of small pits ($\pm 20\text{cm} \times 20\text{cm} \times 30\text{cm}$) where 1kg samples can be extracted and sieved to collect 50g of material for submission to a laboratory.
- **Geophysical surveys:** This will entail data collection of the substrata (in most cases service of a ground geophysical contractor will be sourced), using sensors such as radar, magnetic and electromagnetic techniques to detect buried mineralization. Ground geophysical surveys be conducted by geophysical technicians with handheld instruments.

2. Invasive Technique

- **Detailed Exploration Drilling:** Should the soil and/or the geophysical results be positive, holes will be drilled and drill samples will be collected for further analysis. This will determine the grade and volume of the potential mineralization. Two widely used drilling options may be adopted, these are the Reverse Circulation (RC) drilling and/or diamond-core drilling. RC drilling uses a pneumatic hammer, which drives a rotating tungsten-steel bit. The technique produces an uncontaminated large volume sample, comprised of rock chips. It is relatively quicker and cheaper when compared to other techniques like Diamond Drilling. However, diamond drilling may also be considered for this exploration programme, during advanced stages of exploration if large amounts of sample material may be required for analysis and to perform processing trials. A typical drilling site will consist of a drill-rig, drill core and geological samples store and a drill equipment parking and maintenance yard (including a fuel and lubricants storage facility).

Public Consultation

Public Consultation Activities

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 public consultation process assisted the Environmental Consultant in identifying all potential impacts and aided in the process of identifying possible mitigation measures and alternatives to certain project activities. The communication with I&APs about the proposed prospecting and exploration activities was done through the following means and in this order to ensure that the public is notified and afforded an opportunity to comment on the proposed project:

- A Background Information Document (BID) containing brief information about the proposed project was compiled and delivered upon request to all new registered Interested and Affected parties (I&APs).
- Project Environmental Assessment notices were published in The Namibian and New Era (29 August 2022 and 29 September 2022) briefly explaining the activity and its locality, inviting members of the public to register as I&APs and submit their comments/concerns.
- A consultation meeting was scheduled and held with the I&APs on the 23rd of September 2022 at Arandis Community hall at 12:00 and 01:00, respectively.
- The issues and concerns raised were noted and used to form the basis for the ESA Report and EMP.

Potential Impacts identified

The following potential negative impacts are anticipated:

- **Positive impacts:** Socio-economic development through employment creation and skills transfer, Opens up other investment opportunities and infrastructure-related development benefits, Produce a trained workforce and small businesses that can service communities and may initiate related businesses, Boosting the local economic growth and regional economic development, Improved geological understanding of the area regarding targeted commodity, and Increased support for local businesses through the procurement of consumable items such as Personal Protective Equipment (PPE), machinery spare parts, lubricants, etc..

- **Negative impacts:** Potential disturbance of existing pastoral systems; Physical land/soil disturbance; Impact on local biodiversity (fauna and flora); Habitat disturbance and potential illegal wildlife and domestic hunting in the area; Potential impact on water resources and soils particularly due to pollution; Air quality issue: potential dust generated from the project; Potential occupational health and safety risks, Vehicular traffic safety and impact on services infrastructures such as local roads, Vibrations, and noise associated with drilling activities may be a nuisance to locals; Environmental pollution (solid waste and wastewater), Archaeological and heritage impact and Potential social nuisance and conflicts (theft, damage to properties, etc.).

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

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The potential impacts that are anticipated from the proposed project activities were identified, described, and assessed. For the significant adverse (negative) impacts with a medium rating, appropriate management and mitigation measures were recommended for implementation by the Proponent, their contractors and project related employees.

The public was consulted as required by the EMA and its 2012 EIA Regulations (Section 21 to 24). This was done via the two newspapers (New Era and The Namibian) for this environmental assessment. A face-to-face consultation meeting was held with the I&APs at the Arandis community, whereby the I&APs raised comments and concerns on the proposed project activities.

The issues and concerns raised by the registered I&APs formed the basis for this report and the Draft EMP. The issues were addressed and incorporated into this report whereby mitigation measures have been provided thereof to avoid and/or minimize their significance on the environmental and social components. Most of the potential impacts were found to be of medium rating significance. The effective implementation of the recommended management and mitigation measures will particularly see a reduction in the significance of adverse impacts that cannot be avoided completely (from high/medium rating to low). To maintain the desirable rating, the implementation of management and mitigation measures should be monitored by the Proponent directly, or their Environmental Control Officer (ECO) is highly recommended. The monitoring of this implementation will not only be done to maintain the impacts' rating or maintain

low rating but to also ensure that all potential impacts identified in this study and other impacts that might arise during implementation are properly identified in time and addressed right away too.

It is crucial for the Proponent and their contractors to effectively implement the recommended management and mitigation measures to protect both the biophysical and social environment throughout the project duration. All these would be done with the aim of promoting environmental sustainability while ensuring a smooth and harmonious existence and purpose of the project activities in the community and environment at large.

Recommendations

The Environmental Consultant is confident that the potential negative impacts associated with the proposed project activities can be managed and mitigated by the effective implementation of the recommended management and mitigation measures and with more effort and commitment put on monitoring the implementation of these measures.

It is, therefore, recommended that the proposed prospecting and exploration activities be granted an ECC, provided that:

- All the management and mitigation measures provided herein are effectively and progressively implemented.
- All required permits, licenses and approvals for the proposed activities should be obtained as required. These include permits and licenses for land use access agreements to explore and ensuring compliance with these specific legal requirements.
- The Proponent and all their project workers or contractors comply with the legal requirements governing their project and its associated activities and ensure that project permits and or approvals required undertaking specific site activities are obtained and renewed as stipulated by the issuing authorities.
- Site areas where exploration activities have ceased are rehabilitated, as far as practicable, to their pre-exploration state.
- Environmental Compliance monitoring reports should be compiled and submitted to the MEFT/DEAF's.

Disclaimer

EDS warrants that the findings and conclusion contained herein were accomplished in accordance with the methodologies set forth in the Scope of Work and Environmental Management Act (EMA) of 2007. These methodologies are described as representing good customary practice for conducting an Environmental Impact Assessment of a property for the purpose of identifying recognized environmental conditions. There is a possibility that even with the proper application of these methodologies there may exist on the subject property conditions that could not be identified within the scope of the assessment, or which were not reasonably identifiable from the available information. The Consultant believes that the information obtained from the record review and during the public consultation processes concerning the proposed exploration work is reliable. However, the Consultant cannot and does not warrant or guarantee that the information provided by the other sources is accurate or complete. The conclusions and findings set forth in this report are strictly limited in time and scope to the date of the evaluations. No other warranties are implied or expressed.

Some of the information provided in this report is based upon personal interviews, and research of available documents, records, and maps held by the appropriate government and private agencies. This report is subject to the limitations of historical documentation, availability, and accuracy of pertinent records and the personal recollections of those persons contacted.

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Appendix D: List of Interested and Affected Parties (I&APs)

Appendix E: Background Information Document (BID)

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Appendix G: Consultation Meeting Minutes

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LIST OF ABBREVIATIONS

| Abbreviation | Meaning |
|--------------|--|
| BID | Background Information Document |
| CV | Curriculum Vitae |
| DEAF | Department of Environmental Affairs and Forestry |
| EA | Environmental Assessment |
| EAP | Environmental Assessment Practitioner |
| ECC | Environmental Clearance Certificate |
| EDS | Excel Dynamic Solutions |
| EIA | Environmental Impact Assessment |
| EMA | Environmental Management Act |

| Abbreviation | Meaning |
|---------------------|---|
| EMP | Environmental Management Plan |
| EPL | Exclusive Prospecting Licence |
| ESA | Environmental Scoping Assessment |
| GG & GN | Government Gazette & Government Notice |
| I&APs | Interested and Affected Parties |
| IFC | International Finance Corporation |
| MEFT | Ministry of Environment, Forestry and Tourism |
| MME | Ministry of Mines and Energy |
| PPE | Personal Protective Equipment |
| Reg / S | Regulation / Section |
| TOR | Terms of Reference |

KEY TERMS

| Terms | Definition |
|--|---|
| Alternative | A possible course of action, in place of another that would meet the same purpose and need of the proposal. |
| Baseline | Work done to collect and interpret information on the condition/trends of the existing environment. |
| Biophysical | That part of the environment that does not originate with human activities (e.g., biological, physical and chemical processes). |
| Cumulative Impacts/Effects Assessment | In relation to an activity, means the impact of an activity that in it may not be significant but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area. |

| Terms | Definition |
|---|--|
| Decision-maker | The person(s) entrusted with the responsibility for allocating resources or granting approval to a proposal. |
| Ecological Processes | Processes which play an essential part in maintaining ecosystem integrity. Four fundamental ecological processes are the cycling of water, the cycling of nutrients, the flow of energy and biological diversity (as an expression of evolution). |
| Environment | As defined in Environmental Management Act - the complex of natural and anthropogenic factors and elements that are mutually interrelated and affect the ecological equilibrium and the quality of life, including – (a) the natural environment that is land, water, and air; all organic and inorganic matter and living organisms and (b) the human environment that is the landscape and natural, cultural, historical, aesthetic, economic and social heritage and values. |
| Environmental Management Plan | As defined in the EIA Regulations (Section 8(j)), a plan that describes how activities that may have significant environments effects are to be mitigated, controlled, and monitored. |
| Exclusive Prospecting Licence | Is a license that confers exclusive mineral prospecting rights over land of up to 1000 km ² in size for an initial period of three years, renewable twice for a maximum of two years at a time |
| Interested and Affected Party (I&AP) | In relation to the assessment of a listed activity includes - (a) any person, group of persons or organization interested in or affected by an activity; and (b) any organ of state that may have jurisdiction over any aspect of the activity. Mitigate - practical measures to reduce adverse impacts. Proponent – as defined in the Environmental Management Act, a person who proposes to undertake a listed activity. Significant impact - means an impact that by its magnitude, duration, intensity or probability of occurrence may have a notable effect on one or more aspects of the environment. |

| Terms | Definition |
|--|--|
| Fauna and Flora | All the animals and plants found in an area. |
| Mitigation | The purposeful implementation of decisions or activities that are designed to reduce the undesirable impacts of a proposed action on the affected environment. |
| Monitoring | Activity involving repeated observation, according to a pre-determined schedule, of one or more elements of the environment to detect their characteristics (status and trends). |
| Proponent | Organization (private or public sector) or individual intending to implement a development proposal. |
| Public Consultation/Involvement | A range of techniques that can be used to inform, consult or interact with stakeholders affected by the proposed activities. |
| Protected Area | Refers to a protected area that is proclaimed in the Government Gazette according to the Nature Conservation Ordinance number 4 of 1975, as amended. |
| Scoping | An early and open activity to identify the impacts that are most likely to be significant and require specialized investigation during the EIA work. Can, also be used to identify alternative project designs/sites to be assessed, obtain local knowledge of site and surroundings, and prepare a plan for public involvement. The results of scoping are frequently used to prepare a Terms of Reference for the specialized input into full EIA. |
| Terms of Reference (ToR) | Written requirements governing full EIA input and implementation, consultations to be held, data to be produced and form/contents of the EIA report. Often produced as an output from scoping. |

1 INTRODUCTION

1.1 Project Background

Zoya minerals CC (The Proponent) intends to conduct prospective and exploration activities on the Exclusive Prospecting License (EPL) No. 8289 located about 18.8 km southeast of Arandis in Erongo Region (Figure 1). An application for the EPL was lodged on the 31 July 2020. However, the approval and granting of the EPL requires an Environmental Clearance Certificate (ECC). EPL 8289 covers a surface area of 4 462.0944 ha. The EPL 8289 is prospective to Base and Rare Metals, Dimension Stone, Industrial Minerals, Nuclear Fuel Minerals and Precious Metals. The target commodity for the proposed prospecting and exploration programme is Nuclear Fuel Minerals.

Section 27 (1) of the Environmental Management Act (EMA) (No. 7 of 2007) and its 2012 Environmental Impact Assessment (EIA) Regulations provides a list of activities that may not be carried out without an Environmental Impact Assessment (EIA) undertaken and an ECC granted. Exploration activities are listed among the activities that may not occur without an ECC. Therefore, individuals or organizations may not carry out exploration activities among those listed, without an EIA undertaken and an ECC awarded.

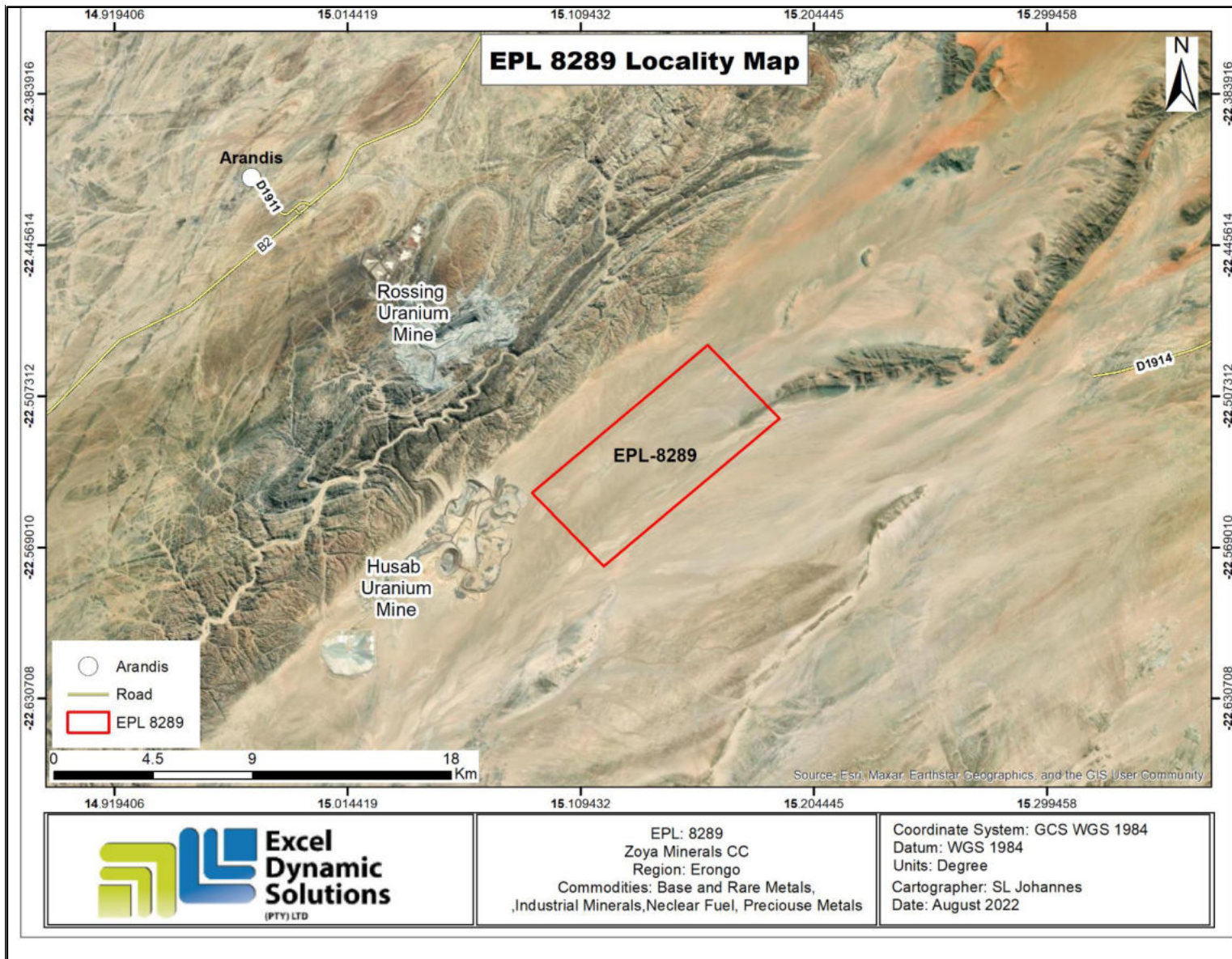


Figure 1: Locality map of EPL 8289

1.2 Terms of Reference, Scope of Works and Appointed Environmental Assessment Practitioner

Excel Dynamic Solutions (Pty) (EDS) has been appointed by the Proponent to undertake an environmental assessment (EA), and thereafter, apply for an ECC for exploration works on the EPL. There were no formal Terms of Reference (ToR) provided to EDS by the Proponent. The consultant, instead, relied on the requirements of the Environmental Management Act (No. 7 of 2007) (EMA) and its Environmental Impact Assessment (EIA) Regulations (GN. No. 30 of 2012) to conduct the study.

The application for the ECC is compiled and submitted to the Ministry of Environment, Forestry and Tourism (MEFT) (**Appendix A**), as the environmental custodian for project registration purposes. Upon submission of an Environmental Scoping Assessment (ESA) Report and Draft Environmental Management Plan (EMP) (**Appendix B**), an ECC for the proposed project will be considered by the Environmental Commissioner at the MEFT's Department of Environmental Affairs and Forestry (DEAF).

The EIA project is headed by Mr. Nerson Tjelos, a qualified and experienced Geoscientist and experienced EAP. Consultation and reporting were done by Mr. Stefanus Johannes and reviewed by Ms. Rose Mtuleni. The CV of Mr. Tjelos is presented in **Appendix C**.

1.3 The Need for the Proposed Project

The mining industry is one of the largest contributors to the Namibian economy. It contributes to the improvement of livelihoods. In Namibia, exploration for minerals is carried out mainly by the private sector. Exploration activities have a potential to enhance and contribute to the development of other sectors and its activities do provide temporary employment, and taxes that fund social infrastructural development. The minerals sector yields foreign exchange and accounts for a significant portion of gross domestic product (GDP). Additionally, the industry produces a trained workforce and small businesses that can serve communities and may initiate related businesses. Exploration activity fosters several associated activities such as manufacturing of exploration and mining equipment, and provision of engineering and environmental services. The mining sector forms a vital part of some of Namibia's development plans, namely: Vision 2030, National Development Plan 5 (NDP5), and Harambee Prosperity Plans (HPPs) I and II. Thus, mining is essential to the development goals of Namibia in contributing to meeting the ever-increasing global demand for minerals, and for national prosperity. Successful exploration is of great contribution to the NDP.

2 PROJECT DESCRIPTION: PROPOSED PROSPECTING & EXPLORATION ACTIVITIES

Prospecting and exploration of minerals are the first components of any potential mining project (development and eventual mining). These are done to acquire the necessary data required for further decision making and investment options. These activities are anticipated to last for about three years.

The exploration process includes three phases - Prospecting, Exploration, and the Decommissioning of works.

2.1 Prospecting Phase

2.1.1 Desktop Study: Geological mapping

This mainly entails a desktop review of geological area maps, study of previous historical geological and mineral exploration work by previous prospectors around the vicinity of the EPL area and attempts to re-evaluate and/or reinterpret these results.

2.1.2 Geophysical surveys

Geophysical surveys entail data collection of the substrate by air or ground, through sensors such as radar, magnetic and/or electromagnetic sensors, to detect and ascertain any mineralization in the area. Ground geophysical surveys shall be conducted, where necessary, using vehicle-mounted sensors or handheld by staff members, while in the case of air surveys, the sensors are mounted to an aircraft, which navigates over the target area.

2.1.3 Lithology geochemical surveys

Rock and soil samples shall be collected and taken for trace element analysis to be conducted by analytical chemistry laboratories, to determine if enough target commodities are present. Additionally, trenches or pits may be dug depending on the commodity (in a controlled environment e.g., fencing off and labelling activity sites) adopting a manual or excavator to further investigate the mineral potential.

Soil sampling consists of small pits being dug where 1kg samples can be extracted and sieved to collect about 50g of material. As necessary, and to ensure adequate risk mitigation, all major

excavations will be opened and closed immediately after obtaining the needed samples, or the sites will be secured until the trenches or pits are closed. At all times, the landowner and other relevant stakeholders will be engaged to obtain authorization where necessary.

2.2 Exploration (Drilling, Sampling and Analysis) Phase

The selection of the potential mineralization model and exploration targets will be based on the local geology, trenching, drilling, and assay results of the samples collected. The planned exploration activities are aimed at delineating the mineral deposits and to determine whether the deposits are economically feasible mining resources.

2.2.1 Detailed Exploration Drilling

Should analyses by an analytical laboratory yield positive results, holes are drilled, and drill samples collected for further analysis. This would determine the depth of the potential mineralization. If necessary new access tracks to the drill sites will be created and drill pads will be cleared in which to set the rig. Two widely used drilling options may be adopted, these are the Reverse Circulation (RC) drilling and/or diamond-core drilling. RC drilling uses a pneumatic hammer, which drives a rotating tungsten-steel bit. The technique produces an uncontaminated large volume sample, which is composed of rock chips. It is relatively quicker and cheaper when compared to other techniques like Diamond Drilling. However, diamond drilling may also be considered for this exploration programme, during advanced stages of exploration if large amounts of sample material may be required for analysis and to perform processing trials.

A typical drilling site will consist of a drill-rig and support vehicles as well as a drill core and geological samples store. A drill equipment parking and maintenance yard may be set up (including a fuel and lubricants storage facility).

Other aspects of the exploration operations include:

2.2.2 Accessibility to Site

There is no existing roads to the EPL, therefore, new routes would need to be established from the nearby existing roads, to access the EPL. Project related vehicles will be using these existing roads to access the EPL. It is also anticipated that, if necessary, onsite new tracks to the different targeted exploration sites within the EPL will be created. The Proponent may need to do some upgrade on the site access road to ensure that it is fit to accommodate project related vehicles, such as heavy trucks.

2.2.3 Material and Equipment

The input required for the exploration program in terms of vehicles and equipment includes, 4X4 vehicles, a truck, water tanks, drill rigs and drilling machines, and a power generator. Equipment and vehicles will be stored at a designated area near the accommodation site or a storage site established within the EPL.

2.2.4 Services and Infrastructure

Water: Water for the exploration operations on the EPL will be obtained from the nearest existing boreholes around the EPL, or the proponent will drill boreholes upon obtaining necessary permits and signing agreements with the landowners. Estimated monthly water consumptions are at 4000 litres, but will not exceed 80 000 litres, which includes water for drinking, sanitation, cooking, dust control, drilling, as well as washing of equipment.

Power supply: Power required during the operation phase may be provided from the diesel generators. A maximum of 2000 litres of diesel will be used per day, and a bunded diesel bowser, which may be on site will be filled when required.

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 to ensure that accidental fuel spills are cleaned up as soon as they have been detected/observed. Fuel may also be stored in jerry cans placed on plastic sheeting to avoid unnecessary contamination of soils.

2.2.5 Waste Management

The site will be equipped with secured waste bins for each type of waste (i.e., domestic, hazardous, and recyclable). Depending on the amount generated, waste will be sorted and collected as and when necessary, and taken to the nearest certified landfill site. An agreement will need to be reached with different waste management facility operators/owners and authorization or permits will be obtained prior to utilizing these facilities, in the case of production of any hazardous waste.

Sanitation and human waste: A portable ablution facility will be used and the sewage will be disposed of according to the approved disposal or treatment methods of the waste products.

Hazardous waste: Drip trays and spill control kits will be available on-site to ensure that oil/fuel spills and leaks from vehicles and equipment are captured on time and contained correctly before polluting the site.

2.2.6 Health and safety

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

2.2.7 Safety and Security

Storage Site: Temporary storage areas for exploration material, equipment, and machinery may 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., two fire extinguishers will be readily available in vehicles, at the working sites and camps.

On-site Workers' Safety: Adequate and appropriate Personal Protective Equipment (PPE) will be provided to every project personnel while working at the site. A minimum of two first aid kits will be readily available on-site to attend to potential minor injuries.

2.2.8 Accommodation

The exploration crew will be accommodated near the exploration sites. If an accommodation camp is to be set up near the site, necessary arrangements will be made with the land owner/s. Exploration activities will take place during the day only and staff will commute to the exploration site(s) from their place of accommodation.

2.3 Decommissioning and Rehabilitation Phase

Once the exploration activities on the EPL come to an end, the Proponent will need to have site rehabilitation measures in place. Decommissioning and rehabilitation are primarily reinforced through a decommissioning and rehabilitation plan, which consists of safety, health, environmental, and contingency aspects. Unfavourable economic situations or unconvincing exploration results might force the Proponent to cease the exploration program before predicted closure.

3 PROJECT ALTERNATIVES

Alternatives are defined as the “*different means of meeting the general purpose and requirements of the activity*” (EMA, 2007). This section will highlight the different ways in which the project can be undertaken and to identify the alternative that will be the most practical, but least damaging to the environment is identified.

Once the alternatives have been established, these are examined by asking the following three questions:

- What alternatives are technically and economically feasible?
- What are the environmental effects associated with the feasible alternatives?
- What is the rationale for selecting the preferred alternative?

The alternatives considered for the proposed development are discussed in the following subsections.

3.1 Types of Alternatives Considered

3.1.1 The "No-go" Alternative

The “no action” alternative implies that the status quo remains, and nothing happens. Should the proposal of exploration activities on the EPL, be discontinued, none of the potential impacts (positive and negative) identified would occur. If the proposed project is to be discontinued, the current land use for the proposed site will remain unchanged.

This option was considered and a comparative assessment of the environmental and socio-economic impacts of the “no action” alternative was undertaken to establish what benefits might be lost if the project is not implemented. The key losses that may never be realized if the proposed project does not go ahead include:

- Loss of foreign direct investment.
- The proposed 5-10 temporary job opportunities for community members will not come to realization.
- No realization of local businesses supports through the procurement of consumable items such as Personal Protective Equipment (PPE), machinery spare parts, lubricants, etc.
- Loss of potential income to local and national government through land lease fees, license lease fees and various tax structures.

- Improved geological understanding of the site area regarding the targeted commodities.
- Socio-economic benefits such as skills acquisition to local community members would be not realized.

Considering the above losses, the “no-action/go” alternative was not considered a viable option for this project.

3.1.2 Exploration Location

The prospecting/exploration location is dependent on the geological setting (regional and local), the economic geology, and the exploration and mining history of the EPL area. Therefore, finding an alternative location for the planned exploration activities is not possible. The mineralization of the target commodities are area-specific, exploration targets are primarily determined by the geology (host rocks) and the tectonic environment of the site (an ore-forming mechanism). The tenement has sufficient surface area for future related facilities should an economic mineral deposit be defined.

Furthermore, the national mineral resources’ potential locations are also mapped and categorized by the Ministry of Mines and Energy in exclusive prospecting licenses, mining licenses and claims, mineral deposit retention licenses, reconnaissance licenses and exclusive reconnaissance licenses. Information on EPL 8289 (**Figure 2**) and other licenses is available on the Namibia Mining Cadastral Map here <https://maps.landfolio.com/Namibia/>

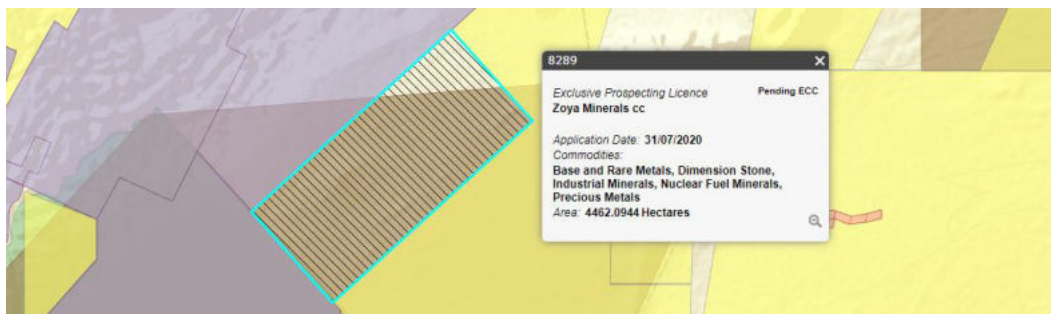


Figure 2: The location of EPL 8289 on the National Mining Cadastre

3.1.3 Exploration Methods

Both invasive and non-invasive exploration activities as indicated under the project description chapter are expected to take place. If an economically viable discovery is made, the project will proceed to the mining phase upon approval of a mining EIA and issuance of a mining license. If any other alternative viable exploration methods are found to achieve the purpose more effectively and/or efficiently without aggravating any environmental measures put in place.

4 LEGAL FRAMEWORK: LEGISLATION, POLICIES AND GUIDELINES

Prospecting and exploration activities have legal implications associated with certain applicable legal standards. A summary of applicable and relevant international policies and Namibian legislation, policies, and guidelines for the proposed development is given in this section (**Table 1**). This summary serves to inform the project Proponent, Interested and Affected Parties, and the decision-makers at the DEAF, of the requirements and expectations, as laid out in terms of these instruments, to be fulfilled to establish the proposed prospecting and exploration activities.

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

This EIA was carried out according to the Environmental Management Act (EMA) and its Environmental Impact Assessment (EIA) Regulations (GG No. 4878 GN No. 30).

The EMA has stipulated requirements to complete the required documentation to obtain an ECC for permission to undertake certain listed activities. These activities are listed under the following Regulations:

- 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 form 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. 8289 and related activities are presented in **Table 1**.

Table 1: Applicable local, national and international standards, policies and guidelines governing the proposed prospecting and exploration activities

| Legislation/Policy/ Guideline | Relevant Provisions | Implications for this project |
|---|---|---|
| <p>The Constitution of the Republic of Namibia, 1990 as amended</p> | <p>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:</p> <p>“...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...”</p> <p>Article 95(l) commits the state to actively promoting and maintaining the welfare of the people by adopting policies aimed at the:</p> <p>“...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.”</p> | <p>By implementing the environmental management plan, the establishment will be in conformant to the constitution in terms of environmental management and sustainability.</p> <p>Ecological sustainability will be main priority for the proposed development.</p> |

| Legislation/Policy/ Guideline | Relevant Provisions | Implications for this project |
|--|---|---|
| Nature Conservation Amendment Act, No. 3 of 2017 | National Parks are established and gazetted in accordance with the Nature Conservation Ordinance, 1975 (4 of 1975), as amended. The Ordinance provides a legal framework with regards to the permission of entering a state protected area, as well as requirements for individuals damaging objects (geological, ethnological, archaeological and historical) within a protected area. Though the Ordinance does not specifically refer to mining as an activity within a protected area (PA) or recreational area (RA), it does restrict access to PA's and prohibits certain acts therein as well as the purposes for which permission to enter game parks and nature reserves may be granted. | The Proponent will be required to enhance the conservation of biodiversity and the maintenance of the ecological integrity of protected areas and other State land. |
| The Parks and Wildlife Management Bill of 2008 | 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 to contribute to national development. | |

| Legislation/Policy/ Guideline | Relevant Provisions | Implications for this project |
|---|--|---|
| <p>Minerals (Prospecting and Mining) Act (No. 33 of 1992)</p> | <p>Section 52 requires mineral license holders to enter into a written agreement with affected landowners before exercising rights conferred upon the license holder.</p> <p>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.</p> <p>Section 54 requires written notice to be submitted to the Mining Commissioner if the holder of a mineral license intends to abandon the mineral license area.</p> <p>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 proposed steps to be taken to prevent or minimize any such effect.</p> | <p>The Proponent should enter into a written agreement with landowners before carrying out exploration on their land.</p> <p>The Proponent should carry out an assessment of the impact on the receiving environment.</p> <p>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.</p> <p>The Proponent may not carry out exploration activities within the areas limited by Section 52 (1) of this Act.</p> |

| Legislation/Policy/ Guideline | Relevant Provisions | Implications for this project |
|---|---|---|
| | Section 91 requires that rehabilitation measures should be included in an application for a mineral license. | |
| Mine Health & Safety Regulations, 10th Draft | Makes provision for the health and safety of persons employed or otherwise present in mineral licenses area. These deal with among other matters; clothing and devices; design, use, operation, supervision and control of machinery; fencing and guards; and safety measures during repairs and maintenance. | The Proponent should comply with all these regulations with respect to their employees. |
| Petroleum Products and Energy Act (No. 13 of 1990) Regulations (2001) | Regulation 3(2)(b) states that "No person shall possess [sic] or store any fuel except under authority of a licence or a certificate, excluding a person who possesses or stores such fuel in a quantity of 600 litres or less in any container kept at a place outside a local authority area" | The Proponent should obtain the necessary authorisation from the MME for the storage of fuel on-site. |

| Legislation/Policy/ Guideline | Relevant Provisions | Implications for this project |
|--|---|---|
| The Regional Councils Act (No. 22 of 1992) | This Act sets out the conditions under which Regional Councils must be elected and administer each delineated region. From a land use and project planning point of view, their duties include, as described in section 28 “to undertake the planning of the development of the region for which it has been established with a view to physical, social and economic characteristics, urbanisation patterns, natural resources, economic development potential, infrastructure, land utilisation pattern and sensitivity of the natural environment. | The relevant Regional Councils are I&APs and must be consulted during the Environmental Assessment (EA) process. The project site falls under the Erongo Regional Council; therefore, they should be consulted. |
| Water Act 54 of 1956 | <p>The Water Resources Management Act 11 of 2013 is presently without regulations; therefore, the Water Act No 54 of 1956 is still in force:</p> <p>Prohibits the pollution of water and implements the principle that a person disposing of effluent or waste has a duty of care to prevent pollution (S3 (k)).</p> <p>Provides for control and protection of groundwater (S66 (1), (d (ii))).</p> <p>Liability of clean-up costs after closure/abandonment of an activity (S3 (l)). (l)).</p> | The protection (both quality and quantity/abstraction) of water resources should be a priority. |

| Legislation/Policy/ Guideline | Relevant Provisions | Implications for this project |
|--|---|--|
| Water Resources Management Act (No 11 of 2013) | <p>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:</p> <p>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 (Section 68).</p> | |
| National Heritage Act No. 27 of 2004 | 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; and to provide for incidental matters. | The Proponent should ensure compliance with these Acts requirements. The necessary management measures and related permitting requirements must be taken. This done by the consulting with the National Heritage Council of Namibia. |
| The National Monuments Act (No. 28 of 1969) | The Act enables the proclamation of national monuments and protects archaeological sites. | |

| Legislation/Policy/ Guideline | Relevant Provisions | Implications for this project |
|---------------------------------------|--|--|
| Soil Conservation Act (No 76 of 1969) | 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 be included in the EMP. |
| Forestry Act (Act No. 12 of 2001) | 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. |
| Public Health Act (No. 36 of 1919) | Section 119 states that "no person shall cause a nuisance or shall suffer to exist on any land or premises owned or occupied by him or of which he is in charge any nuisance or other condition liable to be injurious or dangerous to health." | The Proponent and all its employees should ensure compliance with the provisions of these legal instruments. |

| Legislation/Policy/ Guideline | Relevant Provisions | Implications for this project |
|--|---|--|
| Health and Safety Regulations GN 156/1997 (GG 1617) | Details various requirements regarding health and safety of labourers. | |
| Atmospheric Pollution Prevention Ordinance (1976) | 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 | 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. |

| Legislation/Policy/ Guideline | Relevant Provisions | Implications for this project |
|--|--|--|
| Road Traffic and Transport Act, No. 22 of 1999 | The Act provides for the establishment of the Transportation Commission of Namibia; for the control of traffic on public roads, the licensing of drivers, the registration and licensing of vehicles, the control and regulation of road transport across Namibia's borders; and for matters incidental thereto. Should the Proponent wish to undertake activities involving road transportation or access onto 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 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 insures 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. |

4.2 International Policies, Principles, Standards, Treaties and Conventions

The international policies, principles, standards, treaties, and conventions applicable to the project are as listed in **Table 2** below.

Table 2: International Policies, Principles, Standards, Treaties and Convention applicable to the project

| Statute | Provisions | Project Implications |
|--------------------|--|---|
| Equator Principles | <p>A financial industry benchmark for determining, assessing, and managing environmental and social risk in projects (August 2013). The Equator Principles have been developed in conjunction with the International Finance Corporation (IFC), to establish an International Standard with which companies must comply with to apply for approved funding by Equator Principles Financial Institutions (EPFIs). The Principles apply to all new project financings globally across all sectors.</p> <p>Principle 1: Review and Categorization</p> <p>Principle 2: Environmental and Social Assessment</p> <p>Principle 3: Applicable Environmental and Social Standards</p> <p>Principle 4: Environmental and Social Management System and Equator Principles Action Plan</p> <p>Principle 5: Stakeholder Engagement</p> <p>Principle 6: Grievance Mechanism</p> <p>Principle 7: Independent Review</p> <p>Principle 8: Covenants</p> <p>Principle 9: Independent Monitoring and Reporting</p> | <p>These principles are an attempt to: ‘...encourage the development of socially responsible projects, which subscribe to appropriately responsible environmental management practices with a minimum negative impact on project-affected ecosystems and community-based upliftment and empowering interactions.’</p> |

| Statute | Provisions | Project Implications |
|--|---|--|
| | Principle 10: Reporting and Transparency | |
| <p>The International Finance Corporation (IFC) Performance Standards</p> | <p>The International Finance Corporation’s (IFC) Sustainability Framework articulates the Corporation’s strategic commitment to sustainable development and is an integral part of IFC’s approach to risk management. The Sustainability Framework comprises IFC’s Policy and Performance Standards on Environmental and Social Sustainability, and IFC’s Access to Information Policy. The Policy on Environmental and Social Sustainability describes IFC’s commitments, roles, and responsibilities related to environmental and social sustainability.</p> <p>As of 28 October 2018, there are ten (10) Performance Standards (Performance Standards on Environmental and Social Sustainability) that the IFC requires a project Proponents to meet throughout the life of an investment. These standard requirements are briefly described below.</p> <p>Performance Standard 1: Assessment and Management of Environmental and Social Risks and Impacts</p> <p>Performance Standard 2: Labour and Working Conditions</p> <p>Performance Standard 3: Resource Efficient and Pollution Prevention and Management</p> | <p>The Performance Standards are directed towards clients, providing guidance on how to identify risks and impacts, and are designed to help avoid, mitigate, and manage risks and impacts as a way of doing business in a sustainable way, including stakeholder engagement and disclosure obligations of the Client (Borrower) in relation to project-level activities. In the case of its direct investments (including project and corporate finance provided through financial intermediaries), IFC requires its clients to apply the Performance Standards to manage environmental and social risks and impacts so that development opportunities are enhanced. IFC uses the</p> |

| Statute | Provisions | Project Implications |
|---|--|--|
| | <p>Performance Standard 4: Community Health and Safety</p> <p>Performance Standard 5: Land Acquisition, Restrictions on Land Use, and Involuntary Resettlement</p> <p>Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources</p> <p>Performance Standard 7: Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities</p> <p>Performance Standard 8: Cultural Heritage</p> <p>Performance Standard 9: Financial Intermediaries (FIs)</p> <p>Performance Standard 10: Stakeholder Engagement and Information</p> <p>A full description of the IFC Standards can be obtained from http://www.worldbank.org/en/projects-operations/environmental-and-social-framework/brief/environmental-and-social-standards?cq_ck=1522164538151#ess1</p> | <p>Sustainability Framework along with other strategies, policies, and initiatives to direct the business activities of the Corporation to achieve its overall development objectives.</p> |
| <p>The United Nations Convention to Combat Desertification (UNCCD) 1992</p> | <p>Addresses land degradation in arid regions with the purpose to contribute to the conservation and sustainable use of biodiversity and the mitigation of climate change.</p> | <p>The project activities should not be such that they contribute to desertification.</p> |

| Statute | Provisions | Project Implications |
|--|---|--|
| | The convention objective is to forge a global partnership to reverse and prevent desertification/land degradation and to mitigate the effects of drought in affected areas to support poverty reduction and environmental sustainability United Nation Convention | |
| Convention on Biological Diversity 1992 | Regulate or manage biological resources important for the conservation of biological diversity whether within or outside protected areas, with a view to ensuring their conservation and sustainable use. Promote the protection of ecosystems, natural habitats, and the maintenance of viable populations of species in natural surroundings | Removal of vegetation cover and destruction of natural habitats should be avoided and where not possible minimised |
| Stockholm Declaration on the Human Environment, Stockholm (1972) | It recognizes the need for: “a common outlook and common principles to inspire and guide the people of the world in the preservation and enhancement of the human environment. | Protection of natural resources and prevention of any form of pollution. |

Relevant international Treaties and Protocols ratified by the Namibian Government

- Convention on International Trade and Endangered Species of Wild Fauna and Flora (CITES), 1973.
- Convention on Biological Diversity, 1992.
- World Heritage Convention, 1972.

5 ENVIRONMENTAL BASELINE

The proposed exploration programme will be undertaken in specific environmental and social conditions. Understanding the pre-project conditions of the environment will aid in laying down background "information" of the status quo and future projections of environmental conditions after proposed works on the EPL. This also helps the EAP in identifying the sensitive environmental features that may need to be protected through the recommendations and effective implementation of mitigation measures provided.

The baseline information presented below is sourced from a variety of sources including reports of studies conducted in the Erongo Region. Further information was obtained by the Consultant during the site visit.

5.1 Biophysical Environment

5.2 Climate

Climate generally has an influence on the exploration activities proposed on the EPL. Understanding the climatic conditions helps to determine the appropriate times to conduct exploration activities. **Figure 3** shows the climatic condition around the project area.

| | January | February | March | April | May | June | July | August | September | October | November | December |
|-------------------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| Avg. Temperature °C (°F) | 18.4 °C (65.1) °F | 19 °C (66.1) °F | 18.8 °C (65.8) °F | 18.2 °C (64.7) °F | 16.9 °C (62.4) °F | 16.1 °C (61) °F | 16.1 °C (60.9) °F | 14.1 °C (57.3) °F | 13.9 °C (57) °F | 14.7 °C (58.5) °F | 16 °C (60.8) °F | 17.2 °C (63) °F |
| Min. Temperature °C (°F) | 16.3 °C (61.4) °F | 17 °C (62.5) °F | 16.5 °C (61.7) °F | 15.5 °C (59.9) °F | 13.6 °C (56.5) °F | 12.4 °C (54.3) °F | 12.2 °C (53.9) °F | 10.7 °C (51.3) °F | 10.9 °C (51.7) °F | 12 °C (53.6) °F | 13.3 °C (55.9) °F | 14.8 °C (58.7) °F |
| Max. Temperature °C (°F) | 20.9 °C (69.6) °F | 21.4 °C (70.6) °F | 21.5 °C (70.7) °F | 21.1 °C (70) °F | 20.4 °C (68.8) °F | 20.3 °C (68.6) °F | 20.4 °C (68.8) °F | 17.6 °C (63.7) °F | 17.1 °C (62.8) °F | 17.7 °C (63.9) °F | 18.9 °C (66.1) °F | 19.9 °C (67.9) °F |
| Precipitation / Rainfall mm (in) | 7 (0.3) | 10 (0.4) | 4 (0.2) | 3 (0.1) | 1 (0) | 1 (0) | 1 (0) | 1 (0) | 2 (0.1) | 2 (0.1) | 2 (0.1) | 4 (0.2) |
| Humidity(%) | 84% | 84% | 82% | 78% | 72% | 63% | 60% | 73% | 81% | 82% | 82% | 83% |
| Rainy days (d) | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| avg. Sun hours (hours) | 7.2 | 7.3 | 7.5 | 7.9 | 7.8 | 8.1 | 8.2 | 7.3 | 6.7 | 6.9 | 7.5 | 7.5 |

Figure 3: Shows the climate condition around the project area (source: climate-data, 2022)

The project area has a low humidity in general, and the lack of moisture in the air has a major impact on its climate due to low cloud cover and increased the rates of evaporation (Mendelsohn, 2002).

High temperatures around the project area are mainly experienced between January to April at an average of 18.6 °C; and the lowest temperatures are experienced at an average of 13.9 °C in September. The highest average rainfall of 0.4 mm is experienced in February, and the lowest average rainfall of 0.0 mm is experienced in May to August. Moreover, January months experience the highest humidity of 84% and low humidity in July at 60%. **Figure 3** shows the climatic condition in Otavi.

5.3 Topography

The EPL area falls in the Central Western Plain. This landscape is a broad area of plains which extend inland for about 450km in places. The plains are large, and formed by erosion cutting back into higher ground and craving out the catchment area of several rivers western plains (Mendelsohn et al, 2008). The EPL lies at an altitude of between 391 - 730 m above sea level.

Figure 4 shows the topographic map of the project area.

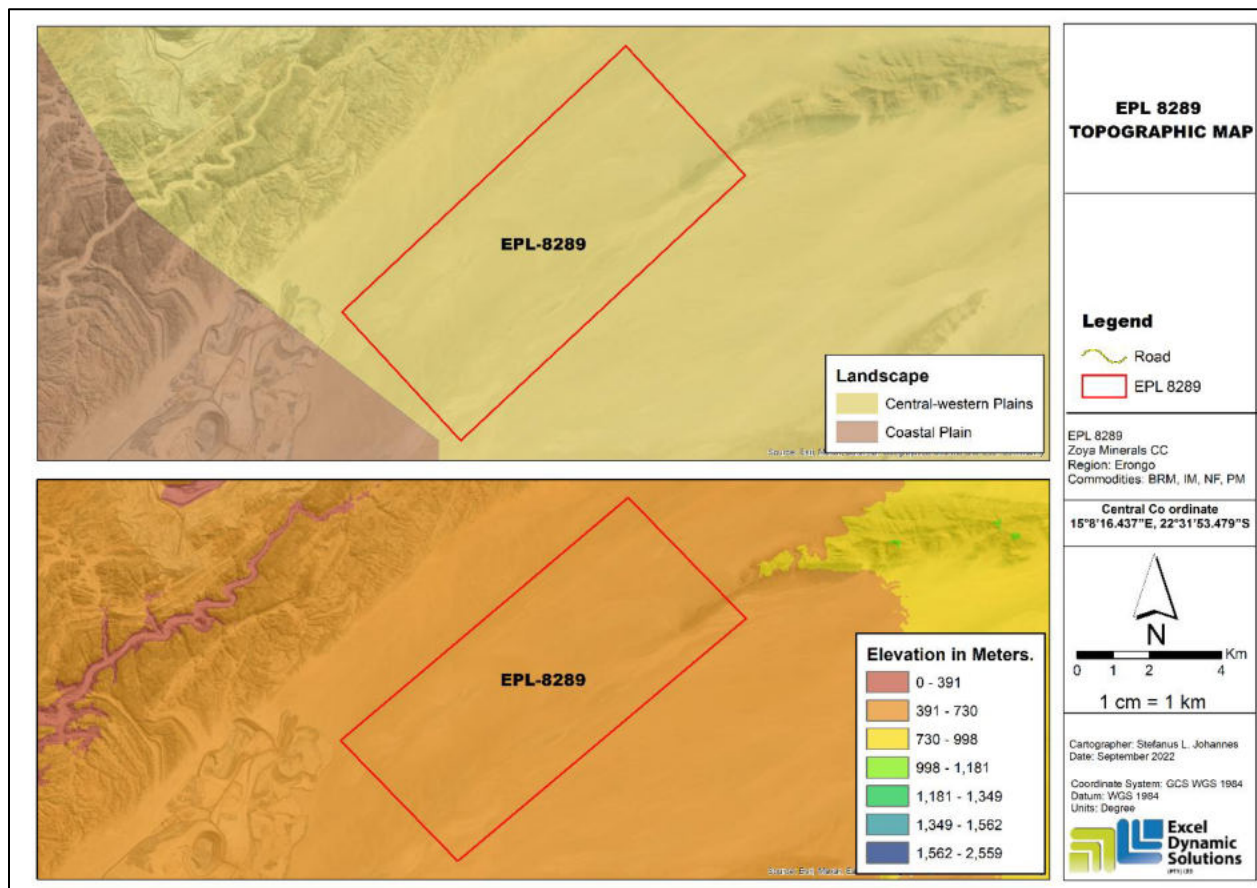


Figure 4: Shows the topography map for the project area

5.4 Geology

Geologically, EPL 8289 lies within the Swakop Group (Mendelsohn *et al*, 2008). The area is vastly dominated by gravel and sand with some few quartzite and marble found on some parts of the EPL (**Figure 5**).

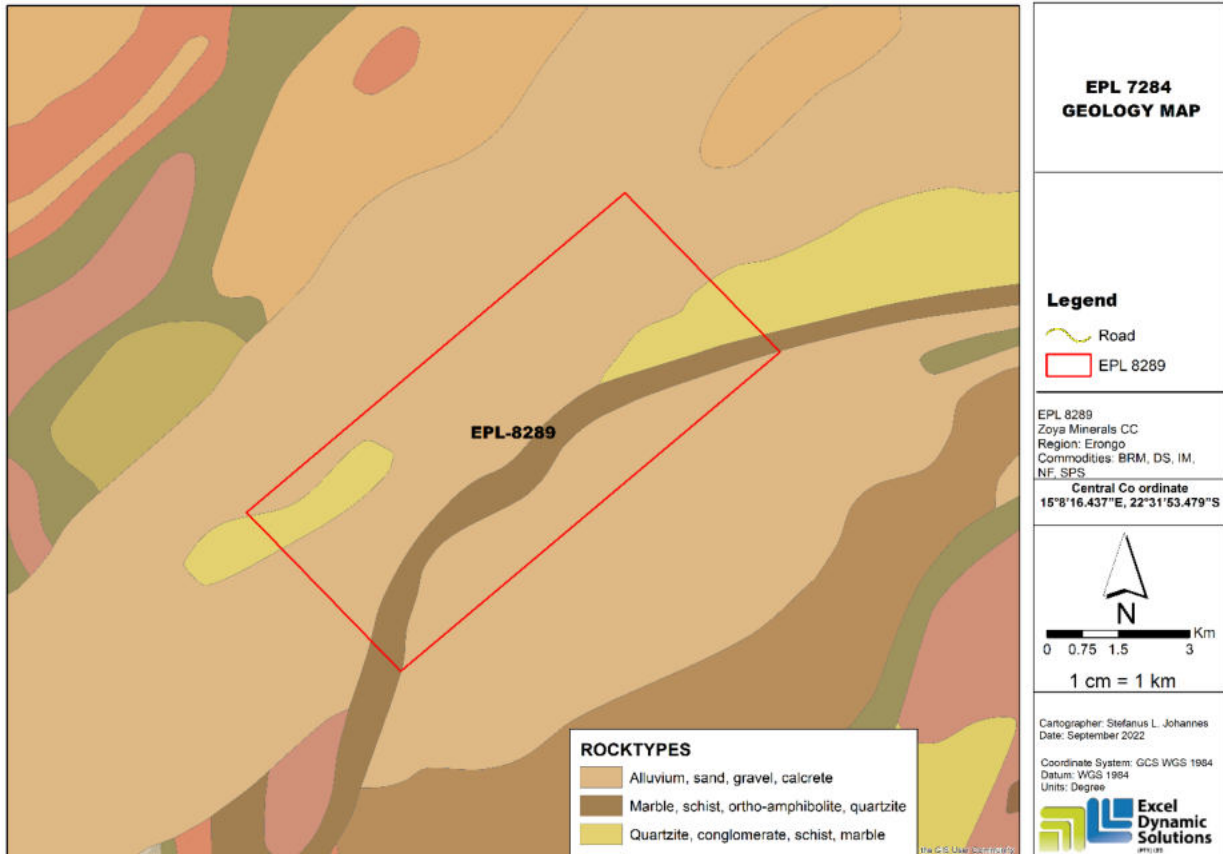


Figure 5: The geology of the EPL

5.5 Soil

The EPL area is dominantly covered by the Regosols and a small section of rock outcrops. Regosols are young, almost undeveloped soils with no diagnostic horizons and little evidence of soil-forming processes. They are found where soil formation has been inhibited by arid conditions or interrupted by erosion or recent deposition of sediments. They are normally medium to finely textured unconsolidated materials common in young sediments, (Mendelsohn, 2003). **Figure 6** below shows the soils map for the EPL.

It is notable that during the prospective phase of the project, soil sampling may be conducted. Therefore, the Soil Conservation Act (No 76 of 1969) should be taken into account to ensure that soils are conserved in a sustainable manner, which does not promote soil erosion, resulting in gullies.

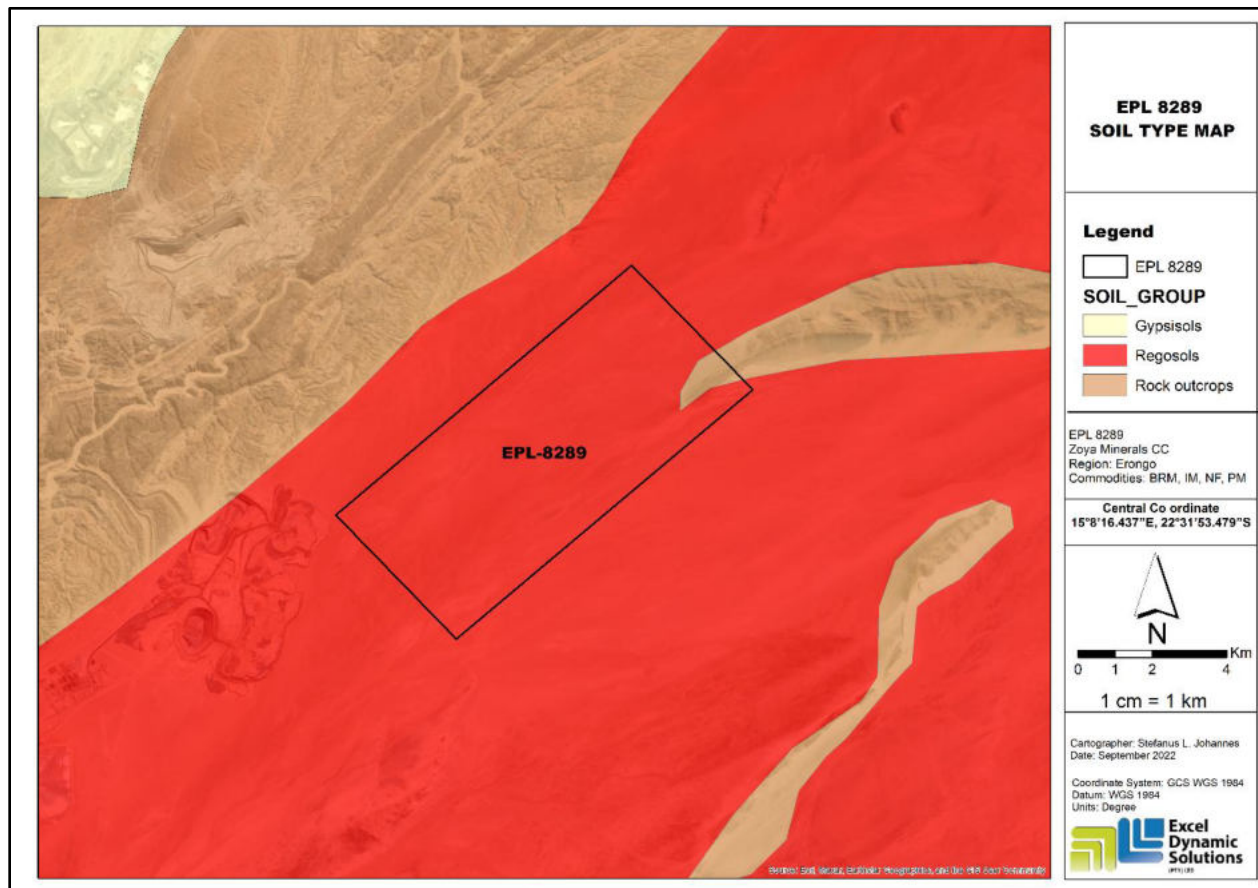


Figure 6: The soils of the EPL

5.6 Hydrology and Groundwater pollution

The EPL is mainly covered by rock bodies with limited groundwater potential, due to the nature of the rock bodies, and is prone to over-abstraction, if caution is not taken in the event of water abstraction on site. The regulations stipulated in the Water Act 54 of 1956 with respect to the water abstraction should be adhered to

In terms of groundwater vulnerability, the EPL lies in area of rather low vulnerability to groundwater pollution. The EPL lays in area of rock bodies with little groundwater potential (unfracture aquifers). Therefore, the risk of ground water contamination is relatively low. **Figure 7** below shows the hydrology map for the project area.

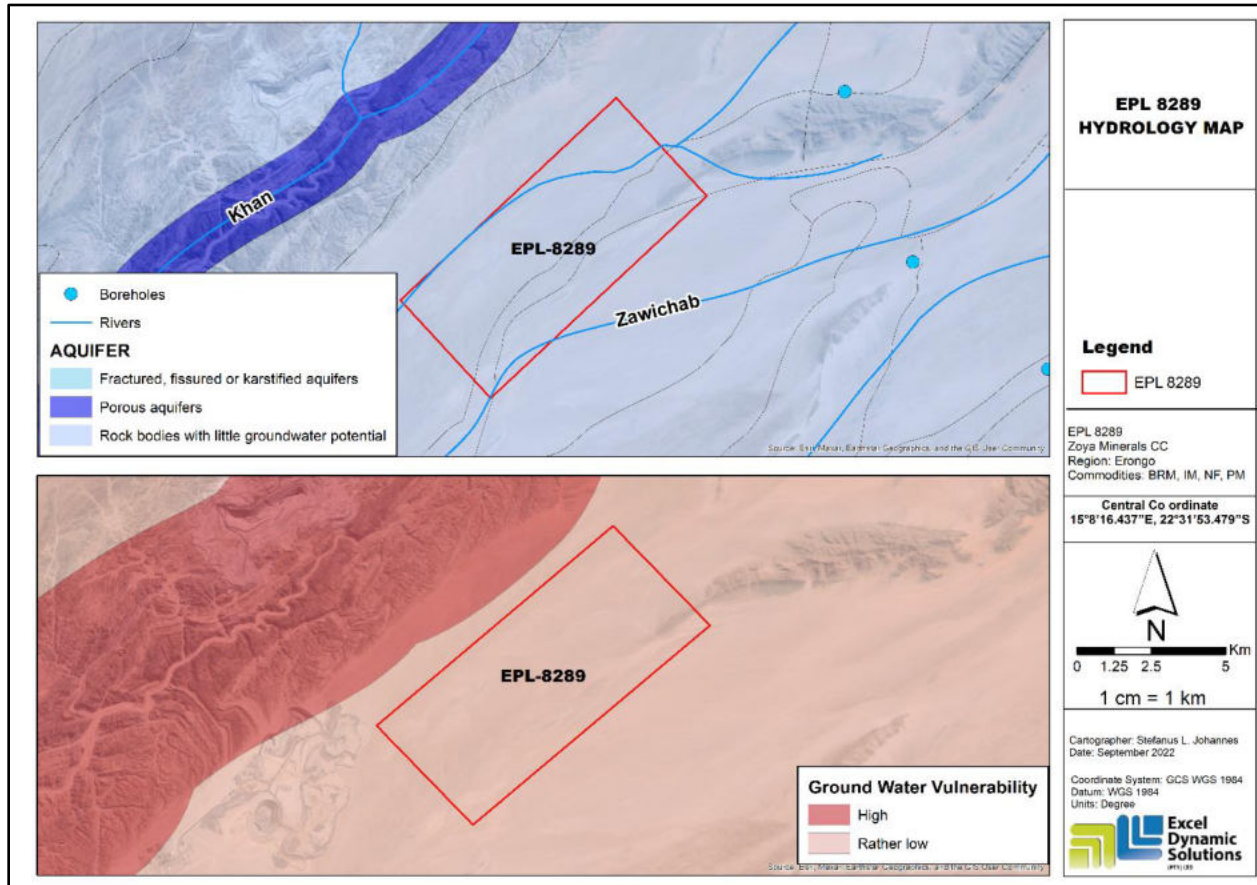


Figure 7: Shows the hydrology map for the EPL

5.7 Flora and Fauna

5.7.1 Flora

The EPL area is dominated by the *Schmidtia kalahariensis* which is an annual grass that often grows up to 90cm high. This type of grass grows in a number of habitats, including sandy soils. The characteristic of the grass is that the entire plant is covered in glandular hairs. **Figure 8** shows the dominant plant covering the EPL area.



Figure 8: Shows the *Schmidtia kalahariensis* species within the EPL 8289

5.7.2 Fauna

Table 3 below is a list of animals that may be found in the vicinity of the project area.

Table 3: Shows animals species found around the EPL area with their concern (source: Emmanuel, 2022)

| Animals | Concern |
|-----------|-----------------------|
| Springbok | Least Concern |
| Hyena | Vulnerable/Endangered |
| Jackal | Least Concern |
| Kudu | Least Concern |
| Ostrich | Least Concern |

| | |
|-----------|---------------|
| Reptiles | None |
| Oryx | Least Concern |
| Livestock | None |

5.8 Archaeology and Heritage

Archaeological remains in Namibia are protected under the National Heritage Act (Act 27 of 2004), which makes provision for archaeological impact assessment of proposed projects/programmes. The archaeology of the Central Namib has been greatly studied in some detail for other previous mining and exploration related projects, and the present assessment required a site inspection as the basis of impact assessment.

Site visit:

A detailed inspection of the site was carried out on 28 September, 2022. The site survey involved direct observation of archaeological site positions, determined in the field by hand-held GPS *etrex* 32, documented and plotted on topographic maps. In the field, all archaeological sites are assessed as to their significance and vulnerability, using two independent parallel scales devised for archaeological assessment in Namibia. **In general, no trace of any significant archaeological or historical remains of national significance, and as relevant to the National Heritage Act 27 of 2004, were found in surveyed area. However, at the localized level, the recorded sites/artifacts/ or features which they are of low significance are illustrated herein in figures and presented in Table 1 below.** These were located in different areas within the EPL 8289 boundaries.

Furthermore, there about 150 sites are recorded in the Erongo Region alone, and the Region is also endowed with Iron Age artefacts and contemporary heritage resources. According to the National Heritage Council of Namibia (Declared Sites/Lists of National Heritage), Erongo Region has about 37 heritage sites which are listed as national monuments¹. The map (Figure 9) below show the distribution of archaeological sites in Namibia.

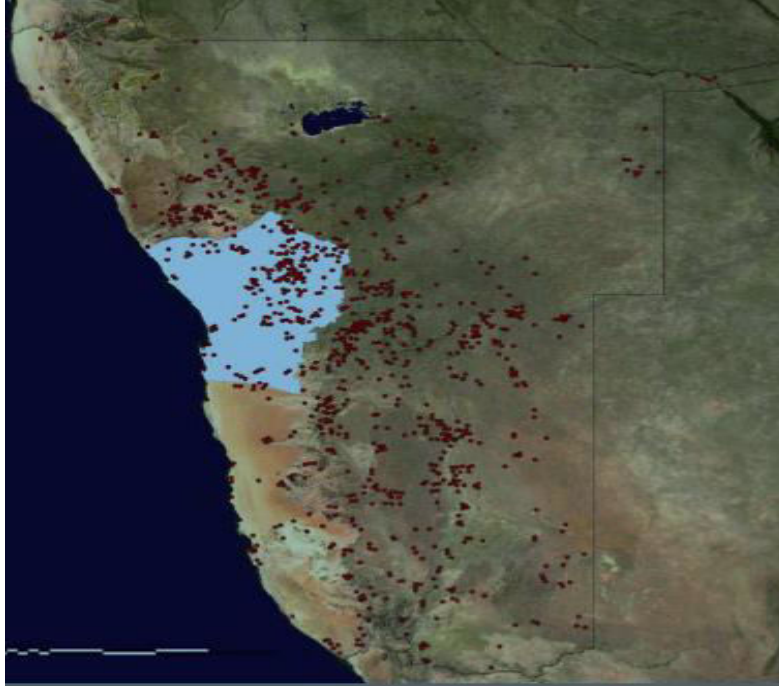


Figure 9: Distribution of the archaeological sites in Namibia with focus on Erongo Region. Source: (Kinahan, J. 2012).

Table 4 Findings of the Archaeological and Heritage sites on EPL 8289– Description of Sites

| Waypoint | Location | Elevation | Description of the findings |
|----------|------------------------------------|-----------|--|
| 199 | S 22° 34' 54.2" E 15° 07' 08.7" | 561 m | A creek – there are a lot of dollar bush plants situated within and along this creek. |
| 351 | S 22° 32' 35.1" E 15° 07' 25.4" | 596 m | A pile of stones: It can be a mining claim mark, not only possible a grave mark. |
| 353 | S 22° 32' 14.1" E 15° 07' 13.0" | 624 m | Stone artifacts: Several surface scatters are located in this area, close to the broken hill. |
| 354 | S 22° 32' 11.8" E 15° 07' 11.7" | 623 m | Drainage channel within the EPL. |
| 355 | S 22° 32' 07.7" E 15° 07' 08.7" | 642 m | Overhand cliff/ rock shelter: partially looks like a collapsed wall that create a shelter to animals (evidence of animal droppings). |



Figure 10: Some of the surface features recorded within the EPL.



Figure 11: A recorded stones arranged in one place.

5.9 Surrounding Land Uses

The EPL falls fully within Erongo region. The EPL is located near some farms, and if the routes to gain road access to the areas of interest for prospecting and exploration investigations. The Proponent is required to secure a signed agreement from the neighboring landowners to gain road access to the areas of interest for prospecting and exploration investigations as per Section

52 of the Minerals (Prospecting and Mining) Act No. 33 of 1992 and Section 2.2.3 of the Minerals Policy of Namibia.

1. Section 52 (1) The holder of mineral licence shall not exercise any rights conferred upon such holder by this Act or under any terms and conditions of such mineral licence –

(a) In, on or under any and until such time as such holder has entered into an agreement in writing with the owner of such land containing terms and conditions relating to the payment of compensation, or the owner of such land has in writing waved any right to such compensation and has submitted a copy of such agreement or waiver to the Commissioner.

Section 2.2.3 of the Draft Minerals Policy of Namibia states that the Licence Holder and/or mineral explorers currently must negotiate a contract with landowners to gain access for prospecting purposes.

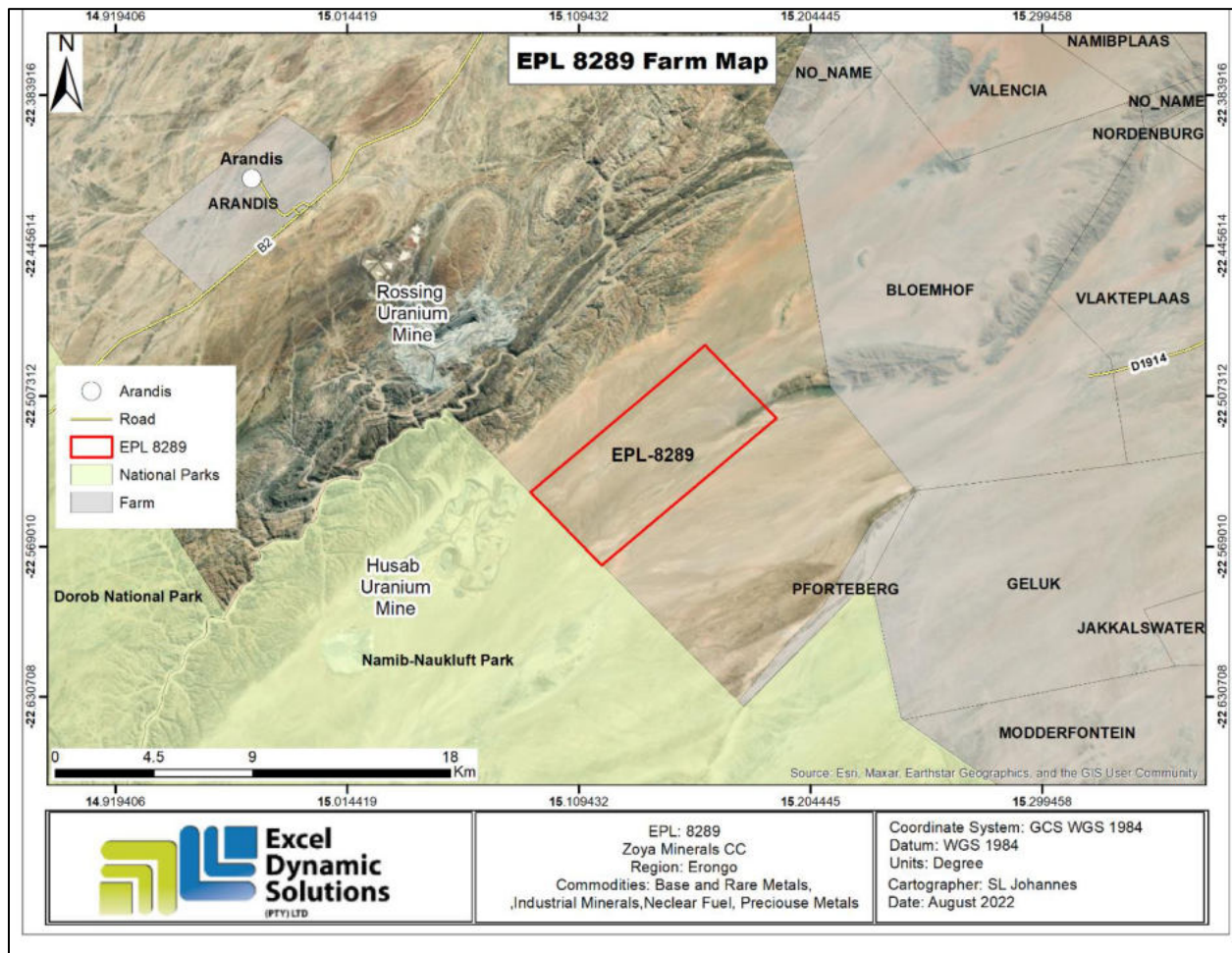


Figure 12: Land Use Map (EPL 8289)

5.10 Population of the Erongo Region

The Erongo Region covers an area of 63,586 km², which comprises 7.7 per cent of Namibia's total area of about 823,680 km². The population of Erongo Region was 150 809 (approximately 70 986 females and 79 823 males), representing a population of 2.4 persons per square kilometers. Arandis population was 5 214 in 2011. (Namibia Statistics Agency, 2011).

6 PUBLIC CONSULTATION PROCESS

Public consultation is an important component of an Environmental Assessment (EA) process. It provides potential Interested and Affected Parties (I&APs) with an opportunity to comment on and raise any issues relevant to the project for consideration as part of the assessment process, and assists the Environmental Assessment Practitioner (EAP) in identifying all potential impacts and the extent to which further investigations are necessary. Public consultation can also aid in the process of identifying possible mitigation measures. Public consultation for this project has been done under the EMA and its EIA Regulations.

6.1 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. Newspaper advertisements of the proposed exploration activities were placed in two widely read national newspapers in the region (The Namibian Newspaper and New Era Newspaper). The project advertisement/announcement ran for two consecutive weeks inviting members of the public to register as I&APs and submit their comments. The summary of pre-identified and registered I&APs is listed in **Table 4** below and the complete list of I&APs is provided in **Appendix D**.

Table 5: Summary of Interested and Affected Parties (I&APs)

| |
|--|
| National (Ministries and State-Owned Enterprises) |
| Ministry of Environment, Forestry and Tourism |
| Ministry of Mines and Energy |
| Ministry of Health and Social Services |
| Regional, Local and Traditional Authorities |
| Erongo Regional Council |
| Arandis Town Council |
| General Public |
| Neighboring mines /Interested members of the public |

| |
|---|
| Namibia Community Based Tourism Association |
|---|

6.2 Communication with I&APs

Regulation 21 of the EIA Regulations details the steps to be taken during a public consultation process and these have been used in guiding this process. Communication with I&APs with regards to the proposed development was facilitated through the following means and in this order:

- A Background Information Document (BID) containing brief information about the proposed facility was compiled (**Appendix E**) and delivered upon request to all new registered Interested and Affected parties (I&APs).
- Project Environmental Assessment notices were published in New Era and The Namibian Newspaper (08 August 2022 and 15 August 2022) (**Appendix F**), briefly explaining the activity and its locality, and inviting members of the public to register as I&APs.
- A consultation meeting was held with the I&APs on **23 September 2022** at the Arandis Community Hall at 12:00 (**Figure 11**). The consultation meeting minutes were taken and are attached as **Appendix G**.



Figure 13: Consultation meeting at the Arandis community hall.

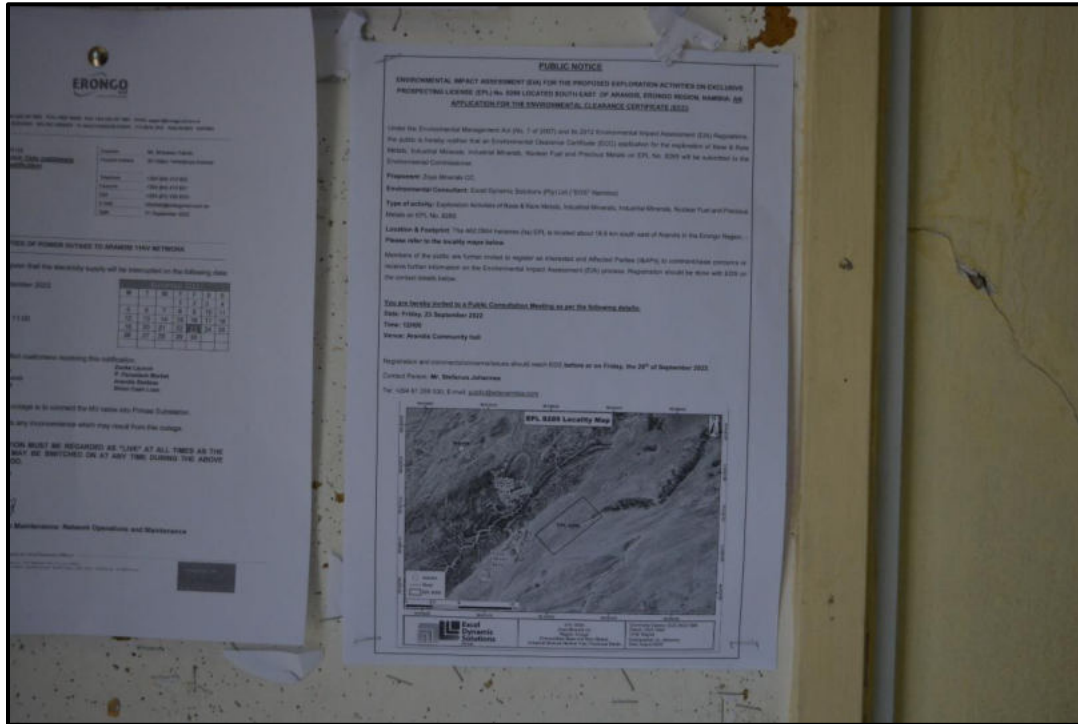


Figure 14: Site notice placed at the Arandis Town council notice board.

6.3 Feedback from Interested and Affected Parties

Issues raised by I&APs (from the consultation meeting) have been recorded and incorporated in the ESA Report and EMP. A summary of these key issues is presented in **Table 6** below. The issues raised and responses by EDS are attached under **Appendix H**.

Table 6: Summary of main issues and comments received during the public meeting

| Issues | Concern |
|-----------------------|---|
| Social responsibility | Exploration companies usually promise community members to help them through social responsibility schemes, which commonly do not materialize. Is there guarantee from Zoya Minerals CC on social responsibility. |
| Employment | Employment is an issue in the area, however, past exploration companies make promises that they will employ the local people (unskilled and semi-skilled) but don't. |

7 IMPACT IDENTIFICATION, ASSESSMENT AND MITIGATION MEASURES

7.1 Impact Identification

Proposed developments/activities are usually associated with different potential positive and/or negative impacts. For an environmental assessment, the focus is placed mainly on the negative impacts. This is done to ensure that these impacts are addressed by providing adequate mitigation measures such that an impact's significance is brought under control, while maximizing the positive impacts of the project activities. The potential positive and negative impacts that have been identified from the prospecting activities are listed as follow:

Positive:

- Socio-economic development through employment creation (primary, secondary, and tertiary employment) and skills transfer,
- Open other investment opportunities and infrastructure-related development benefits,
- Produce a trained workforce and small businesses that can service communities and may initiate related businesses,
- Boosting the local economic growth and regional economic development.
- Increased support for local businesses through the procurement of consumable items such as Personal Protective Equipment (PPE), machinery spare parts, lubricants, etc.

Negative:

- Potential disturbance of grazing land areas,
- Physical land / soil disturbance
- Impact on local biodiversity (fauna and flora) and habitat disturbance and potential illegal wildlife hunting (poaching) in the area.
- Potential impact on water resources and soils particularly due to pollution,
- Air quality issue: potential dust generated from the project.
- Potential occupational health and safety risks
- Vehicular traffic safety and impact on services infrastructure such as local roads
- Vibrations and noise associated with drilling activities may be a nuisance to locals

- Environmental pollution (solid waste and wastewater)
- Archaeological and heritage resources impact
- Potential social nuisance and conflicts (theft, damage to properties, etc).

7.2 Impact Assessment Methodology

The Environmental Assessment process primarily ensures that potential impacts that may occur from project activity are identified and addressed with environmentally cautious approaches and legal compliance. 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, as well as the International Finance Corporation (IFC) Performance Standards.

The identified impacts were assessed in terms of scale/extent (spatial scale), duration (temporal scale), magnitude (severity) and probability (likelihood of occurring), as presented in **Table 7**, **Table 8**, **Table 9** and **Table 10**, respectively.

To enable a scientific approach to the determination of the environmental significance, a numerical value is linked to each rating scale. This methodology ensures uniformity and that potential impacts can be addressed in a standard manner so that a wide range of impacts are comparable. It is assumed that an assessment of the significance of a potential impact is a good indicator of the risk associated with such an impact. The following process will be applied to each potential impact:

- Provision of a brief explanation of the impact.
- Assessment of the pre-mitigation significance of the impact; and
- Description of recommended mitigation measures.

The recommended mitigation measures prescribed for each of the potential impacts contribute towards the attainment of environmentally sustainable operational conditions of the project for various features of the biophysical and social environment. The following criteria were applied in this impact assessment:

7.2.1 Extent (spatial scale)

Extent is an indication of the physical and spatial scale of the impact. **Table 7** shows rating of impact in terms of extent of spatial scale.

Table 7: Extent or spatial impact rating

| Low (1) | Low/Medium (2) | Medium (3) | Medium/High (4) | High (5) |
|---|---|--|--|---|
| Impact is localized within the site boundary: Site only | Impact is beyond the site boundary: Local | Impacts felt within adjacent biophysical and social environments: Regional | Impact widespread far beyond site boundary: Regional | Impact extend National or over international boundaries |

7.2.2 Duration

Duration refers to the timeframe over which the impact is expected to occur, measured in relation to the lifetime of the project. **Table 8** shows the rating of impact in terms of duration.

Table 8: Duration impact rating

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

7.2.3 Intensity, Magnitude / severity

Intensity refers to the degree or magnitude to which the impact alters the functioning of an element of the environment. The magnitude of alteration can either be positive or negative. These ratings were also taken into consideration during the assessment of severity. **Table 9** shows the rating of impact in terms of intensity, magnitude, or severity.

Table 9: Intensity, magnitude or 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 | Substantial deterioration, death, illness or injury, loss of habitat / diversity or | Moderate deterioration, discomfort, partial loss of habitat / biodiversity or | Low deterioration, slight noticeable alteration in habitat and | Minor deterioration, nuisance or irritation, minor change in species / |

| Type of criteria | Negative | | | | |
|------------------|---|---|-------------------------------|--|---|
| | H- (10) | M/H- (8) | M- (6) | M/L- (4) | L- (2) |
| | habitat, total alteration of ecological processes, extinction of rare species | resource, severe alteration or disturbance of important processes | resource, moderate alteration | biodiversity. Little loss in species numbers | habitat / diversity or resource, no or very little quality deterioration. |

7.2.4 Probability of occurrence

Probability describes the likelihood of the impacts occurring. This determination is based on previous experience with similar projects and/or based on professional judgment. **Table 10** shows impact rating in terms of probability of occurrence.

Table 10: Probability of occurrence impact 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 risk or vulnerability to natural or induced hazards. | Probable if mitigating measures are not implemented. Medium risk of vulnerability to natural or induced hazards. | Definite (regardless of preventative measures), highly likely, continuous. High risk or vulnerability to natural or induced hazards. |

7.2.5 Significance

Impact significance is determined through a synthesis of the above impact characteristics. The significance of the impact “without mitigation” is the main determinant of the nature and degree of mitigation required. As stated in the introduction to this section, for this assessment, the significance of the impact without prescribed mitigation actions is measured.

Once the above factors (**Table 7**, **Table 8**, **Table 9** and **Table 10**) have been ranked for each potential impact, the impact significance of each is assessed using the following formula:

$$\text{SIGNIFICANCE POINTS (SP)} = (\text{MAGNITUDE} + \text{DURATION} + \text{SCALE}) \times \text{PROBABILITY}$$

The maximum value per potential impact is 100 significance points (SP). Potential impacts were rated as high, moderate or low significance, based on the following significance rating scale (Table 11).

Table 11: Significance rating scale

| <i>Significance</i> | <i>Environmental Significance Points</i> | <i>Colour Code</i> |
|---------------------|--|--------------------|
| 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

For an impact with a significance rating of high (-ve), mitigation measures are recommended to reduce the impact to a medium (-ve) or low (-ve) significance rating, provided that the impact with a medium significance rating can be sufficiently controlled with the recommended mitigation measures. To maintain a low or medium significance rating, monitoring is recommended for a period to enable the confirmation of the significance of the impact as low or medium and under control.

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, eco-system, property, or a controlled water source. If contamination is to cause harm or impact, it must reach a receptor.

A pollutant linkage occurs when a source, pathway and receptor exist together. Mitigation measures aim firstly, avoid risk and if the risk cannot be avoided, mitigation measures to minimize the impact are recommended. Once mitigation measures have been applied, the identified risk would reduce to lower significance (Booth, 2011).

This assessment focuses on the three project phases namely, the prospecting, exploration, and decommissioning. The potential negative impacts stemming from the proposed activities of the EPL are described, assessed and mitigation measures provided thereof. Further mitigation measures in a form of management action plans are provided in the Draft Environmental Management Plan.

7.3 Assessment of Potential Negative (Adverse) Impacts

The significant negative impacts potentially associated with the proposed prospecting and exploration of Nuclear Fuel Minerals are assessed below:

7.3.1 Potential disturbance to the grazing areas

The effect of exploration work on the land (when done over a wider spatial extent), if not mitigated, may hinder animal husbandry in the area and its surrounding. The project area might experience loss of its pastoral system over time. Losing grazing pastures for livestock and wildlife minimizes the number of animals in the area, and lead to loss of livelihoods. Under the status quo, the impact can be of a medium significance rating. With the implementation of appropriate mitigation measures, the rating will be reduced to a lower significance. The impact is assessed in **Table 12** below.

Table 12: Assessment of the impacts of exploration on grazing areas

| Mitigation Status | Extent | Duration | Intensity | Probability | Significance |
|-------------------|---------|----------|-----------|-------------|--------------|
| Pre mitigation | M: -3 | M: -3 | M/L: -4 | M/H: 4 | M: -40 |
| Post mitigation | L/M: -2 | L/M: -2 | L/M: -4 | L/M: 2 | L: -16 |

Mitigations and recommendations to lower the possibility of disturbance and loss of the Pastoral system

- Any unnecessary removal or destruction of grazing land, due to exploration activities should be avoided.
- Vegetation found on the site, but not in the targeted exploration areas should not be removed but left to preserve biodiversity and grazing land.
- Workers should refrain from driving off road and creating unnecessary tracks that may contribute to the loss of grazing land.
- Environmental awareness on the importance of the preservation of grazing land for local livestock should be provided to the workers.

7.3.2 Land Degradation and Loss of Biodiversity

Fauna: The trenching, pitting and drilling activities done for detailed exploration would result in land degradation, leading to habitat loss for a diversity of flora and fauna ranging from microorganisms to large animals and vegetation. Endemic species are most severely affected, since even the slightest disruption in their habitat can result in extinction or put them at high risk of being wiped out.

The presence and movement of the exploration workforce and operation of project equipment and heavy vehicles would disturb local livestock and wildlife present on the EPL. There may also be a risk to illegal hunting (poaching) of local wildlife by project related workers. This could lead to loss or number reduction of specific faunal species, which also impacts tourism in the area.

Areas that are not rehabilitated and unfenced boreholes, trenches and pits used for exploration (once they are no longer in use) could pose a high risk of animals falling into holes and pits, causing injuries and potentially mortalities.

Flora: Direct impacts on flora and vegetation communities will mainly occur through clearing for access routes and associated infrastructure. The dust emissions from drilling may affect surrounding vegetation through the fall of dust, the impact would be localized, and therefore, manageable.

Under the status quo, 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 13** below.

Table 13: Assessment of the impacts of exploration on biodiversity

| 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: 2 | L: -16 |
|-----------------|---------|---------|---------|--------|--------|

Mitigations and recommendations to minimize the loss of biodiversity

- The Proponent should avoid unnecessary removal of vegetation, in order 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.
- Movement of vehicle and machinery should be restricted to existing roads and tracks to prevent unnecessary damage to the vegetation.
- No onsite vegetation should be cut or used for firewood related to the project's operations. The Proponent should provide firewood for his onsite camping workers from authorized firewood producer or seller.
- Design access routes appropriately in a manner that disturbs minimal land areas as possible.
- Vegetation clearing is to be kept to a minimum. The vegetation of the site is largely low and open and therefore whole-sale 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 the progressive rehabilitation measures. These should consider:
 - Workers should refrain from disturbing, killing or stealing animals and killing small soil and rock outcrop species found on sites.
 - Poaching (illegal hunting) of domestic and wildlife from the area is strictly prohibited.
 - Environmental awareness on the importance of biodiversity preservation should be provided to the workers.

7.3.3 Generation of Dust (Air Quality)

Dust emanating from site access roads when transporting exploration equipment and supplies to and from site may compromise the air quality in the area. Vehicular movements from heavy vehicles could create dust, even though it may not be severe. The hot and dry environment, and loose and sandy nature of the substrate and low vegetation cover may 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. 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** below.

Table 14: Assessment of the impacts of exploration on air quality

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

Mitigations and recommendations to minimize dust

- Avoid driving exploration vehicles at a speed 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 days of the week and hours of day. This will keep the vehicle-related dust level minimal in the area.
- 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, in cases of excessive generation of dust.

7.3.4 Water Resources Use

Water resources may be impacted by project developments/activities in two ways - through pollution (water quality) or over-abstraction (water quantity) or at times both.

The abstraction of more water than can be replenished from areas of low groundwater potential would negatively affect local communities that depend on the groundwater resource (aquifer).

The impact of the project activities on water resources would be dependent on the water volumes required for each project activity. Commonly, drilling activities use a lot of water. However, this would depend on the type of drilling methods employed (e.g. diamond drilling is more water-consuming compared to reverse circulation), and the type of mineral being explored for.

The drilling method to be employed for this project's exploration activities is Reverse Circulation, which may require about 4,000 litres of water per month. The actual water amounts would be dependent on the duration of the exploration works and number of exploration boreholes required to make reliable interpretation on the commodities explored for. The exploration period is temporally limited, therefore, the impact will only last for the duration of the exploration activities and cease upon their completion.

Without the implementation of any mitigation measures, the impact can be rated as medium, but upon effective implementation of the recommended measures, the impact significance would be reduced to low as presented in the **Table 15** below.

Table 15: Assessment of the project impact on water resource use and availability

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

Mitigations and recommendations to manage water use

- Water must be used efficiently, and the 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 of water supply should be made between the landowners and the Proponent.
- Water reuse/recycling methods should be implemented as far as practicable, e.g. water used to cool off exploration equipment can be captured and used for the cleaning of project equipment, if possible.
- Water storage tanks should be inspected daily to ensure that there is no leakage, resulting in wasted water on site.
- Water conservation awareness and saving measures training should be provided to all the project workers.

7.3.5 Soil and Water Resources Pollution

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.

The spills (depending on volumes spilled on the soils) from these 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 handled is relatively small. Therefore, the impact will be moderately low.

Pre-mitigation measure implementation, the impact significance is moderate and upon implementation, the significance will be reduced to low. The impact is assessed in **Table 16** below.

Table 16: Assessment of the project impact on soils and water resources (pollution)

| Mitigation Status | Extent | Duration | Intensity | Probability | Significance |
|-------------------|--------|----------|-----------|-------------|--------------|
| Pre mitigation | M - 3 | M/H - 4 | M - 6 | M - 3 | M - 39 |
| Post mitigation | L - 1 | L - 1 | L - 2 | L/M - 2 | L - 8 |

Mitigations and recommendations to manage soil and water pollution

- Spill control preventive measures should be in place on site to management soil contamination, to prevent and/or minimize contamination from reaching water bodies. Some of the soil control preventive measures that can be implemented include:
 - Identification of oil storage and use locations on site and allocate drip trays and polluted soil removal tools suitable for that specific surface (soil or hard rock cover) on the sites.
 - Maintain equipment and fuel storage tanks to ensure that they are in good condition thus preventing leaks and spills.
 - The oil storage and use locations should be visually inspected for container or tank condition and spills.
- All project employees should be sensitized about the impacts of soil pollution and advised to follow appropriate fuel delivery and handling procedures.
- The Proponent should develop and prepare countermeasures to contain, clean up, and mitigate the effects of an oil spill. This includes keeping spill response procedures and a well-stocked cache of supplies easily accessible.
- Ensure employees receive basic Spill Prevention, Control, and Countermeasure (SPCC) Plan training and mentor new workers as they get hired.
- Project machines and equipment should be equipped with drip trays to contain possible oil spills when operated on site.
- Polluted soil should be removed immediately and put in a designate waste type container for later disposal.
- Drip trays must be readily available to ensure that accidental fuel spills along the tank are cleaned up on timeously.

- Polluted soil must be collected and transported away from the site to an approved and appropriately classified hazardous waste treatment facility.
- Washing of vehicles and equipment contaminated by hydrocarbons must take place at a dedicated area, where contaminants are prevented from contaminating soil or water resources.
- Ablution waste must be periodically emptied out before reaching capacity and transported to a wastewater treatment facility.

7.3.6 Waste Generation

During the prospecting and exploration phase, domestic and general waste is produced on site. If the generated waste is not disposed of in a responsible way, land pollution may occur on the EPL or around the site. 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. To prevent these issues, biodegradable and non-biodegradable wastes must be stored in separate containers and collected regularly for disposal at a recognized landfill/dump site. Any hazardous waste that may have an impact on the animals, vegetation, water resources and the general environment should be handled cautiously. Without any mitigation measures, the general impact of waste generation has a medium significance. The impact will reduce to low significance, upon implementing the mitigation measures. The assessment of this impact is given in **Table 17**.

Table 17: Assessment of waste generation impact

| Mitigation Status | Extent | Duration | Intensity | Probability | Significance |
|-------------------|---------|----------|-----------|-------------|--------------|
| Pre mitigation | L/M - 2 | L/M - 2 | M - 6 | M - 3 | M - 30 |
| Post mitigation | L - 1 | L - 1 | L - 2 | L/M - 2 | L - 8 |

Mitigations and recommendations to waste management

- Workers should be sensitized to dispose of waste in a responsible manner
- No littering is permitted on site.
- After each daily works, the Proponent must ensure that there is no waste left on the sites.

- All domestic and general operational waste produced daily should be contained onsite until such that time it will be transported to designated waste sites.
- No waste may be buried or burned on site or anywhere else.
- The exploration site should be equipped with separate waste bins for hazardous and general/domestic waste.
- Sewage waste should be stored as per the portable chemical toilets supplied on site and regularly disposed of at the nearest treatment facility.
- 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.
- Careful storage and handling of hydrocarbons on site is essential.
- Potential contaminants such as hydrocarbons and wastewater should be contained on site and disposed of in accordance with local 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.

7.3.7 Occupational Health and Safety Risks

Project personnel (workers) involved in the exploration activities may be exposed to health and safety risks. These are in terms of 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 will be 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). Heavy vehicles, equipment and the fuel storage area should be properly secured to prevent any harm or injury to the Proponent's personnel or local domestic animals.

The use of heavy equipment, especially during drilling and the presence of hydrocarbons on sites may result in accidental fire outbreaks. This could pose a safety risk to the project personnel and equipment and vehicles too.

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 18** below and mitigation measures provided.

Table 18: Assessment of the impacts of exploration on health and safety

| 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 - 2 | L/M - 2 | L - 12 |

Mitigations and recommendations to minimize health and safety issues

- The Labour Act's Health and Safety Regulations should be complied with.
- The Proponent should commit to and make provision for medical check-ups for all the workers at site to monitor the impact of project related activities on workers.
- As part of their induction, the project workers should be provided with an awareness training of the risks of mishandling equipment and materials on site as well as health and safety risk associated with their respective jobs.
- When working on site, employees should be properly equipped with adequate personal protective equipment (PPE) such as coveralls, gloves, safety boots, earplugs, dust masks, safety glasses, and hard hats.
- Heavy vehicle, equipment and fuel storage site 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 should 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 and the holes filled and levelled, and trenches backfilled respectively.
- An emergency preparedness plan should be compiled, and all personnel appropriately trained.
- Workers should not be allowed to consume any intoxicants prior to and during working hours nor allowed on site when under the influence of alcohol as this may lead to mishandling of equipment which results into injuries and other health and safety risks.
- The site areas that are considered temporary risks should be equipped with cautionary signs.

7.3.8 Impact of Project Vehicles on Traffic, Roads and Safety

Traffic volumes will increase on district roads during exploration as the project would need a delivery of equipment, supplies, machinery and services on site, and the types of vehicle used range from light vehicle to heavy trucks. The heavy trucks travelling on the local roads are slow moving and exert more pressure on them. These local roads in areas are normally not in a good condition already for light vehicles, and the additional vehicles such as heavy ones may make it worse and difficult to be used by small (vehicles) that already struggled on the roads before they got worse, in addition the trucks, medium and small vehicles will be frequenting the area to and from exploration sites on the EPL and this would potentially increase slow moving heavy vehicular traffic along these roads and put additional pressure on the roads.

This will be a concern if maintenance and care is not taken during the exploration phase. The impact would be short-term (during exploration only) and therefore, manageable.

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 as assessed in **table 19** below.

Table 19: Assessment of the Impact of Project Vehicles on Traffic, Roads and Safety

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

Mitigations and recommendations to minimize Impact of Project Vehicles on Traffic, Roads and Safety issues.

- The heavy trucks transporting materials and services to site should be scheduled to travel at least twice or thrice a week to avoid daily travelling to site, unless on cases of emergencies.
- The Proponent should consider frequent maintenance of local roads to ensure that the roads are in a good condition for other roads users, and travelers from and outside the area.
- The transportation of exploration materials, equipment and machinery should be limited, to reduce pressure on local roads.

- The heavy truck loads should comply with the maximum allowed speed limit for respective vehicles while transporting materials and equipment/machinery on the public and access roads (40km/h).
- Any carting of water to the site should be done minimally, in containers that can supply and store water for relatively long periods, in order to reduce the number of heavy trucks on the road daily.
- Drivers of all project vehicles must be in possession of valid and appropriate driving licenses and adhere to the road safety rules.
- Drivers should drive slowly and be on the lookout for livestock and wildlife, as well as residents/travelers.
- The Proponent should ensure that the site access roads are well equipped with temporary road signs to cater for vehicles in the area throughout the project's life cycle.
- Project vehicles should be in a road worthy condition and serviced regularly, to avoid accidents owing to mechanical faults.
- Vehicle drivers should only make use of designated site access roads provided and as agreed.
- Vehicle's drivers should not be allowed to operate vehicles while under the influence of any intoxicants.
- No heavy trucks or project related vehicles should be parked outside the project site boundary or demarcated areas for such purpose.
- To control traffic movement on site, deliveries from and to site should be carefully scheduled. This should optimally be during weekdays and between the hours of 8am and 5pm.
- The site access road(s) should be upgraded to an acceptable standard to be able to accommodate project related vehicles as well as farm vehicles.

7.3.9 Noise and vibrations

Prospecting and exploration work (especially drilling) may be a nuisance to surrounding communities due to the noise produced by the activity. Excessive noise and vibrations can be a health risk to workers on site. The exploration equipment used for drilling on site is of medium size and the noise level is bound to be limited to the site only, therefore, the impact likelihood is minimal. Without any mitigation, the impact is rated as of medium significance. To change the impact significance from the pre-mitigation significance to low rating, the mitigation measures should be implemented. This impact is assessed in **Table 20** below.

Table 20: Assessment of the impacts of noise and vibrations from exploration

| Mitigation Status | 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 - 2 | L - 2 | L/M - 2 | L - 10 |

Mitigations and recommendations to minimize noise

- Noise from operations' vehicles and equipment on the sites should be kept at acceptable levels.
- The exploration operational times should be set such that no exploration activity is carried out during the night or too early in the morning.
- Exploration hours should be restricted to between 08h00 and 17h00, or at the hours agreed upon by the Proponent and land owners, to avoid noise and vibrations generated by exploration equipment and the movement of vehicles before or after hours.
- When operating the drilling machinery onsite, workers should be equipped with personal protective equipment (PPE) such as earplugs to reduce exposure to excessive noise.

7.3.10 Disturbance to Archaeological and Heritage resources

The proposed prospecting and exploration area did not contain any features of archaeological significances. In general, no trace of any significant archaeological or historical remains of national significance, and as relevant to the National Heritage Act 27 of 2004, were found in surveyed area. However, at the localized level, some features have been picked up and are of relatively low archaeological significance.

Therefore, this impact can be rated as low significance if there are no mitigation measures in place. Upon implementation of the necessary measures, the impact significance will be reduced to a lower rating. The impact is assessed in **Table 21**.

Table 21: Assessment of the impacts of exploration on archaeological & heritage resources

| Mitigation Status | Extent | Duration | Intensity | Probability | Significance |
|-------------------|---------|----------|-----------|-------------|--------------|
| Pre mitigation | M - 2 | M - 3 | M - 2 | M/H - 2 | M – 16 |
| Post mitigation | L/M - 2 | L/M - 2 | L - 2 | L/M - 2 | L - 12 |

Mitigations and recommendations to minimize impact on archaeological and heritage resources

- If any archaeological material or human burials are uncovered during the course of prospecting or exploration activities, then work in the immediate area should be halted, the find would need to be reported to the heritage authorities and may require inspection by an archaeologist.
- Buffer zones should be maintained around known significant archaeological, historical or cultural heritage sites as far as possible. Graves and areas with cultural significance are excluded from any development.
- A “No-Go-Area” should be put in place where there is evidence of sub-surface archaeological materials, archaeological site, historical, rock paintings, cave/rock shelter or past human dwellings. It can be a demarcation by fencing off or avoiding the site completely by not working closely or near the known site. The ‘No-Go Option’ might have a neutral impact significance.
- On-site personnel (s) and contractor crews must be sensitized 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 making the correct judgment on which actions should be taken (refer to CFP Attached).
- If there is a possibility of encountering or unearthing of archaeological materials then it is better to change the layout design so as to avoid the destruction that can occur.
- Direct damage to archaeological or heritage sites should be avoided as far as possible and, where some damage to significant sites is unavoidable, scientific/historical data should be rescued.
- All ground works should be monitored and where any stratigraphic profiles in context with archaeological material are exposed, these should be recorded, photographed and coordinates taken.
- The footprint impact of the proposed prospecting and exploration activities should be kept to minimal to limit the possibility of encountering chance finds within the EPL boundaries.
- A landscape approach of the site management must consider culture and heritage features in the overall planning of exploration infrastructures within and beyond the licenses’ / EPL boundaries;

7.3.11 Social Nuisance: Local Property intrusion and Vandalism

The presence of some non-resident workers may lead to social annoyance to the local community. This could particularly be a concern if there are any cases of damage and vandalism to private property. The private properties of the locals could be houses, fences, vegetation, domestic property or any properties of economic or cultural value to the landowners or occupiers of the land. Unpermitted and unauthorized entry to private properties may cause clashes between the affected property (land) owners and the Proponent.

Pre-implementation of mitigation measures, the impact is rated as of medium significance. However, upon mitigation (post-mitigation), the significance will change from medium to low rating. The impact is assessed below (**Table 22**).

Table 22: Assessment of social impact of community property damage or disturbance

| Mitigation Status | Extent | Duration | Intensity | Probability | Significance |
|-------------------|--------|----------|-----------|-------------|--------------|
| Pre mitigation | M - 3 | M - 3 | M - 6 | M/H - 4 | M – 48 |
| Post mitigation | L - 1 | L - 1 | M/L - 4 | M/L -2 | L - 12 |

Mitigations and recommendations to minimize the issue intrusion or vandalism of private property

- No intruding or vandalism to dwellings, shelters or fences.
- Any workers or site employees found guilty of intruding private property should be dealt with as per their employer' (Proponent)'s code of employment conduct.
- Project workers should be advised to respect the community and local's private property, values, and norms.
- No worker should be allowed to wander or loiter on private property without permission.
- Project workers are not allowed to kill or in any way disturb local livestock and wildlife near the EPL.
- The cutting down or damaging of vegetation belonging to the affected farmers or neighbouring farms is strictly prohibited.

7.4 Cumulative Impacts Associated with Proposed Exploration

According to the International Finance Corporation (2013), cumulative impacts are defined as “those that result from the successive, incremental, and/or combined effects of an action, project, or activity (collectively referred to in this document as “developments”) when added to other existing, planned, and/or reasonably anticipated future ones”.

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

- **The Impacts on road infrastructure:** The proposed exploration activity contributes cumulatively to various activities such as farming activities and travelling associated with tourism and local daily routines. The contribution of the proposed project to this cumulative impact is however not considered significant given the short duration, and local extent (site-specific) of the intended mineral exploration activities.
- **The use of water:** While the contribution of this project will not be significant, mitigation measures to reduce water consumption during exploration are essential.

7.5 Mitigations and Recommendations for Rehabilitation

The rehabilitation of explored (disturbed) sites will include but not limited to the following:

- Backfilling of trenches and or pits in such a way that subsoil is replaced first, and topsoil replaced last.
- Closing off and capping of all exploration drilling boreholes. The boreholes should not only be filled with sand alone, as wind may scour the sand and re-establish the holes.
- Carrying away all waste generated from the last disposal to the last days on site.
- Transporting all machinery and equipment as well as vehicles to designated offsite storage facilities.

8 CONCLUSIONS AND RECOMMENDATIONS

The potential positive and negative impacts stemming from the proposed exploration activities on EPL No. 8289 were identified, assessed and appropriate management and mitigation measures (to negative impacts) made thereof for implementation by the Proponent, their contractors and project related employees.

A majority of the potential impacts were found to be of medium rating significance. With effective implementation of the recommended management and mitigation measures, a reduced rating in the significance of adverse impacts is expected from Medium to Low. To maintain the desirable rating, the implementation of management and mitigation measures should be monitored by the Proponent directly, or their Environmental Control Officer (ECO). The monitoring of this implementation will not only be done to maintain low rating, but also to ensure that all potential impacts identified in this study, and other impacts that might arise during implementation are properly identified in time and addressed right away.

The Environmental Consultant is confident that the potential negative impacts associated with the proposed project activities can be managed and mitigated by the effective implementation of the recommended management and mitigation measures, and with effort and commitment directed at monitoring the implementation of these measures.

It is, therefore, recommended that the proposed prospecting and exploration activities may be granted an ECC, provided that:

- All the management and mitigation measures provided herein are effectively and progressively implemented.
- All required permits, licenses and approvals for the proposed activities should be obtained as required.
- The Proponent and all their project workers or contractors comply with the legal requirements governing their project and its associated activities, and ensure that project permits and or approvals required to undertake specific site activities are obtained and renewed as stipulated by the issuing authorities.
- Site areas where exploration activities have ceased are rehabilitated, as far as practicable, to their pre-exploration state.

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