



Excel Dynamic Solutions (Pty) Ltd

**Environmental Scoping Assessment (ESA) for Proposed
Exploration Activities on Exclusive Prospecting Licence (EPL)
No. 8803 Located Near Karasburg, Karas Region**

ENVIRONMENTAL ASSESSMENT REPORT: FINAL

ECC Application Reference: APP- 001483

Author(s): Mr. Silas David	Proponent: Zambezi Exploration (Pty) Ltd
Company: Excel Dynamic Solutions (Pty) Ltd	Contact person: Mr. Rex Mutelo
Telephone: +264 (0) 61 259 530	Telephone: +264 (0)811405613
Email: public@edsnamibia.com	Postal Address: P.O. Box 22154, Windhoek, Namibia
	Email: rex@zambeziexploration.com

June 2023



Excel Dynamic Solutions (Pty) Ltd

EXECUTIVE SUMMARY

Zambezi Exploration (Pty) Ltd (hereinafter referred to as the Proponent), has applied to the Ministry of Mines and Energy (MME) to be granted an Exclusive Prospecting Licence (EPL) No. 8803 on 10th March 2022. The approval and granting of EPL No. 8803 requires an Environmental Clearance Certificate (ECC) before the commencement of the planned prospecting and exploration works. The 19 052.5702-ha EPL is located near Karasburg, Karas Region. The EPL covers (overlies) Farm Velloor No. 89, Strohnhof No.88, Bokies Bankwest No.82 and Hogies No.83.

The target commodities for EPL 8803 are **Base & Rare metals and Nuclear Fuel Minerals**.

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

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

Brief Project Description

Planned Activities: Proposed Exploration Methods

The Proponent intends to adopt a systematic prospecting and exploration approach to the project as follows:

- 1. Non-invasive Technique:**



Excel Dynamic Solutions (Pty) Ltd

- **Desktop Study: Geological mapping:** Mainly entails a desktop review of geological maps and ground observations. 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 and aero-geophysics survey.
- **Lithology geochemical surveys:** Rock and soil samples shall be collected and taken for trace element analysis to be conducted by analytical chemistry laboratories to determine if enough target commodities are present. Also, trenches or pits may be dug depending on the commodity (in a controlled environment e.g., fencing off and labeling activity sites) adopting a manual approach 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 50g of material. As necessary, and to ensure adequate risk mitigations, all major excavations will both be opened and closed immediately after obtaining the needed samples or the sites will be secured until the trenches or pits are closed. At all times, the land owners and other relevant stakeholders will be engaged to obtain authorization where necessary.
- **Geophysical surveys:** This will entail data collection of the substrata (in most cases service of an aero-geophysical contractor will be sourced), by air or ground, through sensors such as radar, magnetic, and electromagnetic sensors to detect any mineralization in the area to ascertain the mineralization. Ground geophysical surveys shall be conducted, where necessary using vehicle-mounted sensors or handheld by staff members, while in the case of air surveys, the sensors will be mounted to an aircraft, which then flies over the target area.

2. Invasive Technique:



Excel Dynamic Solutions (Pty) Ltd

- **Detailed Exploration Drilling (Invasive Technique):** Should analyses by an analytical laboratory be positive, holes are drilled, and drill samples collected for further analysis. This will 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 up the rig. Two widely used drilling options may be adopted, these are either Reverse Circulation (RC) drilling and/or diamond drilling. RC drilling uses a pneumatic hammer, which drives a rotating tungsten-steel bit. The technique produces an uncontaminated large-volume sample, which is 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 program, for better geological control 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 core equipment parking and maintenance yard may be set up (including a fuel and lubricants storage facility).

Public Consultation

Public Consultation Activities

Regulation 21 of the EIA Regulations details steps to be taken during a public consultation process and these have been used in guiding this process. The public consultation process assisted the Environmental Consultant in identifying all potential impacts and aided in the process of identifying possible mitigation measures and alternatives to certain project activities. The communication with I&APs about the proposed prospecting and exploration activities was done through the following means in this order to ensure that the public is notified and allowed to comment on the proposed project:

- A Background Information Document (BID) containing information about the proposed exploration activities was compiled and delivered upon request to all registered Interested and Affected Parties (I&APs).



Excel Dynamic Solutions (Pty) Ltd

- Project Environmental Assessment notices were published in New Era Newspaper and The Namibian Newspaper (12 and 19 April 2023), briefly explaining the activity and its locality, inviting members of the public to register as I&APs and submit their comments/concerns.
- A consultation meeting was scheduled and held with the affected landowners on the 07th of June 2023 at Karasburg Constituency office at 10h00.
- The issues and concerns raised were noted and used to form a basis for the ESA Report and EMP.

Potential Impacts identified

The following potential impacts are anticipated:

- **Positive impacts:** Socio-economic development through employment creation (primary, secondary, and tertiary employment) and skills transfer; Opens up other investment opportunities and infrastructure-related development benefits; Produces a trained workforce and small businesses that can serve communities and may initiate related businesses; Boosts the local economic growth and regional economic development and; Increased support for local businesses through the procurement of consumable items such as Personal Protective Equipment (PPE), machinery spare parts, lubricants, etc.
- **Negative impacts:** Potential disturbance of existing pastoral systems; Physical land/soil disturbance; Impact on local biodiversity (fauna and flora); Habitat disturbance and potential illegal wildlife and domestic hunting in the area; Potential impact on water resources and soils particularly due to pollution; Air quality issue: potential dust generated from the project; Potential occupational health and safety risks, Vehicular traffic safety and impact on services infrastructures such as local roads, Vibrations, and noise associated with drilling activities may be a nuisance to locals; Environmental pollution (solid waste and wastewater), Archaeological and heritage impact and Potential social nuisance and conflicts (theft, damage to properties, etc.).

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

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

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

The public was consulted as required by the EMA and its 2012 EIA Regulations (Sections 21 to 24). This was done via the two newspapers (New Era and The Namibian) used for this environmental assessment. A consultation was held through a face-to-face meeting with directly affected landowners in Karasburg at Karasburg Constituency office, whereby they raised comments and concerns on the proposed project activities.

The issues and concerns raised by the registered I&APs formed the basis for this Report and the Draft EMP. The issues were addressed and incorporated into this Report whereby mitigation measures have been provided thereof to avoid and/or minimize their significance on the environmental and social components. Most of the potential impacts were found to be of medium-rating significance. With 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 medium rating to low). To maintain the desirable rating, the implementation of management and mitigation measures should be monitored by the Proponent directly, or their Environmental Control Officer (ECO) is highly recommended. The monitoring of this implementation will not only be done to maintain the reduced impacts' rating or maintain a low rating but to also ensure that all potential impacts identified in this study and other impacts that might arise during implementation are properly identified in time and addressed right away too.

It is crucial for the Proponent and their contractors as well as 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 to promote environmental



Excel Dynamic Solutions (Pty) Ltd

sustainability while ensuring a smooth and harmonious existence and purpose of the project activities in the area and environment at large.

Recommendations

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

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

- All the management and mitigation measures provided herein are effectively and progressively implemented.
- All required permits, licenses, and approvals for the proposed activities should be obtained as required. These include permits and licenses for land use access agreements to explore and ensure compliance with these specific legal requirements.
- The Proponent and all their project workers or contractors comply with the legal requirements governing their project and its associated activities and ensure that project permits and or approvals required 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.
- Environmental Compliance monitoring reports should be compiled and submitted to the DEAF Portal as per the provision made on the MEFT/DEAF's portal.

Disclaimer

Excel Dynamic Solutions (EDS) warrants that the findings and conclusion contained herein were accomplished following the methodologies outlined in the Scope of Work and Environmental Management Act (EMA) of 2007. These methodologies are described as representing good customary practice for conducting an EIA of a property to identify recognized environmental



Excel Dynamic Solutions (Pty) Ltd

conditions. There is a possibility that even with the proper application of these methodologies there may exist subject property conditions that could not be identified within the scope of the assessment, or which were not reasonably identifiable from the available information. The Consultant believes that the information obtained from the record review and during the public consultation processes concerning the proposed exploration work is reliable. However, the Consultant cannot and does not warrant or guarantee that the information provided by the other sources is accurate or complete. The conclusions and findings outlined 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 on personal interviews, and research of available documents, records, and maps held by the appropriate government and private agencies. This report is subject to the limitations of historical documentation, availability, and accuracy of pertinent records, and the personal recollections of those persons contacted.

TABLE OF CONTENTS

EXECUTIVE SUMMARY	i
LIST OF FIGURES.....	x
LIST OF TABLES.....	xi
LIST OF APPENDICES.....	xii
LIST OF ABBREVIATIONS	xii
1 INTRODUCTION.....	17
1.1 Project Background.....	17
1.2 Terms of Reference, Scope of Works, and Appointed EA Practitioner	19
1.3 Motivation for the Proposed Project	19
2 PROJECT DESCRIPTION: PROPOSED EXPLORATION ACTIVITY	21
2.1 Prospecting Phase (Non- Invasive Techniques)	21
2.2 Decommissioning and Rehabilitation Phase.....	26
3 PROJECT ALTERNATIVES.....	26
3.1 Types of Alternatives Considered.....	27
3.1.1 The "No-go" Alternative	27
3.1.2 Exploration Location	27
3.1.3 Exploration Methods	28
4 LEGAL FRAMEWORK: LEGISLATION, POLICIES, AND GUIDELINES	29
4.1 The Environmental Management Act (No. 7 of 2007)	29
4.2 International Policies, Principles, Standards, Treaties, and Conventions	39
5 ENVIRONMENTAL AND SOCIAL BASELINE	45
5.1 Biophysical Environment.....	45



Excel Dynamic Solutions (Pty) Ltd

5.1.1	Climate	45
5.1.2	Landscape and Topography	45
5.1.3	Geology	46
5.1.4	Soil	47
5.1.5	Water Resources: Groundwater and Surface Water	48
5.1.6	Flora and Fauna	49
5.2	Heritage and Archaeology	51
5.2.1	Local Level and Archaeological Findings	51
5.3	Surrounding Land Uses	51
5.4	Socio-Economic conditions	52
6	PUBLIC CONSULTATION PROCESS	54
6.1	Pre-identified and Registered Interested and Affected Parties (I&APs)	54
6.2	Communication with I&APs	55
7	IMPACT IDENTIFICATION, ASSESSMENT AND MITIGATION MEASURES	58
7.1	Impact Identification	58
7.2	Impact Assessment Methodology	59
7.2.1	Extent (spatial scale)	60
7.2.2	Duration	60
7.2.3	Intensity, Magnitude/severity	60
7.2.4	Probability of occurrence	61
7.2.5	Significance	61
7.3	Assessment of Potential Negative Impacts	63
7.3.1	Disturbance to the grazing areas	63
7.3.2	Land Degradation and Loss of Biodiversity	64
7.3.3	Generation of Dust (Air Quality)	65



Excel Dynamic Solutions (Pty) Ltd

7.3.4	Water Resources Use.....	65
7.3.5	Soil and Water Resources Pollution.....	66
7.3.6	Waste Generation	67
7.3.7	Occupational Health and Safety Risks.....	68
7.3.8	Vehicular Traffic Use and Safety	68
7.3.9	Noise and vibrations	69
7.3.10	Disturbance to Archaeological and Heritage Resources.....	70
7.3.11	Impact on Local Roads/Routes	70
7.3.12	Social Nuisance: Local Property intrusion and Disturbance/Damage.....	71
7.4	Cumulative Impacts Associated with Proposed Exploration.....	71
7.5	Mitigations and Recommendations for Rehabilitation	72
8	RECOMMENDATIONS AND CONCLUSION.....	73
8.1	Recommendations	73
8.2	Conclusion.....	74
9	REFERENCES	75

LIST OF FIGURES

Figure 1:	Locality map for EPL No. 8803.....	18
Figure 2:	The location of EPL 8803 on the National Mining Cadastre.....	28
Figure 3:	Landscape and Topographic map of the project area	46
Figure 4:	A map of the general geology of the project area	47
Figure 5:	shows the dominant soil types found within the EPL.....	48
Figure 6:	Shows groundwater map for the project area	49
Figure 7:	Vegetation map for the proposed project.....	50
Figure 8:	Map showing land use within and surrounding the EPL	52
Figure 9:	Public notices placed at Karasburg East Constituency, Karas Region.....	56



Figure 10: Consultation meeting held on the 07th June 2023, Karasburg East Constituency Office, Karas Region..... 57

LIST OF TABLES

Table 1: Applicable local, national and international standards, policies and guidelines governing the proposed prospecting and exploration activities..... 30

Table 2: International Policies, Principles, Standards, Treaties and Convention applicable to the project 40

Table 3: Summary of Interested and Affected Parties (I&APs)..... 54

Table 4: Summary of main issues raised, and comments received during public meeting engagements 57

Table 5: Extent or spatial impact rating..... 60

Table 6: Duration impact rating 60

Table 7: Intensity, magnitude, or severity impact rating..... 61

Table 8: Probability of occurrence impact rating 61

Table 9: Significance rating scale 62

Table 10: Assessment of the impacts of exploration on grazing areas 64

Table 11: Assessment of the impacts of exploration on biodiversity..... 65

Table 12: Assessment of the impacts of exploration on air quality 65

Table 13: Assessment of the project impact on water resource use and availability 66

Table 14: Assessment of the project impact on soils and water resources (pollution)..... 67

Table 15: Assessment of waste generation impact 67

Table 16: Assessment of the impacts of exploration on health and safety 68

Table 17: Assessment of the impacts of exploration on-road use (vehicular traffic) 69

Table 18: Assessment of the impacts of noise and vibrations from exploration 69

Table 19: Assessment of the impacts of exploration on archaeological & heritage resources.... 70

Table 20: Assessment of exploration of local services (roads and water) 70

Table 21: Assessment of the social impact of community property damage or disturbance 71

LIST OF APPENDICES

Appendix A: Copy of the Environmental Clearance Certificate (ECC) Application Form 1

Appendix B: Draft Environmental Management Plan (EMP)

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

Appendix D: Proof of Public Consultation (Newspaper Adverts, Attendance register, Meeting Minutes)

Appendix E: Copy of Preparedness to grant EPL No.8803

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
ESA	Environmental Scoping Assessment
EMA	Environmental Management Act
EMP	Environmental Management Plan
EPL	Exclusive Prospecting Licence



GG	Government Gazette
GN	Government Notice
I&APs	Interested and Affected Parties
MEFT	Ministry of Environment, Forestry, and Tourism
MME	Ministry of Mines and Energy
PPE	Personal Protective Equipment
Reg	Regulation
S	Section
TOR	Terms of Reference

DEFINITION OF TERMS

Alternative	A possible course of action, in place of another 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	About an activity, means the impact of an activity that in itself 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 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 the Environmental Management Act - the complex of natural and anthropogenic factors and elements that are mutually interrelated and affect the ecological equilibrium and the quality of life, including – (a) the natural environment that is land, water, and air; all organic and inorganic matter and living organisms and (b) the human environment that is the landscape and natural, cultural, historical, aesthetic, economic and social heritage and values.
Environmental Management Plan	As defined in the EIA Regulations (Section 8(j)), a plan that describes how activities that may have significant environments effects are to be mitigated, controlled, and monitored.
Exclusive Prospecting Licence	Is a license that confers exclusive mineral prospecting rights over the land of up to 1000 km ² in size for an initial period of three years, renewable twice for a maximum of two years at a time.
Interested and Affected Party (I&AP)	Concerning the assessment of a listed activity includes - (a) any person, group of persons, or organization interested in or affected by the activity; and (b) any organ of state that may have jurisdiction over any aspect of the 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.
Proponent	As defined in the Environmental Management Act, a person who proposes to undertake a listed activity.
Mitigate	Practical measures to reduce adverse impacts.
Fauna	All of the animals that are found in a given area.



Flora	All of the plants are found in a given area.
Mitigation	The purposeful implementation of decisions or activities that are designed to reduce the undesirable impacts of a proposed action on the affected environment.
Monitoring	Activity involving repeated observation, according to a pre-determined schedule, of one or more elements of the environment to detect their characteristics (status and trends).
Nomadic Pastoralism	Nomadic pastoralists live in societies in which the husbandry of grazing animals is viewed as an ideal way of making a living and the regular movement of all or part of the society is considered a normal and natural part of life. Pastoral nomadism is commonly found where climatic conditions produce seasonal pastures but cannot support sustained agriculture.
Proponent	Organization (private or public sector) or individual intending to implement a development proposal.
Public Consultation/Involvement	A range of techniques can be used to inform, consult or interact with stakeholders affected by the proposed activities.
Protected Area	Refers to a protected area that is proclaimed in the Government Gazette



	according to the Nature Conservation Ordinance number 4 of 1975, as amended
Scoping	An early and open activity to identify the impacts that are most likely to be significant and require specialized investigation during the EIA work. Can, also be used to identify alternative project designs/sites to be assessed, obtain local knowledge of the site and surroundings, and prepare a plan for public involvement. The results of scoping are frequently used to prepare a Terms of Reference for the specialized input into full EIA.
Terms of Reference (ToR)	Written requirements governing full EIA input and implementation, consultations to be held, data to be produced, and form/contents of the EIA report. Often produced as an output from scoping.

1 INTRODUCTION

1.1 Project Background

Zambezi Exploration (Pty) Ltd (hereinafter referred to as the Proponent), has applied to the Ministry of Mines and Energy (MME) to be granted an Exclusive Prospecting Licence (EPL) No. 8803 on 10th March 2022. The approval and granting of EPL No. 8803 require an Environmental Clearance Certificate (ECC) before the commencement of the planned prospecting and exploration works. The 19 052. 5702-ha EPL is located near Karasburg, Karas Region (**Figure 1**). The EPL covers (overlies) Farm Velloor No. 89, Strohnhof No.88, Bokies Bankwest No.82 and Hogies No.83.

The target commodities for EPL 8803 are **Base & Rare metals and Nuclear Fuel Minerals**.

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

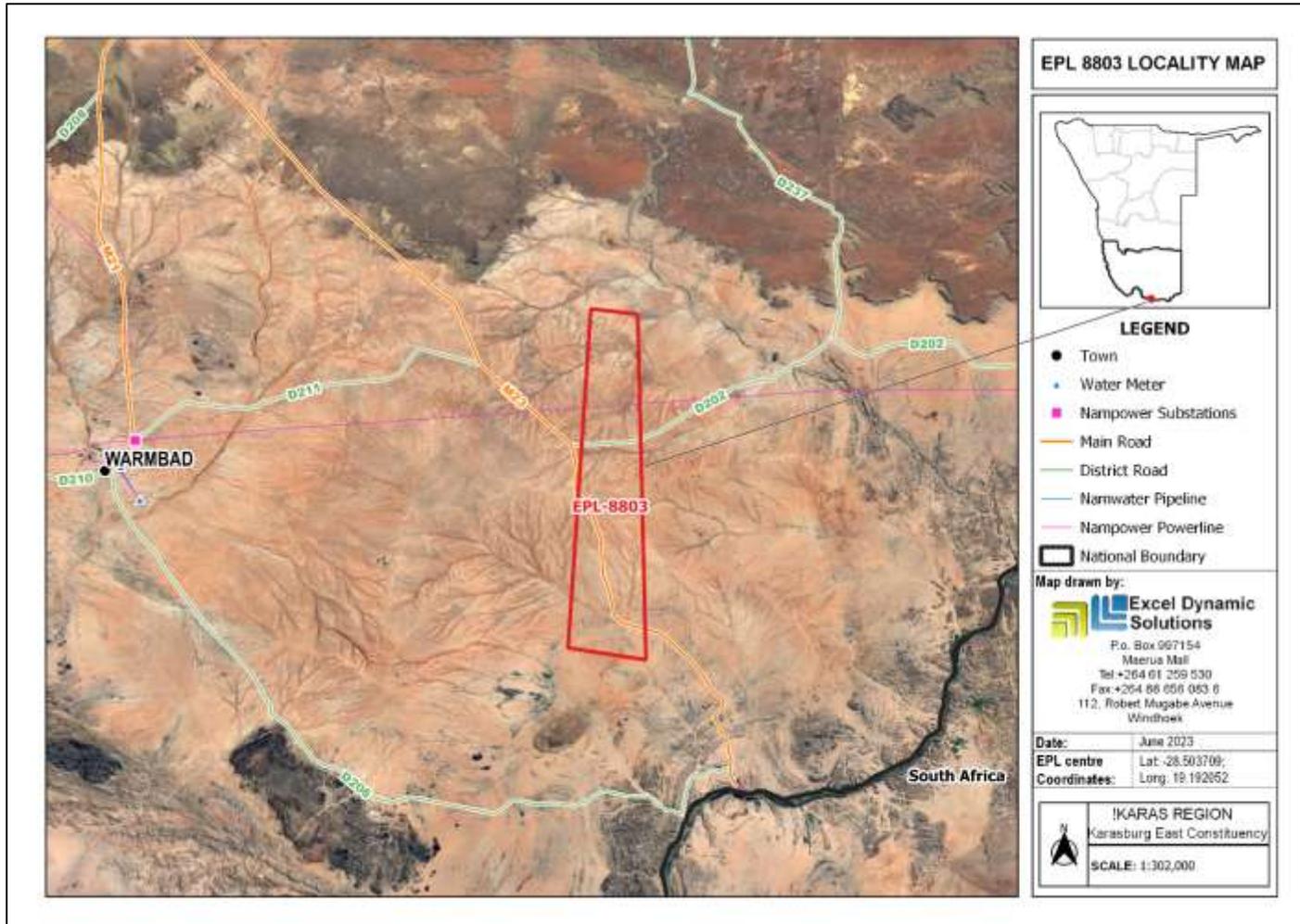


Figure 1: Locality map for EPL No. 8803

1.2 Terms of Reference, Scope of Works, and Appointed EA Practitioner

To satisfy the requirements of the EMA and its 2012 EIA Regulations, The Proponent appointed EDS to conduct the required Environmental Assessment (EA) process on their (Proponent's) behalf, 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 EIA Regulations (GN. No. 30 of 2012) to conduct the study.

The application for the ECC (**Appendix A**) is compiled and submitted to the Ministry of Environment, Forestry, and Tourism (MEFT), 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 may be considered by the Environmental Commissioner at the MEFT Department of Environmental Affairs and Forestry (DEAF).

The EIA project is headed by Mr. Nerson Tjelos, a qualified and experienced Geoscientist and experienced EAP. The consultation process and reporting is done by Mr. Silas David. EAP CV is presented in **Appendix C**.

1.3 Motivation for the Proposed Project

The mining industry is one of the largest contributors to the Namibian economy, it contributes to the improvement of local livelihoods. In Namibia, the exploration of minerals is done mainly by the private sector. Exploration activities have a great potential to enhance and contribute to the development of other sectors and their activities do provide temporary employment, and taxes that fund social infrastructural development. The minerals sector yields foreign exchange and accounts for a significant portion of the gross domestic product (GDP). Additionally, the industry produces a trained workforce and small businesses that can serve communities and may initiate related businesses. Exploration activity fosters several associated activities such as the manufacturing of exploration and mining equipment, and the provision of engineering and environmental services. The mining sector forms a vital part of some of Namibia's development plans, namely: Vision 2030, National Development Plan 5 (NDP5), and Harambee Prosperity



Excel Dynamic Solutions (Pty) Ltd

Plans (HPPs) I and II. Mining is essential to the development goals of Namibia in contributing to meeting the ever-increasing global demand for minerals, and for national prosperity. Successful exploration of EPL No. 8803 could potentially lead to the mining of the target mineral, which would contribute towards achieving the goals of the national development plans.



2 PROJECT DESCRIPTION: PROPOSED EXPLORATION ACTIVITY

Prospecting and exploration of minerals are the first components of any potential mining project. These are carried out to acquire the necessary data required for further decision-making and investment options. These activities are anticipated to last for about three years. The exploration process includes three phases - prospecting, exploration, and the decommissioning of works.

2.1 Prospecting Phase (Non- Invasive Techniques)

2.1.1 Desktop Study

This mainly entails a desktop review of geological maps of the area, on-site ground traverses and observations, and an update, where relevant, of the information obtained during previous geological studies of the area.

2.1.2 Geophysical surveys

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

2.1.3 Lithology geochemical surveys

Rock and soil samples shall be collected and taken for trace element analysis to be conducted by analytical chemistry laboratories to determine the sufficiency of the mineral and the feasibility of mining the mineral. Additionally, trenches or pits may be dug depending on the commodity (in a controlled environment e.g., fencing off and labeling activity sites) adopting a manual approach 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



Excel Dynamic Solutions (Pty) Ltd

secured until the trenches or pits are closed. The landowner and other relevant stakeholders will be engaged to obtain authorization where necessary.

2.1.4 Exploration Phase (Invasive Techniques)

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

2.1.5 Detailed Exploration (Drilling)

The techniques involved herein include soil survey, rock sampling, trenching, and/ or pitting and detailed exploration drilling. Once the target areas have been selected and verified under the prospecting phase, detailed exploration works will follow. The preferred drilling technique for this exploration programme is Reverse Circulation (RC) Drilling. RC It is relatively quick and cheap when compared to other techniques like Diamond Drilling. However, if found to be necessary, diamond drilling may also be considered for this exploration programme, during advanced stages of exploration if large amounts of sample material are required for analysis and to perform processing trials. The selection of the potential mineralization model and exploration targets are based on the local geology, trenching, drilling, and assay results of the samples collected.

Reverse circulation (RC) drilling is achieved by blowing compressed air down the annulus of a drill rod; the differential pressure creates air lift pushing water and cuttings up the inner tube that is inside each rod. The drill cuttings travel up the inside of the drill rod and are collected in a sample bag on the surface. Samples are collected every metre and the number of samples is therefore dictated by the depth of the hole. Generally, a RC drilling program will see multiple holes drilled at 60-90° inclination and can range from 60 to 500m in depth. RC drilling does not require a significant amount of water, as compared to diamond core drilling. For RC drilling, water is often required and used down the hole to cool the drill bit and reduce dust, and assist with the transportation of sample bits to the surface.

Diamond (Core Drilling) there are two main types of core drilling: soft and hard coring. This refers to the type of lithology each method is suited for. Soft coring is used when taking a core sample of unconsolidated material and can reach depths of 152.5 m (or more—but this is what is



typical for environmental industry projects). Soft coring uses a punch core system. This involves using two containers, one nested inside the other. The inner container is pushed out in front to capture the core sample, then the outer container is extended to provide casing, so the hole does not collapse. This method protects the integrity of the sample from the air or fluid used when progressing the outer container. Hard coring is used when the subsurface consists of materials as hard or harder than sandstone. Much greater depths can be reached with this type of coring; depths up to 1524 m reached. Hard coring also uses two nested containers, but the outer container is extended before the inner container. This means the sample is washed with the drilling fluid or air, but because the core sample is of competent rock, there is no danger in it being disturbed or contaminated. Hard coring is sometimes referred to as Diamond Coring, as drill bits with small diamonds embedded are used in difficult lithology to cut through rock.

Pitting: Pitting is usually employed to test shallow, extensive, flat-lying bodies of mineralization such as a buried heavy mineral placer. The main advantage of pitting over a pattern-drill programme on the same deposit is that pits can provide a very large volume sample. Large sample sizes are necessary to overcome problems of variable grade distribution, which are a characteristic feature of such deposits. In areas where the ground is wet, or labour is expensive, pits are best dug with a mechanical excavator. Pits dug to depths of 3–4 m are common and with large equipment excavation to 6 m can be achieved. In wet, soft ground any pit deeper than 1 m is dangerous. Diggers excavate rapidly and pits 3–4 m deep can be dug, logged, sampled, and re-filled within an hour. In cooler and moister weather conditions, thick lateritic soil forms ideal conditions for pitting.

In-fill drilling: The results of in-fill drilling are intended to support an update to a higher classification of the Mineral Resource estimate. The metallurgical test-work results will improve understanding of blending designs in the exploration schedules for the product offtake specifications.

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

Other aspects of the proposed exploration operations include:

2.1.6 Accessibility to Site



Excel Dynamic Solutions (Pty) Ltd

The EPL is accessible via the the M0023 road from Karasburg, leading to the EPL area, leading to the EPL area. The Proponent may need to do some upgrading on the site access roads to ensure that it is fit to accommodate project-related vehicles, such as heavy trucks.

2.1.7 Material and Equipment

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

2.1.8 Services and Infrastructure

- **Water:** Water for the exploration operations on the EPL will be obtained from the nearest existing boreholes, or the proponent will drill boreholes within the EPL, upon obtaining necessary permits and signed agreements with the landowners in the area. The estimated monthly water consumptions are 3 500 liters. This includes water for drinking, sanitation, cooking, dust control (if necessary), drilling, as well as washing of equipment.
- **Power supply:** Power required during the operation phase will be provided by diesel generators. About 2000 liters of diesel will be used per day.
- **Fuel (diesel for generators and other equipment):** The fuel (diesel) required for exploration equipment will be stored in a tank mounted on a mobile trailer, and drip trays will be readily available on this trailer and monitored to ensure that accidental fuel spills are cleaned up as soon as they have been detected/observed. Fuel may also be stored in a bunded diesel bowser on site, and in jerry cans placed on plastic sheeting to avoid unnecessary contamination of soils.

2.1.9 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 regularly as possible and taken to the nearest certified landfill site. An agreement will need to be reached with different waste management facility operators/owners and authorization



Excel Dynamic Solutions (Pty) Ltd

or permits will be obtained before utilizing these facilities, in the case of production of any hazardous waste.

- **Sanitation and human waste:** Portable ablution facilities 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.

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

- **Mineral Waste:** Consists of solid products of exploration and mineral concentration to acquire the targeted minerals. Mineral waste will potentially be produced throughout the project exploration phase. This waste will be stripped and dumped in allocated areas as stipulated in the EMP.
- **Non-mineral Waste:** Consists primarily of auxiliary materials that will support the exploration phase. This includes but is not limited to items such as empty containers, plastic, etc., and other domestic waste. This waste will be collected, sorted, and taken to the dumpsite as regularly as necessary.

2.1.10 Safety and Security

- **Storage Site:** Temporary storage areas for exploration material, equipment, and machinery will be required at the campsite and/or exploration sites. Security will be supplied on a 24-hour basis at the delegated sites for storage. A temporary support fence surrounding the storage site will be constructed to ensure people and domestic animals are not put at risk.
- **Fire management:** A minimum of basic firefighting equipment, i.e., fire extinguishers will be readily available in vehicles, at the working sites and camps. The exploration crew is required to have the contact details of the nearest fire station at hand in case of a larger scale of fires at the site.
- **Health and Safety:** Adequate and appropriate Personal Protective Equipment (PPE) will be provided to every project personnel while on and working at the site. A first aid kit will be readily available on-site to attend to potential minor injuries.

2.1.11 Accommodation

The exploration crew will be accommodated in Karasburg, or a campsite will be set up for the exploration crew near the exploration sites. If the accommodation camp is to be set up on the traditional jurisdiction, necessary arrangements will be made with the landowners. Exploration activities will take place during daytime only and staff will commute to the exploration site(s) from their place of accommodation if they are not accommodated on site.

2.2 Decommissioning and Rehabilitation Phase

Once the exploration activities on the EPL come to an end, the Proponent will need to put 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. An unfavorable economic situation or unconvincing exploration results might force the Proponent to cease the exploration program before the predicted closure. Therefore, it is best practice for the Proponent to ensure the project activities cease in an environmentally friendly manner and the site is rehabilitated.

3 PROJECT ALTERNATIVES

Alternatives are defined as the “different means of meeting the general purpose and requirements of the activity” (EMA, 2007). This section highlights the different ways in which the project can be undertaken, and identifies alternatives that may 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 nothing happens. Should the proposal of exploration activities on the EPL be discontinued, none of the potential impacts (positive and negative) identified would occur. If the proposed project is to be discontinued, the current land use for the proposed site will remain unchanged.

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

- Loss of foreign direct investment.
- About ten (10) temporary job opportunities for local members will not be realized.
- No realization of local business supports through the procurement of consumable items such as Personal Protective Equipment (PPE), machinery spare parts, lubricants, etc.
- Loss of potential income to the 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 members would be not realized.

Considering the above losses, the “no-action/go” alternative may not necessarily be considered a viable option for this project, although, in the case where parts of the project site are considered environmentally sensitive and/or protected, one or several sections of the site may be identified as no-go zones.

3.1.2 Exploration Location

The prospecting/exploration location is dependent on the geological setting (regional and local), the economic geology, and the exploration and mining history of the EPL area. Therefore, finding an alternative location for the planned exploration activities is not possible. This means that the mineralization of the target commodities is area-specific, and exploration targets are primarily



determined by the geology (host rocks) and the tectonic environment of the site (an ore-forming mechanism)). The tenement has a sufficient surface area for future related facilities, should an economic mineral deposit be defined.

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

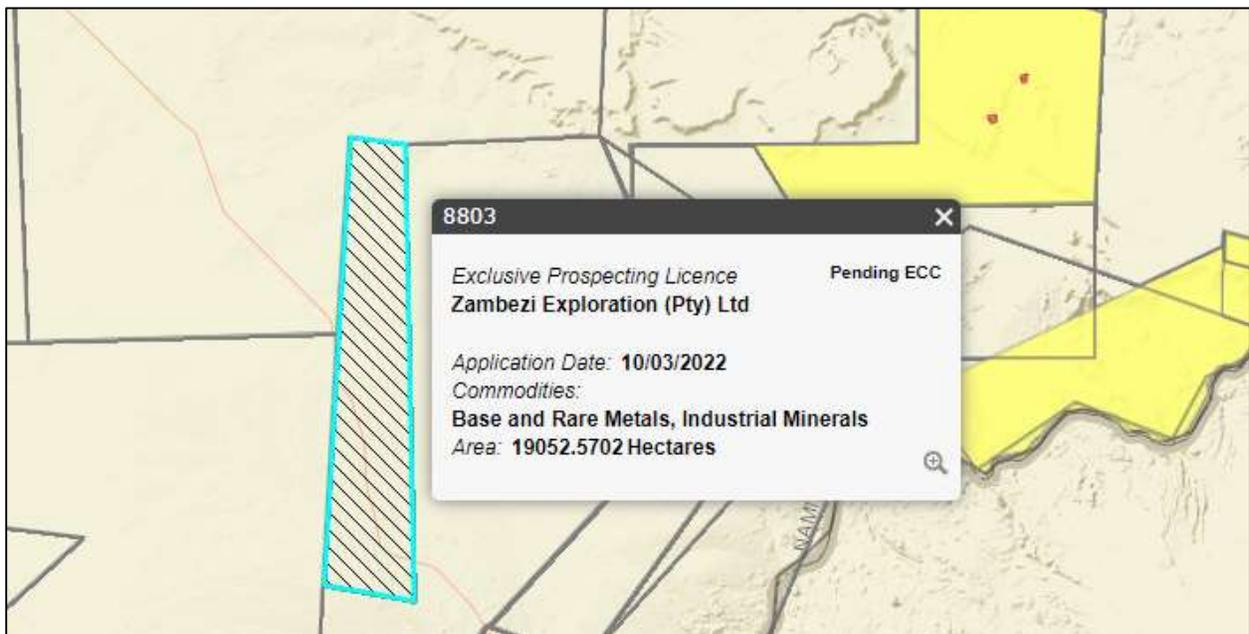


Figure 2: The location of EPL 8803 on the National Mining Cadastre

3.1.3 Exploration Methods

Both invasive and non-invasive exploration activities are expected to take place. The combination of prospecting methods (non-invasive techniques) has no alternatives therefore, these will be implemented as presented. However, the invasive techniques (drilling) may present some options/alternatives to carrying out the project. Drilling provides most of the information for the final evaluation of a prospect and will ultimately determine if the prospect is mineable. Commonly



Excel Dynamic Solutions (Pty) Ltd

in mineral exploration drilling, two methods are utilized. These are reverse circulation (RC) drilling and Diamond (Core) drilling, depending on the type of mineral sought after

4 LEGAL FRAMEWORK: LEGISLATION, POLICIES, AND GUIDELINES

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

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

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

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

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

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



Other legal obligations that are relevant to the proposed activities of EPL No. 8803 and related activities are presented.

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

Legislation / Policy / Guideline: Custodian	Relevant Provisions	Implications for this project
<p>The Constitution of the Republic of Namibia, 1990 as amended:</p> <p>Government of the Republic of Namibia</p>	<p>The Constitution of the Republic of Namibia (1990 as amended) addresses matters relating to environmental protection and sustainable development. Article 91(c) defines the functions of the Ombudsman to include:</p> <p>“...the duty to investigate complaints concerning the over-utilization of living natural resources, the irrational exploitation of non-renewable resources, the degradation and destruction of ecosystems and failure to protect the beauty and character of Namibia...”</p> <p>Article 95(l) commits the state to actively promoting and maintaining the welfare of the people by adopting policies aimed at the:</p> <p>“...Natural resources situated in the soil and on the subsoil, the internal waters,</p>	<p>By implementing the environmental management plan, the establishment will be 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>



Legislation / Policy / Guideline: Custodian	Relevant Provisions	Implications for this project
	<p>in the sea, in the continental shelf, and in the exclusive economic zone are property of the State.”</p>	
<p>Minerals (Prospecting and Mining) Act (No. 33 of 1992): Ministry of Mines and Energy (MME)</p>	<p>Section 52 requires mineral license holders to enter into a written agreement with affected landowners before exercising rights conferred upon the license holder.</p> <p>Section 52(1) mineral license holder may not exercise his/her rights in any town or village, on or in a proclaimed road, land utilized for cultivation, within 100m of any water resource (borehole, dam, spring, drinking trough, etc.) and boreholes, or no operations in municipal areas, etc.), which should individually be checked to ensure compliance.</p> <p>Section 54 requires a written notice to be submitted to the Mining Commissioner if the holder of a mineral license intends to abandon the mineral license area.</p> <p>Section 68 stipulates that an application for an exclusive prospecting license (EPL) shall contain the particulars of the condition of, and any existing damage</p>	<p>The Proponent should enter into a written agreement with landowners before exploring their land. On commercial land, the Proponent should engage the farmers for land use consent.</p> <p>An assessment of the impact on the receiving environment should be carried out.</p> <p>The Proponent should include as part of their application for the EPL, measures by which they will rehabilitate the areas where they intend to carry out mineral exploration activities.</p> <p>The Proponent may not carry out exploration activities within the areas limited by Section 52 (1) of this Act.</p>



Legislation / Policy / Guideline: Custodian	Relevant Provisions	Implications for this project
	<p>to, the environment in the area to which the application relates and an estimate of the effect which the proposed prospecting operations may have on the environment and the measures to be taken to prevent or minimize any such effect.</p> <p>Section 91 requires that rehabilitation measures should be included in an application for a mineral license.</p>	
<p>Nature Conservation Amendment Act, No. 3 of 2017: Ministry of Environment, Forestry and Tourism (MEFT)</p>	<p>National Parks are established and gazetted following the Nature Conservation Ordinance, 1975 (4 of 1975), as amended. The Ordinance provides a legal framework concerning the permission of entering a state-protected area, as well as requirements for individuals damaging objects (geological, ethnological, archaeological, and historical) within a protected area. Though the Ordinance does not specifically refer to mining as an activity within a protected area (PA) or recreational area (RA), it does restrict access to PAs and prohibits certain acts therein as well as the purposes for</p>	<p>The Proponent will be required to enhance the conservation of biodiversity and the maintenance of the ecological integrity of protected areas and another State land in the Project Site area.</p> <p>The Proponent will also be required to comply with the existing and planned local operational management plans.</p>



Legislation / Policy / Guideline: Custodian	Relevant Provisions	Implications for this project
	which permission to enter game parks and nature reserves may be granted.	
The Parks and Wildlife Management Bill of 2008: Ministry of Environment, Forestry and Tourism (MEFT)	Aims to provide a regulatory framework for the protection, conservation, and rehabilitation of species and ecosystems, the sustainable use and sustainable management of indigenous biological resources, and the management of protected areas, to conserve biodiversity and contribute to national development.	
Mine Health & Safety Regulations, 10th Draft: Ministry of Health and Social Services (MHSS)	Makes provision for the health and safety of persons employed or otherwise present in the mineral licenses area. These deal with among other matters; clothing and devices; design, use, operation, supervision, and control of machinery; fencing and guards; and safety measures during repairs and maintenance.	The Proponent should comply with all these regulations concerning their employees.
Petroleum Products and Energy Act (No. 13 of 1990) Regulations (2001): Ministry	Regulation 3(2)(b) states that “No person shall possess [sic] or store any fuel except under the authority of a license or a certificate, excluding a person who possesses or stores such fuel in a quantity of 600 liters or less in	The Proponent should obtain the necessary authorization from the MME for the storage of fuel on-site.



Legislation / Policy / Guideline: Custodian	Relevant Provisions	Implications for this project
of Mines and Energy (MME)	any container kept at a place outside a local authority area”	
The Regional Councils Act (No. 22 of 1992): Ministry of Urban and Rural Development (MURD)	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 perspective, 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, urbanization patterns, natural resources, economic development potential, infrastructure, land utilization pattern and sensitivity of the natural environment.	The relevant Regional Councils are IAPs and must be consulted during the Environmental Assessment (EA) process. The project site falls under the Karas Regional Council; therefore, they should be consulted.
Water Act 54 of 1956: Ministry of Agriculture, Water and Land Reform (MAWLR)	The Water Resources Management Act 11 of 2013 is present without regulations; therefore, the Water Act No 54 of 1956 is still in force: 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)).	The protection (both quality and quantity/abstraction) of water resources should be a priority. The permits and license required thereto should be obtained from MAWLR’s relevant Departments (these permits include Borehole Drilling



Legislation / Policy / Guideline: Custodian	Relevant Provisions	Implications for this project
	<p>Provides for control and protection of groundwater (S66 (1), (d (ii)).</p> <p>Liability of clean-up costs after closure/abandonment of an activity (S3 (l)). (l)).</p>	<p>Permits, Groundwater Abstraction & Use Permits, and when required, Wastewater / Effluent Discharge Permits).</p>
<p>Water Resources Management Act (No 11 of 2013): Ministry of Agriculture, Water and Land Reform (MAWLR)</p>	<p>The Act provides for the management, protection, development, use, and conservation of water resources; provides for the regulation and monitoring of water services, and provides 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 (S68).</p>	
<p>National Heritage Act No. 27 of 2004: Ministry of Education, Arts,</p>	<p>To provide for the protection and conservation of places and objects of heritage significance and the registration of such places and objects;</p>	<p>The Proponent should ensure compliance with this act's requirements. The necessary management measures and</p>



Legislation / Policy / Guideline: Custodian	Relevant Provisions	Implications for this project
and Culture (MEAC)	to establish a National Heritage Council; to establish a National Heritage Register; and to provide for incidental matters.	related permitting requirements must be taken. This is done by consulting with the National Heritage Council (NHC) of Namibia. The management measures should be incorporated into the Draft EMP.
The National Monuments Act (No. 28 of 1969): Ministry of Education, Arts, and Culture (MEAC)	The Act enables the proclamation of national monuments and protects archaeological sites.	related permitting requirements must be taken. This is done by consulting with the National Heritage Council (NHC) of Namibia. The management measures should be incorporated into the Draft EMP.
Soil Conservation Act (No 76 of 1969): Ministry of Agriculture, Water and Land Reform (MAWLR)	The Act makes provision for the prevention and control of soil erosion and the protection, improvement, and conservation of soil, vegetation, and water supply sources and resources, through directives declared by the Minister.	Duty of care must be applied to soil conservation and management measures must be included in the EMP.
Forestry Act (Act No. 12 of 2001): Ministry of Environment, Forestry and Tourism (MEFT)	The Act provides for the management and use of forests and forest products. Section 22. (1) provides: "Unless otherwise authorized by this Act, or by a license issued under subsection (3), no person shall on any land which is not part of a surveyed erven of a local authority area as defined in section 1 of	The proponent will apply for the relevant permit under this Act if it becomes necessary.



Legislation / Policy / Guideline: Custodian	Relevant Provisions	Implications for this project
	<p>the Local Authorities Act, 1992 (Act No. 23 of 1992) cut, destroy or remove - (a) vegetation which is on a dune or drifting sand or a gully unless the cutting, destruction or removal is done to stabilize the sand or gully; or (b) any living tree, bush or shrub growing within 100 m of a river, stream or watercourse.”</p>	
<p>Public Health Act (No. 36 of 1919): Ministry of Health and Social Services (MHSS)</p>	<p>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.”</p>	<p>The Proponent and all its employees should ensure compliance with the provisions of these legal instruments.</p>
<p>Health and Safety Regulations GN 156/1997 (GG 1617): Ministry of Health and Social Services (MHSS)</p>	<p>Details various requirements regarding the health and safety of labourers.</p>	
<p>Public and Environmental Health Act No. 1 of 2015: Ministry</p>	<p>The Act serves to protect the public from nuisance and states that no person shall cause a nuisance or shall suffer to exist on any land or premises</p>	<p>The Proponent should ensure that the project infrastructure, vehicles, equipment, and machinery are designed and</p>



Legislation / Policy / Guideline: Custodian	Relevant Provisions	Implications for this project
of Health and Social Services (MHSS)	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.	operated in a way that is safe, or not injurious or dangerous to public health, and that the noise and dust emissions which could be considered a nuisance remain at acceptable levels. Public and environmental health should be preserved and remain uncompromised.
Atmospheric Pollution Prevention Ordinance (1976): Ministry of Health and Social Services (MHSS)	This ordinance provides for the prevention of air pollution and is affected by the Health Act 21 of 1988. Under this ordinance, the entire area of Namibia, apart from East Caprivi, is proclaimed as a controlled area for section 4(1) (a) of the ordinance.	The proposed project and related activities should be undertaken in such a way that they do not pollute or compromise the surrounding air quality. Mitigation measures should be put in place and implemented on-site.
Hazardous Substance Ordinance, No. 14 of 1974: Ministry of Health and Social Services (MHSS)	The ordinance provides for the control of toxic substances. It covers manufacture, sale, use, disposal, and dumping as well as import and export. Although the environmental aspects are not explicitly stated, the ordinance provides for the importing, storage, and handling.	The Proponent should handle and manage the storage and use of hazardous substances on site so that they do not harm or compromise the site environment



Legislation / Policy / Guideline: Custodian	Relevant Provisions	Implications for this project
Road Traffic and Transport Act, No. 22 of 1999: Ministry of Works and Transport (Roads Authority of Namibia)	The Act provides for the establishment of the Transportation Commission of Namibia; for the control of traffic on public roads, the licensing of drivers, the registration and licensing of vehicles, the control and regulation of road transport across Namibia's borders; and for matters incidental thereto. Should the Proponent wish to undertake activities involving road transportation or access to existing roads, the relevant permits will be required.	Mitigation measures should be provided for, if the roads and traffic impact cannot be avoided, the relevant permits must be applied for.
Labour Act (No. 6 of 1992): Ministry of Labour, Industrial Relations and Employment Creation (MLIREC)	Ministry of Labour, Industrial Relations and Employment Creation is aimed at ensuring harmonious labour relations through promoting social justice, occupational health and safety, and enhanced labour market services for the benefit of all Namibians. This ministry insures the effective implementation of the Labour Act No. 6 of 1992.	The Proponent should ensure that the prospecting and exploration activities do not compromise the safety and welfare of workers.

4.2 International Policies, Principles, Standards, Treaties, and Conventions



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

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

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



	<p>Principle 8: Covenants</p> <p>Principle 9: Independent Monitoring and Reporting</p> <p>Principle 10: Reporting and Transparency</p>	
<p>The International Finance Corporation (IFC) Performance Standards</p>	<p>The International Finance Corporation’s (IFC) Sustainability Framework articulates the Corporation’s strategic commitment to sustainable development and is an integral part of the IFC’s approach to risk management. The Sustainability Framework comprises IFC’s Policy and Performance Standards on Environmental and Social Sustainability, and IFC’s Access to Information Policy. The Policy on Environmental and Social Sustainability describes IFC’s commitments, roles, and responsibilities related to environmental and social sustainability.</p> <p>As of 28 October 2018, there are ten (10) Performance Standards (Performance Standards on Environmental and Social Sustainability) that the IFC requires project Proponents to meet throughout the life of an investment. These standard requirements are briefly described below.</p> <p>Performance Standard 1: Assessment and Management of Environmental and Social Risks and Impacts</p>	<p>The Performance Standards are directed toward clients, guiding how to identify risks and impacts, and are designed to help avoid, mitigate, and manage risks and impacts as a way of doing business sustainably, including stakeholder engagement and disclosure obligations of the Client (Borrower) concerning project-level activities. In the case of its direct investments (including project and corporate finance provided through financial intermediaries), IFC requires its clients to apply the Performance Standards to manage environmental and social risks and impacts so that development</p>



	<p>Performance Standard 2: Labour and Working Conditions</p> <p>Performance Standard 3: Resource Efficient and Pollution Prevention and Management</p> <p>Performance Standard 4: Community Health and Safety</p> <p>Performance Standard 5: Land Acquisition, Restrictions on Land Use, and Involuntary Resettlement</p> <p>Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources</p> <p>Performance Standard 7: Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities</p> <p>Performance Standard 8: Cultural Heritage</p> <p>Performance Standard 9: Financial Intermediaries (FIs)</p> <p>Performance Standard 10: Stakeholder Engagement and Information</p> <p>A full description of the IFC Standards can be obtained from</p> <p>http://www.worldbank.org/en/projects-operations/environmental-and-social-framework/brief/environmental-and-social-framework</p>	<p>opportunities are enhanced. IFC uses the Sustainability Framework along with other strategies, policies, and initiatives to direct the business activities of the Corporation to achieve its overall development objectives.</p>
--	---	---



	social-standards?cq_ck=1522164538151#ess1	
The United Nations Convention to Combat Desertification (UNCCD) 1992	<p>Addresses land degradation in arid regions with the purpose to contribute to the conservation and sustainable use of biodiversity and the mitigation of climate change.</p> <p>The convention's objective is to forge a global partnership to reverse and prevent desertification/land degradation and to mitigate the effects of drought in affected areas to support poverty reduction and environmental sustainability United Nations Convention.</p>	<p>The project activities should not be such that they contribute to desertification.</p>
Convention on Biological Diversity 1992	<p>Regulate or manage biological resources important for the conservation of biological diversity whether within or outside protected areas, to ensure their conservation and sustainable use.</p> <p>Promote the protection of ecosystems, and natural habitats, and the maintenance of viable populations of species in natural surroundings.</p>	<p>Removal of vegetation cover and destruction of natural habitats should be avoided and where not possible minimized.</p>
Stockholm Declaration on the Human Environment, Stockholm (1972)	<p>It recognizes the need for: “a common outlook and common principles to inspire and guide the people of the world in the preservation and enhancement of the human environment.</p>	<p>Protection of natural resources and prevention of any form of pollution.</p>



Excel Dynamic Solutions (Pty) Ltd

Relevant international Treaties and Protocols ratified by the Namibian Government

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



5 ENVIRONMENTAL AND SOCIAL BASELINE

The project activities will be undertaken in specific environmental and social conditions. The understanding of these conditions helps in identifying the sensitive environmental features that may need to be protected through the implementation of certain management and mitigation measures. The summary of selected physical, biological and social baseline information of the project area is provided below as per the site visit conducted by the Environmental Consultant on 07th June 2023 and relevant published reports and books.

The climatic conditions of the project area is described using the available nearest data for the area obtained from the World Online and Meteoblue websites (2023).

5.1 Biophysical Environment

5.1.1 Climate

The proposed area is situated in the south-eastern part of Namibia in the Karas Region, which has been classified as a hyper-arid desert. Mostly summer rain is experienced in this area but due to its proximity to the Succulent Karoo Biome, it often experiences winter rainfall as well. The average annual rainfall for Karasburg and surroundings is 50 – 100 mm, while the average evaporation rate is in the region of 2,100 – 2,240 mm a year (Mendelsohn, et al, 2003). It is obvious that evaporation exceeds rainfall by far, resulting in a water deficit, both on a month to month and annual basis. During winter months the average minimum temperature is 8 – 10 °C, while the average maximum day temperature during summer is 25-40 °C (Mendelsohn, et al, 2003). Southerly to south-westerly winds dominate throughout the year causing wind erosion where soil cover is low. Average wind speeds are rarely higher than 6m/s.

5.1.2 Landscape and Topography

The EPL is located in the Nama-Karoo Basin, and is found at elevation levels ranging from 750 m to approximately 950 m. **Figure 3** below shows the elevation profile (elevation map) of the project area.

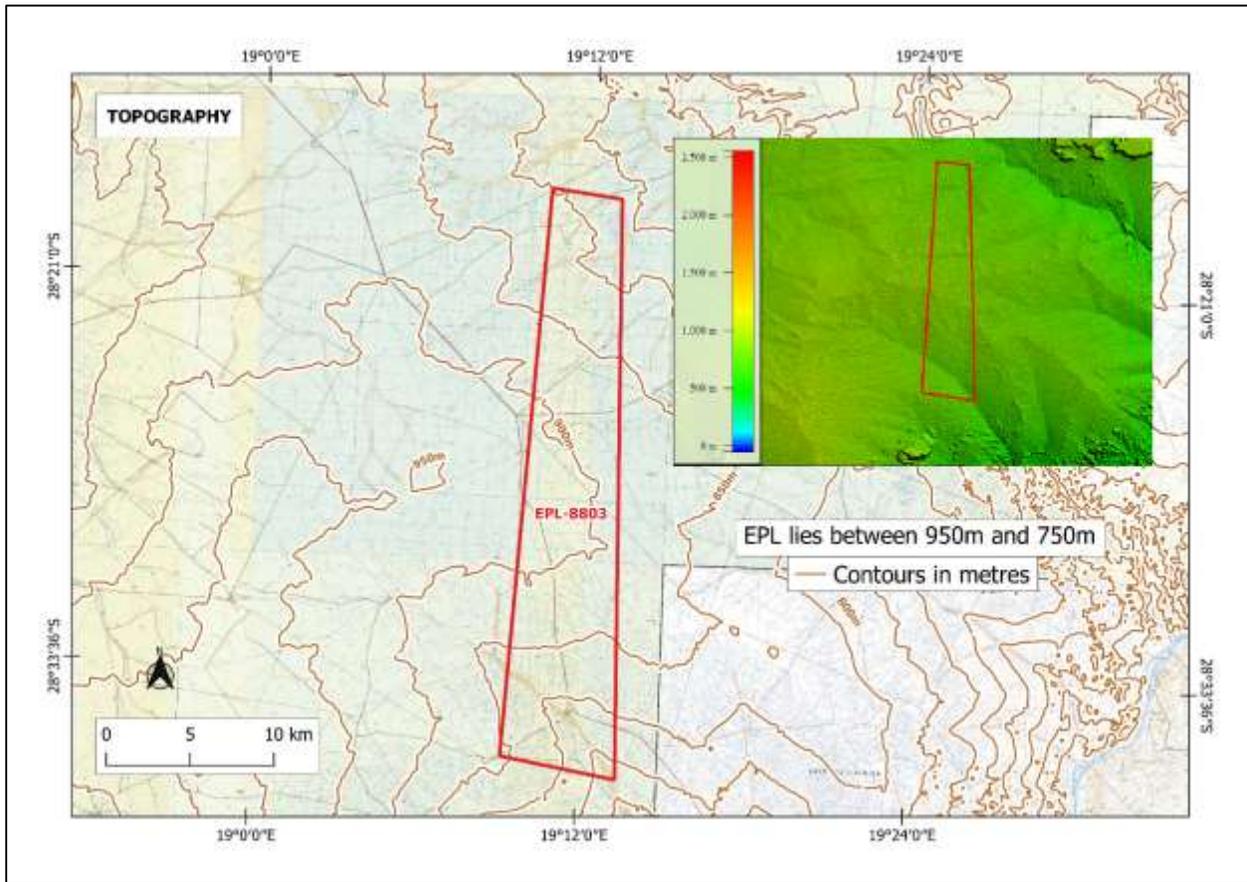


Figure 3: Landscape and Topographic map of the project area

5.1.3 Geology

The EPL is located within the Main Karoo Basin, comprising mainly Sandstones and Shales. The EPL is mainly Sandstone, with the central section of the EPL presenting some Biotite and an alluvial valley composed of shales. The geology of the project area is presented in **Figure 4**.

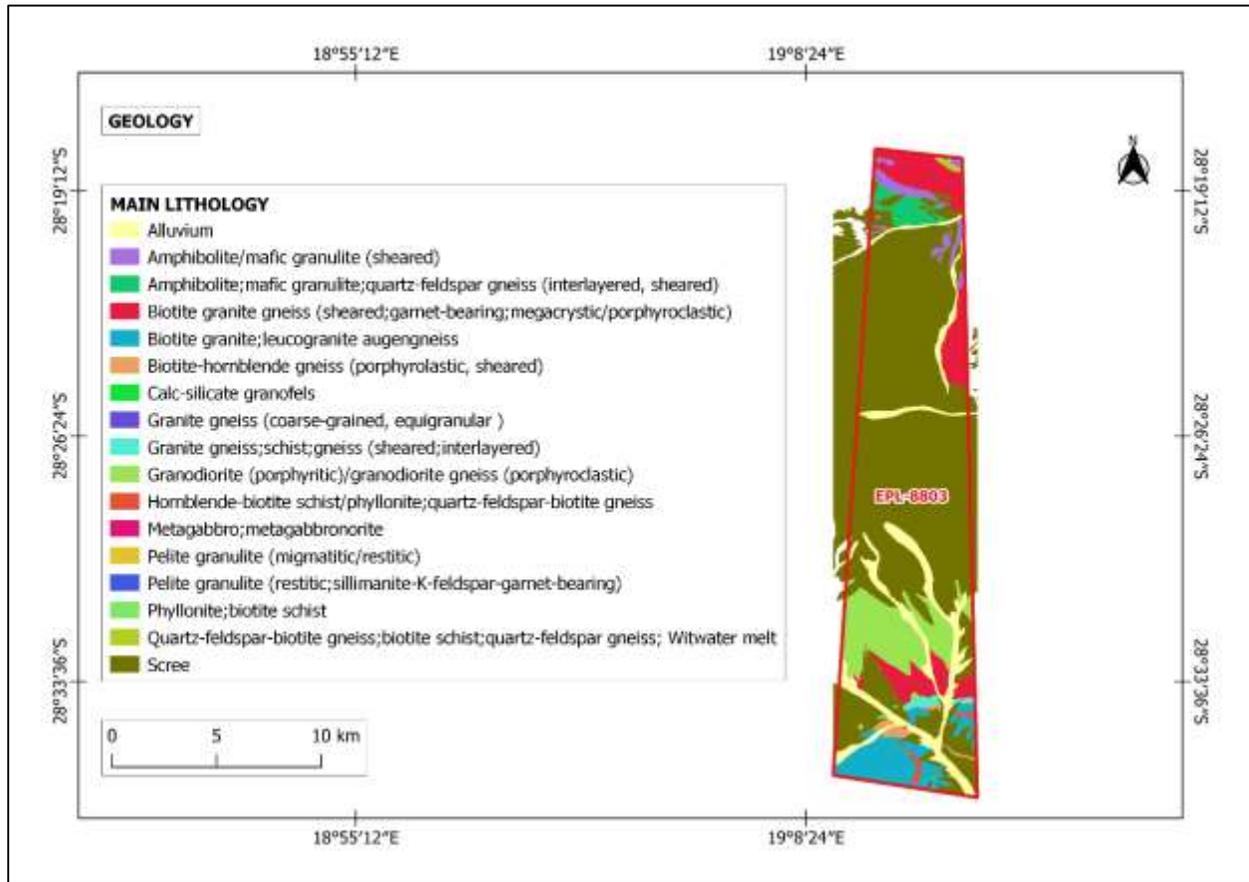


Figure 4: A map of the general geology of the project area

5.1.4 Soil

The soils in the area are considered to be of medium to low Relative Soil Fertility. The EPL is dominated by the Eutric Leptosol soils, which are fertile soils with high base saturation, typically forming in actively eroding landscapes of undulating areas. These soils are characterized by limited depths, due to the presence of continuous hard rock. The water-holding capacity of these soils is low and the area is prone to drought. **Figure 5** below shows the soil types in the project area.

It is notable that during the operational phase of the project, soil sampling may be conducted. *Therefore, the Soil Conservation Act (No 76 of 1969) should be taken into account to ensure that soils are conserved in a way that does not promote soil erosion.* (Refer to the EMP).

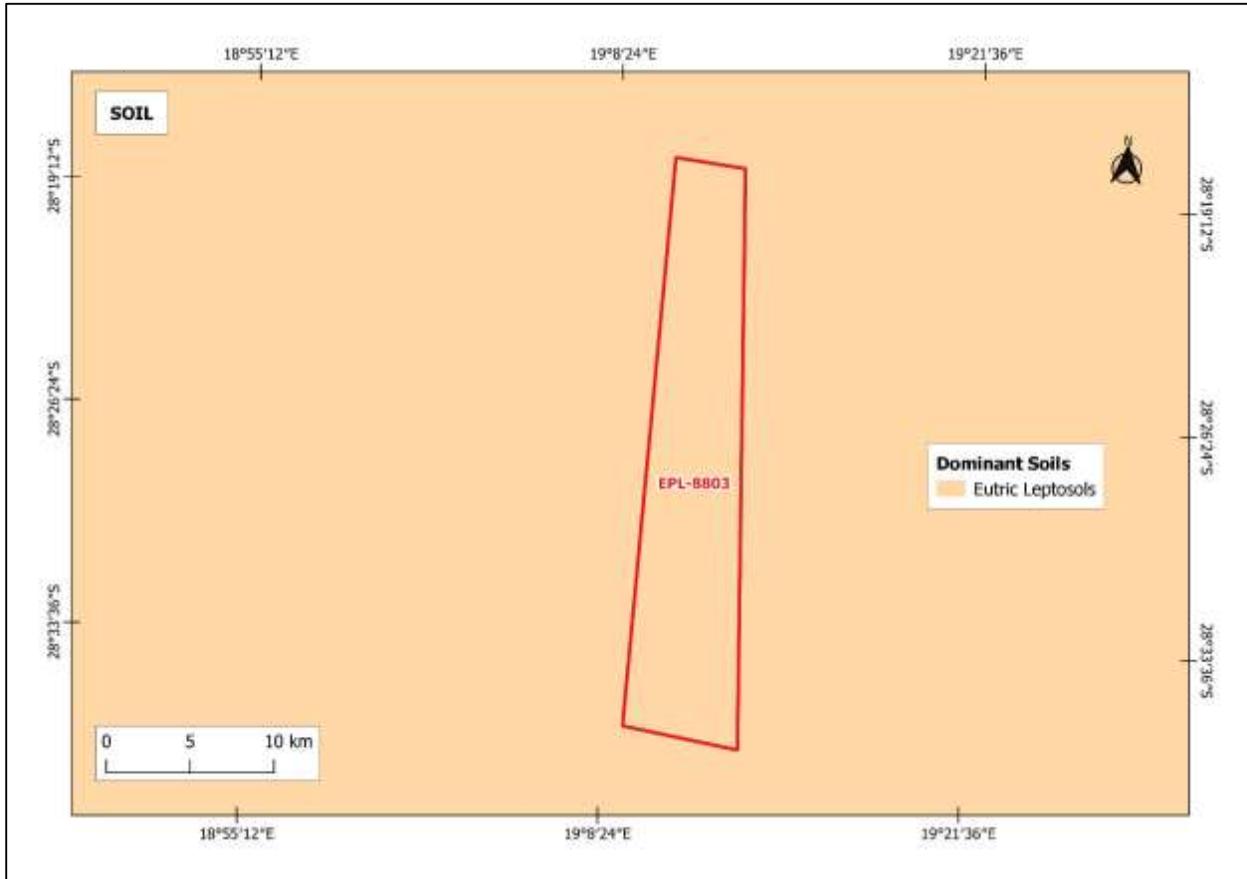


Figure 5: shows the dominant soil types found within the EPL

5.1.5 Water Resources: Groundwater and Surface Water

Exploration activity has the potential to affect the quantity and quality of surface and groundwater. Therefore, any potential contamination and alteration of surface and groundwater, during the project phase, would require close monitoring, in accordance with the presence of surface and groundwater within the EPL. This could involve the setting up of monitoring stations at an early stage to designate possible sources of contamination and possible flow charges of the rivers. Potential water pollution on rivers and other waterbodies needs to be prevented, through



identifying incidental sources of pollution such as accidental spillage, chemicals or hydrocarbons (ECC, 2019). **Figure 6** shows the hydrology map.

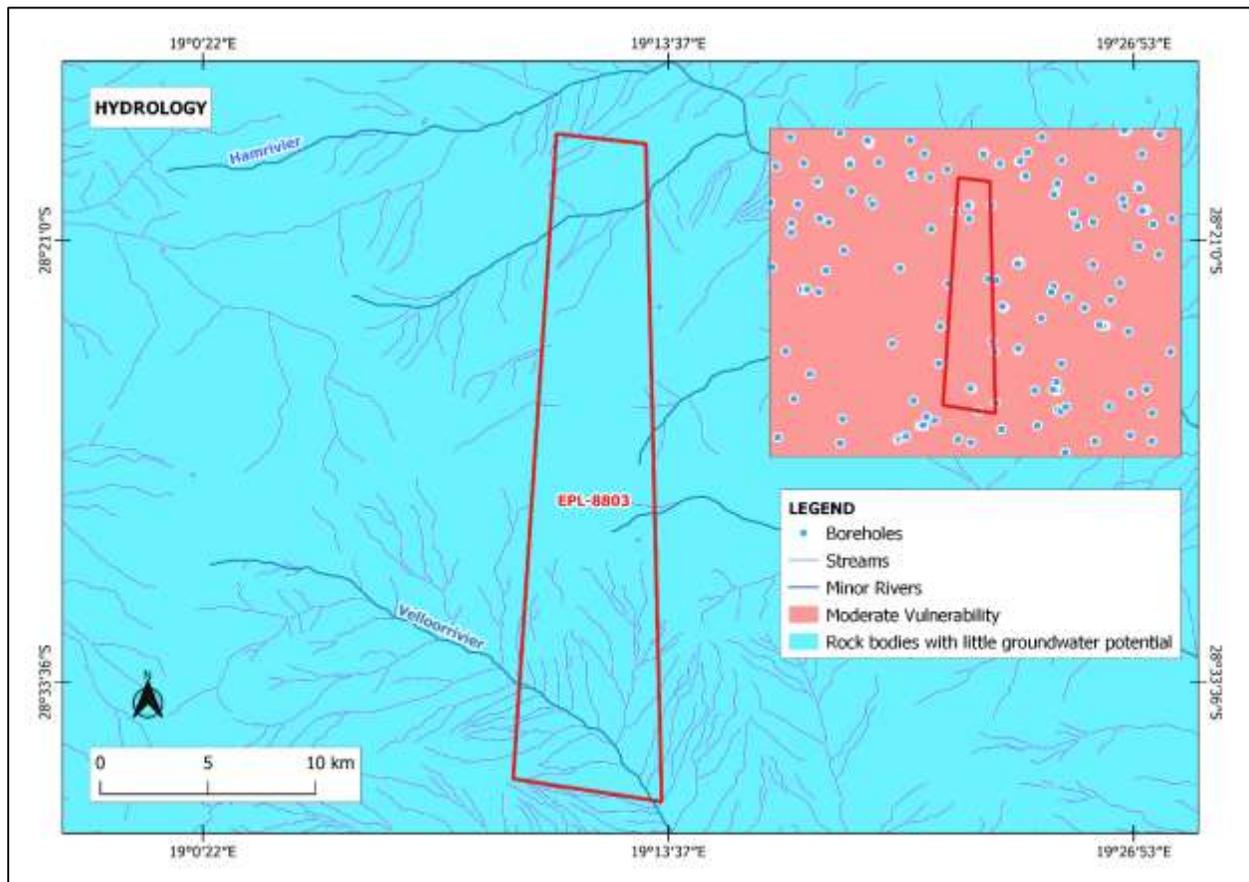


Figure 6: Shows groundwater map for the project area

5.1.6 Flora and Fauna

5.1.6.1 Flora

The EPL is located with the Nama Karoo Biome, with Karas Dwarf Shrubland vegetation types with grasslands and low shrubs. Vegetation in the area is mostly diverse shrubland, with dwarf shrubland vegetation types of the Karasburg Mountains to the west of the EPL and taller shrubs



to the east. Shrubs species such as *Acacia reficiens* commonly make up the sparse shrubland in the area. **Figure 7** shows the vegetation map.



Figure 7: Vegetation map for the proposed project

5.1.6.2 Fauna

Although considered generally low in faunal diversity, the Karasburg area hosts a variety of large to small fauna, ranging from Kudu (*Tragelaphus strepsiceros*), and Springbok (*Antidorcas marsupialis*), to Duiker (*Sylvicapra grimmia*), Klipspringer (*Oreotragus oreotragus*), Steenbok (*Raphicerus campestris*), black-backed jackal (*Canis mesomelas*) and Caracal (*Caracal caracal*)



Excel Dynamic Solutions (Pty) Ltd

damarensis). Gemsbuck (*Oryx gazella*) are also widely scattered across the area (Barnard et al., 1997).

5.2 Heritage and Archaeology

5.2.1 Local Level and Archaeological Findings

During enquiry on known archaeological sites within the project area during the consultation meeting, there are known archaeological and heritage resources or sites recorded on the surface of the Site.

5.3 Surrounding Land Uses

The EPL falls within commercial land area as shown in **Figure 8**. The Proponent is required to secure a signed agreement from the affected landowners to gain access to the areas of interest for prospecting and exploration investigations as per Section 52 of the Minerals (Prospecting and Mining) Act No. 33 of 1992 and Section 2.2.3 of the Minerals Policy of Namibia.

1. Section 52 (1) The holder of the mineral license shall not exercise any rights conferred upon such holder by this Act or under any terms and conditions of such mineral license –
 - (a) In, on, or under any and until such holder has agreed 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 waived 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 License Holder and/or mineral explorers currently have to negotiate a contract with landowners to gain access for mining purposes.

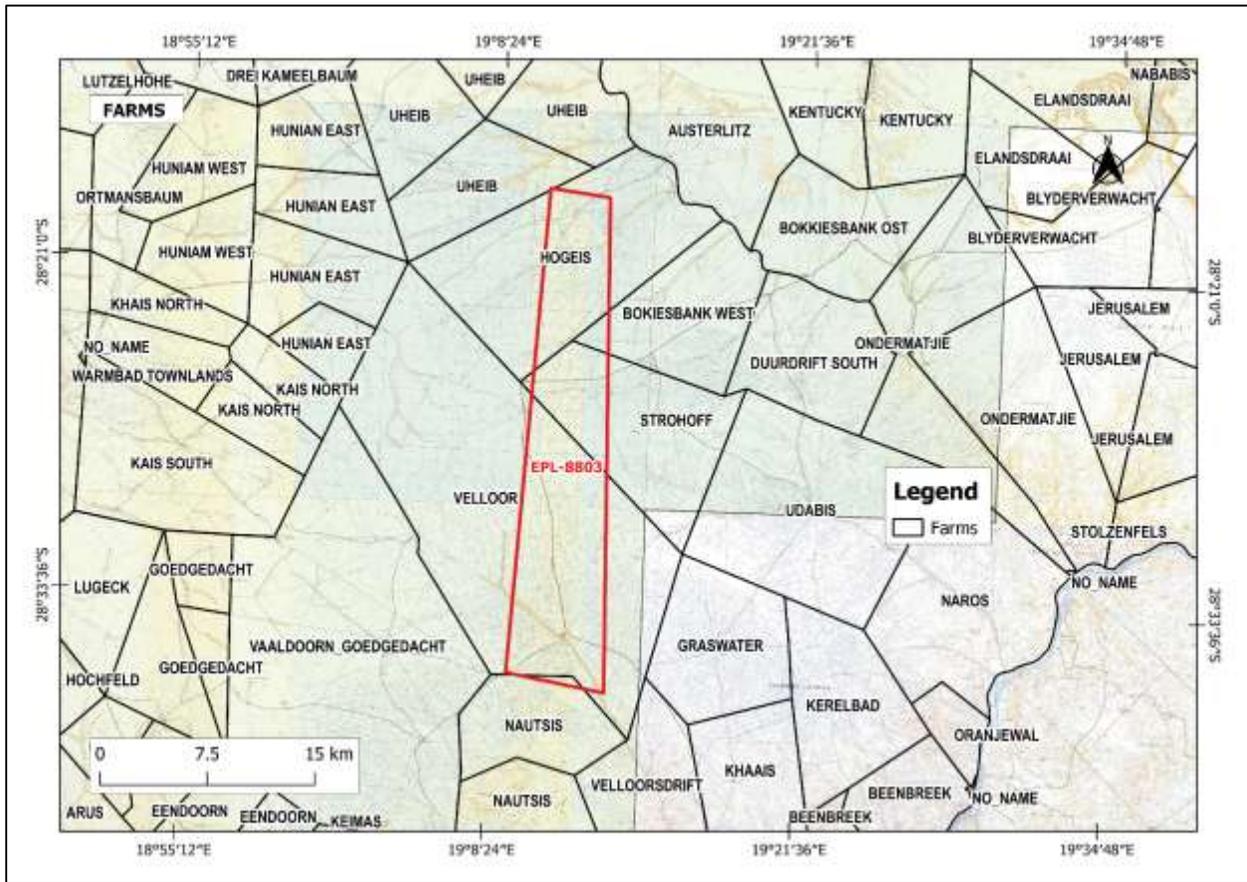


Figure 8: Map showing land use within and surrounding the EPL

5.4 Socio-Economic conditions

Electricity

The area has access to electricity and power infrastructure. The electricity network of the //Karas Region is well distributed to provide the electricity needs of the region. From the Harib Substation extends a 132 kV OHTL to Rock Substation in the east and Aurus Substation to the west. A 220 kV OHTL connects Harib Substation to the Kokerboom Distribution Station to the north and connects with the SAPP to the south.



Excel Dynamic Solutions (Pty) Ltd

Airport

Karasburg area has an air strip, the Karasburg Airport: (IATA:KAS) which is used mainly for light aircraft or as an emergency landing strip for larger planes.

Railway

Karasburg also has an active train station, which is the last significant stop before Upington Station across the border into South-Africa.

Reservoir

Approximately 7 km to the west of Karasburg is the Bondels Dam, built in 1959. It dams the Satco River and was built to enhance the recharge of the Bondels Dam aquifer. It has a capacity of 1.105 million cubic metres.

Mining

A significant amount of mining activity occurs in the //Karas Region, rendering the region an important mining area in Namibia. The development of the //Karas Region is economically tied to its rich mineral deposits that provide mining opportunities and development. Minerals mined in the //Karas Region include diamonds, zinc, copper, tin, lead, silver, marble and gemstones. (NEPRU, 1998). Some of the existing mining activity in the region include the Rosh Pinah Zinc Mine and the Skorpion Zinc Mine in Rosh Pinah, the NamDeb Diamond mine in Oranjemund, as well as De Beers Marine offshore diamond mining off the coast of Lüderitz.



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, thus assisting the Environmental Assessment Practitioner (EAP) in identifying all potential impacts and what extent further investigations are necessary. Public consultation can also aid in the process of identifying possible mitigation measures. Public consultation for this scoping study has been done following the EMA and its EIA Regulations.

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

Relevant and applicable national, regional, and local authorities, local leaders, and other interested members of the public were identified. Pre-identified I&APs were contacted directly, while other parties who contacted the Consultant after project advertisement notices in the newspapers, were registered as I&APs upon their request. Newspaper advertisements of the proposed exploration activities were placed in two widely read national newspapers in the region (New Era Newspaper and The Namibian Newspaper). The project advertisement/announcement ran for two consecutive weeks inviting members of the public to register as I&APs and submit their comments. The summary of pre-identified and registered I&APs is listed in **Table 3** below and the complete list of I&APs is provided in **Appendix D**.

Table 3: Summary of Interested and Affected Parties (I&APs)

National (Ministries and State-Owned Enterprises)
Ministry of Environment, Forestry and Tourism
Ministry of Mines and Energy
Ministry of Health and Social Services
Regional, Local, and Traditional Authorities
Karas Regional Council
Karasburg East Constituency



Excel Dynamic Solutions (Pty) Ltd

General Public
Landowners /Interested members of the public
Namibia Community-Based Tourism Association

6.2 Communication with I&APs

Regulation 21 of the EIA Regulations details the steps to be taken during a public consultation process and these have been used in guiding this process. Communication with I&APs concerning 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 works was compiled, and upon request delivered to all new registered Interested and Affected Parties (I&APs);
- Project Environmental Assessment notices were published in the New Era Newspaper and The Namibian Newspaper (**12 and 19 April 2023**), briefly explaining the activity and its locality and inviting members of the public to register as I&APs and submit their comments/concerns.
- Public notices were placed at Karasburg Constituency Office (**Figure 9**) to inform members of the public about the EIA process.
- Public meetings were scheduled and held on **07 June 2023**, at Karsburg East Constituency at 10h00 (**Figure 10**).



Excel Dynamic Solutions (Pty) Ltd



Figure 9: Public notices placed at Karasburg East Constituency, Karas Region



Figure 10: Consultation meeting held on the 07th June 2023, Karasburg East Constituency Office, Karas Region

Issues raised by I&APs have been recorded and incorporated in the environmental report and EMP. The summarized issues raised during the public meeting are presented in **Table 4** below. The issues raised and responses by EDS are attached under **Appendix G**

Table 4: Summary of main issues raised, and comments received during public meeting engagements

Issue	Concern
Hydrology	The EPL lies in an hydrological sensitive area.
Drilling	No drilling activities will be allowed on the farms
ECC	Why must the ministries make a decision on the ECC and not the landowners?



EIA	An environmental Impact Assessment must be done for this project and not a scoping report.
EPL	Why was the EPL granted in our area not not else where?

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 follows:

Positive impacts:

- Creation of jobs for the locals (primary, secondary, and tertiary employment).
- Producing a trained workforce and small businesses that can service communities and may initiate related businesses.
- Boosting local economic growth and regional economic development.
- Open up other investment opportunities and infrastructure-related development benefits.

Negative impacts:

- Disturbance to grazing areas
- Land degradation and Biodiversity Loss
- Generation of dust
- Water Resources Use



Excel Dynamic Solutions (Pty) Ltd

- Soil & Water Resources Pollution
- Waste Generation
- Occupational Health & Safety risks
- Vehicular Traffic Use & Safety
- Noise & Vibrations
- Disturbance to Archaeological & Heritage Resources
- Impacts on local Roads
- Social Nuisance: local property intrusion & disturbance
- Social Nuisance: Job seeking & differing Norms, Culture & values
- Impacts associated with closure and decommissioning of exploration works

7.2 Impact Assessment Methodology

The Environmental Assessment process primarily ensures that potential impacts that may occur from project activity are identified and addressed with environmentally cautious approaches and legal compliance. The impact assessment method used for this project is following Namibia's Environmental Management Act (No. 7 of 2007) and its Regulations of 2012, as well as the International Finance Corporation (IFC) Performance Standards.

The identified impacts were assessed in terms of scale/extent (spatial scale), duration (temporal scale), magnitude (severity), and probability (likelihood of occurring), as presented in **Table 5**, **Table 6**, **Table 7**, and **Table 8**, respectively.

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

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

The recommended mitigation measures prescribed for each of the potential impacts contribute towards the attainment of environmentally sustainable operational conditions of the project for



various features of the biophysical and social environment. The following criteria were applied in this impact assessment:

7.2.1 Extent (spatial scale)

The extent is an indication of the physical and spatial scale of the impact. **Table 5** shows the rating of impact in terms of the extent of spatial scale.

Table 5:Extent or spatial impact rating

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

7.2.2 Duration

Duration refers to the timeframe over which the impact is expected to occur, measured concerning the lifetime of the project. **Table 6** shows the rating of impact in terms of duration.

Table 6:Duration impact rating

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

7.2.3 Intensity, Magnitude/severity

Intensity refers to the degree or magnitude to which the impact alters the functioning of an element of the environment. The magnitude of alteration can either be positive or negative. These ratings were also taken into consideration during the assessment of severity. **Table 7** shows the rating of impact in terms of intensity, magnitude, or severity.



Table 7: Intensity, magnitude, or severity impact rating

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

7.2.4 Probability of occurrence

Probability describes the likelihood of the impacts occurring. This determination is based on previous experience with similar projects and/or based on professional judgment. **Table 8** shows impact rating in terms of probability of occurrence.

Table 8: 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	A 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, and continuous. High risk or vulnerability to natural or induced hazards.

7.2.5 Significance

Impact significance is determined through a synthesis of the above impact characteristics. The significance of the impact “without mitigation” is the main determinant of the nature and degree of



mitigation required. As stated in the introduction to this section, for this assessment, the significance of the impact without prescribed mitigation actions is measured.

Once the above factors (**Table 5**, **Table 6**, **Table 7**, and **Table 8**) 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 9**).

Table 9:Significance rating scale

Significance	Environmental Significance Points	Colour Code
High (positive)	>60	H
Medium (positive)	30 to 60	M
Low (positive)	1 to 30	L
Neutral	0	N
Low (negative)	-1 to -30	L
Medium (negative)	-30 to -60	M
High (negative)	-60<	H

Positive (+) – Beneficial impact

Negative (-) – Deleterious/ adverse+ Impact

Neutral – Impacts are neither beneficial nor adverse

For an impact with a significance rating of high (-ve), mitigation measures are recommended to reduce the impact to a medium (-ve) or low (-ve) significance rating, provided that the impact with



Excel Dynamic Solutions (Pty) Ltd

a medium significance rating can be sufficiently controlled with the recommended mitigation measures. To maintain a low or medium significance rating, monitoring is recommended for a period to enable the confirmation of the significance of the impact as low or medium and under control.

The assessment of the exploration phases is done for pre-mitigation and post-mitigation.

The risk/impact assessment is driven by three factors:

Source: The cause or source of the contamination.

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

Receptor: A person, animal, plant, ecosystem, 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, to 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, prospecting, exploration (and possible analysis), and decommissioning. The potential negative impacts stemming from the proposed activities of the EPL are described and assessed and mitigation measures are 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 main potential negative impacts associated with the operation and maintenance phase are identified and assessed below:

7.3.1 Disturbance to the grazing areas

The EPL is overlying commercial areas that have livestock and wildlife. Exploration activities such as site clearing, trenching, and drilling can potentially lead to the disturbance of grazing land. This will potentially affect the grazing land available to wildlife, and since the wildlife greatly depends on the little available flora, their livelihood will be impacted.



The effect of exploration work on the land (when done over a wider spatial extent), if not mitigated, may hinder grazing areas. Under the status quo, the impact can consider being of a medium significance rating. With the implementation of appropriate mitigation measures, the rating will be reduced to a lower significance. The impact is assessed in **Table 10** below.

Table 10: Assessment of the impacts of exploration on grazing areas

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

7.3.2 Land Degradation and Loss of Biodiversity

Fauna: The trenching, pitting, and drilling activities carried out during exploration would result in land degradation, leading to habitat loss for a diversity of flora and fauna ranging from microorganisms to large animals and trees. Endemic species are most at risk since even the slightest disruption in their habitat can result in extinction.

The presence and movement of the exploration workforce and operation of project equipment and heavy vehicles would disturb livestock and wildlife present. The proposed activities may also carry the risk of the potential illegal hunting of local wildlife. This could lead to the reduction of specific faunal species, which may limit tourism (sightseeing and safari) activity in the area.

Additionally, if the exploration sites are not rehabilitated, they could pose a high risk of injuries to animals by falling into holes and pits.

Flora: Direct impact of exploration works on flora will mainly occur through clearing for exploration access routes and associated infrastructure. The dust emissions from drilling may also affect surrounding vegetation through the fall of dust, if excessive. Some loss of vegetation is an inevitable consequence of the development. However, given a moderate abundance of vegetations and site-specific areas of exploration on the EPL, the impact will be localized, therefore manageable.



Under the status, the impact can be of a medium significance rating. With the implementation of appropriate mitigation measures, the rating will be reduced to a low significance rating. The impact is assessed in **Table 11** below.

Table 11: Assessment of the impacts of exploration on biodiversity

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M: -4	M: -4	M: -6	M/H: 4	M: -56
Post mitigation	L/M: -3	L/M: -3	L/M: -4	L/M: 3	L: -30

7.3.3 Generation of Dust (Air Quality)

Dust emanating from site access routes when transporting exploration equipment and supply to and from the site may compromise the air quality in the area. Vehicular movements from heavy vehicles such as trucks would potentially create dust, even if it is not anticipated to be low. Additionally, activities carried out as part of the exploration works such as drilling would contribute to the dust levels in the air. The medium significance of this impact can be reduced to a low significance rating by properly implementing mitigation measures. The impact is assessed in **Table 12** below.

Table 12: Assessment of the impacts of exploration on air quality

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M: -3	M: -3	M/L: -4	M/H: 4	M: -40
Post mitigation	L - 2	L - 2	L - 2	L - 1	L - 6

7.3.4 Water Resources Use

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

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



The impact of the project activities on the resources would be dependent on the water volumes required by each project activity. Exploration activities use a lot of water, mainly for drilling. However, this depends on the type of drilling methods employed (diamond drilling is more water-consuming compared to drilling methods such as reverse circulation for instance) and the type of mineral being explored.

The drilling method to be employed for this project’s exploration activities is Reverse Circulation. Given the low to medium groundwater potential of some project site areas, the Proponent may consider carting some of the water volumes from outside the area and storing in industry-standard water reservoirs/tanks on site. The exact amounts of water required for proposed operations would be dependent on the duration of the exploration works and the number of exploration boreholes required to make a reliable interpretation of the commodities explored. The exploration period is temporally limited, therefore, the impact will only last for the duration of the exploration activities, and ceases upon their completion.

Without the implementation of any mitigation measures, the impact can be rated as medium, but upon effective implementation of the recommended measures, the impact significance would be reduced to low as presented in **Table 13** below.

Table 13: Assessment of the project impact on water resource use and availability

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

7.3.5 Soil and Water Resources Pollution

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

The spills (depending on volumes spilled on the soils) from machinery, vehicles, and equipment could infiltrate into the ground and pollute the fractured or faulted aquifers on site, and with time



reach further groundwater systems in the area. However, it should be noted that the scale and extent/footprint of the activities where potential sources of pollution will be handled is relatively small. Therefore, the impact will be moderately low.

Pre-implementation of any mitigation measures, the impact significance is medium to high and upon implementation, the significance will be reduced to moderate. The impact is assessed in **Table 14** below.

Table 14: Assessment of the project impact on soils and water resources (pollution)

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M - 5	M/L - 3	M/L - 3	M - 4	M - 44
Post mitigation	L - 3	M - 3	L - 3	L/M - 3	L - 27

7.3.6 Waste Generation

During the prospecting and exploration program, domestic and general waste is produced on-site. If the generated waste is not disposed of responsibly, land pollution may occur on the EPL or around the sites. The EPL is in an area of moderate sensitivity to pollution. 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 program needs to have appropriate waste management for the site. To prevent these issues, any hazardous waste that may have an impact on animals, vegetation, water resources, and the general environment should be handled cautiously. Without any mitigation measures, the general impact of waste generation has a medium significance. The impact will reduce to low significance, upon implementing the mitigation measures. The assessment of this impact is given in **Table 15** below.

Table 15: Assessment of waste generation impact

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	L/M - 2	L/M - 2	M - 6	M - 5	M - 50



Post mitigation	L - 1	L - 1	L - 2	L/M - 2	L - 8
------------------------	-------	-------	-------	---------	-------

7.3.7 Occupational Health and Safety Risks

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

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

The impact is probable and has a medium significance rating. However, with adequate mitigation measures, the impact rating will be reduced to low. This impact is assessed in **Table 16** below and mitigation measures are provided.

Table 16: Assessment of the impacts of exploration on health and safety

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

7.3.8 Vehicular Traffic Use and Safety

The EPL is accessible via the M0023 road from Karasburg, leading to the EPL area. These are some of the main transportation routes for all vehicular movement in the area and provide access to the EPL and connect the project area to other towns. Traffic volume will therefore increase on



these district roads during exploration as the project would need delivery of supplies and services on site.

Depending on the project needs, trucks, medium-sized vehicles, and small vehicles will frequent the area to and from exploration sites on the EPL. This would potentially increase slow-moving heavy vehicular traffic along these roads and add additional pressure on the roads. However, transportation of materials and equipment is expected to occur on a limited schedule and only for the duration of the project. Therefore, the risk is anticipated to be short-term, not frequent, and therefore of medium significance. Before mitigation, the impact can be rated medium and with the implementation of mitigation measures, the significance will be low as assessed in **Table 17** below.

Table 17: Assessment of the impacts of exploration on-road use (vehicular traffic)

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M - 4	M/H - 3	L/M - 4	M/H - 5	M - 55
Post mitigation	L/M - 2	L/M - 2	L - 2	L/M - 2	L - 12

7.3.9 Noise and vibrations

Prospecting and exploration work (especially drilling) may be a nuisance to surrounding communities due to the noise produced by the activity. Excess noise and vibrations can be a health risk to workers on site. The exploration equipment used for drilling on site is of medium size and the noise level is bound to be limited to the site only, therefore, the impact likelihood is minimal. Without any mitigation, the impact is rated as of medium significance. To change the impact significance from the pre-mitigation significance to a low rating, mitigation measures should be implemented. This impact is assessed in **Table 18** below.

Table 18: Assessment of the impacts of noise and vibrations from exploration

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	L/M - 2	L/M - 2	M - 6	M/H - 3	M - 30
Post mitigation	L - 1	L/M - 2	L - 2	L/M - 2	L - 10



7.3.10 Disturbance to Archaeological and Heritage Resources

The Karasburg contains archeological/cultural significant sites, and there is a possibility of unveiling/discovering new archeological and/or cultural materials in the proposed project area. If such Materials are found, the areas must be mapped out and coordinates taken to establish “No-Go-Areas”, due to their sensitivity and then documented. They may be protected either by fencing them off or demarcation for preservation purposes, or excluding them from any development i.e., no exploration activities should be conducted near these recorded areas through the establishment of buffer zones.

This impact can be rated as medium significance if there are no mitigation measures in place. Upon implementation of the necessary measures, the impact significance will be reduced to a lower rating. The impact is assessed in **Table 19**.

Table 19: Assessment of the impacts of exploration on archaeological & heritage resources

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 - 2	L/M - 2	L - 12

7.3.11 Impact on Local Roads/Routes

Exploration projects are usually associated with the movements of heavy trucks and equipment or machinery that use local roads. Heavy vehicles traveling on local roads exert pressure on the roads and may make the roads difficult to use. This will be a concern if maintenance and care is not taken during the exploration phase. The impact would be short-term (during exploration only) and therefore, manageable.

Without any management and or mitigation measures, the impact can be rated as medium and to reduce this rating to low, the measures will need to be effectively implemented. The assessment of this impact is presented in **Table 20**.

Table 20: Assessment of exploration of local services (roads and water)

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M/H - 4	M - 3	M - 6	M - 3	M – 39



Post mitigation	L - 1	L - 1	M/L - 4	M/L -2	L - 12
------------------------	-------	-------	---------	--------	---------------

7.3.12 Social Nuisance: Local Property intrusion and Disturbance/Damage

The presence of some non-resident workers may lead to social annoyance to the local farmers. This could particularly be a concern if they enter or damage local private property. The private properties of the locals may include houses, fences, vegetation, livestock, wildlife, or any properties of economic or cultural value to land users. The damage or disturbance to properties may not only be private but local public properties. The unpermitted and unauthorized entry to private property may cause clashes between the affected property (land) owners and the Proponent.

The impact is rated as of medium significance. However, upon mitigation (post-mitigation), the significance will change from a medium to a low rating. The impact is assessed below (**Table 21**).

Table 21: Assessment of the social impact of local property damage or disturbance

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

7.4 Cumulative Impacts Associated with Proposed Exploration

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

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



Excel Dynamic Solutions (Pty) Ltd

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

7.5 Mitigations and Recommendations for Rehabilitation

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

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



8 RECOMMENDATIONS AND CONCLUSION

8.1 Recommendations

The potential positive and negative impacts of the proposed exploration activities on EPL No. 8803 were identified and assessed and appropriate management and mitigation measures (to negative impacts) were made thereof for implementation by the Proponent, their contractors, and project-related employees.

Mitigation measures for identified issues have been provided in the Environmental Management Plan, for the Proponent to avoid and/or minimize their significant impacts on the environmental and social components. Most 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 implementation will not only be done to maintain a 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 more effort and commitment put into monitoring the implementation of these measures.

It is, therefore, recommended that in the case of granting an ECC for this project, the proposed prospecting and exploration activities may be granted an ECC, provided that:

- All the management and mitigation measures provided in the EMP are effectively and progressively implemented.
- All required permits, licenses, and approvals for the proposed activities should be obtained as required. These include permits and licenses for land use access agreements to explore and ensure compliance with these specific legal requirements.
- The Proponent and all project workers and contractors must comply with the legal requirements governing the project and ensure that all required permits and or approvals are obtained and renewed as stipulated by the issuing authorities.



Excel Dynamic Solutions (Pty) Ltd

- Site areas where exploration activities have ceased are rehabilitated, as far as practicable, to their pre-exploration state.

8.2 Conclusion

It is crucial for the proponents and their contractors to effectively implement the recommended management and mitigation measures, to protect the biophysical and social environment throughout the project duration. This would be done to promote environmental sustainability while ensuring a smooth and harmonious existence and purpose of the project activities in the project area and environment at large. It is 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 accordingly. Lastly, should the ECC be issued, the Proponent will be expected to be compliant with the ECC conditions as well as legal requirements governing mineral exploration and related activities.



Excel Dynamic Solutions (Pty) Ltd

9 REFERENCES

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

Domptail, S. E., Dreber, N., Falk, T., Gibreel, T., Kirk, M., Limpricht, C., Naumann, C., Prediger, S., Vollan, B., Wesuls, D. (2010): An ecological-economic analysis of the pastoral systems of the Nama Karoo in southern Namibia. – In: Hoffman, M. T., Schmiedel, U., Jürgens, N. [Eds.]: Biodiversity in southern Africa. Volume 3: Implications for land use and management: pp. 75–107, Klaus Hess Publishers, Göttingen & Windhoek

Environmental Compliance Consultancy (2019). Best Practice Guide Environmental Principles for mining in Namibia

Kinahan, John. 2012. Archaeological Guidelines for Exploration & Mining in the Namib Desert, the Namibia Archaeological Trust.

Mendelsohn. (2003). *The Atlas of Namibia: A Portrait of the land and its people*. pg 14 -18

Meteoblue (2022). Weather: Simulated historical climate & weather data for Kaoko-Otavi.

https://www.meteoblue.com/en/weather/historyclimate/climatemodelled/kaoko-otavi_namibia_3356371. Accessed 30 March 2023

Namibia Statistics Agency. (2014). 2011 Population and Housing Census: Kunene Profile 2011, Census Regional Profile. Windhoek: Namibia Statistics Agency

National Planning Commission (2017) Namibia's 5th National Development Plan (NDP5)

NEPRU. April 1998. The Namibia Economy: A NEPRU Viewpoint. No. 15/April 1998.



Excel Dynamic Solutions (Pty) Ltd

Resilient Environmental Solutions. (2019). Environmental Assessment for Exclusive Prospecting License (EPL) 7264 near Talismanis in the Omaheke Region. Windhoek: Ministry of Environment, Forestry and Tourism

World Weather Online. (2022). Karasburg - Karas Region, Namibia Weather.

<https://www.worldweatheronline.com/kaoko-otavi-weather-averages/kunene/na.aspx>. Accessed 13 June 2023