

# Bluestate investments (Pty Ltd

MEFT Application Reference No:  
**APP-002659**

Final Environmental Impact Assessment (EIA) Report to Support  
the Application for Environmental Clearance Certificate (ECC)  
for the Proposed Minerals Exploration / Prospecting in the  
Exclusive Prospecting License (EPL) No. 7811,  
**OMARURU DISTRICT, ERONGO REGION**

July 2021

P. O Box 26826  
6 Amasoniet Street  
WINDHOEK, NAMIBIA

# PROPONENT, LISTED ACTIVITIES AND RELATED INFORMATION SUMMARY

## TYPE OF AUTHORISATIONS REQUIRING ECC

Exclusive Prospecting License (EPL) No. 7811  
for ECC for Exploration /Prospecting

## MEFT ECC APPLICATION REFERENCE No.

APP-002659

## NAME OF THE PROPONENT

Bluestate Investments (Pty) Ltd

## COMPETENT AUTHORITY

Ministry of Mines and Energy (MME)

## ADDRESS OF THE PROPONENT AND CONTACT PERSON

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## PROPOSED PROJECT

Proposed Minerals Exploration / Prospecting activities in the Exclusive  
Prospecting License (EPL) No. 7811, Dâures Constituency, Erongo Region, Erongo Region

## PROJECT LOCATION

Karibib District, Erongo Region, North-Central Namibia  
(Latitude: -21.288443, Longitude: 15.320945)

## ENVIRONMENTAL CONSULTANTS



### *Risk-Based Solutions (RBS) CC*

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## ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP)

Dr. Sindila Mwiya

*PhD, PG Cert, MPhil, BEng (Hons), Pr Eng*

## **Summary Profile and Qualification of the Environmental Assessment Practitioner (EAP) / International Consultant Projects Director – Dr Sindila Mwiya**

Dr Sindila Mwiya has more than eighteen (18) years of practical field-based technical industry experience in Environmental Assessment (SEA, EIA, EMP, EMS), Energy (Renewable and Non-renewable energy sources), onshore and offshore resources (minerals, oil, gas and water) exploration / prospecting, operation and utilisation, covering general and specialist technical exploration and recovery support, Health, Safety and Environment (HSE) permitting for Geophysical Surveys such as 2D, 3D and 4D Seismic, Gravity and Electromagnetic Surveys for mining and petroleum (oil and gas) operations support, through to engineering planning, layout, designing, logistical support, recovery, production / operations, compliance monitoring, rehabilitation, closure and aftercare projects lifecycles. The great array of highly technical specialist knowledge and field-based practical experiences of Dr Sindila Mwiya has now been extended to supporting the development of Environmentally Sustainable, automated / smart and Climate Change resilient homes, towns, and cities.

Through his companies, Risk-Based Solutions (RBS) CC and Foresight Group Namibia (FGN) (Pty) Ltd which he founded, he has undertaken more than 200 projects for Local (Namibian), Continental (Africa) and International (Global) based clients. He has worked and continue to work for Global, Continental and Namibian based reputable resources (petroleum and mining / minerals) and energy companies such as EMGS (UK/ Norway), CGG (UK/ France/Namibia), BW Offshore (Norway/Singapore /Namibia), Shell Namibia B. V. Limited (Namibia/ the Netherlands), Tullow Oil (UK/Namibia), Debmarine (DBMN) (Namibia), Reconnaissance Energy Africa Ltd (ReconAfrica) (UK/Canada/Namibia), Osino Resource Corporation (Canada/Germany/Namibia), Desert Lion Energy Corporation (Canada/ Australia/ Namibia), Petrobras Oil and Gas (Brazil) / BP (UK)/ Namibia, REPSOL (Spain/ Namibia), ACREP (Namibia/Angola), Preview Energy Resources (UK), HRT Africa (Brazil / USA/ Namibia), Chariot Oil and Gas Exploration (UK/ Namibia), NABIRM (USA/ Namibia), Serica Energy (UK/ Namibia), Eco (Atlantic) Oil and Gas (Canada / USA/ Namibia), ION GeoVentures (USA), PGS UK Exploration (UK), TGS-Nopec (UK), Maurel & Prom (France/ Namibia), GeoPartners (UK), PetroSA Equatorial Guinea (South Africa / Equatorial Guinea/ Namibia), Preview Energy Resources (Namibia / UK), Sintezneftegaz Namibia Ltd (Russia/ Namibia), INA Namibia (INA INDUSTRIJA NAFTE d.d) (Croatia/ Namibia), Namibia Underwater Technologies (NUTAM) (South Africa/Namibia), InnoSun Holdings (Pty) Ltd and all its subsidiary renewable energy companies and projects in Namibia (Namibia / France), HopSol (Namibia/Switzerland), Momentous Solar One (Pty) Ltd (Namibia / Canada), OLC Northern Sun Energy (Pty) Ltd (Namibia) and more than 100 local companies. Dr Sindila Mwiya is highly qualified with extensive practical field-based experience in petroleum, mining, renewable energy (Solar, Wind, Biomass, Geothermal and Hydropower), Non-Renewable energy (Coal, Petroleum, and Natural Gas), applied environmental assessment, management, and monitoring (Scoping, EIA, EMP, EMP, EMS) and overall industry specific HSE, cleaner production programmes, Geoenvironmental, geological and geotechnical engineering specialist fields.

Dr Sindila Mwiya has undertaken and continue to undertake and manage high value projects on behalf of global and local resources and energy companies. Currently, (2020-2023) Dr Sindila Mwiya is responsible for permitting planning through to operational and completion compliance monitoring, HSE and engineering technical support for multiple major upstream onshore and offshore petroleum, minerals and mining projects, Solar and Wind Energy Projects, manufacturing and environmentally sustainable, automated / smart and Climate Change resilient homes developments in different parts of the World including Namibia. Currently, Dr Sindila Mwiya is developing a 16 Ha commercial and residential Mwale Mwiya Park in the Town of Katima Mulilo, Zambezi Region, Namibia as one of first advanced Environmentally Sustainable, automated / smart and Climate Change resilient development in Namibia. He continue to worked as an International Resources Consultant, national Environmental Assessment Practitioner (EAP) / Environmentally Sustainable, automated / smart and Climate Change resilient homes developer, Engineering / Technical Consultant (RBS / FGN), Project Manager, Programme Advisor for the Department of Natural and Applied Sciences, Namibia University of Science and Technology (NUST) and has worked as a Lecturer, University of Namibia (UNAM), External Examiner/ Moderator, NUST, National (Namibia) Technical Advisor (Directorate of Environmental Affairs, Ministry of Environment and Tourism / DANIDA – Cleaner Production Component) and Chief Geologist for Engineering and Environment Division, Geological Survey of Namibia, Ministry of Mines and Energy and a Field-Based Geotechnician (Specialised in Magnetism, Seismic, Gravity and Electromagnetics Exploration and Survey Methods) under the Federal Institute for Geoscience and Natural Resources (BGR) German Mineral Exploration Promotion Project to Namibia, Geophysics Division, Geological Survey of Namibia, Ministry of Mines and Energy.

He has supervised and continue to support a number of MScs and PhDs research programmes and has been a reviewer on international, national and regional researches, plans, programmes and projects with the objective to ensure substantial local skills development, pivotal to the national socioeconomic development through the promotion of sustainable natural resources coexistence, management, development, recovery, utilisation and for development policies, plans, programmes and projects financed by governments, private investors and donor organisations. Since 2006 until 2017, he has provided extensive technical support to the Department of Environmental Affairs (DEA), Ministry of Environment and Tourism (MET) through GIZ in the preparation and amendments of the Namibian Environmental Management Act, 2007, (Act No. 7 of 2007), new Strategic Environmental Assessment (SEA) Regulations, preparation of the updated Environmental Impact Assessment (EIA) Regulations as well as the preparation of the new SEA and EIA Guidelines and Procedures all aimed at promoting effective environmental assessment and management practices in Namibia.

Among his academic achievements, Dr Sindila Mwiya is a holder of a PhD (Engineering Geology/Geotechnical / Geoenvironmental / Environmental Engineering and Artificial Intelligence) – Research Thesis: Development of a Knowledge-Based System Methodology (KBSM) for the Design of Solid Waste Disposal Sites in Arid and Semiarid Environments, MPhil/PG Cert and BEng (Hons) (Engineering Geology and Geotechnics) qualifications from the University of Portsmouth, School of Earth and Environmental Sciences, United Kingdom. During the 2004 Namibia National Science Awards, organised by the Namibian Ministry of Education, and held in Windhoek, Dr Sindila Mwiya was awarded the Geologist of the Year for 2004, in the professional category. Furthermore, as part of his professional career recognition, Dr Sindila Mwiya is a life member of the Geological Society of Namibia, Consulting member of the Hydrogeological Society of Namibia and a Professional Engineer registered with the Engineering Council of Namibia.

**Windhoek, Namibia July 2021**

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## NON-TECHNICAL EXECUTIVE SUMMARY

**Bluestate Investments (Pty) Ltd** (the “**Proponent**”) holds mineral rights under the Exclusive Prospecting License (EPL) No. 7811 with respect to base and rare metals, dimension stones, industrial minerals, and precious metals minerals groups. The EPL 7811 was granted on the 4/08/2020 and will expire on the 3/08/2023.

The EPL 7811 is located in the Dâures Constituency in Omaruru District of the Erongo Region. The EPL 7811 has a total area of 6083.0139 Ha and covers the Communal land situated to the west of Nu-Uis and northwest of Okombahe.

The Proponent intends to conduct exploration / prospecting activities starting with desktop studies and aerial surveys, followed by regional field-based reconnaissance work and if the results are positive, implement detailed site-specific field-based activities over key site-specific localities using techniques such as geological mapping, geophysical surveys, trenching, drilling and sampling for laboratory tests.

The proposed minerals exploration activities are listed in the Environmental Impact Assessment (EIA) Regulations, 2012 and the Environmental Management Act, 2007, (Act No. 7 of 2007) and cannot be undertaken without an Environmental Clearance Certificate (ECC).

This Environmental Impact Assessment (EIA) report has been prepared by Risk-Based Solutions (RBS) CC to support the application for ECC. Public consultation process was undertaken during the months of May to July 2021. In line with the provisions of the regulations, the public notices were published in the *Confidante Newspaper* dated 20<sup>th</sup>- 26<sup>th</sup> May 2021, *Windhoek Observer Newspaper* dated 4<sup>th</sup> June 2021 and *New Era Newspaper* date 29<sup>th</sup> June 2021. A stakeholder register was opened on the 20<sup>th</sup> May 2021.

The closing date for registration and submission of written objections, comments, inputs to the environmental assessment process was initially Friday, 11<sup>th</sup> June 2021 and was extended to 9<sup>th</sup> July 2021. During the public / stakeholder consultation period from the 20<sup>th</sup> May to 9<sup>th</sup> July 2021, no stakeholder registrations or inputs were received.

The EPL area falls within the daytime warm to hot temperatures climatic conditions throughout the year, while the nights are mild to cool in winter. The November to April rainfall season is highly variable and may range between 200 - 300 mm per year with a mean annual gross evaporation of about 3300 mm. The general local topography comprises central topographic high mountain areas trending in the northeast-southwest direction with topographic lower areas on either side.

It is estimated that at least 75 species of reptile, 7 amphibian, 87 mammal, 217 birds, 74-101 larger trees and shrubs and up to 80 grass species occur in the general area of which a high proportion are endemics species. The general local topography comprises central topographic high mountain areas trending in the northeast-southwest / east-west directions with topographic lower areas on either side. According to the Department of Water Affairs, (2001), the EPL 7811 falls within the area with generally low groundwater potential and groundwater in the areas is associated with secondary hydraulic properties such as discontinuities and carbonate solutions holes.

Although no archaeological resources have been identified within the EPL area, there is probable existence of archaeological resources. The general area might have served as a corridor between the dry and barren Namib and Savanna grassland for migratory Hunter-Gatherers bands, Herders and Pastoralists, groups as well as for large game during prehistoric period into the interior of Namibia linking other key archaeological signatures recorded e.g. at Otjohorong Granite Hill and Okamaere.

The impacts that the proposed exploration activities will have on the receiving environment (physical, biological, socioeconomic environments and ecosystem functions, services, use and non-use values or passive uses) will depend on the extent of the proposed activities over the development area, management of the area and how the mitigations as detailed in the EMP report are eventually implemented and monitored by the Proponent to the satisfaction of the landowners and the Government regulators. The overall severity of potential environmental impacts of the proposed project activities on

the receiving environment will be of low magnitude, temporally duration, localised extent, and low probability of occurrence.

Based on the findings of this EIA Report, it is hereby recommended that the proposed exploration activities be issued with an Environmental Clearance Certificate (ECC). The Proponent shall take into consideration the following key requirements for implementing the proposed exploration programme:

- (i) The Proponent shall negotiate Access Agreements with the land owner/s as may be applicable.
- (ii) In consultation with the land owners and where possible and if key and core conservation, tourism or archaeological resources areas or protected plant species are identified within the EPL area, such areas shall be excluded from the proposed minerals exploration activities.
- (iii) The Proponent shall adhere to all the provisions of the EMP and conditions of the Access Agreement to be entered between the Proponent and the land owner/s in line with all applicable national regulations.
- (iv) Before entering any private or protected property/ area such as a private farm or communal land, the Proponent shall give advance notices and obtain permission from the land owners or traditional authority to always access the EPL area, and.
- (v) Where possible, and if water is found during the detailed exploration boreholes drilling operations, the Proponent shall support other land uses in the area in terms of access to freshwater supply for both human consumption, wildlife and agricultural support as may be requested by the local community / land owner/s. The abstraction of fresh groundwater resources shall include water levels monitoring, sampling, and quality testing on a bi-annual basis, and that the affected landowners must have access to the results of the water monitoring analyses as part of the ongoing stakeholder disclosure requirements on shared water resources as may be applicable.

Once and if economic minerals resources are discovered, a separate field-based and site-specific Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) reports shall be prepared as part of the feasibility study with respect to the test mining or possible mining operations. The site-specific EIA and EMP shall cover the area identified to have potential economic minerals resources including the pit area/s, waste rock, access, office blocks and all infrastructure support areas (water, energy, and road / access).

In addition to the Terms of Reference (ToR) to be developed during the Environmental Scoping study phase for the test mining / mining stages, the following field-based and site-specific specialist studies shall be considered in the TOR for the EIA and EMP for possible test mining or mining operations in an event of a discovery of economic minerals resources and possible development of a mining project within the EPL No. 7811:

- (i) Groundwater studies including modelling as maybe applicable.
- (ii) Field-based flora and fauna diversity.
- (iii) Dust, noise, and sound modelling linked to engineering studies.
- (iv) Socioeconomic assessment, and.
- (v) Others as may be identified / recommended by the stakeholders/ land owners/ Environmental Commissioner or specialists.



# 1. BACKGROUND

## 1.1 Introduction

Bluestate Investments (Pty) Ltd (the **Proponent**) hold mineral rights under the Exclusive Prospecting License (EPL) No. 7811. The following is the summary of the EPL 7811 (Annex 1):

- ❖ **Type of License:** Exclusive Prospecting License (EPL) No. 7811.
- ❖ **EPL Holder:** Bluestate Investments (Pty) Ltd.
- ❖ **Granted Date:** 4/08/2020.
- ❖ **Expiry Date:** 3/08/2023.
- ❖ **Commodities to be explored:** base and rare metals, dimension stones, industrial minerals, and precious metals, and.
- ❖ **Size of the EPL:** 6083.0139Ha.

The Proponent intends to undertake exploration activities covering desktop studies, followed by site-specific activities using techniques such as geophysical surveys, geological mapping, trenching, drilling and bulk sampling (Annex 1).

## 1.2 Regulatory Requirements

The proposed prospecting activities are listed in the Environmental Management Act, 2007, (Act No. 7 of 2007) and the EIA Regulations, 2012 and cannot be undertaken without an Environmental Clearance Certificate (ECC).

The Proponent is required to have undertaken Environmental Assessment comprising this Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) reports for the proposed minerals prospecting activities to support the application for ECC.

In fulfilment of the environmental requirements, the Proponent appointed Risk-Based Solutions (RBS) CC as the Environmental Consultants led by Dr Sindila Mwiya as the Environmental Assessment Practitioner in the preparation of the EIA and EMP Reports to support the application for ECC (Annex 2).

## 1.3 Location, Land Use, Infrastructure and Services

### 1.3.1 Location and Land Use

The EPL 7811 is located in the Dâures Constituency, Omaruru District in the Erongo Region. The EPL 7811 has a total area of 6083.0139Ha and covers the Communal land situated to the west of Nu-Uis and northwest of Okombahe (Figs. 1.1-1.3). The general local topography comprises central topographic high mountain areas trending in the northeast-southwest / east-west directions with topographic lower areas on either side.

The landscape is dendritic in nature cultivated by several minor and major ephemeral river networks such as the Leeu and Xamgudom flowing into to the Omaruru Ephemeral River. The Omaruru Ephemeral River does not cut through the EPL area and is situated to the south of the license.

The EPL area is dominated by communal farmland (Fig. 1.3). The land use of the area is mainly subsistence agriculture including cattle, game, small stock, and other associated trading business activities at Okombahe, the nearest settlement (Figs. 1.2 and 1.3).

Game farming linked to tourism and trophy hunting is common on conservancies within the communal land surrounding areas. Bush thickening or encroachment is not viewed as an economic problem in the general area.

### **1.3.2 Supporting Infrastructure and Services**

The EPL 7811 is situated to the northwest of the settlement of Okombahe on the C36 gravel road linking Omaruru and the small mining settlement of Uis (Fig. 1.3). Omaruru is the nearest town to the EPL area and is situated about 72 km to the east.

Access to the license area is through the C36 road cutting across the southern portion of the EPL area (Figs. 1.2 -1.3). Within the minerals license area, several minor gravel farm roads and tracks exist and are linked to the C36 road (Figs. 1.2 -1.3). The general EPL area has no mobile services and limited electricity infrastructure.

The proposed exploration programme will not require major water and energy supply services. Exploration water supply especially for drilling will be obtained from the local boreholes or supplied by a tanker as may be required. Electricity supply will be provided by generators and solar as may be required for exploration purposes.

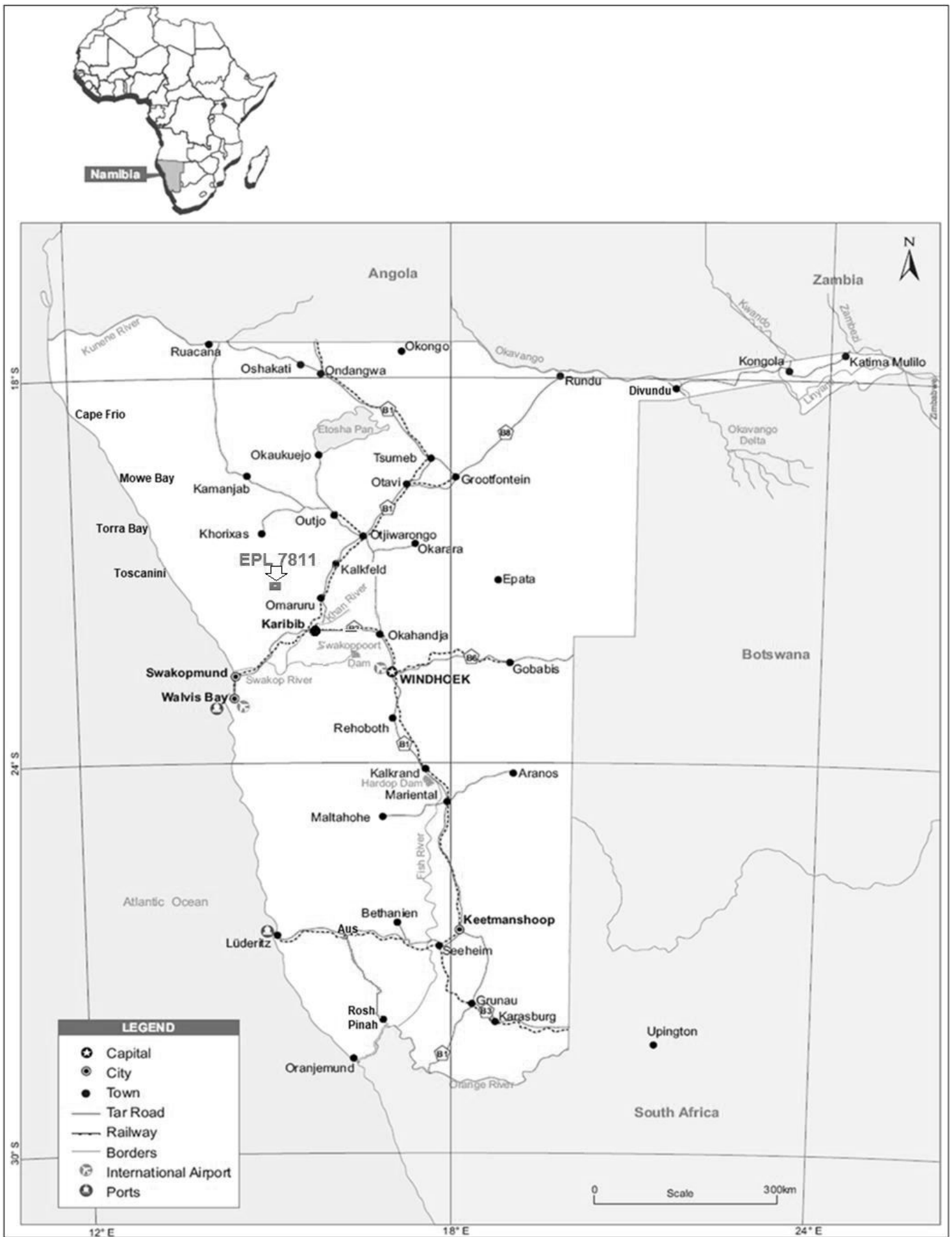


Figure 1.1: Regional location of the EPL No 7811 Area.

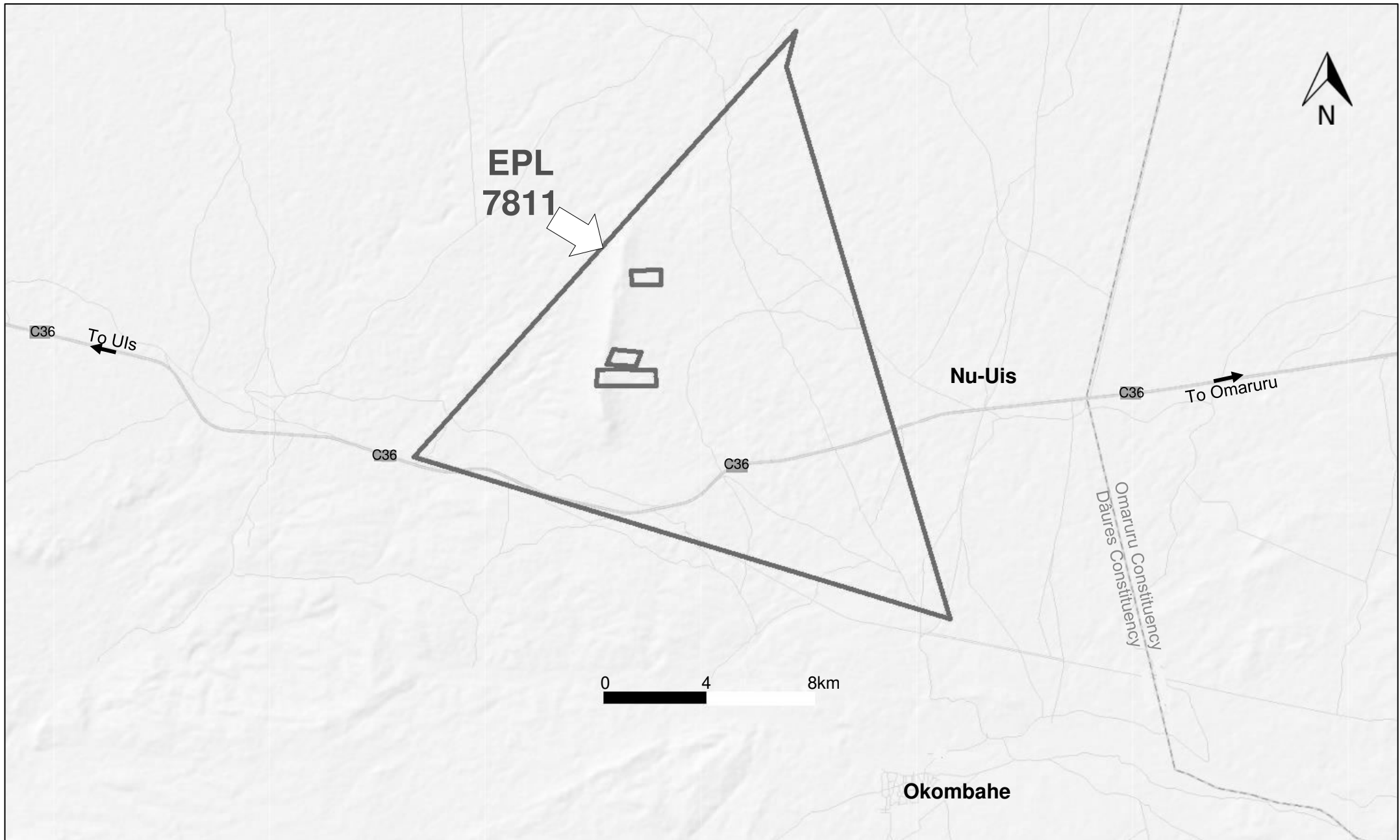


Figure 1.2: Regional location of the EPL 7811 Area (Source: <http://portals.flexicadastre.com/Namibia>).

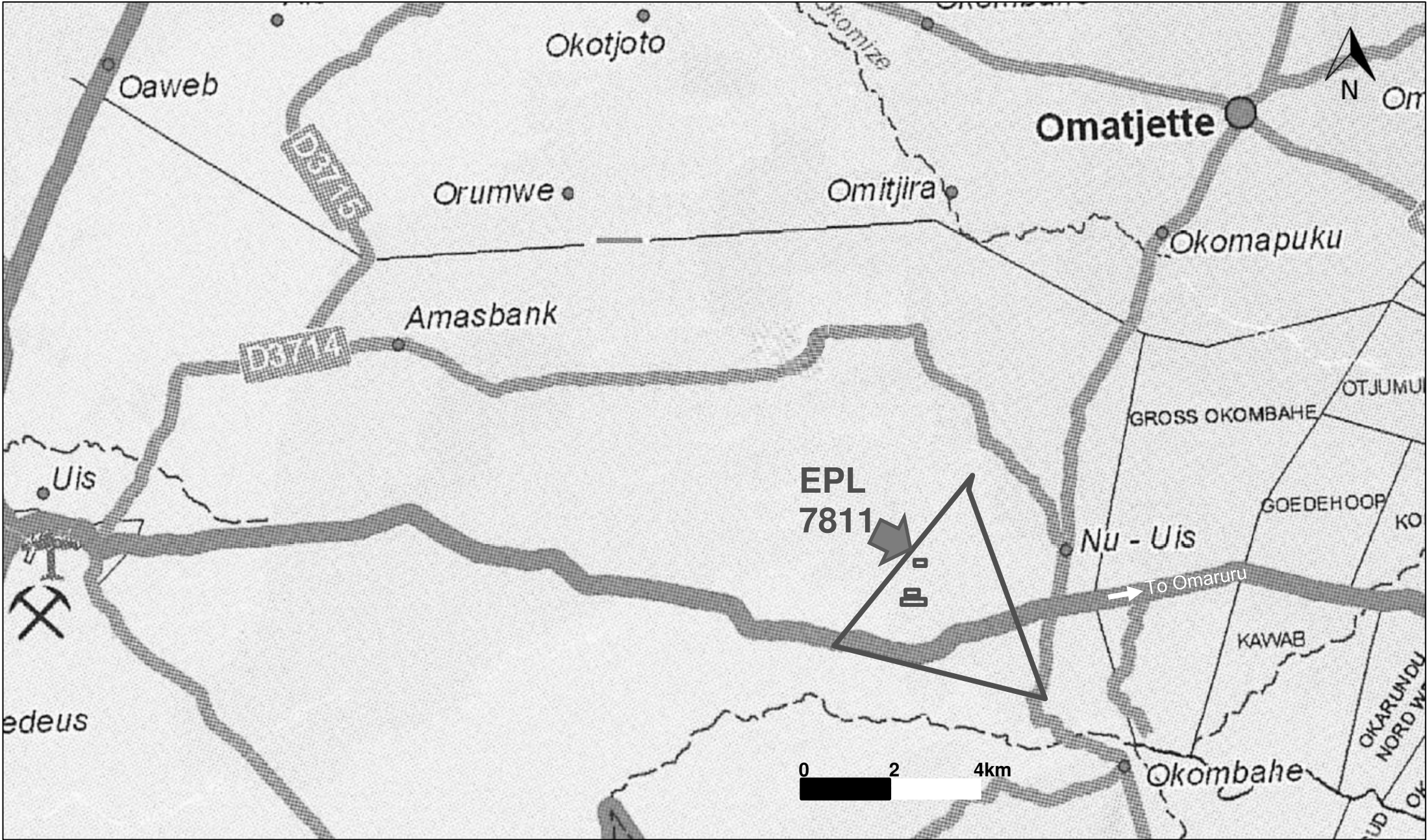


Figure 1.3: Commercial farmland covered by the EPL 7811 and existing access (Source: Namibia 1:1000000 Registration Divisions Extract).

## **1.4 Project Motivation**

The proposed exploration activities will have limited socioeconomic benefits which are mainly centred around the payment of the annual license rental fees to the Central Government through the Ministry of Mines and Energy (MME).

The following is the summary of the likely proposed project benefits.

- ❖ Provisional contractual employment opportunities for the local communities during the minerals prospecting process that could take many years.
- ❖ Expansion of the subsurface knowledge-base: The exploration data to be generated will be highly useful in the search for future subsurface resources such as minerals, water, geothermal and general geoscience research, and development.
- ❖ Contribution to the subsurface knowledge-base that will promote the coexistence of subsurface operations with other land users in Namibia, and.
- ❖ Contribution to the development of local infrastructures such as community rural water supply through Corporate Socially Responsible (CSR) that the Proponent may undertake during the exploration period.

## **1.5 Environmental Assessment Approach**

### **1.5.1 Terms of Reference, Approach and Methodology**

The environmental assessment process adopted for this project took into considerations the provisions the Environmental Management Act, 2007, (Act No. 7 of 2007) and all other applicable national laws and Regulations. The summary of the proposed activities, alternatives and key issues considered during the Environmental Assessment (EA) process are summarised in Table 1.1.

The first step in the environmental assessment process was the project screening followed by the preparation of the Background Information Document (BID) (Annex 1) used for project registration with the Environmental Commissioner and Interested and Affected Parties (I&APs) consultation process. The BID also provided the Terms of Reference (ToR) for the preparation of this EIA Report.

This EIA report undertaken for the proposed minerals explorations activities in the EPL 7811 was performed objectively and independently, with reasonable skill, care and diligence in accordance with professional standards and practices existing at the date of performance of the assessment and that the guidelines, methods and techniques used and applied in this study conformed to the national regulatory requirements, process and specifications in Namibia and in particular as required by Ministry of Mines and Energy (MME), Ministry of Environment, Forestry, and Tourism (MEFT) and the client (Proponent).

The preparation of the EIA / Scoping and EMP reports shall be undertaken in line with the January 2015 MEFT Environmental Assessment Reporting Guideline.

Table 1.1: Summary of the proposed activities, alternatives, and key issues considered during the Environmental Assessment (EA) process covering EIA/ Scoping and EMP phases.

PROPOSED PROJECT ACTIVITIES	ALTERNATIVES TO BE CONSIDERED	KEY ISSUES EVALUATED AND ASSESSED WITH ENVIRONMENTAL MANAGEMENT PLAN (EMP) / MITIGATION MEASURES DEVELOPED	
<p>(i) Initial desktop exploration activities (review of existing information and all previous activities in order identify any potential target/s in each EPL).</p> <p>(ii) Regional reconnaissance field-based activities such as regional mapping and sampling to identify and verify potential targeted areas based on the recommendations of the desktop work undertaken under (i) above.</p> <p>(iii) Initial local field-based activities such as widely spaced mapping, sampling, surveying and possible trenching and drilling to determine the viability of any delineated local target, and.</p> <p>(iv) Detailed local field-based activities such very detailed mapping, trenching, bulk sampling, surveying and detailed drilling to determine the feasibility of any delineated local target and conduct test mining activities.</p>	<p>(i) Location for Minerals Occurrence: A number of economic deposits are known to exist in different parts of Namibia and some have been explored by different companies over the years. The proponent intends to explore / prospect for possible economic minerals occurrence in the EPL area as licensed.</p>	<p>Potential land use conflicts / opportunities for coexistence between proposed exploration and other existing land uses such as conservation, tourism and agriculture</p>	
	<p>(ii) Other Alternative Land Uses: Game farming, tourism and agriculture</p> <p>(iii) Ecosystem Function (What the ecosystem does).</p>	<p>Impacts on the Physical Environment</p> <p>Natural Environment such as air, noise, water, dust etc.</p> <p>Built Environment such as existing houses, roads, transport systems, Buildings, energy and water and other supporting infrastructure</p>	
	<p>(iv) Ecosystem Services.</p> <p>(v) Use Values.</p>	<p>Socioeconomic, archaeological, and cultural impacts on the local societies and communities</p>	
	<p>(vi) Non-Use, or Passive Use.</p>	<p>Flora</p>	
	<p>(vii) The No-Action Alternative</p>	<p>Impacts on the Biological Environment</p> <p>Fauna</p> <p>Habitat</p>	
	<p>(viii) No others alternatives were identified during the public consultation process and preparation of the EIA and EMP Reports</p>	<p>Ecosystem functions, services, use values and non-Use or passive use</p> <p>No others issues were identified during the public consultation process and preparation of the EIA and EMP Reports</p>	

### 1.5.2 Summary of the Steps

The EIA/ Scoping and EMP process used for this project took into considerations the provisions of the Environmental Impact Assessment (EIA) Regulations, 2012 and the Environmental Management Act (EMA), 2007, (Act No. 7 of 2007) as outlined in Fig. 1.4.

The environmental assessment steps that have been undertaken are summarised as follows (Fig. 1.4):

- (i) Project screening process (**Undertaken in January 2021**).
- (ii) Preparation of the Background Information Document (BID) (**Undertaken in January / February 2021**).
- (iii) Preparation of the Public Notice to be published in the local newspapers as part of required public consultation process (**Undertaken in February 2021**).
- (iv) Opened the Stakeholder register (**Undertaken on the 5<sup>th</sup> February 2021**).
- (v) Invitation / notices to stakeholders and the general public to participate in environmental assessment process issued through the local newspaper advertisements as well as via direct emails communications to key stakeholders institutions such as Line Ministries, Regional and Local Governments as may be applicable (**Undertaken in February 2021 for a period of 21 days from the 1<sup>st</sup> Public Notice Publication dated 5<sup>th</sup> February 2021 Published in the New Era Newspaper**. Copy of the Public Notice published in three (3)

newspaper for three (3) weeks (21 days) public consultation period initially running from **Friday 5<sup>th</sup> February 2021 to Friday 26<sup>th</sup> February 2021 and extended to 5<sup>th</sup> March 2021 for public inputs with landowners deadline extended even further to the 19<sup>th</sup> March 2021.**

- (vi) Project registration / notification through the completion of the online formal registration / notification form on the MEFT online Portal ([www.eia.met.gov.na](http://www.eia.met.gov.na)) (**Undertaken in February 2021**).
- (vii) Preparation of the Draft EIA/ Scoping and EMP Reports for client review, public and stakeholder inputs (**Undertaken in February 2021**).
- (viii) Comments and inputs from the client and stakeholder consultations used to finalise the EIA / Scoping and EMP Reports (**Undertaken in February / March 2021**).
- (ix) The final EIA/ Scoping and EMP reports submitted to the Environmental Commissioner in MEFT through the MME (Competent Authority) in fulfilment of all the requirements of the Environmental Impact Assessment (EIA) Regulations No. 30 of 2012 and the Environmental Management Act, (EMA), 2007, (Act No. 7 of 2007) for application of the Environmental Clearance Certificate (ECC) for the proposed project (**March 2021**).
- (x) Following the submission of the application for ECC to the Environmental Commissioner, the public and stakeholders who are interested or affected by the proposed project will have additional **fourteen (14) days** to submit comments / inputs about the proposed project activities direct to the Environmental Commissioner when the application will be made available for additional comments / inputs by the Environmental Commissioner on the MEFT digital Portal [www.eia.met.gov.na](http://www.eia.met.gov.na), and.
- (xi) Wait for the Records or Decisions (RDs) from the Environmental Commissioner (**From March 2021**).



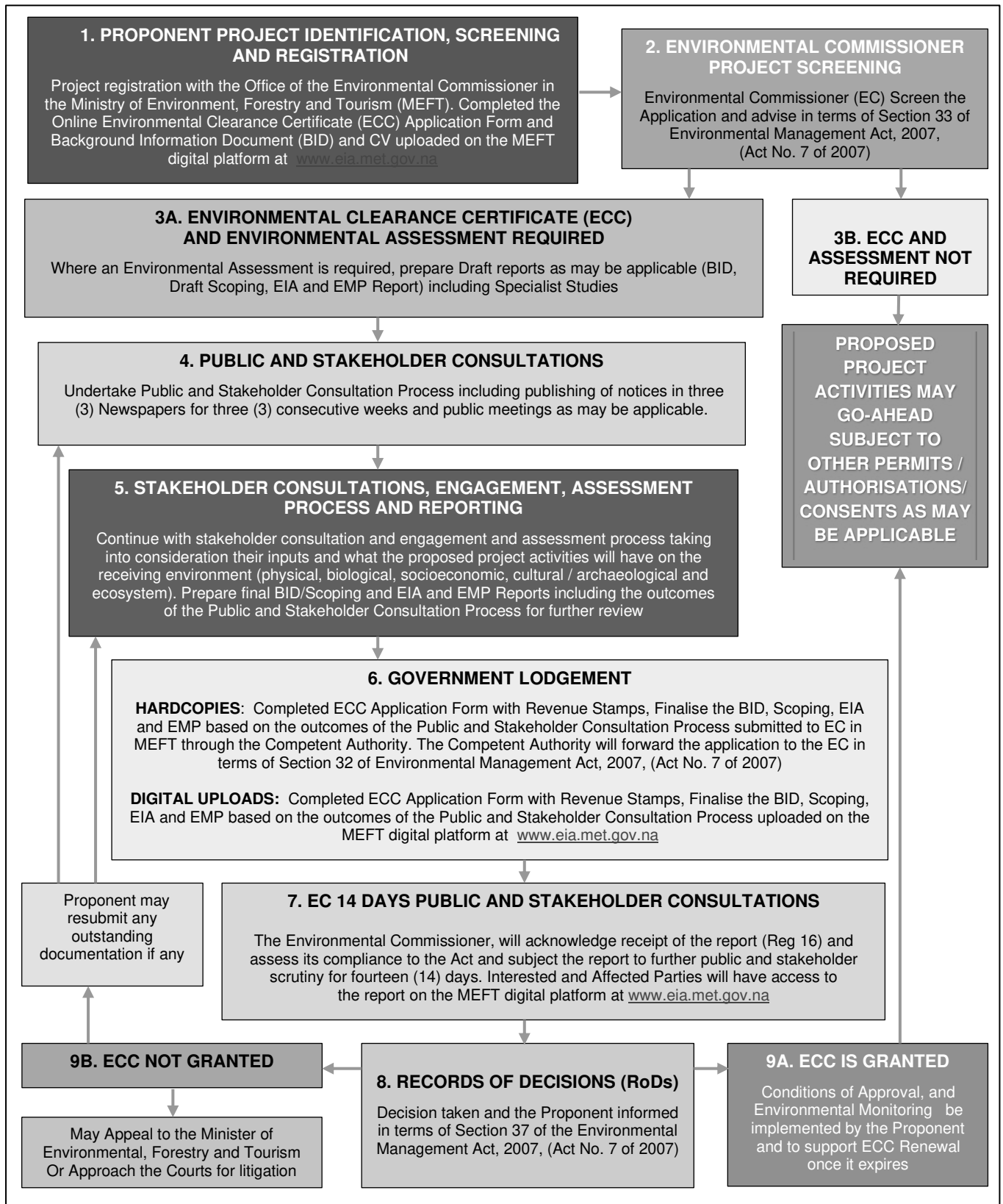


Figure 1.4: RBS Schematic presentation of Namibia's Environmental Assessment Procedure.

### 1.5.3 Assumptions and Limitations

The following assumptions and limitations underpin the approach adopted, overall outcomes and recommendations of the environmental assessment process:

- ❖ The proposed activities as well as all the plans, maps, EPL area, line boundary / coordinates, and appropriate data sets received from the Proponent, project partners, regulators,

Competent Authorities, and specialist consultants are assumed to be current and valid at the time of conducting the studies and preparation of this report.

- ❖ The impact assessment outcomes, mitigation measures and recommendations to be provided in the EIA/ Scoping and EMP Reports are valid for the lifecycle of the proposed prospecting activities.
- ❖ A precautionary approach has been adopted in instances where baseline information and impact assessment guidelines were insufficient or unavailable or site-specific project activities were not yet available, and.
- ❖ Mandatory timeframes as provided for in the EIA Regulations No. 30 of 2012 and the EMA, 2007, (Act No. 7 of 2007) have been observed.

#### 1.5.4 Structure of the Report

The following is the summary structure outline of this EIA report.

1. **Section 1: Background** covering the proposed project location with available infrastructure and services.
2. **Section 2: Project Description** covering the summary of the proposed project exploration activities.
3. **Section 3: Regulatory Framework** covering the proposed exploration with respect to relevant legislation, regulations and permitting requirements.
4. **Section 4: Receiving Environment** covering physical, biological and socioeconomic environments of the proposed project area.
5. **Section 5: Impact Assessment** covering the likely positive and negative impacts the proposed project activities are likely to have on the receiving environment.
6. **Section 6: Conclusions and Recommendations-** Summary of the findings and way forward.
7. **Section 7: Annexes**

## **2. DESCRIPTION OF THE EXPLORATION**

### **2.1 General Overview**

The overall aim of the proposed project activities (exploration / prospecting programme) is to search for potential economic minerals resources within the EPL area covering base and rare metals, dimension stones, industrial minerals, and precious metals.

The scope of the required field-based support and logistical activities will depend on the scale of proposed exploration activities to be undertaken.

The proposed exploration activities will be supported by existing tracks and campsites / farmstead as well as existing accommodation in the area. In the absence of existing tracks, the field team will create such new tracks with the permission of the land owner/s and depending on the scale of exploration.

In the absence of existing suitable campsite / farmstead, temporary camp will be setup at suitable locations within the EPL area in line with the EMP provisions. The size of the exploration camp will be of very limited footprints during the exploration phase but may be expanded for the test mining and mine development phases in an event of a discovery of economic minerals resources.

### **2.2 Initial Desktop Exploration Activities**

The following is description of the proposed initial desktop exploration activities to be implemented by the Proponent as assessed in the EIA Report:

- (i) General evaluation of satellite, topographic, land tenure, accessibility, supporting infrastructures and socioeconomic environment data.
- (ii) Purchase and analysis of existing Government high resolution magnetic and radiometric geophysical data.
- (iii) Purchase and analysis of existing Government aerial hyperspectral, and.
- (iv) Data interpretation and delineating of potential targets for future reconnaissance regional field-based activities for delineated targets.

No field work is envisaged at this stage of the proposed exploration activities which can last between six (6) to twelve (12) months.

### **2.3 Regional Reconnaissance Field-Based Activities**

The following is detailed outline of the proposed regional reconnaissance field-based exploration activities to be implemented by the Proponent as assessed in the EIA Report:

- (i) Regional geological, geochemical, topographical and remote sensing mapping and data analysis.
- (ii) Regional geochemical sampling aimed at identifying possible targeted based on the results of the initial exploration and regional geological, topographical and remote sensing mapping and analysis undertaken.
- (iii) Regional geological mapping aimed at identifying possible targeted based on the results of the initial exploration and regional geological, topographical and remote sensing mapping and analysis undertaken.

- (iv) Limited field-based support and logistical activities lasting between one (1) to two (2) days, and.
- (v) Laboratory analysis of the samples collected and interpretation of the results and delineating of potential targets for future detailed site-specific exploration if the results are positive and supports further exploration of the delineated targets.

Scope and scale of the possible field work is very limited to visiting specific delineated localities to validated the recommendations of the initial desktop activities.

## **2.4 Initial Local Field-Based Activities**

The following is detailed outline of the proposed initial local field-based exploration activities to be implemented by the Proponent as assessed in the EIA Report:

- (i) Local geochemical sampling aimed at verifying the prospectivity of the target/s delineated during regional reconnaissance field activities.
- (ii) Local geological mapping aimed at identifying possible targeted based on the results of the regional geological and analysis undertaken.
- (iii) Ground geophysical survey (Subject to the positive outcomes of i and ii above).
- (iv) Possible Trenching (Subject to the outcomes of i - iii above).
- (v) Field-based support and logistical activities will be very limited focus on a site-specific area for a very short time (maximum five (5) days), and.
- (vi) Laboratory analysis of the samples collected and interpretation of the results and delineating of potential targets

Scope and scale of the possible field work is very limited working on specific delineated localities in order to assess the economic viable of the target/s.

## **2.5 Detailed Local Field-Based Activities**

The following is detailed outline of the proposed detailed local field-based exploration activities to be implemented by the Proponent as assessed in the EIA Report if economic and viable targets are delineated within the EPL area:

- (i) Access preparation and related logistics to support activities.
- (ii) Local geochemical sampling aimed at verifying the prospectivity of the target/s delineated during the initial field-based activities.
- (iii) Local geological mapping aimed at identifying possible targeted based on the results of the regional geological and analysis undertaken, and.
- (iv) Ground geophysical survey, trenching, drilling and sampling (Subject to the positive outcomes of i and ii above).

Scope and scale of the possible field work is likely to be extensive over a localised specific delineated locality in order to assess the economic viable of the target/s.

## 2.6 Prefeasibility and Feasibility Studies

The following is detailed outline of the proposed prefeasibility and feasibility studies related exploration activities to be implemented by the Proponent as assessed in the EIA Report if economic and viable targets are delineated within the EPL area:

- (i) Detailed site-specific field-based support and logistical activities, surveys, detailed geological mapping.
- (ii) Detailed drilling and bulk sampling and testing for ore reserve calculations.
- (iii) Geotechnical studies for mine design.
- (iv) Mine planning and designs including all supporting infrastructures (water, energy and access) and test mining activities.
- (v) EIA and EMP to support the ECC for mining operations, and.
- (vi) Preparation of feasibility report and application for Mining License

Field-based support and logistical activities will be very extensive because the local field-based activities will be undertaken on a specific area for a very long time (up to one year or more in some instances). The activities will be supported by existing tracks and campsites / lodging facilities available in the area.

### **3. LEGISLATIVE FRAMEWORK**

#### **3.1 Overview**

There are four sources of law in Namibia: (1) statutes (2) common law (3) customary law and (4) international law. These four kinds of law are explained in more detail in the other factsheets in this series. The Constitution is the supreme law of Namibia. All other laws must be in line with it. The most important legislative instruments and associated permits/licenses/authorisations/consents/compliances applicable to the ongoing exploration activities and possible test mining include: Minerals exploration and mining, environmental management, land rights, water, atmospheric pollution prevention and labour as well as other indirect laws linked to the accessory services of exploration activities.

#### **3.2 Key Applicable Legislation**

##### **3.2.1 Minerals Exploration and Mining Legislation**

The national legislation governing minerals prospecting and mining activities in Namibia fall under the Ministry of Mines and Energy (MME) as the Competent Authority (CA) responsible for granting authorisations. The Minerals (Prospecting and Mining) Act (No 33 of 1992) is the most important legal instrument governing minerals prospecting and mining activities in Namibia. A new Bill, to replace the Minerals (Prospecting and Mining) Act (No 33 of 1992) is being prepared and puts more emphasis on good environmental management practices, local participation in the mining industry and promotes value addition as prescribed in the Minerals Policy of 2003.

The Minerals (Prospecting and Mining) Act (No 33 of 1992) regulates reconnaissance, prospecting (exploration) and mining activities. The Mining Commissioner, appointed by the Minister, is responsible for implementing the provisions of this Act including reporting requirements, environmental obligations as well as the associated regulations such as the Health and Safety Regulations.

##### **3.2.2 Environmental Management Legislation**

The Environmental Assessment (EA) process in Namibia is governed by the Environmental Impact Assessment (EIA) Regulations No. 30 of 2012 gazetted under the Environmental Management Act, (EMA), 2007, (Act No. 7 of 2007) in the Ministry of Environment, Forestry and Tourism (MEFT). The objectives of the Act and the Regulations are, among others, to promote the sustainable management of the environment and the use of natural resources to provide for a process of assessment and control of activities which may have significant effects on the environment. The Minister of Environment, Forestry and Tourism (is authorised to list activities which may only be undertaken if an environmental clearance certificate has been issued by the environmental commissioner, which activities include those relating to exploration and mining operations.

In addition to the requirements for undertaking Environmental Assessment prior to the project implementation, the Environmental Management Act and the EIA Regulations also provide for obligations of a license holder to provide for project rehabilitation and closure plan. In the regulations, the definition of “rehabilitation and closure plan” is a plan which describes the process of rehabilitation of an activity at any stage of that activity up to and including closure stage.

##### **3.2.3 Water Legislation**

Water Act 54 of 1906 under the Minister of Agriculture, Water and Land Reform (MAWLR) provides for the control, conservation and use of water for domestic, agricultural, urban and industrial purposes. In terms of Section 6, there is no right of ownership in public water and its control and use is regulated and provided for in the Act. In accordance with the Act, the ongoing exploration must ensure that mechanisms are implemented to prevent water pollution. Certain permits will also be required to abstract groundwater as well as for “water works”. The broad definition of water works will include the reservoir on site (as this is greater than 20,000m<sup>3</sup>), water treatment facilities and pipelines. Due to the water scarcity of the area, all water will be recycled (including domestic wastewater). The Act requires the license holder to have a wastewater discharge permit for discharge of effluent.

The Water Act 54 of 1906 is due to be replaced by the Water Resources Management Act 24 of 2004 which is currently being revised. The Water Resource Management Act 2004 *provides for the management, development, protection, conservation and use of water resources.*

### **3.2.4 Atmospheric Pollution Prevention Legislation**

The Atmospheric Pollution Prevention Ordinance, 11 of 1976 falling under the Ministry of Health and Social Services (MHSS) provide for the prevention of the pollution of the atmosphere, and for matters incidental thereto. Part III of the Act sets out regulations pertaining to atmospheric pollution by smoke. While preventative measures for dust atmospheric pollution are outlined in Part IV and Part V outlines provisions for Atmospheric pollution by gases emitted by vehicles.

### **3.2.5 Labour, Health and Safety Legislations**

The Labour Act, 1992, Act No. 6 of 1992 as amended in the Labour Act, 2007 (Act No. 11 of 2007), falling under the Ministry of Labour, Industrial Relations and Employment Creation (MLIREC) refers to severance allowances for employees on termination of a contract of employment in certain circumstances and health, safety, and welfare of employees.

In terms of the Health Safety and Environment (HSE), the Labour Act, 2007 protects employees and every employer shall, among other things: provide a working environment that is safe, without risk to the health of employees, and that has adequate facilities and arrangements for the welfare of employees, provide and maintain plant, machinery and systems of work, and work processes, that are safe and without risk to the health of employees, and ensure that the use, handling, storage or transportation of hazardous materials or substances is safe and without risk to the health of employees. All hazardous substances shall have clear exposure limits and the employer shall provide medical surveillance, first-aid and emergency arrangements as fit for the operation.

### **3.2.6 Other Applicable National Legislations**

Other Important legislative instruments applicable to the proposed exploration operations in the EPL 7811 include the following (Table 3.1):

- ❖ Explosives Act 26 of 1906 (as amended in SA to April 1978) – Ministry of Home Affairs, Immigration, Safety and Security (MHAISS).
- ❖ National Heritage Act 27 of 2004 – Ministry of Education, Arts and Culture (MEAC).
- ❖ Petroleum Products and Energy Act 13 of 1990 – Ministry of Mines and Energy (MME).
- ❖ Nature Conservation Ordinance, No. 4 of 1975 – Ministry of Environment, Forestry and Tourism (MEFT).
- ❖ Forest Act 12 of 2001 – Ministry of Environment, Forestry and Tourism (MEFT).
- ❖ Hazardous Substances Ordinance 14 of 1974 – Ministry of Health and Social Services (MHSS), and.
- ❖ Public Health Act 36 of 1919 – Ministry of Health and Social Services (MHSS).

Table 3.1 summarises the key selected legislations relevant applicable to the proposed exploration in the EPL 7811.

Table 3.1: Legislation relevant to the ongoing exploration operations in the EPL 7811.

LAW	SUMMARY DESCRIPTION
<p><b>Constitution of the Republic of Namibia, 1990</b></p>	<p>The Constitution is the supreme law in Namibia, providing for the establishment of the main organs of state (the Executive, the Legislature, and the Judiciary) as well as guaranteeing various fundamental rights and freedoms. Provisions relating to the environment are contained in Chapter 11, article 95, which is entitled "promotion of the Welfare of the People". This article states that the Republic of Namibia shall – "actively promote and maintain the welfare of the people by adopting, inter alia, policies aimed at ... maintenance of ecosystems, essential ecological processes and biological diversity of Namibia and utilisation of living natural resources on a sustainable basis for all Namibians, both present and future. The Government shall provide measures against the dumping or recycling of foreign nuclear waste on Namibian territory."</p>
<p>Minerals (Prospecting and Mining) Act, 1992 <b>Ministry of Mines and Energy (MME)</b></p>	<p>The Minerals Act governs minerals prospecting and mining. The Act <i>provides for the reconnaissance, prospecting, and mining for, and disposal of, and the exercise of control over minerals in Namibia. and to provide for matters incidental thereto. A new Minerals Bills is currently under preparation.</i></p>
<p>Environmental Management Act (2007) - <b>Ministry of Environment, Forestry and Tourism (MEFT)</b></p>	<p>The purpose of the Act is <i>to give effect to Article 95(l) and 91(c) of the Namibian Constitution by establishing general principles for the management of the environment and natural resources. to promote the co-ordinated and integrated management of the environment. to give statutory effect to Namibia's Environmental Assessment Policy. to enable the Minister of Environment and Tourism to give effect to Namibia's obligations under international conventions.</i> In terms of the legislation, it will be possible to exercise control over certain listed development activities and activities within defined sensitive areas. The listed activities in sensitive areas require an Environmental Assessment to be completed before a decision to permit development can be taken. The legislation describes the circumstances requiring Environmental Assessments. Activities listed as per the provisions of the Act will require Environmental Assessment unless the Ministry of Environment, Forestry and Tourism, in consultation with the relevant Competent Authority, determines otherwise and approves the exception.</p>
<p>Water Act 54 of 1906 <b>Minister of Agriculture, Water and Land reform (MAWLR)</b></p>	<p>This Act provides for the control, conservation and use of water for domestic, agricultural, urban, and industrial purposes. In terms of Section 6, there is no right of ownership in public water and its control and use is regulated and provided for in the Act. In accordance with the Act, the proposed project must ensure that mechanisms are implemented to prevent water pollution. Certain permits will also be required to abstract groundwater (already obtained) as well as for "water works". The broad definition of water works will include the reservoir on Site (as this is greater than 20,000m<sup>3</sup>), water treatment facilities and pipelines. Due to the water scarcity of the area, all water will be recycled (including domestic wastewater) and the Mine will be operated on a zero-discharge philosophy. It will, therefore, not be necessary to obtain permits for discharge of effluent.</p> <p>Section 23 of the Act requires environment rehabilitation after closure of the Mine, particularly, in this instance to obviate groundwater pollution and potential pollution resulting from run-off. This Act is due to be replaced by the Water Resources Management Act 24 of 2004.</p>
<p><i>Forest Act 12 of 2001</i> - <b>Minister of Environment, Forestry and Tourism (MEFT)</b></p>	<p>The Act provide for the establishment of a Forestry Council and the appointment of certain officials. to consolidate the laws relating to the management and use of forests and forest produce. to provide for the protection of the environment and the control and management of forest fires.</p> <p>Under Part IV Protection of the environment, Section 22(1) of the Act, it is unlawful for any person to: cut, destroy, or remove:</p> <p>(a) any vegetation which is on a sand dune or drifting sand or in a gully unless the cutting, destruction or removal is done for the purpose of stabilising the sand or gully or</p> <p>(b) any living tree, bush or shrub growing within 100m of a river, stream, or watercourse.</p> <p>Should either of the above be unavoidable, it will be necessary to obtain a permit from the Ministry. Protected tree species as listed in the Regulations shall not be cut, destroyed, or removed.</p>
<p>Hazardous Substance Ordinance 14 of 1974 <b>Ministry of Health and Social Services</b></p>	<p>Provisions for hazardous waste are amended in this act as it provides <i>"for the control of substances which may cause injury or ill-health to or death of human beings by reason of their toxic, corrosive, irritant, strongly sensitizing or flammable nature or the generation of pressure thereby in certain circumstances. to provide for the prohibition and control of the importation, sale, use, operation, application, modification, disposal or dumping of such substance. and to provide for matters connected therewith"</i></p>



Table 3.1: Cont.

<p>Agricultural (Commercial) Land Reform Act, 1995, Act No.6 of 1995 <b>Ministry of Agriculture, Water and Land Reform (MAWLR)</b></p>	<p>This Act provide for the acquisition of agricultural land by the State for the purposes of land reform and for the allocation of such land to Namibian citizens who do not own or otherwise have the use of any or of adequate agricultural land, and foremost to those Namibian citizens who have been socially, economically or educationally disadvantaged by past discriminatory laws or practices. to vest in the State a preferent right to purchase agricultural land for the purposes of the Act. to provide for the compulsory acquisition of certain agricultural land by the State for the purposes of the Act. to regulate the acquisition of agricultural land by foreign nationals. to establish a Lands Tribunal and determine its authority. and to provide for matters connected therewith.</p>
<p>Explosives Act 26 of 1906 (as amended in SA to April 1978) - <b>Ministry Home Affairs, Immigration, Safety and Security (MHAISS)</b></p>	<p>All explosive magazines are to be registered with the Ministry of Mines and Energy as accessory works. In addition, the magazines must be licensed as required by Section 22. The quantity of explosives and the way it is stored must be approved by an inspector. The inspector has powers to enter the premises at any time to conduct inspections regarding the nature of explosive, quantity and the way it is stored. At closure, all explosives are to be disposed of accordingly.</p>
<p>Atmospheric Pollution Prevention Ordinance 11 of 1976. <b>Ministry of Health and Social Services (MHSS)</b></p>	<p>This regulation sets out principles for <i>the prevention of the pollution of the atmosphere and for matters incidental thereto</i>. Part III of the Act sets out regulations pertaining to atmospheric pollution by smoke. While preventative measures for dust atmospheric pollution are outlined in Part IV and Part V outlines provisions for Atmospheric pollution by gases emitted by vehicles.</p>
<p>The Nature Conservation Ordinance, Ordinance 4 of 1975, <b>Ministry of Environment, Forestry and Tourism (MEFT)</b></p>	<p>During the Mine's activities, care must be taken to ensure that protected plant species and the eggs of protected and game bird species are not disturbed or destroyed. If such destruction or disturbance is inevitable, a permit must be obtained in this regard from the Minister of Environment, Forestry and Tourism. Should the Proponent operate a nursery to propagate indigenous plant species for rehabilitation purposes, a permit will be required. At this stage, however, it is envisaged that this type of activity will be contracted out to encourage small business development.</p>
<p>Labour Act, 1992, Act No. 6 of 1992 as amended in the Labour Act, 2007 (Act No. 11 of 2007 <b>Ministry of Labour, Industrial Relations and Employment Creation (MLIREC)</b></p>	<p>The labour Act gives effect to the constitutional commitment of Article 95 (11), to promote and maintain the welfare of the people. This Act is aimed at establishing <i>a comprehensive labour law for all employees. to entrench fundamental labour rights and protections. to regulate basic terms and conditions of employment. to ensure the health, safety and welfare of employees</i> under which provisions are made in chapter 4. Chapter 5 of the act improvises on the <i>protection of employees from unfair labour practice</i>.</p>
<p>Petroleum Products and Energy Act 13 of 1990 <b>Ministry of Mines and Energy (MME)</b></p>	<p>Any consumer installation as envisaged in this Act must be licensed. Appropriate consumer installation certificate will need to be obtained from the Ministry for each fuel installation. The construction of the installation must be designed in such a manner as to prevent environmental contamination.</p> <p>Any certificate holder or other person in control of activities related to any petroleum product is obliged to report any major petroleum product spill (defined as a spill of more than 200ℓ per spill) to the Minister. Such person is also obliged to take all steps as may be necessary in accordance with good petroleum industry practices to clean up the spill. Should this obligation not be met, the Minister is empowered to take steps to clean up the spill and to recover the costs thereof from the person.</p> <p>General conditions apply to all certificates issued. These include conditions relating to petroleum spills and the abandonment of the Site. The regulation further provides that the Minister may impose special conditions relating to the preparation and assessment of environmental assessments and the safe disposal of petroleum products.</p>
<p>National Heritage Act 27 of 2004 <b>Ministry of Education, Arts and Culture (MEAC)</b></p>	<p>This Act provides provisions for the protection and conservation of places and objects of heritage significance and the registration of such places and objects. The proposed activities will ensure that if any archaeological or paleontological objects, as described in the Act, are found during the implementation of the activities, such a find shall be reported to the Ministry immediately. If necessary, the relevant permits must be obtained before disturbing or destroying any heritage</p>

### 3.3 Key Regulators / Competent Authorities

The environmental regulatory authorities responsible for environmental protection and management in relation to the proposed project including their role in regulating environmental protection are listed in Table 3.2.

Table 3.2: Government agencies regulating environmental protection in Namibia.

AGENCY	RESPONSIBILITY
Ministry of Mines and Energy (MME)	<p>The competent authority for minerals prospecting and mining activities in Namibia. Issues Exclusive prospecting License (EPL), Mining Licenses (ML) and Mining Claims (license) as well as all other minerals related permits for processing, trading, and export of minerals resources.</p> <p>In accordance with the provisions of the Petroleum Products and Energy Act 13 of 1990 (“the Petroleum Products Act”) and the regulations thereof, only 210L of diesel can be stored onsite without a license for own use. To store more than 210L of diesel for own use a site-specific Consumer Installation License is required. The application of a Consumer Installation License requires the applicant to have undertaken Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) to apply for Environmental Clearance Certificate (ECC) in accordance with the provisions of the Environmental Management Act, 2007, (Act No. 7 of 2007) and the EIA Regulations 30 of 2012.</p>
Ministry of Environment, Forestry and Tourism (MEFT)	<p>Issue of Environmental Clearance Certificate (ECC) based on the review and approval of the Environmental Assessments (EA) reports comprising Environmental Scoping, Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) prepared in accordance with the Environmental Management Act (2007) and the Environmental Impact Assessment Regulations, 2012.</p> <p>The National Botanical Research Institute’s (NBRI) mandate is to study the flora and vegetation of Namibia, to promote the understanding, conservation, and sustainable use of Namibia’s plants for the benefit of all. The Directorate of Forestry (DOF) is responsible for issuing of forestry permits with respect to harvest, transport, and export or market forest resources.</p>
Ministry of Agriculture, Water and Land Reform (MAWLR)	<p>The Directorate of Resource Management within the Department of Water Affairs (DWA) in the MAWLR is currently the lead agency responsible for management of surface and groundwater utilisation through the issuing of abstraction permits and waste water disposal permits. DWA is also the Government agency responsible for water quality monitoring and reporting.</p> <p>The Agricultural (Commercial) Land Reform Act, 1995, Act No.6 of 1995 governs commercial farmland owned by the State.</p>
Ministry of Home Affairs, Immigration, Safety and Security (MHAISS)	<p>The Explosive Department within the Namibian Police are responsible for licensing to purchase, store and use of explosive magazines for exploration related blasting that may be undertaken in the EPL 7811</p>

### 3.4 International and Regional Treaties and Protocols

Article 144 of the Namibian Constitution provides for the enabling mechanism to ensure that all international treaties and protocols are ratified. All ratified treaties and protocols are enforceable within Namibia by the Namibian courts and these include the following:

- ❖ The Paris Agreement, 2016.
- ❖ Convention on Biological Diversity, 1992.
- ❖ Vienna Convention for the Protection of the Ozone Layer, 1985.
- ❖ Montreal Protocol on Substances that Deplete the Ozone Layer, 1987.
- ❖ United Nations Framework Convention on Climate Change, 1992.
- ❖ Kyoto Protocol on the Framework Convention on Climate Change, 1998.

- ❖ Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and Their Disposal, 1989.
- ❖ World Heritage Convention, 1972.
- ❖ Convention to Combat Desertification, 1994. and
- ❖ Stockholm Convention of Persistent Organic Pollutants, 2001.
- ❖ Southern Africa Development Community (SADC) Protocol on Mining, and.
- ❖ Southern Africa Development Community (SADC) Protocol on Energy.

### 3.5 Standards and Guidelines

Industrial effluent likely to be generated by the proposed activities must comply with provisions of the Government Gazette No 217 dated 5 April 1962 (Table 3.3) while the drinking water quality comparative guideline values are shown in Table 3.4.

The only key missing components to the regulatory frameworks in Namibia are the standards, and guidelines with respect to gaseous, liquid, and solid emissions. However, in the absence of national gaseous, liquid, and solid emission limits for Namibia, the proposed project shall target the Multilateral Investment Guarantee Agency (MIGA) gaseous effluent emission level and liquid effluent emission levels (Table 3.5).

Noise abatement measures must target to achieve either the levels shown in Table 3.6 or a maximum increase in background levels of 3 dB (A) at the nearest receptor location off-site (MIGA guidelines).

Table 3.3: R553 Regional Standards for Industrial Effluent, in Government Gazette No 217 dated 5 April 1962.

Colour, odour and taste	The effluent shall contain no substance in concentrations capable of producing colour, odour or taste	
pH	Between 5.5 and 9.5	
Dissolved oxygen	At least 75% saturation	
Typical faecal coli	No typical faecal coli per 100 ml	
Temperature	Not to exceed 35 °C	
Chemical demand oxygen	Not to exceed 75 mg/l after applying a correction for chloride in the method	
Oxygen absorbed	Not to exceed 10 mg/l	
Total dissolved solids (TDS)	The TDS shall not have been increased by more than 500 mg/l above that of the intake water	
Suspended solids	Not to exceed 25 mg/l	
Sodium (Na)	The Na level shall not have been increased by more than 50 mg/l above that of the intake water	
Soap, oil and grease	Not to exceed 2.5 mg/l	
Other constituents	Residual chlorine	0,1 mg/l as Cl
	Free & saline ammonia	10 mg/l as N
	Arsenic	0,5 mg/l as As
	Boron	1,0 mg/l as B
	Hexavalent Cr	0,05 mg/l as Cr
	Total chromium	0,5 mg/l as Cr
	Copper	1,0 mg/l as Cu
	Phenolic compounds	0,1 mg/l as phenol
	Lead	1,0 mg/l as Pb
	Cyanide and related compounds	0,5 mg/l as CN
	Sulphides	1,0 mg/l as S
	Fluorine	1,0 mg/l as F
	Zinc	5,0 mg/l as Zn

Table 3.4: Comparison of selected guideline values for drinking water quality (after Department of Water Affairs, 2001).

Parameter and Expression of the results			WHO Guidelines for Drinking-Water Quality 2 <sup>nd</sup> edition 1993	Proposed Council Directive of 28 April 1995 (95/C/13-1/03) EEC	Council Directive of 15 July 1980 relating to the quality intended for human consumption 80/778/EEC	U.S. EPA Drinking water Standards and Health Advisories Table December 1995	Namibia, Department of Water Affairs Guidelines for the evaluation of drinking-water for human consumption with reference to chemical, physical and bacteriological quality July 1991				
			Guideline Value (GV)	Proposed Parameter Value	Guide Level (GL)	Maximum Admissible Concentration (MAC)	Maximum Contaminant Level (MCL)	Group A Excellent Quality	Group B Good Quality	Group C Low Health Risk	Group D Unsuitable
Temperature	t	°C	-	-	12	25	-	-	-	-	-
Hydrogen ion concentration	pH, 25° C	-	R <8.0	6.5 to 9.5	6.5 to 8.5	10	-	6.0 to 9.0	5.5 to 9.5	4.0 to 11.0	<4.0 to >11.0
Electronic conductivity	EC, 25° C	mS/m	-	280	45	-	-	150	300	400	>400
Total dissolved solids	TDS	mg/l	R 1000	-	-	1500	-	-	-	-	-
Total Hardness	CaCO <sub>3</sub>	mg/l	-	-	-	-	-	300	650	1300	>1300
Aluminium	Al	µg/l	R 200	200	50	200	S 50-200	150	500	1000	>1000
Ammonia	NH <sub>4</sub> <sup>+</sup>	mg/l	R 1.5	0.5	0.05	0.5	-	1.5	2.5	5.0	>5.0
	N	mg/l	-	1.0	0.04	0.4	-	1.0	2.0	4.0	>4.0
Antimony	Sb	µg/l	P 5	3	-	10	C 6	50	100	200	>200
Arsenic	As	µg/l	-	10	-	50	C 50	100	300	600	>600
Barium	Ba	µg/l	P 700	-	100	-	C 2000	500	1000	2000	>2000
Beryllium	Be	µg/l	-	-	-	-	C 4	2	5	10	>10
Bismuth	Bi	µg/l	-	-	-	-	-	250	500	1000	>1000
Boron	B	µg/l	300	300	1000	-	-	500	2000	4000	>4000
Bromate	BrO <sub>3</sub> <sup>-</sup>	µg/l	-	10	-	-	P 10	-	-	-	-
Bromine	Br	µg/l	-	-	-	-	-	1000	3000	6000	>6000
Cadmium	Cd	µg/l	3	5	-	5	C 5	10	20	40	>40
Calcium	Ca	mg/l	-	-	100	-	-	150	200	400	>400
	CaCO <sub>3</sub>	mg/l	-	-	250	-	-	375	500	1000	>1000
Cerium	Ce	µg/l	-	-	-	-	-	1000	2000	4000	>4000
Chloride	Cl <sup>-</sup>	mg/l	R 250	-	25	-	S 250	250	600	1200	>1200
Chromium	Cr	µg/l	P 50	50	-	50	C 100	100	200	400	>400
Cobalt	Co	µg/l	-	-	-	-	-	250	500	1000	>1000
Copper after 12 hours in pipe	Cu	µg/l	P 2000	2	100	-	C TT##	500	1000	2000	>2000
		µg/l	-	-	3000 <sup>1</sup>	-	S 1000	-	-	-	-
Cyanide	CN <sup>-</sup>	µg/l	70	50	-	50	C 200	200	300	600	>600
Fluoride	F	mg/l	1.5	1.5	-	at 8 to 12 °C: 1.5	C 4	1.5	2.0	3.0	>3.0
		mg/l	-	-	-	at 25 to 30 °C: 0.7	P,S 2	-	-	-	-
Gold	Au	µg/l	-	-	-	-	-	2	5	10	>10
Hydrogen sulphide	H <sub>2</sub> S	µg/l	R 50	-	-	undetectable	-	100	300	600	>600
Iodine	I	µg/l	-	-	-	-	-	500	1000	2000	>2000
Iron	Fe	µg/l	R 300	200	50	200	S 300	100	1000	2000	>2000
Lead	Pb	µg/l	10	10	-	50	C TT#	50	100	200	>200
Lithium	Li	µg/l	-	-	-	-	-	2500	5000	10000	>10000
Magnesium	Mg	mg/l	-	-	30	50	-	70	100	200	>200
	CaCO <sub>3</sub>	mg/l	-	-	7	12	-	290	420	840	>840
Manganese	Mn	µg/l	P 500	50	20	50	S 50	50	1000	2000	>2000
Mercury	Hg	µg/l	1	1	-	1	C 2	5	10	20	>20
Molybdenum	Mo	µg/l	70	-	-	-	-	50	100	200	>200
Nickel	Ni	µg/l	20	20	-	50	-	250	500	1000	>1000
Nitrate*	NO <sub>3</sub> <sup>-</sup>	mg/l	P 50	50	25	50	-	45	45	90	>180
	N	mg/l	-	-	5	11	C 10	10	20	40	>40
Nitrite*	NO <sub>2</sub> <sup>-</sup>	mg/l	3	0.1	-	0.1	-	3	-	-	-
	N	mg/l	-	-	-	-	C 1	-	-	-	-
Oxygen, dissolved	O <sub>2</sub>	% sat.	-	50	-	-	-	-	-	-	-
Phosphorus	P <sub>2</sub> O <sub>5</sub>	µg/l	-	-	400	5000	-	-	-	-	-
	PO <sub>4</sub> <sup>3-</sup>	µg/l	-	-	300	3350	-	-	-	-	-
Potassium	K	mg/l	-	-	10	12	-	200	400	800	>800
Selenium	Se	µg/l	10	10	-	10	C 50	20	50	100	>100
Silver	Ag	µg/l	-	-	-	10	S 100	20	50	100	>100
Sodium	Na	mg/l	R 200	-	20	175	-	100	400	800	>800
Sulphate	SO <sub>4</sub> <sup>2-</sup>	mg/l	R 250	250	25	250	S 250	200	600	1200	>1200
Tellurium	Te	µg/l	-	-	-	-	-	2	5	10	>10
Thallium	Tl	µg/l	-	-	-	-	C 2	5	10	20	>20
Tin	Sn	µg/l	-	-	-	-	-	100	200	400	>400
Titanium	Ti	µg/l	-	-	-	-	-	100	500	1000	>1000
Tungsten	W	µg/l	-	-	-	-	-	100	500	1000	>1000
Uranium	U	µg/l	-	-	-	-	P 20	1000	4000	8000	>8000
Vanadium	V	µg/l	-	-	-	-	-	250	500	1000	>1000
Zinc after 12 hours in pipe	Zn	µg/l	R 3000	-	100	-	S 5000	1000	5000	10000	>10000
		µg/l	-	-	5000	-	-	-	-	-	-

P: Provisional  
R: May give reason to complaints from consumers

C: Current. P: Proposed. S: Secondary.  
T#: Treatment technique in lieu of numeric MCL.  
TT##: treatment technique triggered at action level of 1300 µg/l

Table 3.5: Liquid effluent emission levels (MIGA /IFC).

<b>Pollutant</b>	<b>Max. Value</b>
pH	6-9
Total suspended solids	50 mg/l
Total metals	10 mg/l
Phosphorous (P)	5 mg/l
Fluoride (F)	20 mg/l
Cadmium (Cd)	0.1 mg/l

Table 3.6: Noise emission levels (MIGA /IFC).

	<b>Maximum Allowable Leq (hourly), in dB(A)</b>	
	Day time (07:00 – 22:00)	Night time (22:00 – 07:00)
Receptor		
Residential, institutional, educational	55	45
Industrial, commercial	70	70

### 3.6 Recommendations on Permitting Requirements

It is hereby recommended that the Proponent shall follow the provisions of all relevant national legislations throughout the proposed project lifecycle and must obtain the following permits/authorisations as may be applicable / required as the proposed project develops:

- (i) Valid EPL 7811 as may be applicable from Department of Mines in the MME.
- (ii) Valid ECC from the Department of Environmental Affairs in the MEFT.
- (iii) The Proponent shall apply for a fresh water abstraction and waste water discharge permits from the Department of Water Affairs (DWA) in the MAWLR before drilling a water borehole and discharge wastewater into the environment respectively, and.
- (iv) All other permits as may be become applicable during the proposed exploration operations.

## **4. SUMMARY OF NATURAL ENVIRONMENT**

### **4.1 Climate**

Summer rainfall is brought by northeast winds, generally from October to April. The average rainfall varies considerably and ranges between 380 mm and 450 mm. The mean annual gross evaporation is between 3000 mm -3200 mm. The numbers of rainfall events expressed as an annual average in days as determined from the regional data is 10-30 days. The sun shines for an annual average of 10 hours a day. The annual mean temperature for Otjiwarongo area is around 24°C with the mean monthly temperatures ranging between 23°C to 14°C throughout the year. Based on regional data sets, temperatures at 08h00, 14h00 and 20h00 are estimated to be around 14°C, 24°C and 18°C respectively.

### **4.2 Topography**

The general local topography comprises central topographic high mountain areas trending in the northeast-southwest direction with topographic lower areas on either side. The terrain around the EPL 7811 is rocky and rugged in nature with steep slopes characterising the mountainous sections whilst the foothills of the mountains are flat and gently undulating. The drainage of the area is dendritic in nature with ephemeral streams, often steeply incised, forming small early-stage tributaries of the Leeu and Xamgudom flowing into to the Omaruru Ephemeral River.

### **4.3 Vertebrate Fauna and Flora Diversity**

#### **4.3.1 Reptiles**

According to Alexander and Marais (2007), Branch (1998), Branch (2008), Boycott and Bourquin 2000, Broadley (1983), Buys and Buys (1983), Cunningham (2006), Griffin (2003), Hebbard (n.d.), Marais (1992), Tolley and Burger (2007), endemic reptile species known and/or expected to occur in the general license area make up 35.1% of the reptiles from the general area and although not as high as endemism elsewhere for example the western escarpment areas of Namibia but still makes up a large portion of the reptiles. Reptiles of greatest concern are probably the tortoises – *Stigmochelys pardalis* and *Psammobates oculiferus* which are often consumed by humans. *Python anchietae* and *P. natalensis* which are indiscriminately killed throughout their range and *Varanus albigularis* as well as the various *Pachydactylus* species geckos of which 80% are viewed as endemic. Other important species would be the 3 Blind snakes (*Rhinotyphlops* species of which 2 species are endemic) and 2 Thread snakes (*Leptotyphlops* species of which 1 species is endemic) which could be associated with the sandier soils in the area.

#### **4.3.2 Amphibians**

According to Carruthers (2001), Channing (2001), Channing and Griffin (1993), Du Preez and Carruthers (2009), Passmore and Carruthers (1995), of the 9 species of amphibians are likely to occur in the general license area, 33.3% (3 species) are of conservation value with 2 species being endemic (*Poyntonophrynus hoeschi* and *Phrynomantis annectens*) (Griffin 1998b) and 1 species (*Pyxicephalus adspersus*) viewed as near threatened (Du Preez and Carruthers 2009). However, the area does not have unique amphibian habitat with potential habits being associated with the various ephemeral drainage lines within the license area.

#### **4.3.3 Mammals**

According to De Graaff (1981), Griffin and Coetzee (2005), Estes (1995), Joubert and Mostert (1975), Monadjem et al. (2010), Skinner and Smithers (1990), Skinner and Chimimba (2005), Stander and Hanssen (2003) and Taylor (2000), of the 84 species of mammals expected to occur in the general license area, 4.8% are endemic and 35.7% are classified under international conservation legislation. The most important groups are rodents (29.8% - 12% endemic), bats (26.2% - 4.5% endemic) and carnivores (20.2% - 5.9% endemic). According to De Graaff (1981), Griffin and Coetzee (2005), Estes (1995), Joubert and Mostert (1975), Monadjem et al. (2010), Skinner and Smithers (1990), Skinner and

Chimimba (2005), Stander and Hanssen (2003) and Taylor (2000), the most important species from the general area are probably all those classified as near threatened (*Eidolon helvum*, *Hipposideros vittatus*, *Rhinolophus blasii*, *Hyaena brunnea* and *Panthera pardus*) and vulnerable (*Acinonyx jubatus* and *Felis nigripes*) by the IUCN (2014) and rare (*Cistugo seabrai*, *Atelerix frontalis angolae* and *Felis nigripes*) under Namibian legislation.

#### 4.3.4 Avifauna

The high proportion of endemics – 10 of the 14 endemics to Namibia (i.e. 71% of all endemics) – expected to occur in the general license area underscore the importance of this area. Furthermore 21.3% are classified as southern African endemics (or 6.3% of all the birds expected) and 78.7% are classified as southern African near-endemics (or 23.1% of all the birds expected). According to Brown et al. (1998), Brown et al. (2006), Hockey et al. (2006), Komen (n.d.), Maclean (1985), Simmons and Brown (In press) and Tarboton (2001), the most important “endemic” species known/expected to occur in the general area are viewed as Monteiro’s Hornbill (*Tockus monteiri*), Damara Hornbill (*Tockus damarensis*), Ammomanopsis grayi (Gray’s Lark), Namibornis herero (Herero Chat), Eupodotis rueppellii (Rüppell’s Korhaan) and Poicephalus rueppellii (Rüppell’s Parrot). The species listed by the IUCN (2014) as endangered are: (Ludwig’s bustard and white-backed vulture), near threatened (kori bustard) and vulnerable (martial eagle and secretarybird) and are viewed as the most important.

#### 4.3.5 Trees and Shrubs

It is estimated that at least 79-110 species of larger trees and shrubs (>1m) – Coats Palgrave 1983 [81 sp.], Curtis and Mannheimer 2005 [79 sp.], Mannheimer and Curtis 2009 [110 sp.], Van Wyk and Van Wyk 1997 [60 sp.]), are found in the general area. The most important tree/shrub species occurring in the general area are probably *Cyphostemma bainesii* (endemic, NC), *Cyphostemma currorii* (NC), *Cyphostemma juttae* (endemic, NC), *Erythrina decora* (Forestry\*, endemic), *Heteromorpha papillosa* (endemic) and *Manuleopsis dinteri* (endemic species) (Craven, 1999. Curtis and Mannheimer, 2005 and Mannheimer and Curtis, 2009). The protected species are viewed as the most important tree/shrubs occurring in the area include: *Acacia erioloba* and *Boscia albitrunca*. However, these species are widespread throughout large parts of Namibia and are not exclusively associated with the ongoing / proposed development area, which minimises the overall effect on trees/shrubs.

#### 4.3.6 Grass

It is estimated that up to 111 grasses – 73 to 88 species – (Müller 2007 [88 sp.], Müller 1984 [73 sp.], Van Oudshoorn 1999 [73 sp.]) occur in the general area. The most important grass expected in the area is the endemic *Setaria finite* associated with ephemeral drainage lines. Although the season (end of dry and beginning of wet) made the identification of grasses difficult, none off the grasses are exclusively associated with the proposed / ongoing developments area nor protected species, which minimises the overall effect on grasses.

#### 4.3.7 Other Flora Species

Aloes are protected throughout Namibia with 5 other aloe species, but which potentially occur in the general area, and also viewed as important are *Aloe asperifolia*, *A. dinteri*, *A. hereroensis*, *A. namibensis* and *A. zebrina* (Rothmann 2004).

Many endemic Commiphora species are found throughout Namibia with Steyn (2003) indicating that *Commiphora crenato-serrata* potentially also occurring in the general area.

Other species with commercial potential that could occur in the general area include *Harpagophytum procumbens* (Devil’s claw) – harvested for medicinal purposes and often over-exploited – and *Citrullus lanatus* (Tsamma melon) which potentially has a huge economic benefit (Mendelsohn et al. 2002).

Lithops species – all protected (See Nature Conservation Ordinance No. 4 of 1975) – are also known to occur in the general area and often difficult to observe, especially during the dry season when their aboveground structures wither. At least two species of Lithops are known to occur in the Usakos area

– *Lithops gracilidelineata* var. *gracilidelineata* and *L. werneri* – and are viewed as important (Cole and Cole 2005).

At least 64 species of ferns, of which 13 species being endemic, occur throughout Namibia. Ferns in the general area include at least 15 indigenous species (*Actiniopteris radiata*, *Asplenium cordatum*, *Cheilanthes dinteri*, *C. eckloniana*, *C. marlothii*, *C. parviloba*, *Marselia aegyptiaca*, *M. ephippiocarpa*, *M. farinosa*, *M. macrocarpa*, *M. nubica*, *M. unicornis*, *M. vera*, *Ophioglossum polyphyllum* & *Pellaea calomelanos*) ((Cunningham, 2017 and 2020). The general area is under collected with more species probably occurring in the general area than presented above.

The overall diversity of lichens is poorly known from Namibia, especially the coastal areas and statistics on endemism is even sparser (Craven 1998). More than 100 species are expected to occur in the Namib Desert with the majority being uniquely related to the coastal fog belt. Lichen diversity is related to air humidity and generally decreases inland from the Namibian coast (Schults and Rambold 2007). Off road driving is the biggest threat to these lichens which are often rare and unique to Namibia. To indicate how poorly known lichens are from Namibia, the recent publication by Schultz et al. (2009) indicating that 37 of the 39 lichen species collected during BIOTA surveys in the early/mid 2000's was new to science (i.e. new species), is a case in point. The most important lichen habitats are viewed as the Erongo Mountains, granite domes, other surrounding mountainous and rocky areas.

#### 4.3.8 Habitats, Fauna and Flora Conclusions

All developments have potential negative environmental consequences, identifying the most important faunal species including high risk habitats beforehand, coupled with environmentally acceptable mitigating factors, lessens the overall impact of such development. The following is the summary of the key habitats that have been identified:

- ❖ **Hills / topographically high areas:** Rocky areas generally have high biodiversity and consequently viewed as important habitat for all vertebrate fauna and flora.
- ❖ **Ephemeral drainage lines:** The various ephemeral drainage lines are important habitat to larger trees, especially *Acacia erioloba* (protected), *Euclea pseudebenus* (protected), *Faidherbia albida* (protected) and *Ziziphus mucronata* (protected), and.
- ❖ **Plains / Topographically low area:** Topographically low areas are also important habitats with *Acacia erioloba*, *Albizia anthelmintica* and *Boscia albitrunca* being found in these areas.

There are various anthropomorphic activities throughout the general EPL area such as existing roads and tracks, communal land infrastructure and previous exploration activities, etc., and the proposed developments would have a limited footprint and not be expected to affect the whole EPL area and associated unique amphibians, mammals, reptiles, and flora species negatively. The implementation and monitoring of the mitigation measures as detailed in the EMP Report is likely to lessen the extent of the likely negative impacts.

## 4.4 Socioeconomic Setting

### 4.5.1 Overview

Social impacts at the exploration stage are likely to be minimal and tend to be positive in an event of a discovery of economic minerals resources. A clear understanding of these impacts may help communities understand and anticipate the effects of exploration. One of the major possible impacts of the proposed / ongoing exploration activities include employment expectations and unrealistic expectations about the development of a mine and coexistence opportunity / conflicts associated with the current land uses such as conservation and tourism operations activities being undertaken by the local communities west of Nu-Uis and northwest of Okombahe areas. It is important for local communities to bear in mind that 99.9% of the exploration projects will not advance to a mine development.



## 4.5.2 Agriculture

As an important cattle, game, and small stock (goats and sheep) communal farming area and consequently a source of employment and livelihood as well as renewed interest from a tourism point of view, the importance of the local area is invaluable. The surrounding EPL area falls within the long-established communal farming communities but highly vulnerable to climate change due to its arid environment, recurrent drought, and desertification. According to the submission made by the local community, the situation has forced pastoral farmers to find temporary homages between these mountains as they still contain grazing grass during drought. The farmers are further even forced to climb between the rocks and hills to harvest grass for their animals if it becomes difficult for the animals to climb the mountains.

The carrying capacity for the general area is 10-20kg/ha (Mendelsohn et al. 2002) or 12-15LAU/ha (van der Merwe 1983) and the risk of farming is viewed as relatively high. Small stock farming is the dominant farming activity in the local area with between 70-80% of stock farmed with being sheep and 20-30% goats and cattle, respectively (van der Merwe 1983). The stock density is estimated at <3sheep/km<sup>2</sup> (1.5% of total sheep in Namibia) and <1cattle/km<sup>2</sup> (1.3% of total cattle in Namibia) (van der Merwe 1983).

## 4.5.3 Conservation and Tourism

There are numerous existing tourism ventures in the general area with the tourism potential viewed as relatively high (Mendelsohn *et al.* 2002). The EPL area does not fall within a conservancy and the nearest conservancies are the Ohungu Conservancy and the upcoming Kandepoina Conservancy to the north of the EPL area. The EPL area falls within communal land situated to the west of Nu-Uis and northwest of Okombahe.

## 4.4.2 Socioeconomic Conclusions and Recommendations

The development of this project will have some limited socioeconomic contributions to the local area or the Erongo Region. There will be no employment created during the exploration phase. However, if there is a discovery of economic minerals resources that could lead to the development of a viable mining project in area this could create limited job opportunities and bring added local benefits and contribute to the national economy through taxes, royalty, and direct investment. Workers from the project area will be staying in Nu-Uis and Okombahe settlements. The following is the summary of the key actions that the Proponent shall implement as part of enhancing the socioeconomic impacts of the proposed project:

- ❖ Stipulate that local resident should be employed for temporary unskilled/skilled and where possible in permanent unskilled/skilled positions as they would reinvest in the local economy. However, due to low skills levels of the local population, it is likely that most skilled positions would be filled with people from outside the area.
- ❖ The recruitment selection process should seek to promote gender equality and the employment of women wherever possible.
- ❖ Ensure that contractors adhere to Namibian Affirmative Action, Labour and Social Security, Health and Safety laws.
- ❖ The local authorities, community organisations and community leaders shall be informed on final decisions regarding the project and the potential job opportunities for local people.
- ❖ Stipulate a preference for local contractors in the tender policy. The procurement of services and goods from local entrepreneurs and the engagement of local businesses people should be favoured and promoted provided that it is financially and practically feasible.
- ❖ Undertake a skills audit, develop a database of local businesses that qualify as potential service providers and invite them to the tender process.

- ❖ Scrutinise tender proposals to ensure that minimum wages were included in the costing.
- ❖ Project offers experience and on job skills development, particularly for low or semi-skilled workers. This would raise the workers experience and skills to secure jobs in future.
- ❖ Promising employees could be identified and training and skills development programme could be initiated.
- ❖ The project could organise business partnerships with local entrepreneurs or small SMEs.
- ❖ Service providers to provide opportunities for skills transfer, and.
- ❖ Provide opportunities for employees re-skilling beyond the project closure.

## 4.5 Ground Components

### 4.5.1 Geology

The EPL 7811 Area falls within the metasedimentary rocks of the Damara represented by the Kuiseb and Karibib Formations as well as sounding Damara Granites (Geological Survey of Namibia, 1999 and Miller, 2008, 1992, 1983a and 1983b). Schists and quartzites, together of iron ore lenses form the lower units of the stratigraphy.

According to Miller, (1992) it was deposited during successive phases of rifting, spreading, subduction and continental collision. Much of the basal succession (Nosib Group), laid down in or marginal to intracontinental rifts, consists of quartzite, arkose, conglomerate, phyllite, calc-silicate and subordinate limestone and evaporitic rocks. Local alkaline ignimbrite with associated subvolcanic intrusions range from 840 to 720 million years in age.

Widespread carbonate deposition followed and overlapped far beyond early rift shoulders (Kudis, Ugab and basal Khomas Subgroups). interbedded mica and graphitic schist, quartzite (some ferruginous), massflow deposits, iron-formation and local within-plate basic lava point to fairly variable depositional conditions south of a stable platform where only carbonates with very minor clastics occur (Otavi Group) (Geological Survey of Namibia, 1999 and Miller, 2008, 1992, 1983a and 1983b).

The Kalahari cover consisting of thin sand/silt/calcrete deposits. hence they are not major source of water supply in the area (Miller, 2008). Some of these deposits, such as the gravels, clays and calcretes, are also potential local materials that can be used in the various construction activities associated with different infrastructure development at various stages of the mine life cycle.

### 4.5.2 Geotechnical Engineering Considerations

Rocks of varying geotechnical characteristics are expected within the pegmatite zones and alternating bands within the banded dolomitic marble and biotite-quartz schist country rock and covered by a variety of sediments in some places. No field and laboratory assessment of rock mass and detailed discontinuities survey were undertaken as part of this study.

Table 4.1 outlines an indicative classification of the various discontinuities that are likely to be found in the area. Both low and high order discontinuities are likely to be found around the EPL area. It is highly recommended that a field-based geotechnical engineering assessment followed by laboratory assessments must be undertaken before the implementation deep excavation in order to have accurate figures of all the key geotechnical parameters.

Table 4.1: General rock structure scheme (Source: Mwiya, 2004).

DISCONTINUITY	GEOMETRY			CHARACTERISTIC			EXAMPLE	INFLUENCE INDICATOR
	LENGTH m	SPACING m	WIDTH m	TRANSMISSIVITY m <sup>2</sup> /s	HYDRAULIC CONDUCTIVITY m/s	INFILLING THICKNESS m		
<b>LOW ORDER DISCONTINUITIES. ZONES OUTCROPS</b>								
1 <sup>ST</sup> ORDER	>10 <sup>4</sup>	>10 <sup>3</sup>	>10 <sup>2</sup>	10 <sup>-5</sup> - 10 <sup>-2</sup>	10 <sup>-7</sup> - 10 <sup>-5</sup> AV. [10 <sup>-6</sup> ]	10 <sup>0</sup>	Regional major fault systems	4 V. High
2 <sup>ND</sup> ORDER	10 <sup>3</sup> - 10 <sup>4</sup>	10 <sup>2</sup> - 10 <sup>3</sup>	10 <sup>1</sup> - 10 <sup>2</sup>	10 <sup>-7</sup> - 10 <sup>-4</sup>	10 <sup>-8</sup> - 10 <sup>-6</sup> AV. [10 <sup>-7</sup> ]	10 <sup>-1</sup>	Local major fault zones	
3 <sup>RD</sup> ORDER	10 <sup>2</sup> - 10 <sup>3</sup>	10 <sup>1</sup> - 10 <sup>2</sup>	10 <sup>0</sup> - 10 <sup>1</sup>	10 <sup>-9</sup> - 10 <sup>-6</sup>	10 <sup>-9</sup> - 10 <sup>-7</sup> AV. [10 <sup>-8</sup> ]	≤10 <sup>-2</sup>	Local minor fault zones	
<b>HIGH ORDER DISCONTINUITIES: INDEPENDENT OUTCROPS</b>								
4 <sup>TH</sup> ORDER	10 <sup>1</sup> - 10 <sup>2</sup>	10 <sup>0</sup> - 10 <sup>1</sup>	-	-	10 <sup>-11</sup> -10 <sup>-9</sup> AV.[10 <sup>-10</sup> ]	-	Local major joint set or bedding	3 High
5 <sup>TH</sup> ORDER	10 <sup>0</sup> - 10 <sup>1</sup>	10 <sup>-1</sup> - 10 <sup>0</sup>	-	-	10 <sup>-12</sup> -10 <sup>-10</sup> AV. [10 <sup>-11</sup> ]	-	Local minor joints/ fractures	
6 <sup>TH</sup> ORDER	10 <sup>-1</sup> - 10 <sup>0</sup>	10 <sup>-2</sup> - 10 <sup>-1</sup>	-	-	10 <sup>-13</sup> -10 <sup>-11</sup> AV. [10 <sup>-12</sup> ]	-	Local minor fissures / schistosity	2 Low
7 <sup>TH</sup> ORDER	<10 <sup>-1</sup>	<10 <sup>-2</sup>	-	-	<10 <sup>-13</sup>	-	Crystalline voids	1 V. Low

### 4.5.3 Water Sources

According to the Department of Water Affairs and Forestry, (2001) and the geology of the EPL area falls within an area with very limited economic groundwater water resources (aquifers) as shown in Fig. 4.1. Water supply in the general area is from local groundwater resources (Department of Water Affairs, 2001). The local settlements get water supply from the limited groundwater resources associated with the local carbonates and fractured terrain in the general area. The proposed / ongoing project activities (exploration programme) will utilise limited local groundwater resources if available. No site-specific hydrogeological specialist study, groundwater modelling or water sampling and testing activities have been undertaken for this study.

The source of water supply for the proposed / ongoing exploration and in particular drilling of exploration boreholes if need arises to drill, will be from existing groundwater resources. Alternatively, water will be trucked to an exploration as may be required. The proponent must obtain permission from the land owners before using water from any existing local boreholes and infrastructures. If there is a need to drilling a water borehole to support the proposed / ongoing exploration programme, the proponent must obtain permission from the land owner and Department of Water Affairs in the Ministry of Agriculture, Water and Forestry (MAWF).

In an event of discovery of economic minerals resources, the sources of water supply for the mining related operations will be supplied through NamWater from groundwater resources if proven to be available following a detailed hydrogeological and groundwater modelling study that must be undertaken as part of the EIA supporting the feasibility study. Currently, potential available groundwater resources in the area will not be sufficient to support any new larger-scale mining related operation within the EPL 7811.

### 4.5.4 Evaluation of Water Vulnerability

Vulnerability assessment of surface water covered possible runoff, the presence of source factors and major flow routes such as major high order discontinuities (Table 4.1), ephemeral river channels,

valleys and gullies as pathways and the presence of surface water body as a target. The groundwater assessments covered hydraulic properties and thickness of the unsaturated and saturated zones derived from geological and hydrogeological data.

The assessment of the unsaturated characteristics was based on the ability for source factors to influence the system through known pathway factors such as discontinuities. The combined effects of unsaturated and saturated flow probabilities were used as indicator for groundwater vulnerability. However, groundwater or surface water will only be vulnerable to contamination if the following three (3) component are all present at the same time and at a site-specific area within the EPL:

- (i) Contaminant sources resulting from proposed exploration programme.
- (ii) Potential pathways for contaminant migration such as major high order discontinuities (Table 4.1), ephemeral river channels, valleys and gullies, and.
- (iii) Targets (economic water resources) present within the project area.

Overall, the limited local groundwater resources found in the area form part of the poorly developed metamorphic rocks based confined and unconfined aquifer system that is moderately vulnerable to any sources of pollution. During the rainy season, surface water bodies can be found along the local ephemeral river system. This surface water often recharges the local groundwater resources along the faults, solution holes, and other discontinuities along the ephemeral rivers in the general surrounding EPL area.

Therefore, surface water in the local EPL area is more vulnerable to pollution sources associated with some of the proposed local field-based detailed prospecting / exploration activities such as drilling and trenching as well as supporting activities such as campsite and discharge of liquid and solid waste. It is important that all polluting activities must not be placed or undertaken in areas with high order discontinuities, valleys or gullies systems in the area. Discharge of solid or liquid waste into a public stream is prohibited.

## **4.6 Archaeology**

### **4.6.1 Overview**

Indigenous communities, the descendants of people who lived in Damaraland over thousands of years, still maintain important cultural links with the areas of Nu-Uis and Okombahe settlements nearest to the EPL 7811 area. Archaeological remains in Namibia are protected under the National Heritage Act (27 of 2004) which makes provision for archaeological assessment of large projects including mineral exploration programmes.

Remains of indigenous settlements, wells, burial grounds, and other sites are likely to be found in the general area and are all valuable material evidence of indigenous land ownership and can provide crucial support for land claims.

According to Kinahan (2011), modern humans and their ancestors have lived in Namibia for more than one million years. Namibia has a relatively complete sequence covering the mid-Pleistocene to Recent Holocene period, represented by thousands of archaeological sites mainly concentrated in the central highlands, escarpment and Namib Desert.

The Recent Holocene archaeological sequence in Namibia, i.e. the last 5 000 years, is of particular importance because it provides the background evidence for the development and recent history of the indigenous peoples of Namibia before the advent of written historical records during the colonial era. Many archaeological sites from this period are of great significance to the understanding of Namibian history, and some are considered to be of global importance to our understanding of the African past.

The EPL area falls within the former Damaraland with a rich legacy of archaeological remains which lie scattered over the landscape and especially in this various granite mountain terrains northwest of the EPL area. According to the local community, this is by far the longest archaeological record in the

southern hemisphere, and it contains unique evidence of how humankind learned to cope with one of the most hostile environments on earth.

#### **4.6.2 Recommendations**

It likely that the area covered by the EPL 7811 could hold archaeological potential as indicated by the local community. The expectation is therefore:

- (i) A high likelihood of Holocene age archaeological sites, including rock art, associated with outcropping granite.
- (ii) A high likelihood of late precolonial settlement sites throughout the entire tenement, especially in the vicinity of springs and seepages.
- (iii) A high likelihood of early colonial settlement remains relating to the historical occupation of the local areas.

The following is the summary of the recommended actions to be implemented by the Proponent:

- (i) Contractors working on the site should be made aware that under the National Heritage Act any items protected under the definition of heritage found in the course of development should be reported to the National Heritage Council.
- (ii) The provisions of the EMP must be implemented and monitored at all times in order to protect potential archaeological sites that may occur in the local area, and.
- (iii) Detailed field survey should be carried out when the Proponent / licence holder has identified specific targets for detailed exploration such as trenching or drilling, or before any form of site-specific invasive exploration activities commences.

#### **4.7 Public Consultations and Engagement**

Public consultation and engagement process are part of the environmental assessment process for this project. According to the Environmental Impact Assessment (EIA) Regulations No. 30 of 2012 and the Environmental Management Act, (EMA), 2007, (Act No. 7 of 2007), a person conducting a public consultation process must give notice to all Interested and Affected Parties (I&AP) of the application which is subjected to public consultation.

The EIA Regulations clearly state that potential interested, and affected parties must be provided with a reasonable opportunity (21 days) to comment on the application under Section 21(6) of the EIA Regulations.

In line with the provisions of the regulations, the public notices as shown in Figs. 4.1-4.3 were published in the local newspapers during the months of May- July 2021 and a stakeholder register was opened on the 20<sup>th</sup> May 2021 and no registration was received for initial and extended periods dedicated for public consultation process. Public Notice were published in three (3) newspaper for more than three (3) weeks (21 day) period for public consultation starting from Thursday 20<sup>th</sup> May 2021 to Friday 11<sup>th</sup> June 2021.

The closing date for registration and submission of written objections, comments, inputs to the environmental assessment process was Friday 11<sup>th</sup> JUNE 2021 and was extended to the 9<sup>th</sup> July 2021.

Through the newspaper advertisements as shown in Figs. 4.1 - 4.3 the public were invited to submit written comments / inputs / objections with respect to the proposed minerals exploration activities in the EPL 7811 (Annex 4). No submissions were received.

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Email CV to: info@zanelembeki.school.na  
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Post graduate with trained qualification-Masters, PhD preferred.

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**PUBLIC NOTICE**  
APPLICATION FOR ENVIRONMENTAL CLEARANCE CERTIFICATE (ECC) BY BLUESTATE INVESTMENTS (Pty) Ltd FOR PROPOSED MINERALS PROSPECTING ACTIVITIES IN THE EXCLUSIVE PROSPECTING LICENSE (EPL) No. 7811, DÄURES CONSTITUENCY, ERONGO REGION

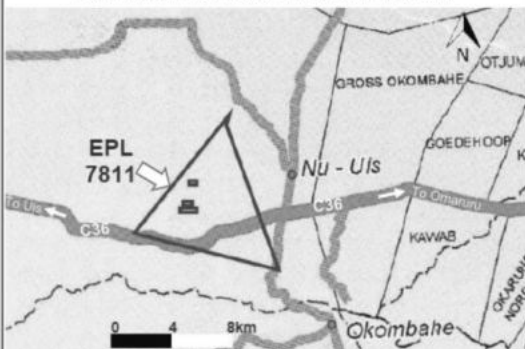
Bluestate Investments (Pty) Ltd (the "Proponent") holds mineral rights under the Exclusive Prospecting License (EPL) No. 7811 for base and rare metals, dimension stones, industrial minerals, and precious metals. The EPL 7811 is situated in the Däures Constituency, Erongo Region, and was granted on the 4/09/2020 and will expire on the 3/09/2023. The EPL 7811 has a total area of 6083.0139Ha and covers the Communal land situated to the west of Nu-Uis and northwest of Okombahe.

The Proponent intends to conduct exploration / prospecting activities starting with desktop studies including the processing and interpretation of the existing geophysical and other historical data sets, followed by regional field-based reconnaissance activities and if the results are positive, implement detailed site-specific field-based activities using techniques such as geological mapping, geophysical surveys, trenching, drilling, and sampling for laboratory tests. The proposed prospecting activities are listed in the Environmental Management Act, 2007, (Act No. 7 of 2007) and the EIA Regulations 30 of 2012 and cannot be undertaken without an Environmental Clearance Certificate (ECC).

In fulfillment of these environmental requirements, the Proponent has appointed Risk-Based Solutions (RBS) CC as the Environmental Consultant, led by Dr Sindila Mwiya as the Environmental Assessment Practitioner (EAP) to prepare the Environmental Reports to support the application for ECC. All Interested and Affected Parties (I&AP) are hereby invited to register and submit written comments / objections / inputs with respect to the proposed prospecting activities. A Background Information Document (BID) is available on request upon registration.

REGISTER BY EMAIL: [frontdesk@rbs.com.na](mailto:frontdesk@rbs.com.na) and more information contact Dr Sindila Mwiya (EAP) International Resources Technical Specialist Consultant, Email: [smwiya@rbs.com.na](mailto:smwiya@rbs.com.na), Mobile: +264812772546

CONSULTATION DURATION AND DEADLINE FOR WRITTEN SUBMISSIONS IS: FROM THURSDAY 20<sup>th</sup> MAY 2021 TO FRIDAY 11<sup>th</sup> JUNE 2021



**Risk-Based Solutions (RBS) CC** (URL: [www.rbs.com.na](http://www.rbs.com.na))  
Your International Specialist Consultants (Oil, Gas, Minerals & Energy Exploration, Production & Mining) and Environmental Assessments (SEA, EIA, EMP, EMS)

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APPLICATION FOR ENVIRONMENTAL CLEARANCE CERTIFICATE (ECC) BY BLUE STATE INVESTMENTS (Pty) Ltd FOR PROPOSED MINERALS PROSPECTING ACTIVITIES IN THE EXCLUSIVE PROSPECTING LICENSE (EPL) No. 8019, KARIBIB CONSTITUENCY, ERONGO REGION

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Figure 4.1: Copy of the public notice that was published in the Confidante newspaper dated 20<sup>th</sup> – 26<sup>th</sup> May 2021.

# Dundee supports community efforts to combat crime

Staff Writer

**D**undee Precious Metals Tsumeb Vice President and Managing Director, Zebra Kasete, handed over a donation of building materials valued at N\$50, 000.00 to the Tsumeb Men and Women Network, in recognition of their community's efforts to curb crime.

The donation will be used to build an office from which the Men and Women Network will operate in collaboration with other volunteers.

The Tsumeb Men and Women Network is a community policing volunteer organization that works in collaboration with local police in Tsumeb to fight crimes. "Violent and petty crimes are a growing problem in Namibia, particularly in informal settlements" said Kasete at the handover event.

He also outlined the detrimental effects of crime on the national economy and investment opportunities, with Deputy Commissioner: Head of Operations Division, Namibian Police Oshikoto Region, and Petrus Shigwedha adding that the police cannot solve public safety problems alone.

Shigwedha encouraged community policing and interactive partnerships that will result in the development of trust with community members.

Also, in attendance was, Tsumeb Municipality Council Member, Abraham Baseko and members of the Tsumeb Men and Women Network.



Community crime fighters unite... The objective of community-based policing is to get citizens involved in discouraging and preventing crime at the local level by encouraging neighbors to look out for each other. From left to right: Dundee Precious Metals Tsumeb Manager Community Development-Fabian Mubiiana, Deputy Commissioner: Head of Operations Division, Namibian Police Oshikoto Region-Petrus Shigwedha, Men and Women Network Chairperson-Gottlieb Hayoonga and Dundee Precious Metals Tsumeb Vice President and Managing Director-Zebra Kasete.

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Figure 4.2: Copy of the public notice that was published in the Windhoek Observer newspaper dated Friday, 4<sup>th</sup> June 2021.



## Understanding grasses

...how different species can help your livestock

■ Erastus Ngaruka

In Namibia, livestock production is heavily dependent on the rangeland, which grows a variety of forage resources including trees, shrubs, grasses and forbs. These plants differ in growth forms, structure, life cycles, habitat preferences and their

uses. Livestock farming in the country is dominated by grazing livestock, mainly cattle and sheep.

Moreover, these animal species mainly depend on grass for their nutrition. When one describes a grazing area, there are several attributes that should be key to determining the grazing value of

that area.

These are grass species composition, frequency, abundance, density and soil cover. Basically, the quality of the grass plant can be attributed to its species, growth structure and life cycle. Farmers commonly use the term palatability as an assertion of the quality of the grass; however, grasses have different levels of palatability.

A palatable grass is one that an animal is attracted to or selects to graze – and this is influenced by its smell, taste, nutrients and digestibility.

Therefore, selective grazing becomes dangerous, especially when species diversity or composition is narrow, leading to local extinction of sensitive valuable grass species.

One of the important attributes that farmers should understand is the grass life cycle or life span. There are two different life spans under which grasses can be classified – annual and perennial. The annual grasses refer to grasses that have a shorter life span of less than a year.

They grow fast, produce seeds quickly and shed seeds for reseeding, and then the mother plant dies. Usually, annual grasses emerge with the first rainfall or are only seen during the wet season but disappear during the dry season, usually by August.

These types of grasses dominate many grazing areas in Namibia as their dominance

increases with rangeland degradation. On the other hand, perennial grasses have a longer life span or last for more years. Unlike annuals, they do not die after shedding seeds, but only undergo a dormancy period (stop growing) during the dry season to conserve nutrients for regrowth from the same stump in the next rainy season.

There are many different species of perennial grasses; however, not all are palatable or well utilised by grazing animals. The most valuable perennial grasses are more sensitive to continuous grazing; thus, their dominance decreases with overgrazing or rangeland degradation, which, in turn, gives rise to aggressive establishment of annual grasses.

To make informed grazing management decisions, farmers need to know and understand the impact of the prevailing ecological perturbations, including herbivory, climate and intra- and inter-specific species competitions. The reaction of the rangeland to these perturbations can be observed through its plant population establishment and distribution.

The dominating annual grasses in almost all grazing areas in Namibia currently include *Schmidtia kalahariensis*, *Chloris virgata*, *Eragrostis porosa*, *Eneapogon cencroides* and *Urochloa brachyuran*.

The dominating perennial grasses are *Stipagrostis*

*uniplumis*, *Stipagrostis obtusa*,

*Stipagrostis hochstetteriana*, *Eragrostis pallens*, *Eragrostis rigidior*, and *Aristida stipitata*, amongst others. The most valuable perennial grasses such as *Cenchrus ciliaris*, *Brachiaria nigropedata*, *Antheophora pubescens* and *Schmidtia pappophoroides* are only observed in well managed or least disturbed areas in some parts of the country.

Farmers can obtain more knowledge of these grasses from descriptive literature books (e.g. *Grasses of Namibia*) and can find common names as well. These literature material and information can be found on the internet, book shops, Namibia Botanical Research Institute and university libraries, amongst others.

It is advisable that farmers engage in restorative practices on their rangelands. These include improving soil conditions, controlling bush densities, reintroducing the valuable perennial grasses by reseeding on their grazing areas, and to cultivate them in gardens or crop fields.

These efforts should all be aimed at reducing pressure and adding value on the rangelands, and to ensure sustainable fodder availability for livestock. Lastly, farm with nature and farm with grass for profit. - *AgriBank*

\*Erastus Ngaruka is technical advisor AgriBank's advisory services.

**PUBLIC NOTICE**  
**APPLICATION FOR ENVIRONMENTAL CLEARANCE CERTIFICATE (ECC) BY BLUESTATE INVESTMENTS (Pty) Ltd FOR PROPOSED MINERALS PROSPECTING ACTIVITIES IN THE EXCLUSIVE PROSPECTING LICENSE (EPL) No. 7811, DAURES CONSTITUENCY, ERONGO REGION**

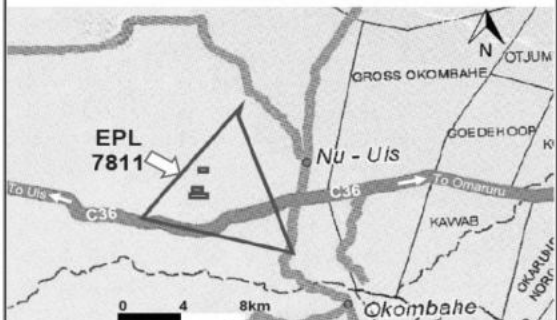
Bluestate Investments (Pty) Ltd (the "Proponent") holds mineral rights under the Exclusive Prospecting License (EPL) No. 7811 for base and rare metals, dimension stones, industrial minerals, and precious metals. The EPL 7811 is situated in the Daures Constituency, Erongo Region, and was granted on the 4/08/2020 and will expire on the 3/08/2023. The EPL 7811 has a total area of 6083.0139Ha and covers the Communal land situated to the west of Nu-Uis and northwest of Okombahe.

The Proponent intends to conduct exploration / prospecting activities starting with desktop studies including the processing and interpretation of the existing geophysical and other historical data sets, followed by regional field-based reconnaissance activities and if the results are positive, implement detailed site-specific field-based activities using techniques such as geological mapping, geophysical surveys, trenching, drilling, and sampling for laboratory tests. The proposed prospecting activities are listed in the Environmental Management Act, 2007, (Act No. 7 of 2007) and the EIA Regulations 30 of 2012 and cannot be undertaken without an Environmental Clearance Certificate (ECC).

In fulfilment of these environmental requirements, the Proponent has appointed Risk-Based Solutions (RBS) CC as the Environmental Consultant, led by Dr Sindila Mwiya as the Environmental Assessment Practitioner (EAP) to prepare the Environmental Reports to support the application for ECC. All Interested and Affected Parties (I&AP) are hereby invited to register and submit written comments / objections / inputs with respect to the proposed prospecting activities. A Background Information Document (BID) is available on request upon registration.

**REGISTER BY EMAIL:** [frontdesk@rbs.com.na](mailto:frontdesk@rbs.com.na) and more information contact Dr Sindila Mwiya (EAP/ International Resources Technical Specialist Consultant, Email: [smwiya@rbs.com.na](mailto:smwiya@rbs.com.na), Mobile: +264812772546

**CONSULTATION DURATION AND DEADLINE FOR WRITTEN SUBMISSIONS IS: EXTENDED TO FRIDAY 9<sup>th</sup> JULY 2021**



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Your International Specialist Consultants (Oil, Gas, Minerals & Energy Exploration, Production & Mining) and Environmental Assessments (SEA, EIA, EMP, EMS)



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Figure 4.3: Copy of the public notice that was published in the New Era Newspaper dated Tuesday, 29<sup>th</sup> July 2021.



## 5. IMPACT ASSESSMENT AND RESULTS

### 5.1 Impact Assessment Procedure

The Environmental Assessment process that has been undertaken with respect to the proposed exploration programme for the EPL No. 7811 has been conducted in accordance with the provisions of the Environmental Impact Assessment (EIA) Regulations No. 30 of 2012 gazetted under the Environmental Management Act, (EMA), 2007, (Act No. 7 of 2007).

### 5.2 Alternatives and Ecosystem Assessments

The following alternatives have been considered:

- (i) **EPL Location:** Several potential economic minerals deposits are known to exist in the general area and linked to the regional geology of the EPL area. The Proponent intend to explore / prospect for all the licensed minerals groups likely to be associated with the regional and local geology. The minerals occurrences are site-specific and related to the regional and local geology of a specific area to which there are no alternatives sites to consider with respect to the license location. The only other alternative is the no-action option (no exploration activities are implemented in a specific area).
- (ii) **The No-Action Alternative** - A comparative assessment of the environmental impacts of the 'no-action' alternative (a future in which the proposed exploration activities do not take place) has been undertake. An assessment of the environmental impacts of a future, in which the proposed exploration and possible discovery of economic minerals resources does not take place, may be good for the receiving environment because there will be no negative environmental impacts due to the proposed minerals exploration or possible mining operation that may take place in the EPL area. The environmental benefits will include:
  - ❖ No negative impacts because of no mineral exploration taking place, and.
  - ❖ No potential future mining related negative environmental impact on the receiving environment in an event of a discovery of economic minerals resources within the EPL area.

However, it is important to understand that even if the proposed exploration activities do not take place, to which the likely negative environmental impacts are likely to be low and localised, Climate Change and the other current and future land uses such as agriculture and tourism will still have some negative impacts on the receiving environment. The likely negative environmental impacts of the other current and future land use that may still happen in the absence of the proposed minerals exploration activities includes:

- ❖ Land degradation due to drought.
- ❖ Overgrazing / over stocking beyond the land carrying capacity.
- ❖ Wildfires and droughts.
- ❖ Poor land management practices, and.
- ❖ Erosion and overgrazing.

Kraals, pit latrines and chemical leaching from agricultures are some of the major point sources of water pollution in many parts of Namibia. Furthermore, it is also important to understand what benefits might be lost if the proposed exploration activities do not take place. Key loses that may never be realised if the proposed project activities do not go-ahead include: Loss of potential added value to the unknown underground minerals resources that may occur within the EPL area, socioeconomic benefits derived from current

and future exploration, direct and indirect contracts and employment opportunities, foreign direct investments, license rental fees, royalties, and various other taxes payable to the Government.

- (iii) **Other Alternative Land Uses:** The EPL area fall within the commercial agricultural land uses area dominated by small stock farming. Minerals exploration activities are well known land uses options in Namibia. Due to the limited scope of the proposed exploration and the implementation of the EMP, it is likely that the proposed exploration can coexist with the current land uses especially if key and other sensitive land uses such as core conservation, tourism or archaeological resources areas falling within the EPL area are excluded from the proposed minerals exploration activities in consultation with the land owners.
- (iv) **Potential Land Use Conflicts:** Considering the current land use practices (agriculture and tourism) as well as potential other land uses including minerals exploration, it is likely that the proposed exploration activities in the general area can still co-exist with the existing and potential future land use options. Where other key sensitive land uses such as core conservation, tourism, or archaeological resources areas falling within the EPL boundary are identified, these environmental sensitive areas shall be excluded from the proposed minerals exploration activities. Much more detailed assessments of any likely visual and other socioeconomic impacts will need to be included in the EIA that must be undertaken as part of the prefeasibility and feasibility studies if economic minerals resources are discovered in the general surrounding areas. The use of thematic mapping and delineation of various land use zones for specific uses such as agriculture, conservation, exploration or tourism etc, within the EPL area will greatly improve the multiple land use practices and promote coexistence for all the possible land use options.
- (v) **Ecosystem Function (What the Ecosystem Does):** There are wildlife habitats, carbon cycling or the trapping of nutrients and characterised by the physical, chemical, and biological processes or attributes that contribute to the self-maintenance of an ecosystem in this area. Although the proposed exploration activities are unlikely to affect the ecosystem function due to the limited scope and the fact that the ecosystem of this EPL area is part of the larger local and regional ecosystems which are all interlinked, where possible the key and core conservation, tourism, or archaeological resources areas falling within the EPL area shall be excluded from the proposed minerals exploration activities in consultation with the land owners.
- (vi) **Ecosystem Services:** Food chain, harvesting of animals or plants, and the provision of clean water or scenic views are some of the local ecosystem services associated with the EPL area. Although the proposed exploration activities are unlikely to affect the ecosystem services due to the limited and likely localised scope and the fact that the ecosystem of this EPL area is part of the larger local and regional ecosystems which are all interlinked. In consultation with the land owners and where other key sensitive land uses such as core conservation, tourism, or archaeological resources areas falling within the EPL boundary are identified, these environmental sensitive areas shall be excluded from the proposed minerals exploration activities.
- (vii) **Use Values:** The EPL area has direct use for other land uses such as agriculture, conservation, and tourism as well as indirect include watching a television show about the general area and its wildlife, food chain linkages that sustains the complex life within this area and bequest value for future generations to enjoy. The proposed exploration activities will not destroy the current use values due to the limited scope of the proposed activities as well as the adherence to the provisions of the EMP report, and.
- (viii) **Non-Use or Passive Use:** The EPL area has an existence value that is not linked to the direct use / benefits to current or future generations. The proposed exploration activities will not affect ecosystem current or future none or passive uses due to the limited scope of the proposed activities that will leave much of the EPL area untouched because the ecosystem of this EPL area is part of the larger local and regional ecosystems which are all interlinked.

## 5.3 Key Issues Considered in the Assessment Process

### 5.3.1 Sources of Impacts (Proposed Project Activities)

The ongoing exploration activities being undertaken in the EPL 7811 and as assessed in this EIA Report with mitigation measures provided in the EMP Report are as follows:

- (i) Initial desktop exploration activities (no field-work undertaken).
- (ii) Regional reconnaissance field-based mapping and sampling activities (Subject to the positive results of (i)).
- (iii) Initial local field-based mapping and sampling activities (Subject to the positive results of (i) and (ii) above),
- (iv) Detailed local field-based activities such as local geological mapping, geochemical mapping, and sampling, trenching, and drilling of closely spaced boreholes and bulk sampling (Subject to the positive results of (i) - (iii) above), and.
- (v) Prefeasibility and feasibility studies (Subject to the positive results of (i) - (iv) above).

### 5.3.2 Summary of Receptors Likely to be Negative Impacted

Based on the finding of this EIA Report, the following is the summary of the key environmental receptors that are may be negatively impacted by the proposed activities:

- ❖ **Physical environment:** Water quality, physical infrastructure and resources, air quality, noise and dust, landscape and topography, soil quality and, Climate change influences.
- ❖ **Biological environment:** Habitat, protected areas and resources, flora, fauna, and ecosystem functions, services, use values and non-use or passive use, and.
- ❖ **Socioeconomic, cultural, and archaeological environment:** Local, regional, and national socioeconomic settings, agriculture, conservation, eco-tourism, and recreation cultural, biological, and archaeological resources.

## 5.4 Impact Assessment Methodology

### 5.4.1 Impact Definition

In this EIA Report, a natural and/or human environmental impact is defined as: "Change to the environment, whether adverse or beneficial, wholly or partially resulting from an organisation's environmental aspects." (ISO 14001).

All proposed project activities (routine and non-routine) were considered during the Scoping, EIA and EMP Phases in terms of their potential to:

- ❖ Interact with the existing environment (physical, biological and social elements), and.
- ❖ Breach relevant national legislation, relevant international legislation, standards and guidelines, and corporate environmental policy and management systems.

Where a project activity and receptor were considered to have the potential to interact, the impact has been defined and ranked according to its significance. Table 5.1 provides the definition of different categories of impacts identified and used in this report. This EIA Report has assessed the potential impacts resulting from routine Project activities, assuming that the Project activities that may cause an impact that will occur but the impact itself will be dependent on the likelihood (Probability) (Table 5.2).

Correct control measures through the implementation of the EMP and monitoring thereof, often

reduce any negative significant impacts on the receiving environment as the results of the project activities. The assessment therefore, has focussed on the measures aimed at preventing the occurrence of an impact as well as mitigation measures that may be employed. The overall impact severity has been categorised using a semi-quantitative subjective scale as shown in Table 5.2 for sensitivity of receptors, Table 5.3 for magnitude, Table 5.4 for duration, Table 5.5 for extent and Table 5.6 showing probability.

Table 5.1: Definition of impact categories used in this report.

Rating	Definition of Rating
<b>Status of the Impact – in terms of meeting the objective of maintaining a healthy environment.</b>	
Positive	The impact benefits the environment
Negative	The impact results in a cost to the environment
Neutral	The impact has no effect
<b>Probability – the likelihood of the impact occurring</b>	
Negligible	Possibility negligible
Improbable	Possibility very low
Probable	Distinct possibility
Highly Probable	Most likely
Definite	Impact will occur regardless of preventive measures
<b>Degree of confidence in predictions – in terms of basing the assessment on available information</b>	
Low	Assessment based on extrapolated data
Medium	Information base available but lacking
High	Information base comparatively reliable
<b>Extent – the area over which the impact will be experienced</b>	
Site specific	Confined to within < 1 km of the project
Local	Confined to the study area or within 5 km of the project
Regional	Confined to the region, i.e. > 5 km but < National
National	Nationally
International	Beyond the borders of Namibia
<b>Duration – the time frame for which the impact will be experienced</b>	
Very short	Less than 2 years
Short-term	2 to 5 years
Medium-term	6 to 15 years
Long-term	More than 15 years
Permanent	Generations
<b>Intensity – the magnitude of the impact in relation to the sensitivity of the receiving environment</b>	
Negligible	Natural functions and processes are negligibly altered due to adaptation by the receptor(s) to high natural environmental variability
Mild	Natural functions and processes continue albeit in a modified way that <b>does not</b> appear to have a significant disruptive effect (i.e. changes are temporary)
Moderate	Natural functions and processes continue albeit in a modified way that <b>does</b> appear to have a noticeable disruptive effect (i.e. changes are permanent)
Severe	Natural functions or processes are altered to the extent that they temporarily cease resulting in severe deterioration of the impacted environment
Very Severe	Natural functions or processes permanently cease or are completely disrupted

Table 5.2: Definitions used for determining the sensitivity of receptors.

SENSITIVITY RATING		CRITERIA
1	<b>Negligible</b>	The receptor or resource is resistant to change or is of little environmental value.
2	<b>Low</b>	The receptor or resource is tolerant of change without detriment to its character, is of low environmental or social value, or is of local importance.
3	<b>Medium</b>	The receptor or resource has low capacity to absorb change without fundamentally altering its present character, is of high environmental or social value, or is of national importance
4	<b>High</b>	The receptor or resource has moderate capacity to absorb change without significantly altering its present character, has some environmental or social value, or is of district/regional importance.
5	<b>Very High</b>	The receptor or resource has little or no capacity to absorb change without fundamentally altering its present character, is of very high environmental or social value, or is of international importance.

Table 5.3: Scored on a scale from 0 to 5 for impact magnitude.

SCALE (-) or (+)		DESCRIPTION
0		no observable effect
1		low effect
2		tolerable effect
3		medium high effect
4		high effect
5		very high effect (devastation)

Table 5.4: Scored time (duration) over which the impact is expected to last.

SCALE (-) or (+)		DESCRIPTION
T		Temporary
P		Permanent

Table 5.5: Scored geographical extent of the induced change.

SCALE (-) or (+)		DESCRIPTION
L		limited impact on location
O		impact of importance for municipality.
R		impact of regional character
N		impact of national character
M		impact of cross-border character

### 5.4.3 Likelihood (Probability) of Occurrence

The likelihood (probability) of the pre-identified events occurring has been ascribed using a qualitative scale of probability categories (in increasing order of likelihood) as shown in Table 5.6. Likelihood is estimated on the basis of experience and/ or evidence that such an outcome has previously occurred. Impacts resulting from routine/planned events (i.e., normal operations) are classified under category (E).

Table 5.6: Summary of the qualitative scale of probability categories (in increasing order of likelihood).

SCALE (-) or (+)		DESCRIPTION
A		Extremely unlikely (e.g. never heard of in the industry)
B		Unlikely (e.g. heard of in the industry but considered unlikely)
C		Low likelihood (egg such incidents/impacts have occurred but are uncommon)
D		Medium likelihood (e.g. such incidents/impacts occur several times per year within the industry)
E		High likelihood (e.g. such incidents/impacts occurs several times per year at each location where such works are undertaken)

#### **5.4.4 Project Activities Summary of Impacts Results**

The results of the impacts assessment and evaluation has adopted a matrix framework like the Leopold matrix. Assessment results of the magnitude, duration, extent, and probability of the potential impacts due to the proposed project activities interacting with the receiving environment are presented in form of a matrix table as shown in Tables 5.7-5.10.

The overall severity of potential environmental impacts of the proposed project activities on the receiving environment will be of low magnitude (Table 5.7), temporally duration (Table 5.8), localised extent (Table 5.9) and low probability of occurrence (Table 5.10) due to the limited scope of the proposed activities and the use of step progression approach in advancing exploration.

The step progressional approach will allow the Proponent to the results of exploration success and the implementation of the next stage of exploration will be subject to the positive outcomes of previous activities as graded (Tables 5.7-5.10).

It is important to note that the assessment of the likely impacts as shown in Tables 5.7 - 5.10, have been considered without the implementation of mitigation measures detailed in the EMP Report.

The need for implementation of the appropriate mitigation measures as presented in the separate EMP Report have be determined on the results of the impact assessment (Tables 5.7 - 5.10) and the significant impacts as detailed in Tables 5.11 and 5.12.

Table 5.7: Results of the sensitivity assessment of the receptors (Physical, Socioeconomic and Biological environments) with respect to the proposed exploration / prospecting activities.

RECEPTOR SENSITIVITY			PHYSICAL ENVIRONMENT					BIOLOGICAL ENVIRONMENT					SOCIOECONOMIC, CULTURAL AND ARCHAEOLOGICAL ENVIRONMENT					
SENSITIVITY RATING		CRITERIA	Water Quality	Physical infrastructure and Resources	Air Quality, Noise and Dust	Landscape Topography	Soil Quality	Climate Change Influences	Habitat	Protected Areas	Flora	Fauna	Ecosystem functions, services, use values and non-Use or passive use	Local, regional and national socioeconomic settings	Commercial Agriculture	Community Protected Areas	Tourism and Recreation	Cultural, Biological and Archaeological Resources
1	Negligible	The receptor or resource is resistant to change or is of little environmental value.																
2	Low	The receptor or resource is tolerant of change without detriment to its character, is of low environmental or social value, or is of local importance.																
3	Medium	The receptor or resource has low capacity to absorb change without fundamentally altering its present character, is of high environmental or social value, or is of national importance																
4	High	The receptor or resource has moderate capacity to absorb change without significantly altering its present character, has some environmental or social value, or is of district/regional importance.																
5	Very High	The receptor or resource has little or no capacity to absorb change without fundamentally altering its present character, is of very high environmental or social value, or is of international importance.																
<b>1. Initial Desktop Exploration Activities</b>	(i) General evaluation of satellite, topographic, land tenure, accessibility, supporting infrastructures and socioeconomic environment data	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	(ii) Purchase and analysis of existing Government high resolution magnetics and radiometric geophysical data	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	(iii) Purchase and analysis of existing Government aerial hyperspectral	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	(iv) Data interpretation and delineating of potential targets for future reconnaissance regional field-based activities for delineated targets	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
<b>2. Regional Reconnaissance Field-Based Activities</b>	(i) Regional geological, geochemical, topographical and remote sensing mapping and data analysis	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	(ii) Regional geochemical sampling aimed at identifying possible targeted based on the results of the initial exploration and regional geological, topographical and remote sensing mapping and analysis undertaken	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	(iii) Regional geological mapping aimed at identifying possible targeted based on the results of the initial exploration and regional geological, topographical and remote sensing mapping and analysis undertaken	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	(iv) Limited field-based support and logistical activities including exploration camp site lasting between one (1) to two (2) days	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	(v) Laboratory analysis of the samples collected and interpretation of the results and delineating of potential targets for future detailed site-specific exploration if the results are positive and supports further exploration of the delineated targets	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Table 5.7: Cont.

RECEPTOR SENSITIVITY			PHYSICAL ENVIRONMENT					BIOLOGICAL ENVIRONMENT					SOCIOECONOMIC, CULTURAL AND ARCHAEOLOGICAL ENVIRONMENT					
SENSITIVITY RATING		CRITERIA	Water Quality	Physical Infrastructure and Resources	Air Quality, Noise and Dust	Landscape Topography	Soil Quality	Climate Change Influences	Habitat	Protected Areas	Flora	Fauna	Ecosystem functions, services, use values and non-Use or passive use	Local, regional and national socioeconomic settings	Commercial Agriculture	Community Protected Areas	Tourism and Recreation	Cultural, Biological and Archaeological Resources
1	Negligible	The receptor or resource is resistant to change or is of little environmental value.																
2	Low	The receptor or resource is tolerant of change without detriment to its character, is of low environmental or social value, or is of local importance.																
3	Medium	The receptor or resource has low capacity to absorb change without fundamentally altering its present character, is of high environmental or social value, or is of national importance																
4	High	The receptor or resource has moderate capacity to absorb change without significantly altering its present character, has some environmental or social value, or is of district/regional importance.																
5	Very High	The receptor or resource has little or no capacity to absorb change without fundamentally altering its present character, is of very high environmental or social value, or is of international importance.																
3. Initial Local Field-Based Activities	(i)	Local geochemical sampling aimed at verifying the prospectivity of the target/s delineated during regional reconnaissance field activities	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	(ii)	Local geological mapping aimed at identifying possible targeted based on the results of the regional geological and analysis undertaken	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	(iii)	Ground geophysical survey (Subject to the positive outcomes of i and ii above)	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	(iv)	Possible Trenching (Subject to the outcomes of i - iii above)	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	(v)	Field-based support and logistical activities will be very limited focus on a site-specific area for a very short time (maximum five (5) days)	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	(vi)	Laboratory analysis of the samples collected and interpretation of the results and delineating of potential targets	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
4. Detailed Local Field-Based Activities	(i)	Access preparation and related logistics to support activities	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	(ii)	Local geochemical sampling aimed at verifying the prospectivity of the target/s delineated during the initial field-based activities	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	(iii)	Local geological mapping aimed at identifying possible targeted based on the results of the regional geological and analysis undertaken	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	(iv)	Ground geophysical survey, trenching, drilling and sampling (Subject to the positive outcomes of i and ii above).	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
5. Prefeasibility and Feasibility Studies	(i)	Detailed site-specific field-based support and logistical activities, surveys, detailed geological mapping	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	(ii)	Detailed drilling and bulk sampling and testing for ore reserve calculations	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	(iii)	Geotechnical studies for mine design	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	(iv)	Mine planning and designs including all supporting infrastructures (water, energy and access) and test mining activities	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	(v)	EIA and EMP to support the ECC for mining operations	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	(vi)	Preparation of feasibility report and application for Mining License	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1



Table 5.8: Results of the scored period (duration) over which the impact is expected to last.

RECEPTOR SENSITIVITY		PHYSICAL ENVIRONMENT						BIOLOGICAL ENVIRONMENT					SOCIOECONOMIC, CULTURAL AND ARCHAEOLOGICAL ENVIRONMENT										
		Water Quality	Physical infrastructure and Resources	Air Quality, Noise and Dust	Landscape Topography	Soil Quality	Climate Change Influences	Habitat	Protected Areas	Flora	Fauna	Ecosystem functions, services, use values and non-Use or passive use	Local, regional and national socioeconomic settings	Commercial Agriculture	Community Protected Areas	Tourism and Recreation	Cultural, Biological and Archaeological Resources						
<table border="1"> <thead> <tr> <th>SCALE</th> <th>DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td>T</td> <td>Temporary</td> </tr> <tr> <td>P</td> <td>Permanent</td> </tr> </tbody> </table>		SCALE	DESCRIPTION	T	Temporary	P	Permanent																
		SCALE	DESCRIPTION																				
		T	Temporary																				
P	Permanent																						
<b>1. Initial Desktop Exploration Activities</b>	(i) General evaluation of satellite, topographic, land tenure, accessibility, supporting infrastructures and socioeconomic environment data	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T						
	(ii) Purchase and analysis of existing Government high resolution magnetics and radiometric geophysical data	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T						
	(iii) Purchase and analysis of existing Government aerial hyperspectral	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T						
	(iv) Data interpretation and delineating of potential targets for future reconnaissance regional field-based activities for delineated targets	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T						
<b>2. Regional Reconnaissance Field-Based Activities</b>	(i) Regional geological, geochemical, topographical and remote sensing mapping and data analysis	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T						
	(ii) Regional geochemical sampling aimed at identifying possible targeted based on the results of the initial exploration and regional geological, topographical and remote sensing mapping and analysis undertaken	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T						
	(iii) Regional geological mapping aimed at identifying possible targeted based on the results of the initial exploration and regional geological, topographical and remote sensing mapping and analysis undertaken	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T						
	(iv) Limited field-based support and logistical activities including exploration camp site lasting between one (1) to two (2) days	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T						
	(v) Laboratory analysis of the samples collected and interpretation of the results and delineating of potential targets for future detailed site-specific exploration if the results are positive and supports further exploration of the delineated targets	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T						

Table 5.8: Cont.

DURATION OF IMPACT		PHYSICAL ENVIRONMENT						BIOLOGICAL ENVIRONMENT					SOCIOECONOMIC, CULTURAL AND ARCHAEOLOGICAL ENVIRONMENT											
		Water Quality	Physical Infrastructure and Resources	Air Quality, Noise and Dust	Landscape Topography	Soil Quality	Climate Change Influences	Habitat	Protected Areas	Flora	Fauna	Ecosystem functions, services, use values and non-Use or passive use	Local, regional and national socioeconomic settings	Commercial Agriculture	Community Protected Areas	Tourism and Recreation	Cultural, Biological and Archaeological Resources							
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SCALE	DESCRIPTION																							
T	Temporary																							
P	Permanent																							
<b>3. Initial Local Field-Based Activities</b>	(i) Local geochemical sampling aimed at verifying the prospectivity of the target/s delineated during regional reconnaissance field activities	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T							
	(ii) Local geological mapping aimed at identifying possible targeted based on the results of the regional geological and analysis undertaken	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T							
	(iii) Ground geophysical survey (Subject to the positive outcomes of i and ii above)	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T							
	(iv) Possible Trenching (Subject to the outcomes of i - iii above)	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T							
	(v) Field-based support and logistical activities will be very limited focus on a site-specific area for a very short time (maximum five (5) days)	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T							
	(vi) Laboratory analysis of the samples collected and interpretation of the results and delineating of potential targets	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T							
<b>4. Detailed Local Field-Based Activities</b>	(i) Access preparation and related logistics to support activities	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T							
	(ii) Local geochemical sampling aimed at verifying the prospectivity of the target/s delineated during the initial field-based activities	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T							
	(iii) Local geological mapping aimed at identifying possible targeted based on the results of the regional geological and analysis undertaken	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T							
	(iv) Ground geophysical survey, trenching, drilling and sampling (Subject to the positive outcomes of i and ii above).	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T							
<b>5. Prefeasibility and Feasibility Studies</b>	(i) Detailed site-specific field-based support and logistical activities, surveys, detailed geological mapping	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T							
	(ii) Detailed drilling and bulk sampling and testing for ore reserve calculations	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T							
	(iii) Geotechnical studies for mine design	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T							
	(iv) Mine planning and designs including all supporting infrastructures (water, energy and access) and test mining activities	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T							
	(v) EIA and EMP to support the ECC for mining operations	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T							
	(vi) Preparation of feasibility report and application for Mining License	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T							

Table 5.9: Results of the scored geographical extent of the induced change.

GEOGRAPHICAL EXTENT OF IMPACT		PHYSICAL ENVIRONMENT					BIOLOGICAL ENVIRONMENT					SOCIOECONOMIC, CULTURAL AND ARCHAEOLOGICAL ENVIRONMENT																	
		Water Quality	Physical Infrastructure and Resources	Air Quality, Noise and Dust	Landscape Topography	Soil Quality	Climate Change Influences	Habitat	Protected Areas	Flora	Fauna	Ecosystem functions, services, use values and non-Use or passive use	Local, regional and national socioeconomic settings	Commercial Agriculture	Community Protected Areas	Tourism and Recreation	Cultural, Biological and Archaeological Resources												
<table border="1"> <thead> <tr> <th>SCALE</th> <th>DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td>L</td> <td>limited impact on location</td> </tr> <tr> <td>O</td> <td>impact of importance for municipality</td> </tr> <tr> <td>R</td> <td>impact of regional character</td> </tr> <tr> <td>N</td> <td>impact of national character</td> </tr> <tr> <td>M</td> <td>impact of cross-border character</td> </tr> </tbody> </table>		SCALE	DESCRIPTION	L	limited impact on location	O	impact of importance for municipality	R	impact of regional character	N	impact of national character	M	impact of cross-border character																
SCALE	DESCRIPTION																												
L	limited impact on location																												
O	impact of importance for municipality																												
R	impact of regional character																												
N	impact of national character																												
M	impact of cross-border character																												
<b>1. Initial Desktop Exploration Activities</b>	(i) General evaluation of satellite, topographic, land tenure, accessibility, supporting infrastructures and socioeconomic environment data	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L												
	(ii) Purchase and analysis of existing Government high resolution magnetic and radiometric geophysical data	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L												
	(iii) Purchase and analysis of existing Government aerial hyperspectral	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L												
	(iv) Data interpretation and delineating of potential targets for future reconnaissance regional field-based activities for delineated targets	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L												
<b>2. Regional Reconnaissance Field-Based Activities</b>	(i) Regional geological, geochemical, topographical and remote sensing mapping and data analysis	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L												
	(ii) Regional geochemical sampling aimed at identifying possible targeted based on the results of the initial exploration and regional geological, topographical and remote sensing mapping and analysis undertaken	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L												
	(iii) Regional geological mapping aimed at identifying possible targeted based on the results of the initial exploration and regional geological, topographical and remote sensing mapping and analysis undertaken	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L												
	(iv) Limited field-based support and logistical activities including exploration camp site lasting between one (1) to two (2) days	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L												
	(v) Laboratory analysis of the samples collected and interpretation of the results and delineating of potential targets for future detailed site-specific exploration if the results are positive and supports further exploration of the delineated targets	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L												

Table 5.9: *Conti.*

GEOGRAPHICAL EXTENT OF IMPACT		PHYSICAL ENVIRONMENT						BIOLOGICAL ENVIRONMENT				SOCIOECONOMIC, CULTURAL AND ARCHAEOLOGICAL ENVIRONMENT							
		Water Quality	Physical Infrastructure and Resources	Air Quality, Noise and Dust	Landscape Topography	Soil Quality	Climate Change Influences	Habitat	Protected Areas	Flora	Fauna	Ecosystem functions, services, use values and non-Use or passive use	Local, regional and national socioeconomic settings	Commercial Agriculture	Community Protected Areas	Tourism and Recreation	Cultural, Biological and Archaeological Resources		
SCALE		DESCRIPTION																	
L		limited impact on location																	
O		impact of importance for municipality																	
R		impact of regional character																	
N		impact of national character																	
M		impact of cross-border character																	
<b>3. Initial Local Field-Based Activities</b>	(i) Local geochemical sampling aimed at verifying the prospectivity of the target/s delineated during regional reconnaissance field activities	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
	(ii) Local geological mapping aimed at identifying possible targeted based on the results of the regional geological and analysis undertaken	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
	(iii) Ground geophysical survey (Subject to the positive outcomes of i and ii above)	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
	(iv) Possible Trenching (Subject to the outcomes of i - iii above)	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
	(v) Field-based support and logistical activities will be very limited focus on a site-specific area for a very short time (maximum five (5) days)	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
	(vi) Laboratory analysis of the samples collected and interpretation of the results and delineating of potential targets	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
<b>4. Detailed Local Field-Based Activities</b>	(i) Access preparation and related logistics to support activities	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
	(ii) Local geochemical sampling aimed at verifying the prospectivity of the target/s delineated during the initial field-based activities	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
	(iii) Local geological mapping aimed at identifying possible targeted based on the results of the regional geological and analysis undertaken	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
	(iv) Ground geophysical survey, trenching, drilling and sampling (Subject to the positive outcomes of i and ii above).	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
<b>5. Prefeasibility and Feasibility Studies</b>	(i) Detailed site-specific field-based support and logistical activities, surveys, detailed geological mapping	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
	(ii) Detailed drilling and bulk sampling and testing for ore reserve calculations	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
	(iii) Geotechnical studies for mine design	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
	(iv) Mine planning and designs including all supporting infrastructures (water, energy and access) and test mining activities	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
	(v) EIA and EMP to support the ECC for mining operations	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
	(vi) Preparation of feasibility report and application for Mining License	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L

Table 5.10: Results of the qualitative scale of probability occurrence.

IMPACT PROBABILITY OCCURRENCE		PHYSICAL ENVIRONMENT					BIOLOGICAL ENVIRONMENT					SOCIOECONOMIC, CULTURAL AND ARCHAEOLOGICAL ENVIRONMENT					
		Water Quality	Physical Infrastructure and Resources	Air Quality, Noise and Dust	Landscape Topography	Soil Quality	Climate Change Influences	Habitat	Protected Areas	Flora	Fauna	Ecosystem functions, services, use values and non-Use or passive use	Local, regional and national socioeconomic settings	Commercial Agriculture	Community Protected Areas	Tourism and Recreation	Cultural, Biological and Archaeological Resources
SCALE		DESCRIPTION															
A		Extremely unlikely (e.g. never heard of in the industry)															
B		Unlikely (e.g. heard of in the industry but considered unlikely)															
C		Low likelihood (egg such incidents/impacts have occurred but are uncommon)															
D		Medium likelihood (e.g. such incidents/impacts occur several times per year within the industry)															
E		High likelihood (e.g. such incidents/impacts occurs several times per year at each location where such works are undertaken)															
<b>1. Initial Desktop Exploration Activities</b>	(i)	General evaluation of satellite, topographic, land tenure, accessibility, supporting infrastructures and socioeconomic environment data															
	(ii)	Purchase and analysis of existing Government high resolution magnetic and radiometric geophysical data															
	(iii)	Purchase and analysis of existing Government aerial hyperspectral															
	(iv)	Data interpretation and delineating of potential targets for future reconnaissance regional field-based activities for delineated targets															
<b>2. Regional Reconnaissance Field-Based Activities</b>	(i)	Regional geological, geochemical, topographical and remote sensing mapping and data analysis															
	(ii)	Regional geochemical sampling aimed at identifying possible targeted based on the results of the initial exploration and regional geological, topographical and remote sensing mapping and analysis undertaken															
	(iii)	Regional geological mapping aimed at identifying possible targeted based on the results of the initial exploration and regional geological, topographical and remote sensing mapping and analysis undertaken															
	(iv)	Limited field-based support and logistical activities including exploration camp site lasting between one (1) to two (2) days															
	(v)	Laboratory analysis of the samples collected and interpretation of the results and delineating of potential targets for future detailed site-specific exploration if the results are positive and supports further exploration of the delineated targets															

Table 5.10: Cont.

IMPACT PROBABILITY OCCURRENCE		PHYSICAL ENVIRONMENT					BIOLOGICAL ENVIRONMENT					SOCIOECONOMIC, CULTURAL AND ARCHAEOLOGICAL ENVIRONMENT					
		Water Quality	Physical infrastructure and Resources	Air Quality, Noise and Dust	Landscape Topography	Soil Quality	Climate Change Influences	Habitat	Protected Areas	Flora	Fauna	Ecosystem functions, services, use values and non-Use or passive use	Local, regional and national socioeconomic settings	Commercial Agriculture	Community Protected Areas	Tourism and Recreation	Cultural, Biological and Archaeological Resources
SCALE		DESCRIPTION															
A		Extremely unlikely (e.g. never heard of in the industry)															
B		Unlikely (e.g. heard of in the industry but considered unlikely)															
C		Low likelihood (egg such incidents/impacts have occurred but are uncommon)															
D		Medium likelihood (e.g. such incidents/impacts occur several times per year within the industry)															
E		High likelihood (e.g. such incidents/impacts occurs several times per year at each location where such works are undertaken)															
<b>3. Initial Local Field-Based Activities</b>	(i)	Local geochemical sampling aimed at verifying the prospectivity of the target/s delineated during regional reconnaissance field activities															
	(ii)	Local geological mapping aimed at identifying possible targeted based on the results of the regional geological and analysis undertaken															
	(iii)	Ground geophysical survey (Subject to the positive outcomes of i and ii above)															
	(iv)	Possible Trenching (Subject to the outcomes of i - iii above)															
	(v)	Field-based support and logistical activities will be very limited focus on a site-specific area for a very short time (maximum five (5) days)															
	(vi)	Laboratory analysis of the samples collected and interpretation of the results and delineating of potential targets															
<b>4. Detailed Local Field-Based Activities</b>	(i)	Access preparation and related logistics to support activities															
	(ii)	Local geochemical sampling aimed at verifying the prospectivity of the target/s delineated during the initial field-based activities															
	(iii)	Local geological mapping aimed at identifying possible targeted based on the results of the regional geological and analysis undertaken															
	(iv)	Ground geophysical survey, trenching, drilling and sampling (Subject to the positive outcomes of i and ii above).															
<b>5. Prefeasibility and Feasibility Studies</b>	(i)	Detailed site-specific field-based support and logistical activities, surveys, detailed geological mapping															
	(ii)	Detailed drilling and bulk sampling and testing for ore reserve calculations															
	(iii)	Geotechnical studies for mine design															
	(iv)	Mine planning and designs including all supporting infrastructures (water, energy and access) and test mining activities															
	(v)	EIA and EMP to support the ECC for mining operations															
	(vi)	Preparation of feasibility report and application for Mining License															

## 5.5 Evaluation of Significant Impacts

### 5.5.1 Overview

The significance of each impact has been determined by assessing the impact severity against the likelihood (probability) of the impact occurring as summarised in the impact significance assessment matrix provided in Table 5.11.

### 5.5.2 Significance Criteria

Significance criteria for negative/adverse impacts (i.e., relative ranking of importance) are defined in Table 5.11. It is important to note that impacts have been considered without the implementation of mitigation measures. The need for and appropriate mitigation measures as presented in the EMP report have been determined on the basis of the impact assessment presented in this report.

Table 5.11: Scored impact significance criteria.

<b>IMPACT SEVERITY</b> [ Magnitude, Duration, Extent, Probability ]	<b>RECEPTOR CHARACTERISTICS (SENSITIVITY)</b>				
	<b>Very High (5)</b>	<b>High (4)</b>	<b>Medium (3)</b>	<b>Low (2)</b>	<b>Negligible (1)</b>
<b>Very High (5)</b>	Major [5/5]	Major [4/5]	Moderate [3/5]	Moderate [2/5]	Minor [1/5]
<b>High (4)</b>	Major [5/4]	Major [4/4]	Moderate [3/4]	Moderate [2/4]	Minor [1/4]
<b>Medium (3)</b>	Major [5/3]	Moderate [4/3]	Moderate [3/3]	Minor [2/3]	None [1/3]
<b>Low (2)</b>	Moderate [5/2]	Moderate [4/2]	Minor [3/2]	None [2/2]	None [1/2]
<b>Negligible (1)</b>	Minor [5/1]	Minor [4/1]	None [3/1]	None [2/1]	None [1/1]

### 5.5.3 Assessment Likely Significant Impacts

The assessment of significant impacts depended upon the degree to which the proposed project activities are likely to result in unwanted consequences on the receptor covering physical and biological environments (Table 5.12). Overall, the assessment of significant impacts has focused on the ecosystem-based approach that considers potential impacts to the ecosystem. The main key sources of impacts that have been used in the determination of significant impacts posed by the proposed minerals exploration comprised activities. Each of the main areas of impact have been identified and assessed as follows:

- ❖ Positive Impacts are classified under a single category. they are then evaluated qualitatively with a view to their enhancement, if practical.
- ❖ Negligible or Low Impacts will require little or no additional management or mitigation measures (on the basis that the magnitude of the impact is sufficiently small, or that the receptor is of low sensitivity).
- ❖ Medium or High Impacts require the adoption of management or mitigation measures.
- ❖ High Impacts always require further management or mitigation measures to limit or reduce the impact to an acceptable level.

Overall, the results of the significant impact assessment matrix for the proposed minerals exploration activities on the physical and biological environments are shown in Tables 5.12.

Table 5.12: Significant impact assessment matrix for the proposed exploration activities.

SIGNIFICANT IMPACT						PHYSICAL ENVIRONMENT					BIOLOGICAL ENVIRONMENT				SOCIOECONOMIC, CULTURAL AND ARCHAEOLOGICAL ENVIRONMENT							
IMPACT SEVERITY [ Magnitude, Duration, Extent, Probability ]	RECEPTOR CHARACTERISTICS (SENSITIVITY)					Water Quality	Physical infrastructure and Resources	Air Quality, Noise and Dust	Landscape Topography	Soil Quality	Climate Change Influences	Habitat	Protected Areas	Flora	Fauna	Ecosystem functions, services, use values and non-Use or passive use	Local, regional and national socioeconomic settings	Commercial Agriculture	Community Protected Areas	Tourism and Recreation	Cultural, Biological and Archaeological Resources	
	Very High (5)	High(4)	Medium (3)	Low (2)	Negligible (1)																	
Very High (5)	Major [5/5]	Major [4/5]	Moderate [3/5]	Moderate [2 /5]	Minor 1/5																	
High (4)	Major [5/4]	Major [4/4]	Moderate [3/4]	Moderate [2/4]	Minor[1/4]																	
Medium (3)	Major [5/3]	Moderate[4/3]	Moderate[3/3]	Minor[2/3]	None[1/3]																	
Low (2)	Moderate [5/2]	Moderate[4/2]	Minor[3/2]	None[2/2]	None[1/2]																	
Negligible (1)	Minor [5/1]	Minor [4/1]	None [3/1]	None [2/1]	None [1/1]																	
<b>1. Initial Desktop Exploration Activities</b>	(i) General evaluation of satellite, topographic, land tenure, accessibility, supporting infrastructures and socioeconomic environment data					1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1		
	(ii) Purchase and analysis of existing Government high resolution magnetic and radiometric geophysical data					1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1		
	(iii) Purchase and analysis of existing Government aerial hyperspectral					1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1		
	(iv) Data interpretation and delineating of potential targets for future reconnaissance regional field-based activities for delineated targets					1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	
<b>2. Regional Reconnaissance Field-Based Activities</b>	(i) Regional geological, geochemical, topographical and remote sensing mapping and data analysis					1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1		
	(ii) Regional geochemical sampling aimed at identifying possible targeted based on the results of the initial exploration and regional geological, topographical and remote sensing mapping and analysis undertaken					1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	
	(iii) Regional geological mapping aimed at identifying possible targeted based on the results of the initial exploration and regional geological, topographical and remote sensing mapping and analysis undertaken					1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	
	(iv) Limited field-based support and logistical activities including exploration camp site lasting between one (1) to two (2) days					1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
	(v) Laboratory analysis of the samples collected and interpretation of the results and delineating of potential targets for future detailed site-specific exploration if the results are positive and supports further exploration of the delineated targets					1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1



Table 5.12: Cont.

SENSITIVITY						PHYSICAL ENVIRONMENT					BIOLOGICAL ENVIRONMENT				SOCIOECONOMIC, CULTURAL AND ARCHAEOLOGICAL ENVIRONMENT								
IMPACT SEVERITY <small>Magnitude, Duration, Extent, Probability</small>	RECEPTOR CHARACTERISTICS (SENSITIVITY)					Water Quality	Physical infrastructure and Resources	Air Quality, Noise and Dust	Landscape Topography	Soil Quality	Climate Change Influences	Habitat	Protected Areas	Flora	Fauna	Ecosystem functions, services, use values and non-Use or passive use	Local, regional and national socioeconomic settings	Commercial Agriculture	Community Protected Areas	Tourism and Recreation	Cultural, Biological and Archaeological Resources		
	Very High (5)	High(4)	Medium (3)	Low (2)	Negligible (1)																		
Very High (5)	Major [5/5]	Major [4/5]	Moderate [3/5]	Moderate [2 /5]	Minor 1/5																		
High (4)	Major [5/4]	Major [4/4]	Moderate [3/4]	Moderate [2/4]	Minor[1/4]																		
Medium (3)	Major [5/3]	Moderate[4/3]	Moderate[3/3]	Minor[2/3]	None[1/3]																		
Low (2)	Moderate [5/2]	Moderate[4/2]	Minor[3/2]	None[2/2]	None[1/2]																		
Negligible (1)	Minor [5/1]	Minor [4/1]	None [3/1]	None [2/1]	None [1/1]																		
<b>3. Initial Local Field-Based Activities</b>	(i) Local geochemical sampling aimed at verifying the prospectivity of the target/s delineated during regional reconnaissance field activities					1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1			
	(ii) Local geological mapping aimed at identifying possible targeted based on the results of the regional geological and analysis undertaken					1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1			
	(iii) Ground geophysical survey (Subject to the positive outcomes of i and ii above)					2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2		
	(iv) Possible Trenching (Subject to the outcomes of i - iii above)					2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	
	(v) Field-based support and logistical activities will be very limited focus on a site-specific area for a very short time (maximum five (5) days)					2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	
	(vi) Laboratory analysis of the samples collected and interpretation of the results and delineating of potential targets					1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	
<b>4. Detailed Local Field-Based Activities</b>	(i) Access preparation and related logistics to support activities					2\2	2\2	2\2	2\2	2\2	2\2	3\2	3\2	3\2	3\2	3\2	2\2	2\2	2\2	2\2	2\2		
	(ii) Local geochemical sampling aimed at verifying the prospectivity of the target/s delineated during the initial field-based activities					2\2	2\2	2\2	2\2	2\2	2\2	3\2	3\2	3\2	3\2	3\2	2\2	2\2	2\2	2\2	2\2		
	(iii) Local geological mapping aimed at identifying possible targeted based on the results of the regional geological and analysis undertaken					2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2		
	(iv) Ground geophysical survey, trenching, drilling and sampling (Subject to the positive outcomes of i and ii above).					2\2	2\2	2\2	2\2	2\2	2\2	3\2	3\2	3\2	3\2	3\2	2\2	2\2	2\2	2\2	2\2	2\2	
<b>5. Prefeasibility and Feasibility Studies</b>	(i) Detailed site-specific field-based support and logistical activities, surveys, detailed geological mapping					2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2		
	(ii) Detailed drilling and bulk sampling and testing for ore reserve calculations					3\3	3\3	3\3	3\3	3\3	3\3	3\3	3\3	3\3	3\3	3\3	3\3	3\3	3\3	3\3	3\3	3\3	
	(iii) Geotechnical studies for mine design					2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	
	(iv) Mine planning and designs including all supporting infrastructures (water, energy and access) and test mining activities					3\3	3\3	3\3	3\3	3\3	3\3	3\3	3\3	3\3	3\3	3\3	3\3	3\3	3\3	3\3	3\3	3\3	3\3
	(v) EIA and EMP to support the ECC for mining operations					1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
	(vi) Preparation of feasibility report and application for Mining License					1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

## 5.6 Assessment of Overall Impacts

### 5.6.1 Summary of the Results of the Impact Assessment

In accordance with Tables 5.7 - 5.12, the following is the summary of the overall likely negative and significant impacts of the proposed exploration activities on the receiving environment (physical, biological, and socioeconomic environments) without and with mitigations:

- (i) Initial desktop exploration activities: Overall likely negative impact on the receiving environment will be negligible with extremely unlikely probability of occurrence without mitigations. Overall significant impacts will be negligible **[1/1]** (Table 5.12). Except for the socioeconomic components which carry a limited **(+)** at national level in terms of fess payable to the Government, the rest of the likely impacts are negative **(-)**.
- (ii) Regional reconnaissance field-based activities: Overall likely negative impact on the receiving environment will be negligible with extremely unlikely probability of occurrence without mitigations. Overall significant impacts will be negligible **[1/1]**. Some field-based activities will have localised low impacts with low probability of occurrence without mitigations and negligible with mitigations. Overall significant impacts will be negligible **[1/1]** (Table 5.12). Except for the socioeconomic components which carry a limited **(+)** at national level in terms of fess payable to the Government, all the other likely impacts are negative **(-)**.
- (iii) Initial local field-based activities: Initial field-based activities will have localised low impacts with low probability of occurrence without mitigations and negligible with mitigations. Overall significant impacts will be negligible **[2/2]**. All desktop related activities and laboratory assessments will have negligible impacts with extremely unlikely probability of occurrence without mitigations. Overall significant impacts will be negligible **[2/2]** (Table 5.12). Except for the socioeconomic components which carry a limited **(+)** at national level in terms of fess payable to the Government, all the other likely impacts are negative **(-)**.
- (iv) Detailed local field-based activities: Overall likely negative impact on the receiving environment will be high and localised impacts without mitigations and localised low impacts with mitigations. Overall significant impacts will be medium **[2/2]** without mitigations and low with mitigations (Table 5.12). Except for the socioeconomic components which carry a limited **(+)** at national level in terms of fess payable to the Government, all the other likely impacts are negative **(-)**, and.
- (v) Prefeasibility and feasibility studies to be implemented on a site-specific area if the local field-based studies prove positive: Overall likely negative impact on the receiving environment will be high and localised impacts without mitigations and localised medium impacts with mitigations. Overall significant impacts will be high **[3/3]** without mitigations and low with mitigations for bulk sampling, test mining and field logistics (Table 5.12). Except for the socioeconomic components which carry a limited **(+)** at national level in terms of fess payable to the Government, all the other likely impacts are negative **(-)**.

## 6. CONCLUSIONS AND RECOMMENDATIONS

### 6.1 Conclusions

Bluestate Investments (Pty) Ltd (**the Proponent**) intends to undertake exploration activities in the Exclusive Prospecting Licence (EPL) No. 7811 covering base and rare metals, dimension stones, industrial minerals, and precious metals. The Proponent intends to conduct exploration / prospecting activities starting with desktop studies and aerial surveys, followed by regional field-based reconnaissance work and if the results are positive, implement detailed site-specific field-based activities over key site-specific localities using techniques such as geological mapping, geophysical surveys, trenching, drilling and sampling for laboratory tests as may be applicable and subject to the delineation of potential exploration target/s within the EPL area.

The overall severity of potential environmental impacts of the proposed project activities on the receiving environment (physical, biological, socioeconomic environments and ecosystem functions, services, use and non-use values or passive uses) will be of low magnitude, temporally duration, localised extent, and low probability of occurrence.

### 6.2 Recommendations

It is hereby recommended that the proposed exploration activities be issued with an Environmental Clearance Certificate (ECC). The proponent shall take into consideration the following key requirements for implementing the proposed exploration programme:

- (i) An EMP report shall be prepared.
- (ii) Mitigation measures shall be implemented as detailed EMP report.
- (iii) The proponent negotiate an Access Agreement with the land owner/s.
- (iv) In consultation with the land owners and where possible and if key and core conservation, tourism or archaeological resources areas are identified within the EPL area, such areas shall be excluded from the proposed minerals exploration activities.
- (v) The Proponent shall adhere to all the provisions of the EMP and conditions of the Access Agreement to be entered between the proponent and the land owner/s in line with all applicable national regulations.
- (vi) Before entering any private property such as a private farm, the proponent must give advance notices and obtain permission to always access such private property from the land owners, and.
- (vii) Where possible, and if water is found during the detailed exploration boreholes drilling operations, the proponent shall support other land users in the area in terms of access to freshwater supply for both human consumption, wildlife and agricultural support as may be requested by the local community / land owners/s. The abstraction of the groundwater resources shall include water levels monitoring, sampling, and quality testing on a bi-annual basis, and that the affected landowners must have access to the results of the water monitoring analyses as part of the ongoing stakeholder disclosure requirements on shared water resources as maybe applicable.

### 6.3 Summary ToR for Test Mining and Mining Stages

In an even that economic minerals resources are discovered within the EPL 7811 area and could lead to the development of mining project, a new Environmental Clearance Certificate (ECC) for mining will be required. The application for ECC being supported by this EIA report only covers the exploration phase. A separate field-based and site-specific Environmental Impact Assessment (EIA) and

Environmental Management Plan (EMP) reports supported by specialist studies as maybe applicable must be prepared in order to support the application for the new ECC for mining operations.

The EIA and EMP studies shall form part of the prefeasibility and feasibility study with respect to the test mining or possible mining operations. The site-specific EIA and EMP shall cover the area identified to have potential economic minerals resources as well as all areas to be used for infrastructural support areas such as pit / shaft area/s, waste rock, tailings dump, access, office blocks, water and energy infrastructure support areas (water, energy and road / access). In addition to the Terms of Reference (ToR) to be developed during the Environmental Scoping study phase for the test mining / mining stages, the following field-based and site-specific specialist studies shall be undertaken as part of the EIA and EMP for possible test mining or mining operations in an event of a discovery of economic minerals resources and possible development of a mining project:

- (i) Groundwater studies including modelling as maybe applicable.
- (ii) Field-based flora and fauna diversity.
- (iii) Noise and Sound modelling linked to engineering studies.
- (iv) Socioeconomic assessment, and.
- (v) Others as may be identified / recommended by the stakeholders/ land owners/ Environmental Commissioner or specialists.

The aims and objectives of the Environmental Assessment (EA) covering EIA and EMP to be implemented as part of the feasibility study if a variable resources are discovered are:

- (i) To assess all the likely positive and negative short- and long-term impacts on the receiving environment (physical, biological and socioeconomic environments) at local (EPL Area), regional, national (Namibia) and Global levels using appropriate assessment guidelines, methods and techniques covering the complete project lifecycle. The EIA and EMP to be undertaken shall be performed with reasonable skill, care and diligence in accordance with professional standards and practices existing at the date of performance of the assessment and that the guidelines, methods and techniques shall conform to the national regulatory requirements, process and specifications in Namibia and in particular as required by the Ministry of Mines and Energy, Ministry of Environment, Forestry, and Tourism and Ministry of Agriculture, Water Affairs and Forestry, and.
- (ii) The development of appropriate mitigation measures that will enhance the positive impacts and reduce the likely negative influences of the negative impacts identified or anticipated. Such mitigation measures shall be contained in a detailed EMP report covering the entire project lifecycle.

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## **8. ANNEXES**

- 1. BID and Copy of the EPL**
- 2. CV of the EAP (Dr Sindila Mwiya)**
- 3. Desktop Archaeological Study**
- 4. Copy of Public Consultation Materials**