



ENVIRONMENTAL ASSESSMENT (EA) REPORT FOR EXCLUSIVE PROSPECTING LICENSE No. 7847 LOCATED NEAR DORDABIS SETTLEMENT IN THE KHOMAS REGION, NAMIBIA

REPORT VERSION: FINAL

ECC APPLICATION NUMBER: APP-002676

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Date: **October 2022**



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EXECUTIVE SUMMARY

Lodestone Namibia (Pty) Ltd (The Proponent) has been granted Exclusive Prospecting License (EPL) No. 7847 by the Ministry on Mines and Energy (MME). The tenure of the license is from 04 February 2010 to 27 July 2023. The EPL area is prospective to three (3) groups of commodities, upon which detailed prospecting and exploration activities will be conducted. The commodity groups are Base and Rare Metals, Precious Metals, and Industrial Minerals.

The EPL is located approximately 5 km northwest of Dordabis Settlement in the Khomas Region, and covers a surface area of 6840.8561 ha. The Proponent plans to conduct prospecting and exploration activities leading to the estimation and delineation of the target resources.

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 is compiled and submitted to the 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).

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 about 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 soil and/or the geophysical survey results be positive, 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 - 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).

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:** land degradation and loss of biodiversity (fauna and flora); Generation of dust; Generation of waste; Visual Impacts; Occupational health and safety risks, Vehicular traffic safety; Vibrations and noise associated with drilling activities; Environmental pollution (solid waste and wastewater), Archaeological and heritage impact and Impacts associated with closure and decommissioning of exploration works

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

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CONCLUSION

The potential impacts 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 Dordabis, where the I&APs raised comments and concerns on the proposed project activities

The potential positive and negative impacts stemming from the proposed prospecting and exploration activities on EPL 7847 were identified, assessed and mitigation measures made thereof. The mitigation measures and recommendations provided in this Environmental Assessment report and management action plans provided in the draft Environmental Management Plan, can be deemed sufficient to avoid and/or reduce (where impact avoidance is impossible) the risks to acceptable levels. The Consultant is therefore confident that these measures are sufficient and recommend that the Proponent be issued with the Environmental Clearance Certificate (ECC) to enable for the commencement of exploration works on EPL 7847. However, the ECC should be issued on a condition that the provided management measures and action plans are effectively implemented on site and monitored. Should the ECC be issued, the Proponent will be expected to be compliant with the ECC conditions as well as legal requirements governing the mineral exploration and related activities.

The issues and concerns raised by the registered I&APs contributed to the basis for this report and the Draft EMP. The issues were addressed and incorporated into this report whereby mitigation measures have been provided, 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 must be monitored by the Proponent, or their Environmental Control Officer (ECO) is highly recommended. The monitoring of this implementation will be done to maintain low impact ratings and 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 immediately.

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.

LIMITATIONS

The Consultant warrants that the findings and conclusions contained herein were accomplished in accordance with the methodologies set forth in the Scope of Work and EMA, 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 process concerning the subject property is reliable. However, the Consultant cannot and does not warrant or guarantee that the information provided by these 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, community meetings 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 B: Environmental Management Plan (EMP)

Appendix C: Curricula Vitae (CV) for the Environmental Assessment Practitioner (EAP)

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

Appendix E: Background Information Document (BID)

Appendix F: EIA Notification in the newspapers (*New Era* and *Namibian*)

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Appendix H: Public Meeting Attendance Register

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LIST OF ABBREVIATIONS

Abbreviation	Meaning
AMSL	Above Mean Sea Level
BID	Background Information Document
CV	Curriculum Vitae
DEA	Department of Environmental Affairs
EA	Environmental Assessment
EAP	Environmental Assessment Practitioner
ECC	Environmental Clearance Certificate
EDS	Excel Dynamic Solutions
EIA	Environmental Impact Assessment
EMA	Environmental Management Act
EMP	Environmental Management Plan
EPL	Exclusive Prospecting License
KRC	Khomas Regional Council
KRDP	Khomas Regional Development Profile
GG	Government Gazette
GN	Government Notice
I&APs	Interested and Affected Parties
MEFT	Ministry of Environment, Forestry and Tourism
Reg	Regulation
S	Section
TOR	Terms of Reference

Key Terms

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.
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.

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.
Fauna	All of the animals found in a given area/region, habitat or geological period.
Flora	All of the plants found in a given area/region, habitat or geological period.
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.
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.

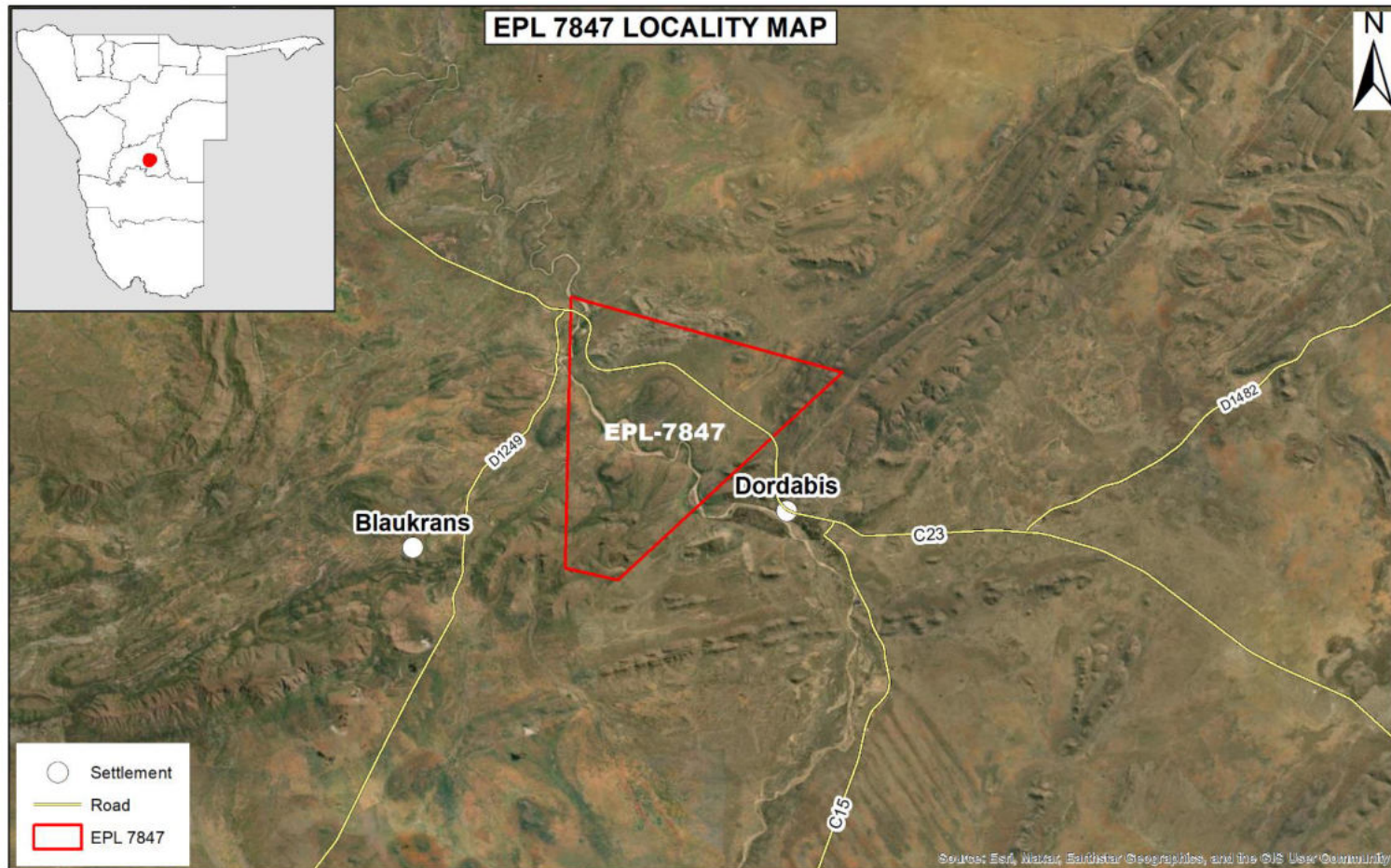
Terms of Reference (ToR)	Written requirements governing full EIA input and implementation, consultations to be held, data to be produced and form/contents of the EIA report. Often produced as an output from scoping.
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1 INTRODUCTION

1.1 Project Background

Lodestone Namibia (Pty) Ltd (The Proponent), as holder of the Exclusive Prospecting License (EPL) 7847, as granted by the Ministry of Mines and Energy (MME), intends to acquire an Environmental Clearance Certificate to conduct prospecting and exploration activities on the EPL. The Proponent focuses on acquisition, exploration and development of Base and Rare Metals, Precious Metals, Precious Stones, and Industrial Minerals on the EPL. A locality map of EPL 7847 is shown in **Figure 1**.

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.



	Cartographer: SL Johannes Date: October 2022	EPL 7847 Lodestone Namibia (Pty) Ltd. Region: Khomas Commodities: BRM,IM,PM	Coordinate System: GCS WGS 1984 Datum: WGS 1984 Units: Degree 17.596446 E -22.899915 S	
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Figure 1: EPL 7847 Locality Map

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 are done by Ms. Rose Mtuleni with support from Ms. Althea Brandt and Mr. Silas David, and reviewed by Mr. Nerson Tjelos. The CV for Mr. Tjelos is presented in **Appendix C**.

1.3 Motivation for the Proposed Project

Mining is a source of mineral commodities that many countries find essential for maintaining and improving their standards of living. Mining is one of the largest contributors to the Namibian economy. The Proponent's exploration programme represents a valuable opportunity to contribute to infrastructure and minerals development, which is a key component in the development of Namibia and the nation's economy. Exploration activities provide opportunities for employment, dividends, and taxes that fund social infrastructure. The minerals sector yields foreign exchange and accounts for a significant portion of gross domestic product. In addition, the industry produces a trained workforce and small businesses that can service communities and may initiate related businesses.

A number of associated activities such as manufacturing of exploration and mining equipment, provision of engineering and environment services occur and expand from exploration activity. Successful exploration work can lead to mining activities on the EPL, which would feed into the national development plans such as NDP5, vision 2030. The project is expected to generate full time short to medium term direct employment for at least 10 people. The majority of workers to be considered for the proposed exploration project would be the skilled and semi-skilled people (general labourers and operators). With careful consideration of the environment, the envisioned development of mining activity would boost the local and national economy, making contribution to the national development agenda.

2 PROJECT DESCRIPTION: PROPOSED PROSPECTING / EXPLORATION ACTIVITY

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 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 Survey

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 workers, 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 Survey

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 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

The EPL is located about 5 km northwest of the Dordabis Settlement. The EPL covers the area spreading outward from the intersection between the C23 and C15 roads. Access to exploration site(s) will be organised along the existing roads as far as possible. Tracks for new access roads to enable exploration activity should be assessed for any environmental sensitivity. 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 exploration program in terms of vehicles and equipment include: two (4X4) vehicles, truck, water tanks, drilling rig and drilling support equipment, compressor and a power generator. Equipment and vehicles will be stored at a designated area near accommodation site or a storage site established within the EPL

2.2.4 Services and Infrastructure

Water: Water required for the operation phase will be obtained from nearest boreholes and off-site municipal sources and/or from any other approved water sources through water abstraction permits. The estimated monthly water consumption amounts are at nearly 9000 litres. This estimate includes water for drinking, sanitation, cooking, dust control, drilling, and washing equipment.

Power supply: Power required during the operation phase may be provided from the diesel generators.

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 along the tank trailer path/route around the exploration sites are cleaned up as soon as they have been detected.

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.

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 in Dordabis Settlement or any nearby farms on the EPL. A campsite will be set up for the exploration crew. If the accommodation camp is to be set up on a farm, necessary arrangements will be done with the farm owner/s. Exploration activity will take place during the day time only and the exploration team will commute between the work site and their place of accommodation

2.2.9 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.

2.3 Decommissioning and Rehabilitation Phase

Once the exploration activities on EPL 7847 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: “*different means of meeting the general purpose and requirements of the activity*” (Environmental Management Act (2007)) of Namibia (and its regulations (2012)). This section will highlight the different ways in which the project can be undertaken and identify the alternative that will be the most practical but least damaging to the environment.

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 there is no proceeding with the proposed activity. Should the proposed works be discontinued, none of the potential impacts (positive and negative) identified would occur.

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 potential foreign direct investment.**
- **About 10 job opportunities for community members will not be realized.**
- **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 for local community members would be not realized.**

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

3.1.2 Exploration Location

The prospecting/exploration location is dependent on the mineralogy and geological setting, economic geology, and the exploration and mining history of the area. Therefore, finding an alternative location for the planned exploration activities is not possible. This means that the target commodities’ mineralization is area specific, as exploration targets are primarily determined by the geology (host rocks) and the tectonic environment of the site (ore forming mechanism). The tenements occupy a sufficient area for future related facilities, should an economic mineral deposit be defined.

3.1.3 Exploration Methods

Both invasive and non-invasive exploration activities are expected to take place. If an economically viable discovery is made, the project will seek to acquire a mining license, and proceed to mining phase, if granted.

4 LEGAL FRAMEWORK: LEGISLATION, POLICIES AND GUIDELINES

A review of applicable Namibian legislation, policies and guidelines relevant to the proposed development are given in this section. This review serves to inform the project Proponent, Interested and Affected Parties and the decision makers at the DEA of the requirements and expectations, as laid out in terms of these instruments, to be fulfilled in order 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 in order 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 the EPL 7847 are presented in **Table 2**.

Table 1: Applicable local, national and international standards, policies and guidelines governing the proposed development

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><i>“...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...”</i></p> <p><i>Article 95(l) commits the state to actively promoting and maintaining the welfare of the people by adopting policies aimed at the:</i></p> <p><i>“...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.”</i></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 the main priority for the proposed development.</p>
<p>The Regional Councils Act (No. 22 of 1992)</p>	<p>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.</p> <p>The main objective of this Act is to initiate, supervise, manage and evaluate development.</p>	<p>The relevant Regional Councils are considered to be I&APs and must be consulted during the Environmental Assessment (EA) process. The project site falls under the Khomas Regional Council; therefore, they should be consulted.</p>

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
Local Authorities Act No. 23 of 1992	To provide for the determination, for purposes of local government, of local authority councils; the establishment of such local authority councils; and to define the powers, duties and functions of local authority councils; and to provide for incidental matters.	The Windhoek Rural Constituency is the responsible Local Authority of the area 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> <ul style="list-style-type: none"> • 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)). • Provides for control and protection of groundwater (S66 (1), (d (ii)). <p>Liability of clean-up costs after closure/abandonment of an activity (S3 (l)).</p>	The protection (both quality and quantity/abstraction) of water resources should be a priority.
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>	

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
<p>Minerals (Prospecting and Mining Act) No. 33 of 1992</p>	<p>The Prospecting and Mining Act aims to provide for the reconnaissance, prospecting and mining for, and disposal of, and the exercise of control over, minerals in Namibia; and to provide for matters incidental thereto.</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>The Proponent should enter into a written agreement with landowners/affected parties before carrying out exploration as per the Section 52 of the Minerals (Prospecting and Mining) Act No. 33 of 1992 and Section 2.2.3 of the Draft Minerals Policy of Namibia:</p> <p><i>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 –</i></p> <p><i>(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 waked any right to such compensation and has submitted a copy of such agreement or waiver to the Commissioner.</i></p> <p><i>Section 2.2.3 of the Draft Minerals Policy of Namibia states that the Licence Holder and/or mineral explorers currently have to negotiate a contract with landowners to gain access for or mining purposes.</i></p>

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
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 this Acts' requirement. The necessary management measures and related permitting requirements must be taken. This done by 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.	
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.
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.
Health and Safety Regulations GN 156/1997 (GG 1617)	Details various requirements regarding health and safety of labourers.	
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 therefore be applied for.

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
Labour Act (No. 6 of 1992)	Ministry of Labour (MOL) 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.

Relevant international Treaties and Protocols ratified by the Namibian Government include:

- 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 providing 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 has been sourced from a variety of sources including reports of studies conducted in the Khomas Region, and in the Dordabis area. Further information is obtained by the Consultant during the site visits.

5.1 Climate

Climate and weather have a major influence on the exploration activities of the EPL. Climatic conditions determine the appropriate and/or inappropriate times to conduct exploration activity. Generally, the climate of the project area is known as a local steppe climate. Climate data is obtained from the Southern African Science Service Centre for Climatic Change and Adaptive Land Management (SASSCAL) weather station (Claratal), the nearest weather station to the project site. The Claratal Weather Station located on Farm Claratal. Farm Claratal is situated on top of Kupferberg Pass, to the West of Windhoek.

5.1.1 Rainfall

In the EPL area, rainfall is experienced mainly between the months of December and March, with the highest occurrences of rainfall in February. The average annual rainfall recorded for the Dordabis area is 350 - 400mm. However, a low rainfall year with as little as 150 – 200mm for the year can be expected during a dry year (Mendelsohn et al, 2002). A total of about 314mm of rainfall was recorded for the year 2020 (**Figure 2**). General rainfall averages generally vary from year to year in Namibia.

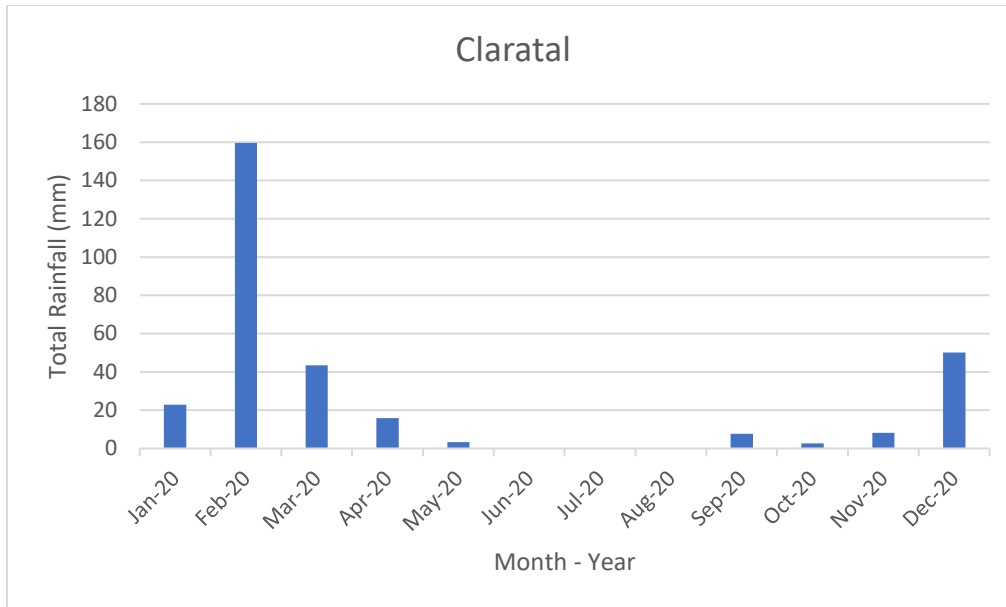


Figure 2: Rainfall Patterns at Project Area, 2020

5.1.2 Temperature

The average maximum temperatures in the hottest month, usually December, are 30°C – 32°C. Extreme conditions reaching almost 40°C may occur occasionally. The area experienced average temperatures of Diurnal temperature range s are typically of the order of about 15 degrees in any month. The average minimum temperature in the coldest month, usually July, is 2°C - 4°C (Mendelsohn et al, 2002). The hottest month of the year 2020 is January, at average temperatures of 23°C and the coldest month was June at an average monthly temperature of 13°C (**Figure 3**).

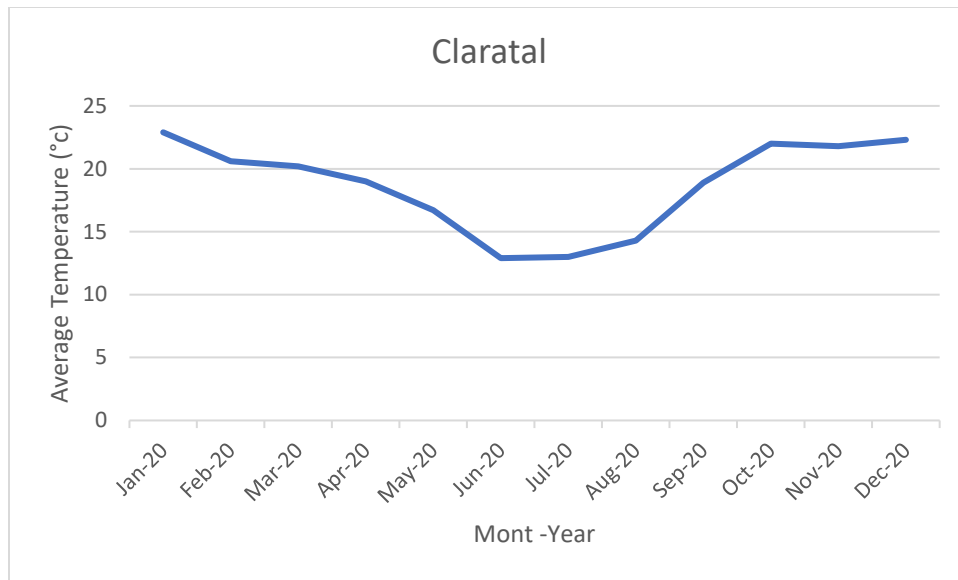


Figure 3: Temperature Patterns at project area, 2020

5.1.3 Relative Humidity

Relative humidity around the project area is experienced in various amounts throughout the year, depending on the time of year and related weather conditions. The most humid months are usually between February and April, with an average relative humidity of 70 – 80%. The least humid month is usually October, with average relative humidity of only 10 – 20 %. Evaporation rates are typically high in the area, with average annual evaporation in the range 2100 – 2240mm / year (Mendelsohn et al, 2002). In the year 2020, February had the highest relative humidity percentages at an average of 60%, and September, the lowest at 18% in the EPL area (**Figure 4**).

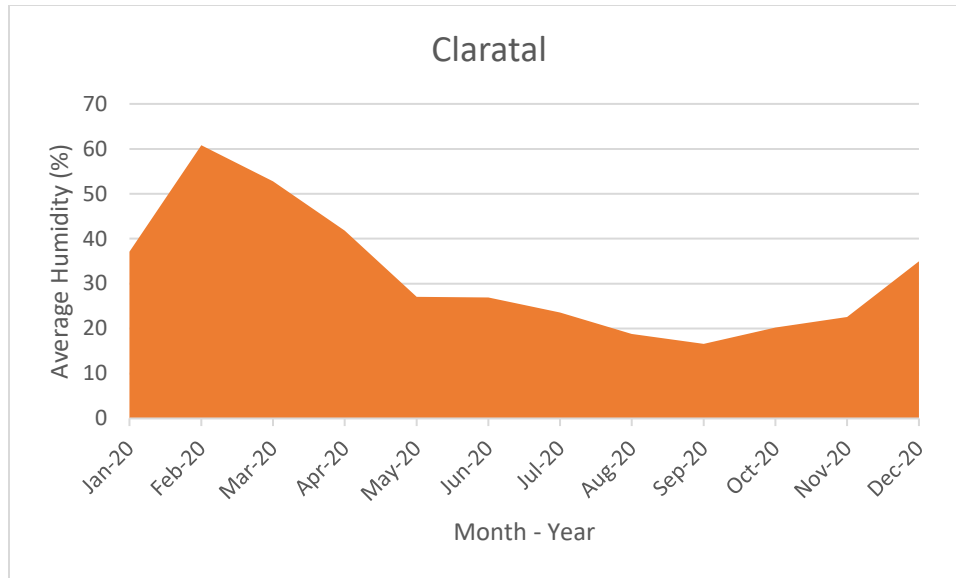


Figure 4: Relative Humidity Patterns at the project area, 2020

5.1.4 Winds

In the vicinity of the project area, strong winds often have a north-westerly to north-easterly component and occur during the day, with the strongest winds generally occurring in the afternoons. Winds from the south-eastern quarter are the least frequent and weakest breezes (Mendelsohn et al, 2002). The area experiences relatively strong wings between January and June, and weaker winds between July and December (**Figure 5**).

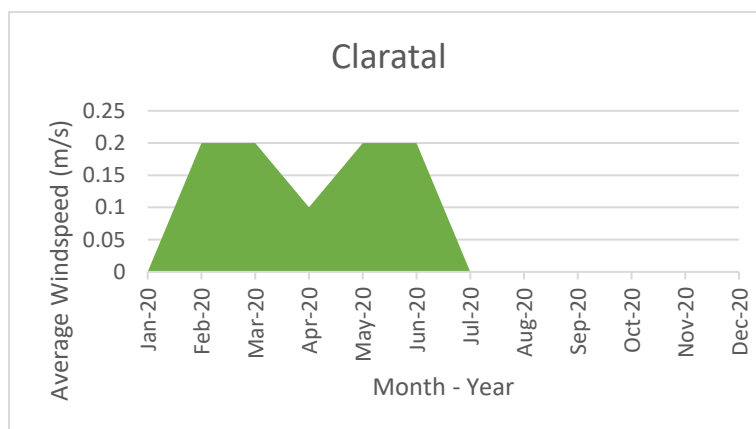


Figure 5: Average wind speed, 2020

5.2 Topography

The EPL 7847 lies within the region of the Khomas Hochland Plateau. In general, the topography of the EPL area is characterized by rolling hills in the west with many summit heights reflecting old land surfaces, and falling off to the east as it approaches the Kalahari Desert. Previous studies in the surrounding area report small rocky outcrops of varying sizes, but mostly only 1m above the surrounding terrain. About 20% of central vicinity of Dordabis is part of the Khomas Hochland Plateau, which is characterized mainly by rolling hills, with deep valleys caused by river erosion. The project area’s elevation profile lies mainly between 1550 and 1800 metres above sea level (Figure 6).

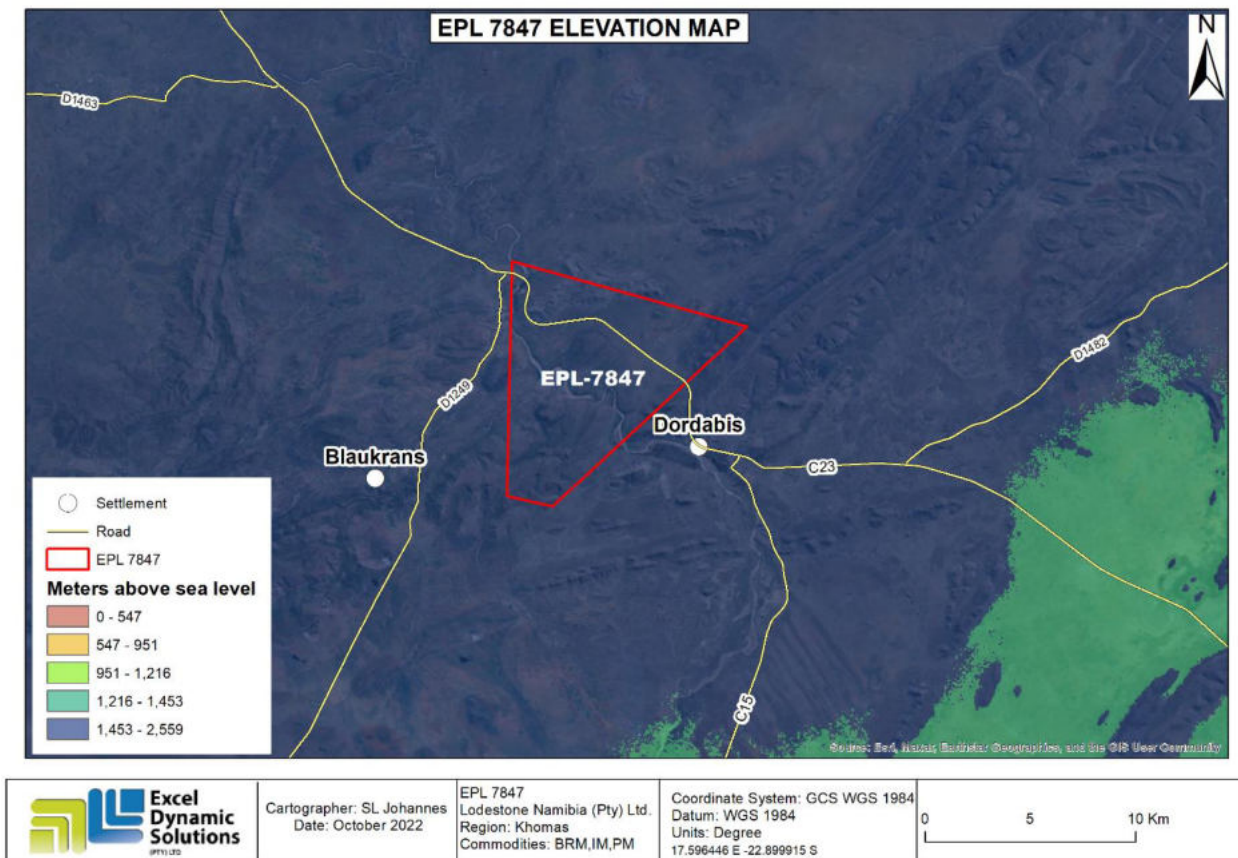


Figure 6: EPL 7847 Landscape Map

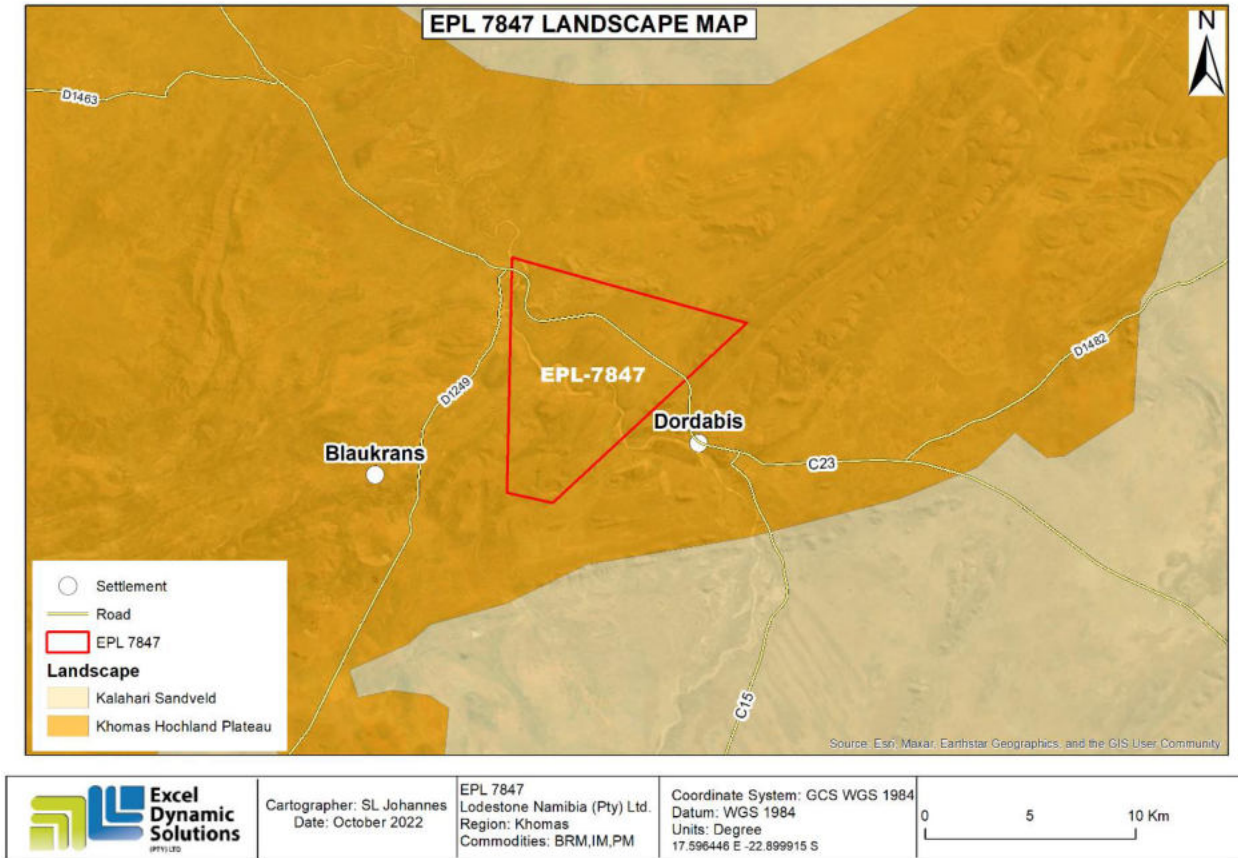


Figure 7: EPL 7847 Landscape Map

5.3 Geology and Soils

The EPL lies within the intracontinental arm of the Pan-African Damara Orogen, which based on stratigraphy, structure and metamorphic grade, has been subdivided into a number of distinct zones (Miller, 1983a; Hoffmann, 1987), aligned in a southwesterly - northeasterly direction. Pre-Damara gneissic basement, siliciclastic Nosib Group rocks, which form the base of the Damara Supergroup, and the lithologically variable passive margin succession of the Hakos Group are the stratigraphic units present in the Southern Margin Zone (SMZ).

The SMZ falls entirely within the Damara Belt low-temperature – high-pressure accretionary prism. It is between 25 and 55 km wide and consists of a complex association of nappes and duplex structures with roof and floor thrusts and thin sheets of basement gneisses thrust well up into the imbricated Nosib and Hakos rocks. It is followed to the north by the Southern or Khomas Zone, which formed the deepest part of the Khomas Sea that separated the Congo and Kalahari Cratons; it comprises the several kilometres thick schists and minor quartzites of the Khomas Complex.

The Hakos Group is confined to the SMZ where it rests unconformably or, more commonly, with a tectonic contact on the Nosib Group or pre-Damara basement. It is the lateral equivalent of the Swakop and Otavi Groups to the north and the Witvlei Group to the east. The area has predominantly siliciclastic Nosib Group of the Damara Supergroup outcrops in the core anticlines of the SMZ. The geology is dominated by schists, quartzites, granites, metamorphic limestones, dolomites, conglomerates and other rocks belonging to formations of the proterozoic Damara Sequence. Interspersed is the archaic Mokolian Complex of the Kalahari and Kongo Cratons (gneisses and other highly metamorphic rocks).

The Khomas subgroup is the youngest of the Damara Sequence and consists of metamorphic rocks like mica schist, traversed by micaceous quartzite, subordinate calcareous schist and impure marble, and amphibole schist (Geological Survey, 1996 and unpublished maps).

Figure 8 shows the geology of the EPL.

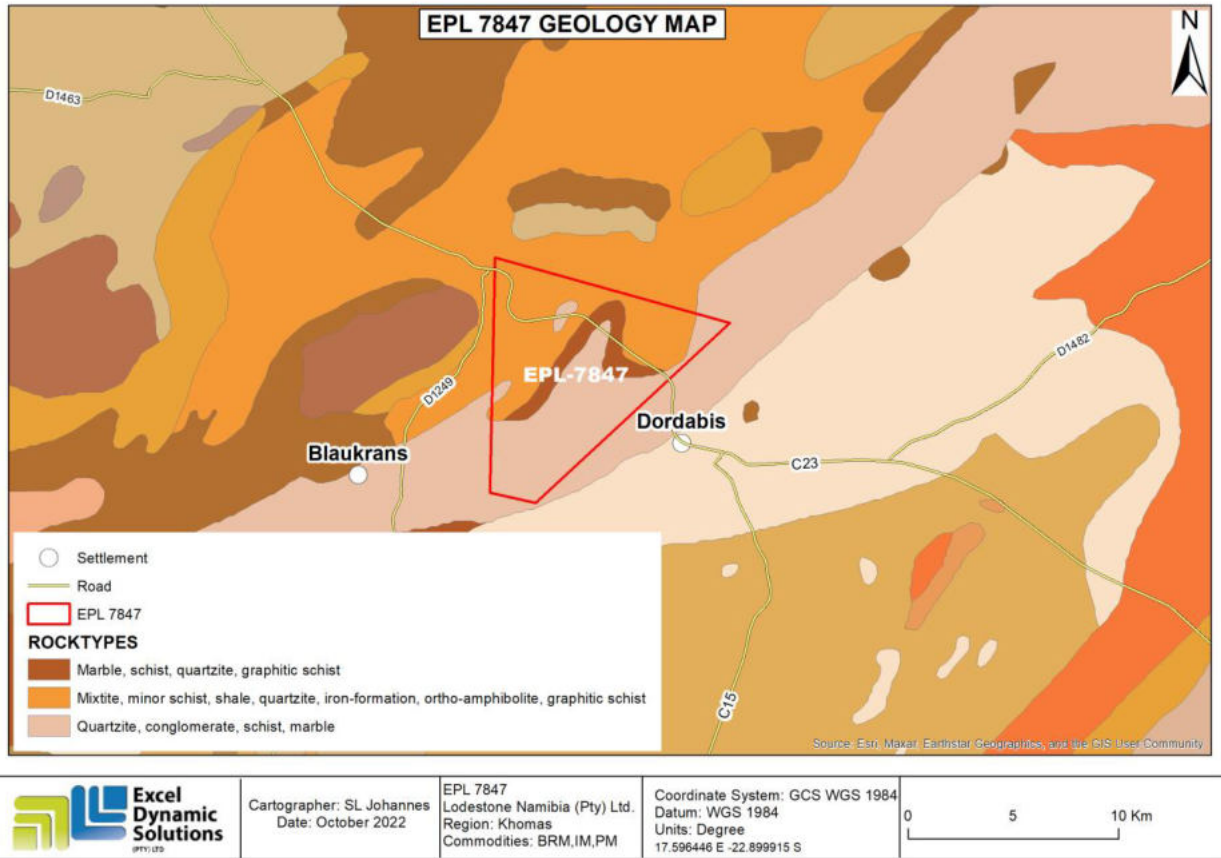


Figure 8: EPL 7847 Geology Map

The study area is made up mainly of Eutric Regosols (**Figure 9**). 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). A typical soil profile in the study area often shows a cut or very thin A horizon (Bertram & Broman, 1999).

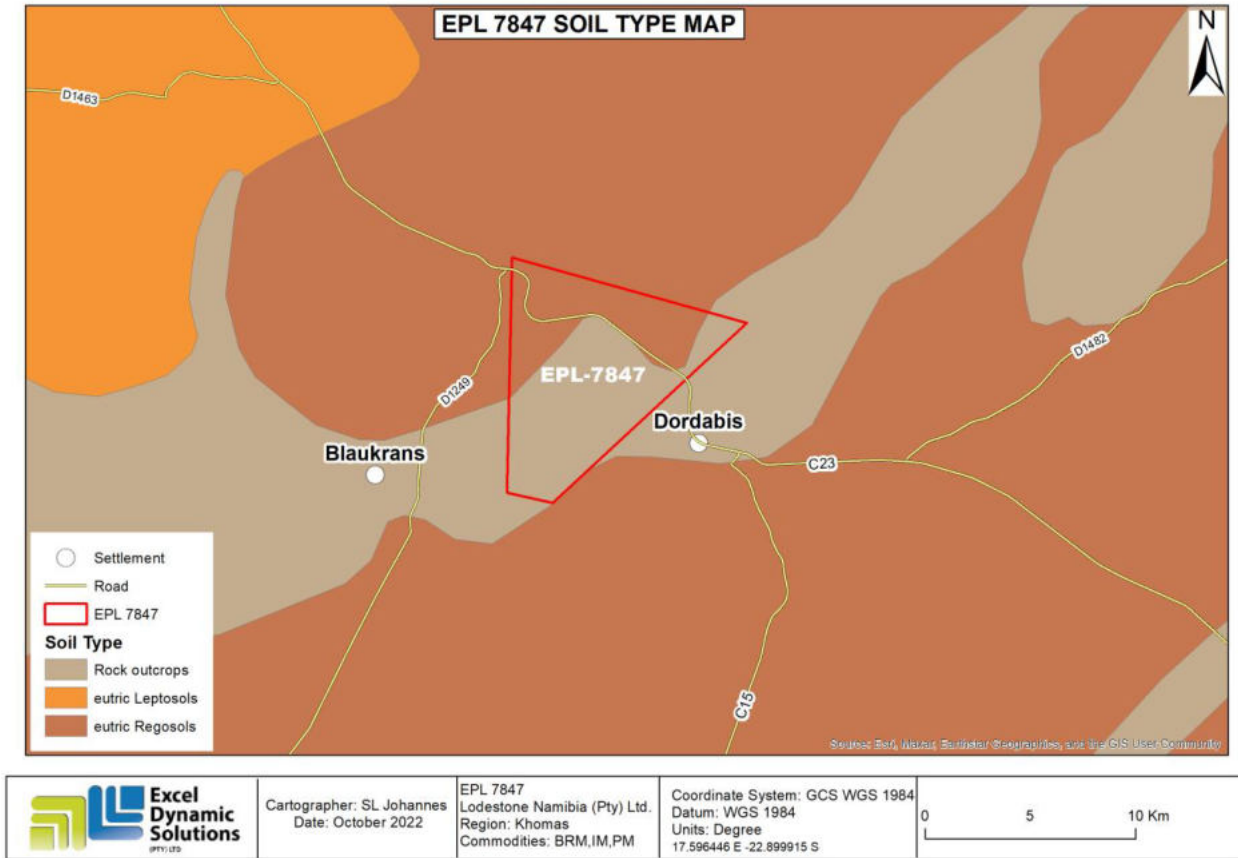


Figure 9: EPL 7847 Soils Map

5.4 Hydrology

The EPL site is located on the catchment divide between the Olifants River and the Skaap River. The Olifants, Skaap and Auob catchments are less significant in terms of major water supply in the area. According to COWI Water Report, (2017), the Dordabis area is currently supplied with boreholes but with increase in economic activities it is recommended to drill additional water supply boreholes. Potential groundwater sites can target the contact zones where fractures have developed a secondary porosity and increase the yield of a borehole. **Figure 10** below show the hydrology of the project area.

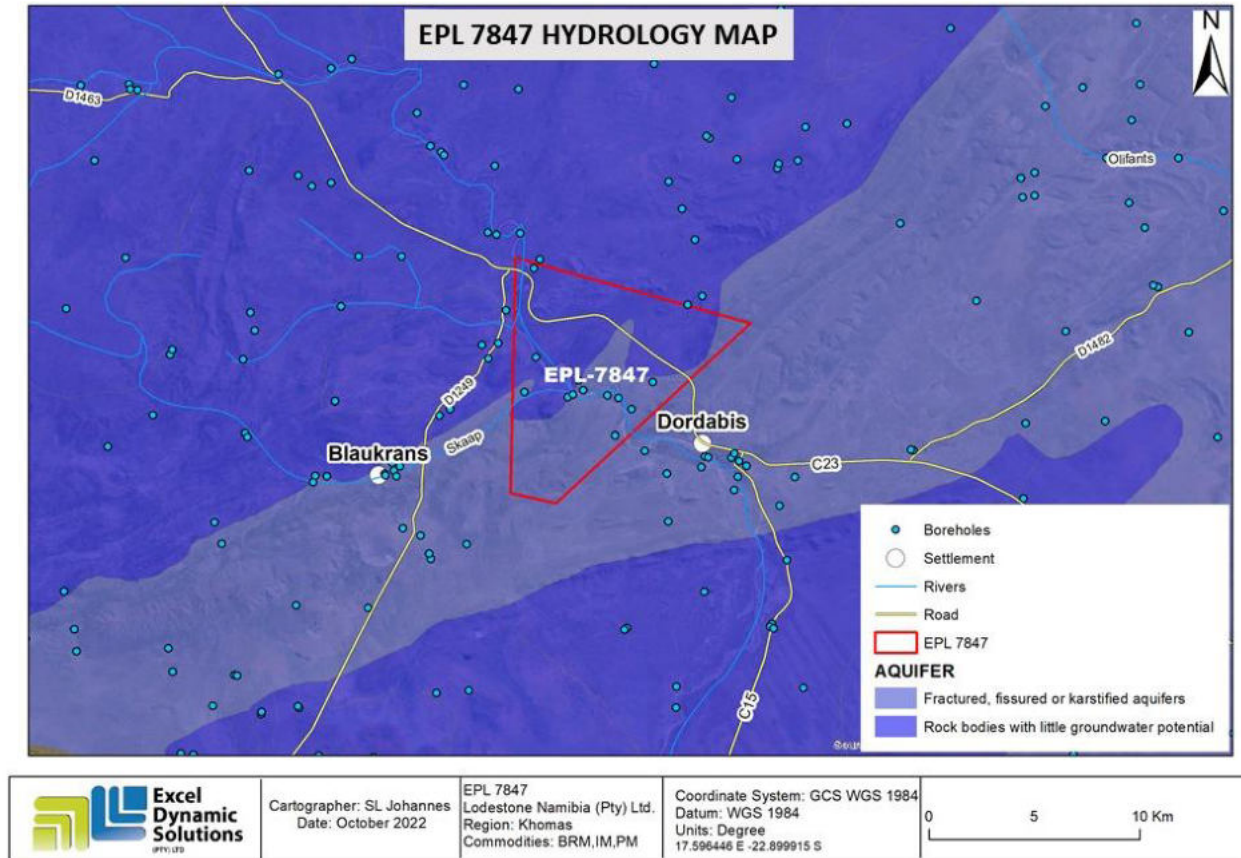


Figure 10: EPL 7847 Hydrology Map

5.5 Flora and Fauna

The Dordabis area is referred to as dense Highland Shrubland which is mainly shrub covered. The Highland Shrublands is the vegetation type that largely characterizes the Khomas Region.

In the central highlands, elements of both the Sudano-Zambezi Flora and the Namib-Karoo Flora can be found, depending on small-scale environmental factors. The central mountainous area of Namibia is classified as Highland Savanna, but also contains some azonal elements like differences in hydrology and pedology, which has led to the existence of some flora subgroups. Therefore, vegetation types such as Thornbush Savanna and Camelthorn Savanna may also be found.

The **Highland Savanna** is characterized by trees like *Combretum apiculatum*, *Acacia hereroensis*, *A. reficiens* ssp. *reficiens* and *A. erubescens* among others. The *Acacia Hereroensis* is the most common type of tree found within the EPL area, as shown in **Figure 12**. Undisturbed grass cover in the area consists of climax grasses such as *Antheophora pubescens*, and *Brachiaria nigropedata*, as well as other good pasture grasses, and a decline in these valuable grasses can be attributed to selective grazing and overgrazing.

Grass cover in the **Thornbush Savanna** varies depending on the soil type, but the species composition is similar to that of the Highland Savanna. The grassveld is interspersed with trees and large shrubs like *Boscia albitrunca*. *Acacia* species often dominate in the Thornbush Savanna. The **Camelthorn Savanna** is an open savanna on deep sandy soils with good grass cover, where the camelthorn (*Acacia erioloba*) is a dominant species among other trees and shrubs. In this vegetation type, hard and unpalatable grasses such as species of *Eragrostis* (especially *E. pallens*) and *Aristida stipitata* can be found. The occurrence of bigger trees is also connected with the valley floors in the form of so-called gallery forest (Bertram & Broman, 1999).

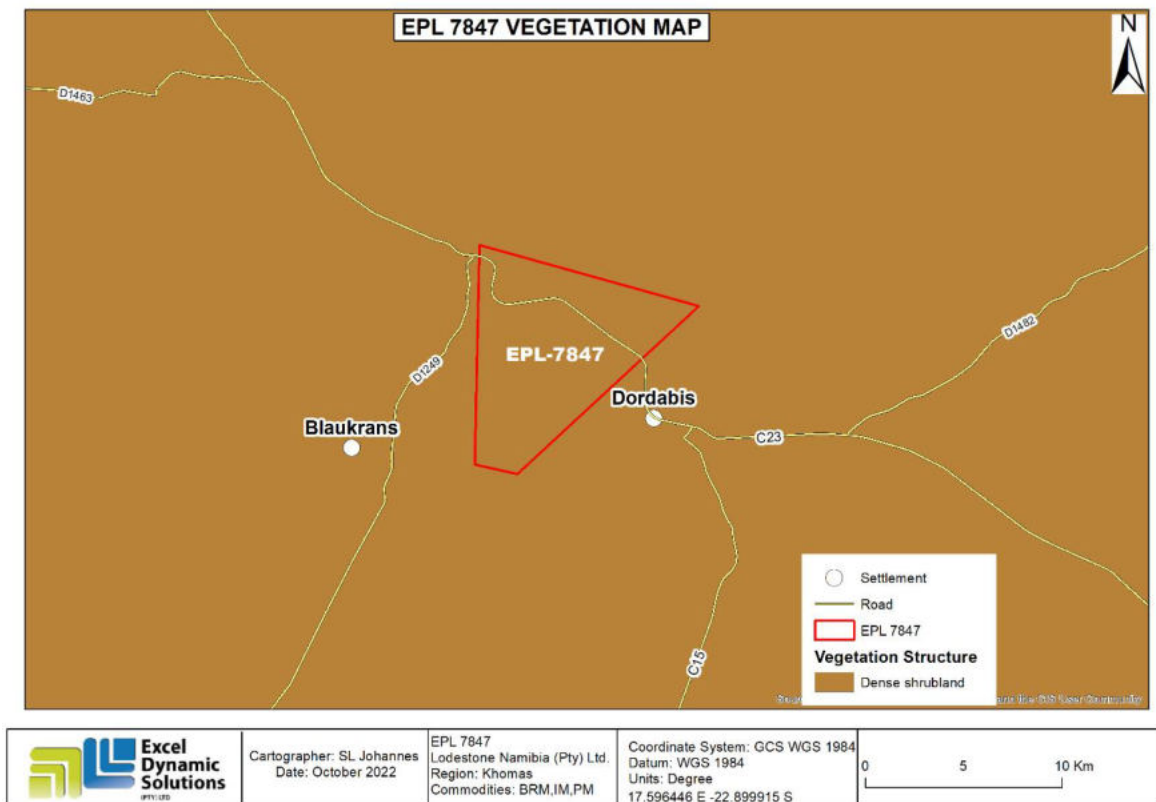


Figure 11: EPL 7847 Vegetation Map



Figure 12: Vegetation observed on EPL 7847

The Khomas Region has an abundance of wildlife. Large herbivores found in the various parts of the region include species such the kudu, gemsbok, springbok, red hartebeest and steenbok. The number of recorded bird species in the region ranges from 171 to more than 230, while reptile species range from 61 to 80 (Mendelsohn et al 2002; KRC 2001). Small stock farming is popular in the central parts of the country, and cattle and game farming are common on the outskirts of Windhoek.

5.6 Heritage and Archaeology

A cemetery was located during the site visit (**Figure 13**). It remains possible that there might be some other undiscovered sites, graves or archaeological specimens of significance discovered during exploration operations. Therefore, should the Proponent find any archaeological specimens or sites, appropriate guidelines as stipulated under the National Heritage Act, No. 27 of 2004, Section 55 must be followed.



Figure 13: A cemetery site located near Dordabis

5.7 Surrounding Land Uses

The settlement of Dordabis is surrounded by several farms and it serves as the market center, for basic service provision to its residents and to the farms in its vicinity. The EPL fall within farmland as shown in **Figure 14**. Livestock farming is common in the central parts of the country, and is the main type of farming in the EPL area. The livestock consists of both small and large stock, kept in camps with a regulated change of pasture land by driving the animals. A mixed pasture after a rotation scheme where grazers are followed by browsers is favourable in the area.

In the event of an ECC issuance, the Proponent is required to secure a signed agreement between them and the affected landowners and farmers, to gain access to the areas of interest for prospecting and exploration investigations as per the 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 –*

(b) 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 waked 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 have to negotiate a contract with landowners to gain access for or mining purposes.

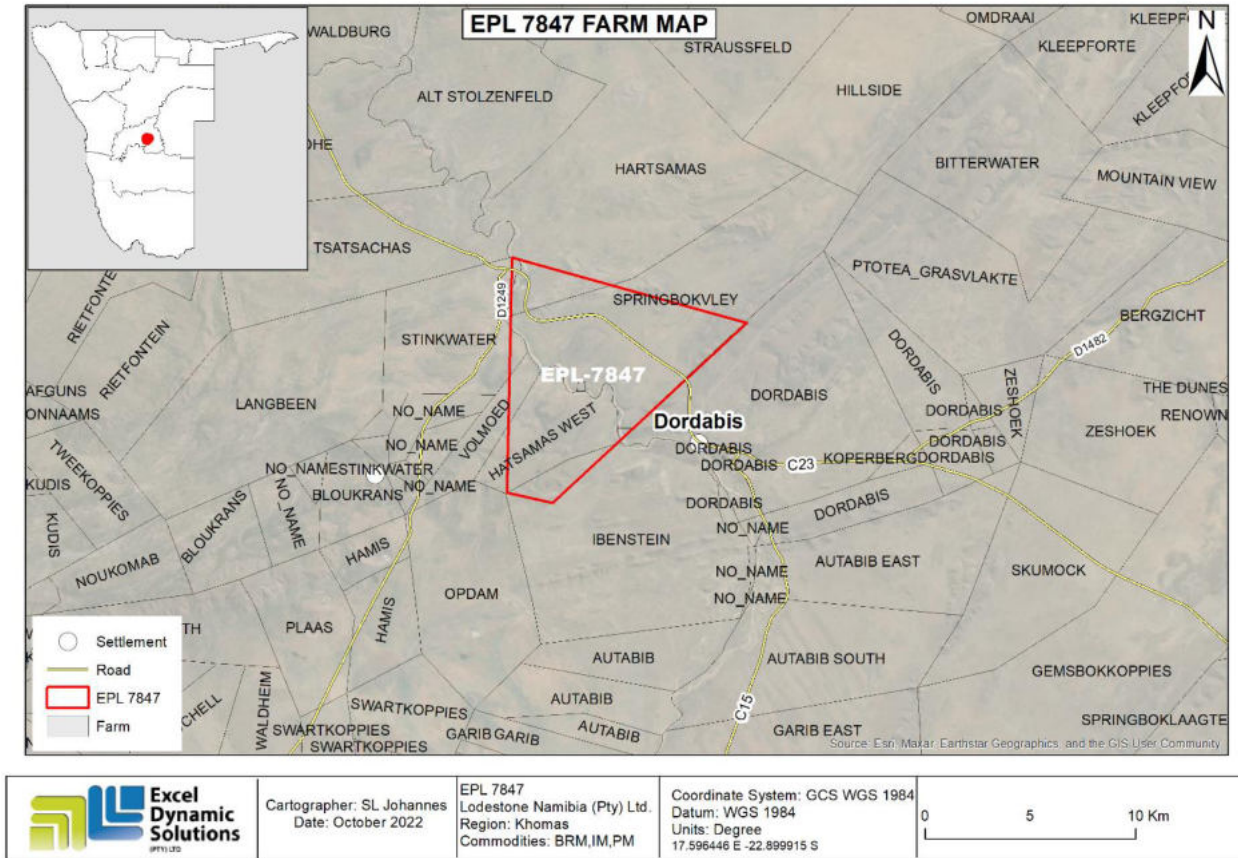


Figure 14: EPL 7847 Land Use (Farms) Map

5.8 Socio-Economic Status

Demography

Khomas Region has the highest population density in Namibia, with a population of over 342,141 as at 2011. The regional growth rate indicates that region’s population had rapidly increased between 2001 and 2011. The region had a population of 250,262 in 2001, which increased to 342,141 by 2011 (NSA, 2011), and an increase within a similar rate is expected today, in 2021. The settlement of Dordabis has a population of ±5000.

Mining

The Khomas Region hosts rock formations that are rich in mineralisation and profitable mines have been developed and operated in the region over the years. Base metals are regionally significant; however, global commodity prices have been fluctuant over the recent years causing a level of variability in mining activity in the region.

Infrastructure and Services

The Khomas Region has basic infrastructure necessary for transportation, telecommunication, water and electricity, supplied mainly to the urban areas. Windhoek forms an important railway junction, linking the city with the rest of the country's rail network. The major national roads connect the city with Namibia's southern, eastern and northern neighbouring countries. The Hosea Kutako International Airport, is located approximately 35km east of Windhoek, while the Eros airport, located within the city, accommodates local flights.

The Dordabis property is well-located in terms of infrastructure, due to the proximity and ease of access to Windhoek and its infrastructure. Dordabis settlement has a primary school, clinic, police station and small businesses that sell a variety of goods.

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 would be necessary. Public consultation can also aid in the process of identifying possible mitigation measures. Public consultation for this study has been done in accordance with 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 as stakeholders. The pre-identified I&APs were contacted directly, while other parties who contacted the Consultant after project advertisement notices were placed in 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* and *New Era* newspapers). The project advertisement/announcement ran for two consecutive weeks inviting members of the public to register as I&APs, submit their comments or concerns and/or attend the public consultation meeting as notified through the advertisements. The list of pre-identified and registered I&APs is listed in **Table 4** below and the complete list including registered I&APs is provided in **Appendix D**.

Table 2: Summary of Interested and Affected Parties

National (Ministries and State Owned Enterprises)
Ministry of Environment, Forestry and Tourism
Ministry of Urban and Rural Development
Ministry of Health and Social Services
Ministry of Mines and Energy
Regional & Local
Khomas Regional Council
Windhoek Rural Constituency
General Public
Interested members of the public and Farmers

6.2 Communication with I&APs

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. Communication with I&APs about the proposed development was facilitated through the following means and in this order:

- A Background Information Document (BID) containing brief information about the proposed exploration project was compiled (**Appendix E**) and sent out to all pre-identified I&APs and upon request to all new registered Interested and Affected parties (I&APs);
- Project Environmental Assessment notices were placed in *The Namibian and New Era* newspapers (**Appendix F**) dated **10 March 2021** and **17 March 2021**, briefly explaining the activity and its locality, inviting members of the public to register as I&APs and submit their comments/concerns;
- Public notices were placed at frequented places in Dordabis (**Figure 15**) to invite members of the public for the public consultation meeting and allow them to register as I&APs and submit comments or concerns; and
- A public meeting was scheduled and held on **17 April 2021** in Dordabis (**Figure 16**).

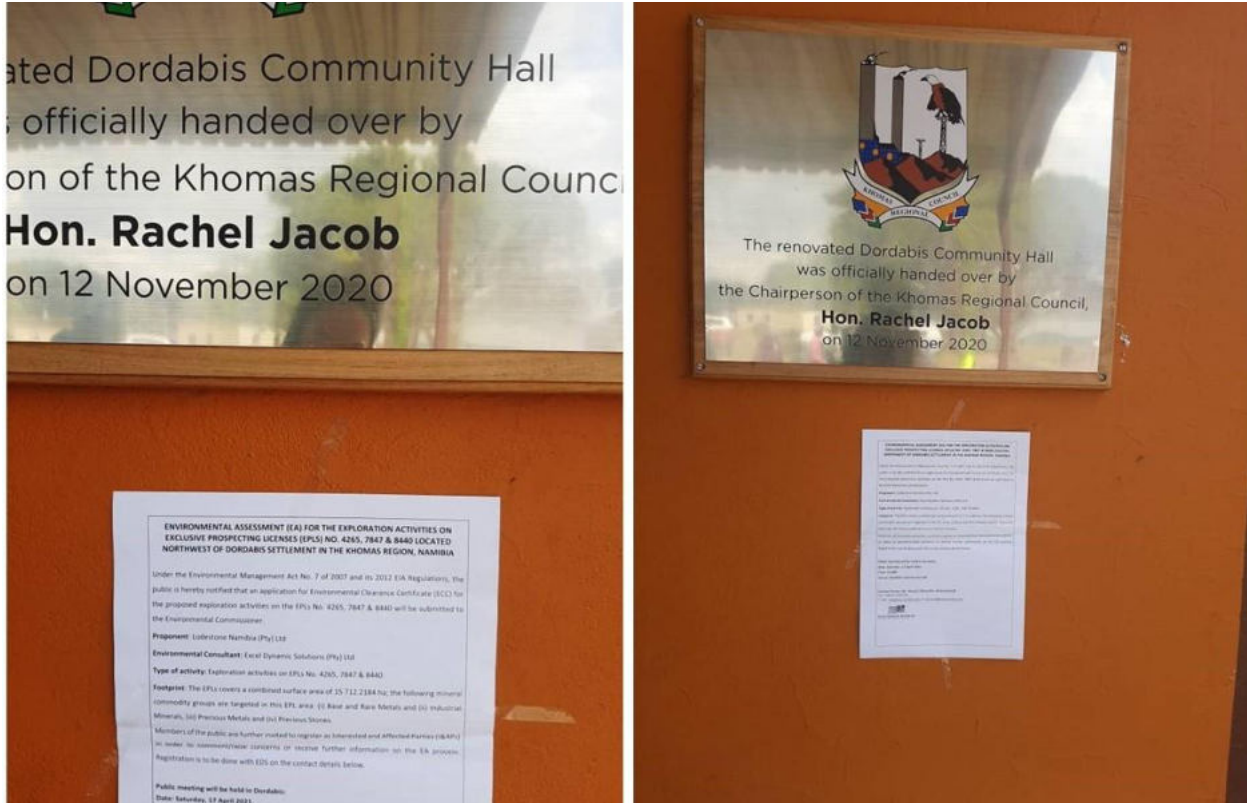


Figure 15: Public Notices in Dordabis



Figure 16: Public Consultation Meeting in Dordabis Community Hall

6.2.1 Feedback from Interested and Affected Parties

Issues raised during the meeting have been recorded, and these, together with the responses provided are fully presented in the meeting minutes in **Appendix G**, and input considered valuable to the scoping study has been incorporated in the environmental report and EMP. The main issues of concern raised during the meeting are: a lack of effective communication from the client for the meeting details, and anticipation of future employment amongst the community members.

Apart from issues raised during the (first) public meeting, there were no other comments received by the Consultant after the public consultation meeting in Dordabis. The Draft EIA report together with all its appendices are circulated to all I&APs for review for a period not less than 7 days. Any further comments will be documented in a Comments and Response Trail Document (**Appendix G**).

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 development. The potential positive and negative impacts that have been identified from the prospecting activities are listed as follow:

Positive impacts:

- Creation of jobs to the locals (primary, secondary and tertiary employment),
- 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, and
- Opens other investment opportunities and infrastructure-related development benefits.

Negative impacts:

- Land degradation and Biodiversity Loss,
- Generation of dust,
- Generation of waste,
- Visual impacts (scars) on landscape,
- Potential occupational health and safety risks,
- Impact on surrounding soils and groundwater
- Possible disturbance to heritage/archaeological resources,
- Vibrations and noise from exploration works
- Vehicular traffic safety
- Impacts associate with closure and decommissioning of exploration works.

7.2 Impact Assessment Methodology

The Environmental Assessment is primarily a process used to ensure 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 Legislation (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 probability (likelihood of occurring), scale/extent (spatial scale), magnitude (severity) and duration (temporal scale) as presented in **Table 5, Table 6, Table 7** and **Table 8**.

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 4** shows rating of impact in terms of extent of spatial scale.

Table 3: Extent or spatial impact rating

Low (1)	Low/Medium (2)	Medium (3)	Medium/High (4)	High (5)
Impact is localised 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 5** shows the rating of impact in terms of duration.

Table 4: 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 were also taken into consideration during the assessment of severity. **Table 6** shows the rating of impact in terms of intensity, magnitude or severity.

Table 5: 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,	Substantial deterioration,	Moderate deterioration,	Low deterioration,	Minor deterioration,

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

7.2.4 Probability of occurrence

Probability describes the likelihood of the impacts actually occurring. This determination is based on previous experience with similar projects and/or based on professional judgment. See **Table 7** for impact rating in terms of probability of occurrence.

Table 6: 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 chapter, for this assessment, the significance of the impact without prescribed mitigation actions was measured.

Once the above factors (**Table 4**, **Table 5**, **Table 6** and **Table 7**) 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 8).

Table 7: 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)	<30	L
Neutral	0	N
Low (negative)	>-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, mitigation measures are recommended to reduce the impact to a medium or low 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 from 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, drilling, sampling (and possible analysis) and decommissioning. The potential negative impacts stemming from the proposed activities of 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 Impacts

The significant potential negative impacts associated with the operation and maintenance phase are identified and assessed below:

7.3.1 Land Degradation and Loss of Biodiversity

Drilling activities and earthworks done to expose the mineral bearing rock units could result in land degradation, leading to the destruction of habitats for the local diversity of fauna and flora. 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 Consultant advises the Proponent to avoid unnecessary removal of vegetation, in order to promote a balance between biodiversity and their operations. Under the current status, the impact can be considered to be of a medium significance rating. With the implementation of appropriate mitigation measures, the rating will significantly be reduced to low. The impact is assessed in **Table 9** below.

Table 8: Assessment of the impacts of exploration on biodiversity

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
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Mitigations and recommendation to minimize land degradation and loss of biodiversity

- Vegetation found on the site, but not in the targeted exploration areas should not be removed, but left to preserve biodiversity on the site.
- Shrubs or trees found along drilling or sampling spots on sites should not be unnecessarily removed. Care should be taken when extracting mineral species without destroying the vegetation.
- Workers should refrain from killing or snaring animals' species (big or small) that may be found on the site.
- Environmental awareness on the importance of biodiversity preservation should be provided to the workers.

7.3.2 Generation of Dust (Air Quality)

Dust emanating from site access roads when transporting exploration equipment and supply to and from site may compromise the air quality in the area. Vehicular movements create dust even though it is not always so severe. The hot and dry environment, loose and in some places, sandy nature of the substrate, and low vegetation cover causes ambient fugitive dust levels. The medium significance of this impact can be reduced by properly implementing mitigation measures. The impact is assessed in **Table 10** below.

Table 9: Assessment of the impacts of exploration on air quality

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

Mitigations and recommendation to minimize dust

- The Proponent should ensure that the exploration schedule is limited to the given number of days of the week, but not every day. This will keep the vehicle-related dust level minimal in the area.

- Since the project site is in an area where due to little vegetation cover, soils are exposed, it is highly probable that more dust will be generated from exploration drilling and excavation. It is therefore advised that on extremely windy days, or during the advanced stages of drilling, a reasonable amount of water should be used to suppress the dust that may be emanating from certain exploration areas on the EPL site, if there is high levels of dust.

7.3.3 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 measure, the impact has a medium significance. The impact will be of low significance from medium, upon implementing the mitigation measures. The assessment of this impact is given in **Table 11**.

Table 10: Assessment of waste generation impact

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 recommendation to waste management

- Workers should be sensitized to dispose of waste in a responsible manner and not to litter.
- After each daily works, the Proponent should ensure that there are no wastes left on the sites.
- All domestic and general operational waste produced daily should be contained 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.
- Hazardous waste, including emptied chemical containers should be safely stored on site where they cannot be accessed and used by locals for personal use. These containers can then be transported to the nearby approved hazardous waste sites for safe disposal. No waste should be improperly disposed of on site or in the surroundings, i.e., on unapproved waste sites.
- 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 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 products(s) to the sites.
- All wastewater and hydrocarbon substances and other potential pollutants associated with the project activities should be contained in designated containers on site and later disposed of at nearby approved waste sites in accordance with MAWLR's Water Environment Division standards on wastewater discharge into the environment. This is to ensure that these hazardous substances do not infiltrate into the ground and affect the local groundwater quality.

7.3.4 Visual Impact (Scars) on Landscape

Visual impact on the landscape due to exploration works refers to aesthetic damage to the landscape. Drilling and trenching activities usually leave scars on the local landscape. If the targeted sites are located close to or along tourist routes, these scars in many cases contrasts the surrounding landscape and may potentially become a visual nuisance, especially for the tourism industry. It is vital to acknowledge that during prospecting phase, certain measures will need to be taken into consideration regarding the visual aspect. Currently, the visual impact can be rated as Medium, but can be reduced to low upon effective implementation of the measures. The assessment of this impact is presented in **Table 12**.

Table 11: Assessment of visual impacts

	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M - 3	M - 3	M - 6	M - 3	M - 36
Post mitigation	L/M - 2	L/M - 2	L/M - 4	L/M - 2	L - 16

Mitigations and recommendation to minimize visual impact

- The Proponent should consider the implementation of continuous rehabilitation programme, by using overburden waste rocks or soils to visually maintain the landscape's natural setting.
- The Proponent should not create unnecessary routes, which may lead to landscape scarring on site

7.3.5 Potential 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 13** below and mitigation measures provided.

Table 12: Assessment of the impacts of exploration on health and safety

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M - 3	L/M - 2	M - 6	M/H - 4	M - 44
Post mitigation	L/M - 2	L/M - 2	L - 2	L/M - 2	L - 12

Mitigations and recommendation 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

7.3.6 Impact on Surrounding Soils and Groundwater

Exploration works may leave the already exposed site soils vulnerable to erosion if no mitigation measures are put in place. 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. The impact can be rated as Medium, if no mitigation measures are implemented. However, with the implementation of mitigation measures, the impact significance will decrease to a low level. The impact is assessed in **Table 14** below and mitigation measures are provided below.

Table 13: Assessment of the impacts of exploration on soils and groundwater

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/M - 2	L - 2	L/M - 2	L - 10

Mitigations and recommendation to minimize impact on soil

- 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

7.3.7 Disturbance to Archaeological and Heritage Resources

During exploration works, historical resources may be impacted through inadvertent destruction or damage. This may include the excavation of subsurface graves or other archaeological objects. There was no information provided about any heritage or archaeological sites within the project area or its vicinity. Therefore, this impact can be rated as of Medium significance, which can be reduced to low through the mitigation measures. The impact is assessed in **Table 15** below.

Table 14: Assessment of the impacts of exploration on archaeological sites

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M - 3	M - 3	M - 6	M - 3	M – 36

Post mitigation	L/M - 2	L/M - 2	L/M - 4	L/M - 2	L - 16
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Mitigations and recommendation 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-Zone” 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 workers 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 to Appendix B).
- If there is a possibility of encountering or unearthing of archaeological materials, 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 to site management must consider culture and heritage features in the overall planning of exploration infrastructures, within and beyond EPL boundaries;

7.3.8 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. In order to change the impact significance to a low rating, the mitigation measures should be implemented. This impact is assessed in **Table 16** below.

Table 15: Assessment of the impacts of noise from exploration

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/M - 2	L - 2	L/M - 2	L - 10

Mitigations and recommendation to noise

- Noise from operations vehicles and equipment on site should be reduced to acceptable levels.
- The exploration operational times should be set such that, no mining activity is carried out during the night or very early in the mornings.
- 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 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 noise exposure.

7.4 Assessment of Potential Negative Impacts: Decommissioning Phase

Impacts pertaining to the closure of the exploration program have been identified. The impacts are; loss of employment by workers at the exploration site and contribution to the national economy (revenue and royalties' payments). Another concern that stems from exploration program closure is the rehabilitation of the site.

7.4.1 Impacts associated with closure and decommissioning of exploration works

Rehabilitation of the site is a vital step in completing the process of exploration. If no rehabilitation is carried out after operations, the sites would experience detrimental effects. Any biodiversity loss and land degradation experienced on the sites may not be restored and the landscape will remain scarred. The impacts associated with rehabilitation are assessed in **Table 17**.

Table 17: Assessment of the impacts of closure and rehabilitation

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M - 3	M/H - 4	M- 6	M/H - 4	M – 52
Post mitigation	L/M - 2	L/M - 2	L/M - 4	L/M - 2	L - 16

Mitigations and recommendation for Rehabilitation and decommissioning

- 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 RECOMMENDATIONS AND CONCLUSION

The potential positive and negative impacts of the proposed exploration activities on EPL 7847 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.

9 REFERENCES

Angula, S. E. (2007). *The Environmental Impacts of Small-Scale Mining in Namibia: A Case Study of Uis Small-scale Mining Site - Erongo Region*. Windhoek: University of Namibia.

Atlas of Namibia Project (2002) Directorate of Environmental Affairs, Ministry of Environment and Tourism website: (http://209.88.21.36/Atlas/Atlas_web.htm)

Benito, G., Rohde, R., Seely, M., Külls, C., Dahan, O., Enzel, Y., Roberts, C. (2009). Management of Alluvial Aquifers in Two Southern African Ephemeral Rivers: Implications for IWRM. *Water Resources Management*. *Water Resources Management: Springer Link*, 641-667.

Booth, P. (2011). *Environmental Conceptual Site Model Exercise: Source – pathway – receptor*. WSP Global: Semantic Scholar.

Christelis, G. and Struckmeier, F. (editors). (2001). *Groundwater in Namibia: An Explanation to the Hydrogeological Map*. Windhoek: Ministry of Agriculture, Water and Forestry.

Christelis, G. and Struckmeier, W. (eds). (2001). *Groundwater in Namibia: An Explanation to the Hydrogeological Map*. Windhoek: Ministry of Agriculture, Water and Forestry.

COWI 2017. Techno-economic advisor for the feasibility study of the encroacher bush biomass power project in Namibia – Biomass Source Report. Reference code: 2015059 NA ITF

EIS 2017. Environmental Information Service, www.the-eis.com

Geological Survey of Namibia website – <http://www.mme.gov.na/gsn/>

Mendelsohn, J., Jarvis, A., Roberts, C. & Robertson, T., 2003. Atlas of Namibia. 2nd ed. Cape Town: David Philip Publishers.

Miller R. McG. (2008), Geology of Namibia, Ministry of Mines and Energy, Geological Survey of Namibia, Windhoek.

Mweemba, M. S. (2014). Small-Scale Mining in Namibia: An Overview. *Theme: “Earth Sciences and Climate Change: Challenges to Development in Africa” : 7th conference of the African Association of Women in Geosciences, Sub theme: Earth sciences and the community* (p. 4). Windhoek: Ministry of Mines and Energy.

Namibia Statistics Agency. (2011). *2011 Population and Housing Census Regional Profile, Erongo Region*. Windhoek: Namibia Statistics Agency.

Namibia Statistics Agency. (2011). *Namibia 2011: Population and Housing Census Main Report*. Windhoek: Namibia Statistics Agency.

North River Resources Website: <http://www.northriverresources.com/project-dordabis.aspx>, accessed September 20, 2019).

Robert S. Middleton., 2019: Competent Persons Report for White Metal Resources Corp, Effective Date of June 4, 2019.

World Population Review. (2019). *World Population Review: United Nations population estimates and projections - Namibia Population*. Retrieved October 10, 2019, from World Population Review: <http://worldpopulationreview.com/countries/namibia-population/>

World Weather Online Site: <https://www.worldweatheronline.com/>

COWI 2017. Techno-economic advisor for the feasibility study of the encroacher bush biomass power project in Namibia – Biomass Source Report. Reference code: 2015059 NA ITF

ECC (2019). *Best Practice Guide Environmental Principles for mining in Namibia*

Geological Survey of Namibia website – <http://www.mme.gov.na/gsn/>

Hoffmann, K.-H. 1987. *Stratigraphic subdivision and sedimentary facies of the Duruchaus Formation in the Geelkop Dome and Nauaspoort-Wortelpoort area north of Rehoboth, southern Damara Belt. Communs geol. Surv. S.W. Afr./Namibia, 3, 9-18.*

Miller, R. McG. 1983a. *The Pan-African Damara Orogen of South West Africa/Namibia, 431-515. In: Miller, R.McG. (Ed.) Evolution of the Damara Orogen of South West Africa/Namibia. Spec. Publ. geol. Soc. S. Afr., 11, 515 pp.*