Excel Dynamic Solutions (Pty) Ltd

Environmental Scoping Assessment (ESA) for Prospecting and Exploration Activity on Exclusive Prospecting License (EPL) No. 7327 located near Omatjete in the Erongo Region, Namibia

ENVIRONMENTAL ASSESSMENT FINAL REPORT

ECC Application Reference: APP- 003023

Author(s): **Mr. Silas David** Reviewer: **Ms. Rose Mtuleni** Company: **Excel Dynamic Solutions (Pty) Ltd** Telephone: **+264 (0) 61 259 530** Fax2email: **+264 (0) 886 560 836** Email: **info@edsnamibia.com**	Client: **Theresia Jeaneth Aochamus J.V Damaran Exploration Namibia (Pty) Ltd** Contact person: **Mr. Riaan Kazondunge** Telephone: **+264 81 302 2767** Postal Address: **Private Bag 12012, Ausspannplatz, Windhoek** Email: **rkazondunge@tangaresources.com.au**

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Excel Dynamic Solutions (Pty) Ltd

EXECUTIVE SUMMARY

Thersia Jeaneth Aochamus *J.V* with Damaran Exploration Namibia (Pty) Ltd (hereinafter referred to as *The Proponents*), intends to conduct mineral prospecting and exploration activities on Exclusive Prospecting Licence (EPL) No. 7327 located near Omatjete in the Erongo Region. The EPL is situated near Omatjete in the Erongo Region, although a smaller part of the EPL is found in the Kunene Region. The tenure for exploration on the EPL is granted for works between 06 March 2019 and 05 March 2022. The EPL is located approximately 56.4 km southeast of Omatjete and covers four (4) commodity groups, which include: Base and Rare Metals, Dimension Stones, Industrial Minerals and Precious Metals.

Project Description

The objective of the planned prospecting and exploration activities is to identify geological features and lithostratigraphic units within the area, and to delineate the mineral deposits, in order to determine whether the deposits are economically viable. The scoping process identifies sensitive environmental features that could be affected by the proposed prospecting and exploration activities. It is anticipated that both invasive and non-invasive exploration activities are to occur upon issuance of an ECC. The Proponent plans to conduct a staged exploration approach with three phases including the Pre-Development Phase, Operation and Maintenance Phase, and the Decommissioning and Rehabilitation Phase.

The pre-development phase involves literature and map reviews, as well as fieldwork to determine targets for test drilling. The operational and maintenance phase is the phase during which the exploration program will be operational. The target areas within the EPLs' boundaries, identified during the pre-development phase will undergo exploration drilling. RC Drilling is the preferred technique for the planned exploration work, and diamond drilling may be considered depending on outcome of initial operations. A pit may be dug for sampling and the size of the samples may be adjusted depending on the nature of mineralization observed from drilling. No explosives will be used during the exploration phase. The decommissioning and rehabilitation phase is primarily reinforced through a decommissioning and rehabilitation plan, which consists of safety, health, environmental and contingency aspects. Uncertain or unstable economic situations or unconvincing exploration results may force the Proponent to eventually cease with the exploration program. Therefore, it is of best practice for the Proponent to ensure that they have a rehabilitation plan for the sites in anticipation of closure of operations.

Based on the valuation method conducted for the exploration activities, land degradation due to land clearing to conduct exploration activities is rated at a high significant rate as it can affect the Otjohorongo reserve ecological locale. Most of the impacts are foreseen to be localized and can be mitigated through the employment of mitigation measures which are recommended in the Environmental Management Plan (EMP).

Excel Dynamic Solutions (Pty) Ltd

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LIST OF ABBREVIATIONS

Abbreviation	Meaning
AMSL	Above Mean Sea Level
BID	Background Information Document
CV	Curriculum Vitae
DEA	Department of Environmental Affairs
EA	Environmental Assessment
EAP	Environmental Assessment Practitioner
ECC	Environmental Clearance Certificate
EDS	Excel Dynamic Solutions
ESA	Environmental Scoping Assessment
EMA	Environmental Management Act
EMP	Environmental Management Plan
EPL	Exclusive Prospecting Licence
GG	Government Gazette
GN	Government Notice
I&APs	Interested and Affected Parties
MEFT	Ministry of Environment, Forestry and Tourism
MME	Ministry of Mines and Energy
PPE	Personal Protective Equipment
Reg	Regulation
S	Section
TOR	Terms of Reference

DEFINATION OF TERMS

Alternative	A possible course of action, in place of another that would meet the same purpose and need of the proposal.
Baseline	Work done to collect and interpret information on the condition/trends of the existing environment.
Biophysical	That part of the environment that does not originate with human activities (e.g. biological, physical and chemical processes).
Cumulative Impacts/Effects Assessment	In relation to an activity, means the impact of an activity that in it may not be significant but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area.
Decision-maker	The person(s) entrusted with the responsibility for allocating resources or granting approval to a proposal.
Ecological Processes	Processes which play an essential part in maintaining ecosystem integrity. Four fundamental ecological processes are the cycling of water, the cycling of nutrients, the flow of energy and biological diversity (as an expression of evolution).
Environment	As defined in Environmental Management Act - the complex of natural and anthropogenic factors and elements that are mutually interrelated and affect the ecological equilibrium and the quality of life, including – (a) the natural environment that is land, water and air; all organic and inorganic matter and living organisms and (b) the human environment that is the landscape and natural, cultural, historical, aesthetic, economic and social heritage and values.

Environmental Management Plan	As defined in the EIA Regulations (Section 8(j)), a plan that describes how activities that may have significant environments effects are to be mitigated, controlled and monitored.
Exclusive Prospecting Licence	Is a license that confers exclusive mineral prospecting rights over land of up to 1000 km2 in size for an initial period of three years, renewable twice for a maximum of two years at a time
Interested and Affected Party (I&AP)	In relation to the assessment of a listed activity includes - (a) any person, group of persons or organization interested in or affected by an activity; and (b) any organ of state that may have jurisdiction over any aspect of the activity. Mitigate - practical measures to reduce adverse impacts. Proponent – as defined in the Environmental Management Act, a person who proposes to undertake a listed activity. Significant impact - means an impact that by its magnitude, duration, intensity or probability of occurrence may have a notable effect on one or more aspects of the environment.
Fauna	All of the animals found in a given area.
Flora	All of the plants found in a given area.
Mitigation	The purposeful implementation of decisions or activities that are designed to reduce the undesirable impacts of a proposed action on the affected environment.
Monitoring	Activity involving repeated observation, according to a pre-determined schedule, of one or more elements of the environment to detect their characteristics (status and trends).
Nomadic Pastoralism	Nomadic pastoralists live in societies in which the husbandry of grazing animals is viewed as an ideal way of making a living and the regular movement of all or part of the society is considered a normal and natural part of life. Pastoral nomadism is commonly found where climatic conditions produce seasonal pastures but cannot support sustained agriculture.

Proponent	Organization (private or public sector) or individual intending to implement a development proposal.
Public Consultation/Involvement	A range of techniques that can be used to inform, consult or interact with stakeholders affected by the proposed activities.
Protected Area	Refers to a protected area that is proclaimed in the Government Gazette according to the Nature Conservation Ordinance number 4 of 1975, as amended
Scoping	An early and open activity to identify the impacts that are most likely to be significant and require specialized investigation during the EIA work. Can, also be used to identify alternative project designs/sites to be assessed, obtain local knowledge of site and surroundings and prepare a plan for public involvement. The results of scoping are frequently used to prepare a Terms of Reference for the specialized input into full EIA.
Terms of Reference (ToR)	Written requirements governing full EIA input and implementation, consultations to be held, data to be produced and form/contents of the EIA report. Often produced as an output from scoping.

1 INTRODUCTION

1.1 Project Background

Theresia Jeaneth Aochamus (hereinafter referred to as *The Proponent*) is the holder of EPL No. 7327 through a joint venture with Damaran Exploration Namibia (Pty) Ltd. EPL 7327 was granted in 2019 by the Ministry of Mines and Energy (MME). The EPL is prospective to four (4) commodity groups, which include: Base and Rare Metals, Dimension Stone, Industrial Minerals and Precious Metals. However, the primary target resources for exploration for this project are Base Metals and Precious Metals**.** The tenure for exploration on EPL 7327 is granted for works between 06 March 2019 and 05 March 2022. The locality of EPL 7327 shown on **Figure 1**.

Section 27 (1) of the Environmental Management Act (EMA) (No. 7 of 2007) and its 2012 Environmental Impact Assessment (EIA) regulations, provides a list of activities that may not be carried out without an Environmental Impact Assessment (EIA) undertaken and an Environmental Clearance Certificate (ECC) obtained (*refer to Section 4.1 of this report*). Exploration activities are listed among the activities that may not occur without an ECC*.* Therefore, individuals or organizations may not carry out exploration activities among those listed, without an EIA undertaken and an ECC awarded.

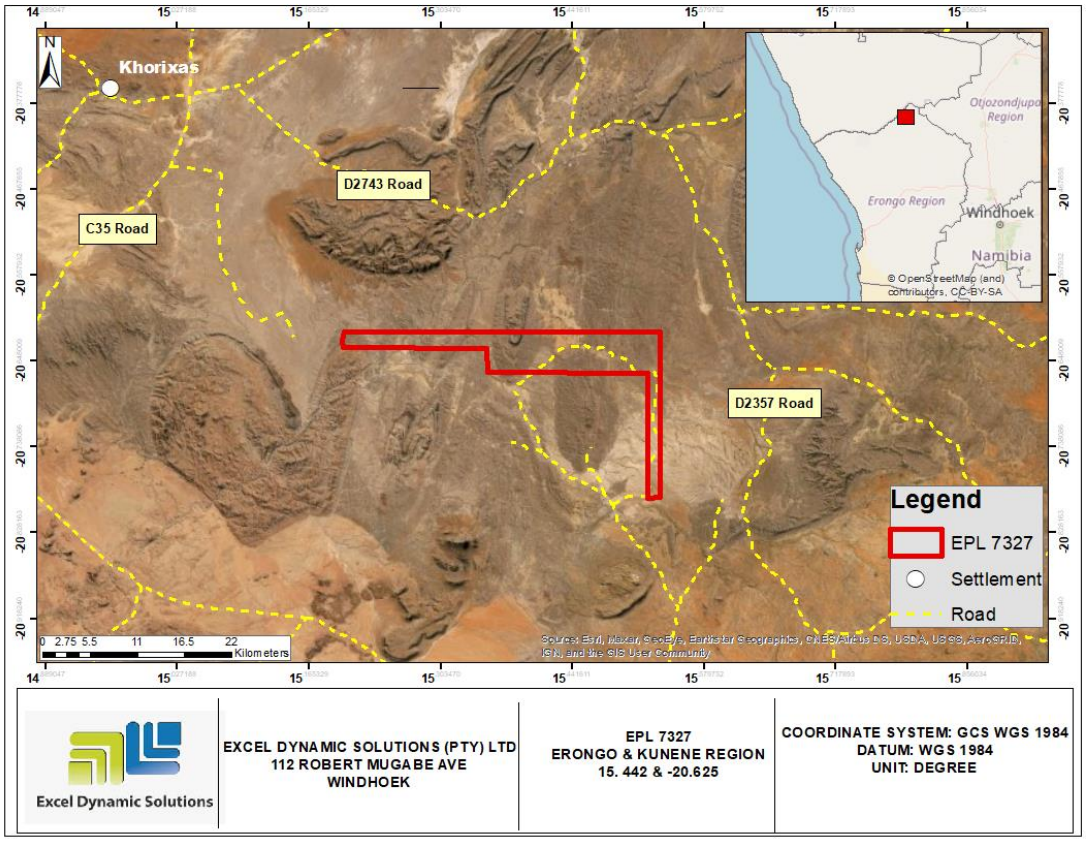

Figure 1: Locality map for EPL No. 7327 located near Omatjete Settlement, Erongo Region.

1.2 Appointed Environmental Assessment Practitioner

In accordance with the requirements of the Environmental Management Act (Act 7 of 2007) (EMA), the Proponent has appointed Excel Dynamic Solutions (Pty) Ltd (EDS, Consultant or Environmental Assessment Practitioner (EAP) hereinafter), an independent team of Environmental Consultants, to conduct the required Environmental Scoping Assessment (ESA) process and submit the ECC application to the Environmental Commissioner at the Department of Environmental Affairs and Forestry (DEAF) of the Ministry of Environment, Forestry and Tourism (MEFT) on their behalf. The findings of the ESA are incorporated into this report and a draft EMP is compiled - (**Appendix B**). These documents will be submitted as part of an application for an ECC to the MEFT. The ESA project is headed by Mr. Nerson Tjelos, a qualified and experienced Geoscientist and experienced EAP. The CV for Mr. Tjelos is presented in **Appendix C.**

2 PROJECT DESCRIPTION: PROPOSED EXPLORATION ACTIVITY

Prospecting and exploration of minerals is the first component of any potential mining project (development and eventual mining). Successful exploration results could lead to development of the mine for extraction of the target mineral in market rate quantities, and to the eventual closure of mining. The exploration project activities commence after issuance of the ECC by the Environmental Commissioner. The exploration phase is expected to last for about three years. The planned exploration activities are aimed at delineating the mineral deposits and determining whether the deposits are economically feasible mining resources. The project is developed in three main phases: the Pre-Development Phase, the Exploration Phase, and the Decommissioning and Rehabilitation Phase.

2.1 Pre-development Phase (Prospecting)

Upon issuance of an ECC, the exploration program commences with reviewing of existing reports and creation of composite stratigraphic, lithological-geochemical maps of the targeted areas to identify prospective lithostratigraphic packages. In addition to the literature review, fieldwork (lithological (soil/rock) mapping and sampling) will be conducted to verify desktop work. Up to this point, no physical disturbance is required.

Further prospecting requires the Proponent to assess the EPL through detailed geological mapping, surface rock sampling and soil geochemical surveys, supported where necessary by geophysical surveys, to define targets for test drilling. The refined geological maps assist in selection of target areas for subsequent detailed exploration such as drilling in the next phase of exploration

2.2 Operational and Maintenance (Exploration: Drilling, Sampling and Analysis) Phase

The selection and verification of target areas is followed by detailed exploration works under the operational phase of the exploration program. The Proponent has highlighted that both invasive and non-invasive exploration activities are expected to take place upon issuance of an ECC. Non-invasive activities include geological field mapping and ground-based surveys, while invasive activities involve soil and rock sampling, trenching, drilling, and bulk sampling. The preferred

drilling technique for this exploration programme is Reverse Circulation (RC) Drilling. RC drilling uses a pneumatic hammer, which drives a rotating tungsten-steel bit. The technique produces an uncontaminated large volume sample, which is comprised of rock chips. It is relatively quicker and cheaper when compared to other techniques like Diamond Drilling. However, diamond drilling may be considered for this exploration programme, during advanced stages of exploration if large amounts of sample material may be required for analysis and to perform processing trials. Diamond drilling may also be used to obtain structural geological data.

A 12 to 18 months' exploration period is predicted. The selection of the potential mineralization model and exploration targets will be based on the local geology, trenching, drilling, and assay results of the samples collected. The planned exploration activities aim to delineate the mineral deposits and determine whether the deposits are economically feasible mining resources. No explosives will be used during the exploration phase.

Other aspects of the exploration operations include:

2.2.1 Accessibility to Site

The EPL is situated at about 47 km northwest of Omatjete settlement and 63 km southeast of Khorixas. The EPL 7327 is accessible via the D3712 road and the D3718 road, which both pass through the EPL northwards from the Omatjete Settlement.

2.2.2 Material and Equipment

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

2.2.3 Services and Infrastructure

Water: Water for the exploration operations on the EPL will be obtained from the nearest existing boreholes and/or off-site Omatjete Settlement and nearby village sources or any other approved water sources, through water abstraction permits. Estimated monthly water consumptions are at

± 2000 liters but not exceeding 80 000 liters, which includes water for drinking, sanitation, cooking, dust control, drilling, as well as washing equipment.

Power supply: Power required during the operation phase will be provided from diesel-generators. About 300 litres of diesel will be used per day, a bunded diesel bowser which will be on site, will be filled 2 – 3 times a week by a diesel bowser. Upon discovery of mineable resources, arrangements will be made with NamPower and/or local municipal sources for the possible supply of electricity for mining activities.

Fuel (diesel for generators and other equipment): The fuel (diesel) required for exploration equipment will be stored in a tank mounted on a mobile trailer, and drip trays will be readily available on this trailer and monitored to ensure that accidental fuel spills are cleaned up as soon as they have been detected/observed. Fuel may also be stored in jerry cans placed on plastic sheeting to avoid unnecessary contamination of the ground

2.2.4 Waste Management

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

Sanitation and human waste: Long drop system ablution facilities will be used and the sewage will be disposed of as according to the approved disposal or treatment methods of the product, and/or taken to the nearest treatment facility.

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

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

Mineral Waste: Consists of solid products of exploration and mineral concentration to acquire the targeted minerals. Mineral waste will potentially be produced throughout the project

exploration phase. This waste will be stripped and dumped in allocated areas as stipulated in the EMP.

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

2.2.8 Health and safety

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

2.2.9 Safety and Security

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

Fire management: A minimum of basic firefighting equipment, i.e., two fire extinguishers will be readily available in vehicles, at the working sites and camps.

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

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2.2.2 Accommodation

The exploration crew will be accommodated in Omatjete, or a campsite will be set up for the exploration crew near the exploration sites. If the accommodation camp is to be set up on a farm, necessary arrangements will be made with the farm owner/s. Exploration activities will take place during daytime only and staff will commute to exploration site (s) from their place of accommodation.

2.3 Decommissioning and Rehabilitation Phase

Once the exploration activities on EPL 7327 come to an end, the Proponent will need to put site rehabilitation measures in place. Concluding of exploration activity on the EPLs occurs once the planned exploration activities are completed, or may be discontinued before planned closure due to unfavourable economic situations or unconvincing exploration results. Decommissioning and rehabilitation are primarily reinforced through a decommissioning and rehabilitation plan, which consists of safety, health, environmental, and contingency aspects. It is of best practice for the Proponent to ensure that the project is finalized in an environmentally friendly manner, and the site is rehabilitated.

2.4 The Need for the Proposed Project

Mining is essential in meeting the ever-increasing demand for minerals for the world's growing population and for national prosperity. The Proponent's exploration programme represents a valuable opportunity to contribute to infrastructure minerals development, which is a key component in the development of Namibia and the Nation's economy. Exploration activities provide employment, as well as dividends that fund social infrastructure. The minerals sector yields foreign exchange and account for a significant portion of the gross domestic product (GDP). Additionally, the industry produces a trained workforce and small businesses that can service communities and may initiate related businesses. Several associated activities are fostered, such as manufacturing of exploration and mining equipment, provision of engineering and environment services. Successful exploration work can lead to mining activities on the EPL, which would feed into the national development plans such as NDP5, vision 2030, and Harambee Prosperity Plan. This project is expected to generate full-time medium to long-term direct employment for at least 10 people. The majority of them are skilled and semi-skilled workers (general labourers and operators) to be employed in the proposed exploration project.

3 LEGAL FRAMEWORK: LEGISLATION, POLICIES AND GUIDELINES

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

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

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
The Constitution of the Republic of Namibia, 1990 as amended	The Constitution of the Republic of Namibia (1990 as amended) addresses matters relating to environmental protection and sustainable development. Article 91(c) defines the functions of the Ombudsman to include: "…the duty to investigate complaints concerning the over-utilisation of living natural resources, the irrational exploitation of non-renewable resources, the degradation and destruction of ecosystems and failure to protect the beauty and character of Namibia…" Article 95(l) commits the state to actively promoting and maintaining the welfare of the people by adopting policies aimed at the:	By implementing the environmental management plan, the establishment will be in conformant to the constitution in terms of environmental management and sustainability. Ecological sustainability will be main priority for the proposed development.

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
	"…Natural resources situated in the soil and on the subsoil, the internal waters, in the sea, in the continental shelf, and in the exclusive economic zone are property of the State."	
Nature Conservation Amendment Act, No. 3 of 2017	National Parks are established and gazetted in accordance with the Nature Conservation Ordinance, 1975 (4 of 1975), as amended. The Ordinance provides a legal framework with regards to the permission of entering a state protected area, as well as requirements for individuals damaging objects (geological, ethnological, archaeological and historical) within a protected area. Though the Ordinance does not specifically refer to mining as an activity within a protected area (PA) or recreational area (RA), it does restrict access to PA's and prohibits certain acts therein as well as the purposes for which permission to enter game parks and nature reserves may be granted.	The Proponent will be required to enhance the conservation of biodiversity and the maintenance of the ecological integrity of protected areas and other State land
The Parks and Wildlife Management Bill of 2008	Aims to provide a regulatory framework for the protection, conservation, and rehabilitation of species and ecosystems, the sustainable use and sustainable management of indigenous biological resources, and the management of protected areas, in order to conserve biodiversity and in order to contribute to national development.	

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
Minerals (Prospecting and Mining) Act (No. 33 of 1992)	Section 52 requires mineral license holders to enter into a written agreement with affected landowners before exercising rights conferred upon the license holder. Section 52(1) mineral licence holder may not exercise his/her rights in any town or village, on or in a proclaimed road, land utilised for cultivation, within 100m of any water resource (borehole, dam, spring, drinking trough etc.) and boreholes, or no operations in municipal areas, etc.), which should individually be checked to ensure compliance. Section 54 requires written notice to be submitted to the Mining Commissioner in the event that the holder of a mineral license (which includes and EPL) intends to abandon the mineral license area. Section 68 stipulates that an application for an EPL shall contain the particulars of the condition of, and any existing damage to, the environment in the area to which the application relates and an estimate of the effect which the proposed prospecting operations may have on the environment and the proposed steps to be taken in order to prevent or minimize any such effect. Section 91 requires that rehabilitation measures should be included in an application for a mineral license.	The Proponent should enter into a written agreement with landowners before carrying out exploration on their land. The Proponent should carry out an assessment of the impact on the receiving environment. The Proponent should include as part of their application for the EPL, measures by which they will rehabilitate the areas where they intend to carry out mineral exploration activities. The Proponent may not carry out exploration activities within the areas limited by Section 52 (1) of this Act.

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
Mine Health & Safety Regulations, 10th Draft	Makes provision for the health and safety of persons employed or otherwise present in mineral licenses area. These deal with among other matters; clothing and devices; design, use, operation, supervision and control of machinery; fencing and guards; and safety measures during repairs and maintenance.	The Proponent should comply with all these regulations with respect to their employees.
Petroleum Products and Energy Act (No. 13 of 1990) Regulations (2001)	Regulation 3(2)(b) states that "No person shall possess [sic] or store any fuel except under authority of a licence or a certificate, excluding a person who possesses or stores such fuel in a quantity of 600 litres or less in any container kept at a place outside a local authority area"	The Proponent should obtain the necessary authorisation from the MME for the storage of fuel on-site.
The Regional Councils Act (No. 22 of 1992)	. This Act sets out the conditions under which Regional Councils must be elected and administer each delineated region. From a land use and project planning point of view, their duties include, as described in section 28 "to undertake the planning of the development of the region for which it has been established with a view to physical, social and economic characteristics, urbanisation patterns, natural resources, economic development potential, infrastructure, land utilisation pattern and sensitivity of the natural environment.	The relevant Regional Councils are considered to be I&APs and must be consulted during the Environmental Assessment (EA) process. The project site falls under the Kunene & Erongo Regional Council; therefore, they should be consulted.

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
Traditional Authorities Act No. 25 of 2000	To provide for the determination, for purposes of traditional government, of traditional authority councils; the establishment of such traditional authority councils; and to define the powers, duties and functions of traditional authority councils; and to provide for incidental matters.	The Omatjete Settlement is the responsible traditional Authority of the area therefore they should be consulted.
Water Act 54 of 1956	The Water Resources Management Act 11 of 2013 is presently without regulations; therefore, the Water Act No 54 of 1956 is still in force: Prohibits the pollution of water and implements the principle that a person disposing of effluent or waste has a duly of care to prevent pollution (S3 (k)). Provides for control and protection of groundwater (S66 (1), (d (ii)). Liability of clean-up costs after closure/abandonment of an activity (S3 (l)). (l)).	The protection (both quality and quantity/abstraction) of water resources should be a priority.
Water Resources Management Act (No 11 of 2013)	The Act provides for the management, protection, development, use and conservation of water resources; and provides for the regulation and monitoring of water services and to provide for incidental matters. The objects of this Act are to:	

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
	Ensure that the water resources of Namibia are managed, developed, used, conserved and protected in a manner consistent with, or conducive to, the fundamental principles set out in Section 66 - protection of aquifers, Subsection 1 (d) (iii) provide for preventing the contamination of the aquifer and water pollution control (Section 68).	
National Heritage Act No. 27 of 2004	To provide for the protection and conservation of places and objects of heritage significance and the registration of such places and objects; to establish a National Heritage Council; to establish a National Heritage Register; and to provide for incidental matters.	The Proponent should ensure compliance with these Acts requirements. The necessary management measures and related permitting requirements must be taken. This done by the consulting with the National Heritage Council of Namibia.
The National Monuments Act (No. 28 of 1969)	The Act enables the proclamation of national monuments and protects archaeological sites.	
Soil Conservation Act (No 76 of 1969)	The Act makes provision for the prevention and control of soil erosion and the protection, improvement and conservation of soil, vegetation and water supply sources and resources, through directives declared by the Minister.	Duty of care must be applied to soil conservation and management measures must be included in the EMP.
Public Health Act (No. 36 of 1919)	Section 119 states that “no person shall cause a nuisance or shall suffer to exist on any land or premises owned or occupied by him or of which he is in charge any nuisance or other condition liable to be injurious or dangerous to health.”	The Proponent and all its employees should ensure compliance with the provisions of these legal instruments.

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
Health and Safety Regulations GN 156/1997 (GG 1617)	Details various requirements regarding health and safety of labourers.	
Road Traffic and Transport Act, No. 22 of 1999	The Act provides for the establishment of the Transportation Commission of Namibia; for the control of traffic on public roads, the licensing of drivers, the registration and licensing of vehicles, the control and regulation of road transport across Namibia's borders; and for matters incidental thereto. Should the Proponent wish to undertake activities involving road transportation or access onto existing roads, the relevant permits will be required.	Mitigation measures should be provided for, if the roads and traffic impact cannot be avoided, the relevant permits must be applied for.
Labour Act (No. 6 of 1992)	Ministry of Labour (MOL) is aimed at ensuring harmonious labour relations through promoting social justice, occupational health and safety and enhanced labour market services for the benefit of all Namibians. This ministry insures effective implementation of the Labour Act no. 6 of 1992.	The Proponent should ensure that the prospecting and exploration activities do not compromise the safety and welfare of workers.
The United Nations Convention to Combat Desertification (UNCCD) 1992	Addresses land degradation in arid regions with the purpose to contribute to the conservation and sustainable use of biodiversity and the mitigation of climate change.	The project activities should not be such that they contribute to desertification.

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
	The convention objective is to forge a global partnership to reverse and prevent desertification/land degradation and to mitigate the effects of drought in affected areas to support poverty reduction and environmental sustainability.	
The International Finance Corporation (IFC) Performance Standards	The International Finance Corporation's (IFC) Sustainability Framework articulates the Corporation's strategic commitment to sustainable development and is an integral part of IFC's approach to risk management. The Sustainability Framework comprises IFC's Policy and Performance Standards on Environmental and Social Sustainability, and IFC's Access to Information Policy. The Policy on Environmental and Social Sustainability describes IFC's commitments, roles, and responsibilities related to environmental and social sustainability.	The Performance Standards are directed towards clients, providing guidance on how to identify risks and impacts, and are designed to help avoid, mitigate, and manage risks and impacts as a way of doing business in a sustainable way, including stakeholder engagement and disclosure obligations of the Client (Borrower) in relation to project-level activities.

4 ENVIRONMENTAL BASELINE

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

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

4.1 Biophysical Environment

4.2 Climate

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

4.2.1 Rainfall

In the EPL area, rainfall is expected between January and April. February experiences the highest rainfall at an average of about 172.5 mm, and little or no rainfall is expected between May and December. **Figure 2** below shows a 12-month average rainfall record for the project area.

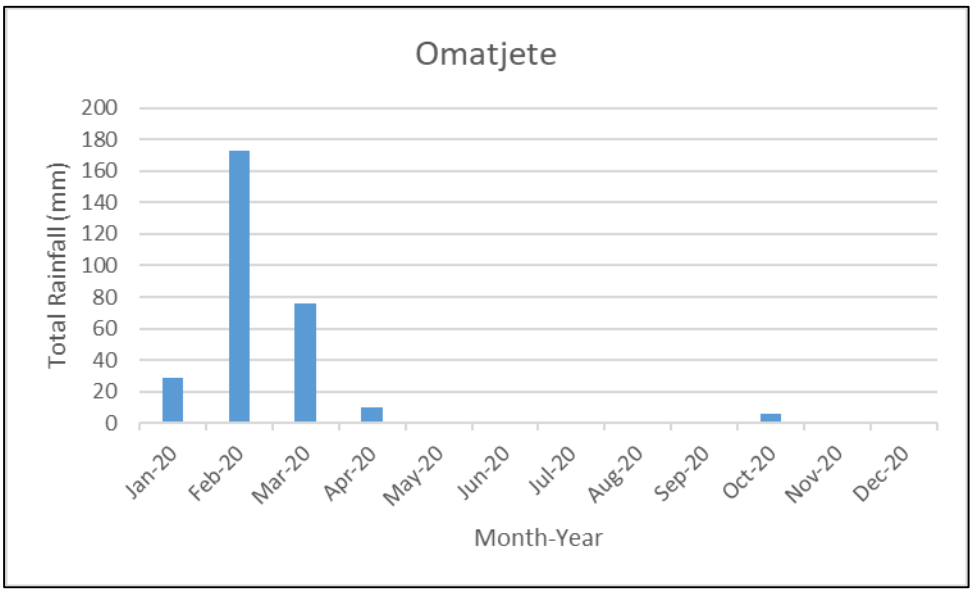


Figure 2: A graph showing monthly average rainfall patterns for the project area (source: SASSCAL,2021).

4.2.2 Temperature

The project area experiences high temperatures in December at an average of 24.5 ^{0}C and low temperature at an average of 11.6 ^{0}C in June. **Figure 3** below shows the temperature graph.

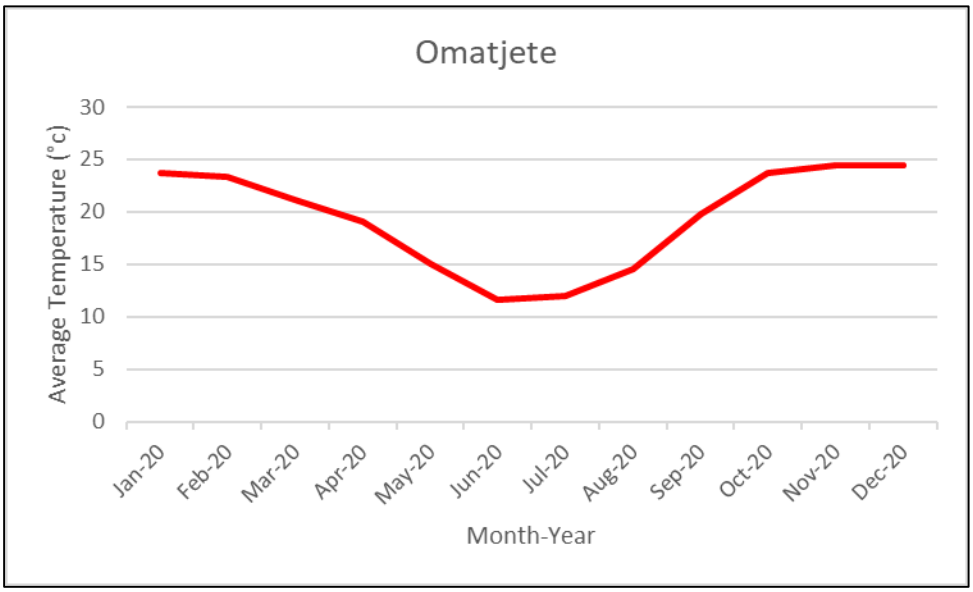


Figure 3: A graph showing monthly average temperature patterns for the project area source: SASSCAL, 2021).

4.2.3 Winds

Strong winds around the vicinity of the project area are experienced during July at an average speed of 2.6 m/s and weak winds is experienced during September, at an average speed of 0.3 m/s. **Figure 4** below shows the wind speed graph.

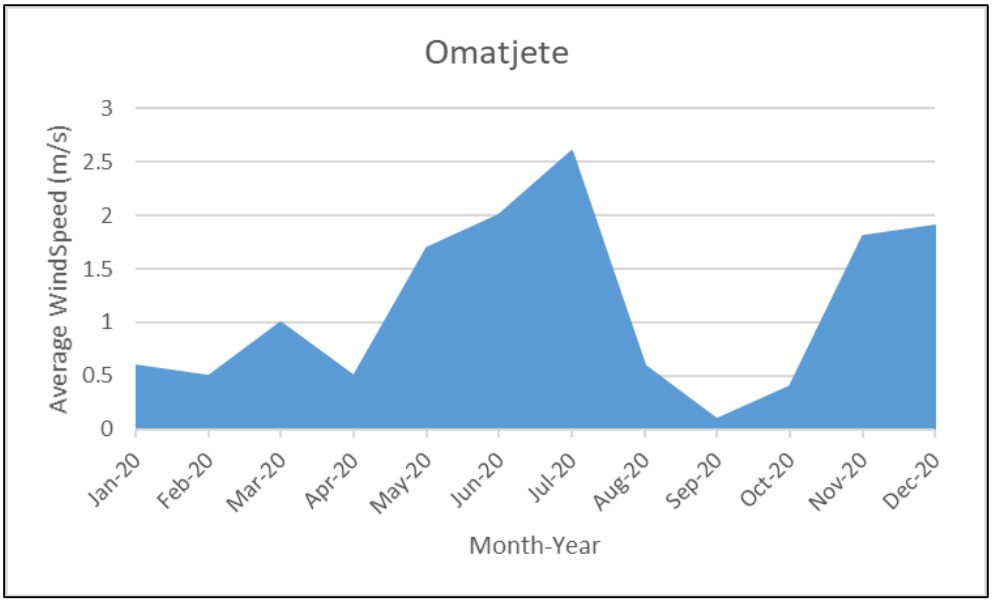


Figure 4: A graph showing average monthly wind speed in the project area (source: SASSCAL,2021).

4.2.4 Relative Humidity

Humidity around the project area is experienced in various amounts throughout the year, depending on the time of year and related weather conditions. The most humid month is March where an average relative humidity of 65% is experienced and the least humid month is September where an average relative humidity recorded at 18%. **Figure 5** below shows the humidity graph.

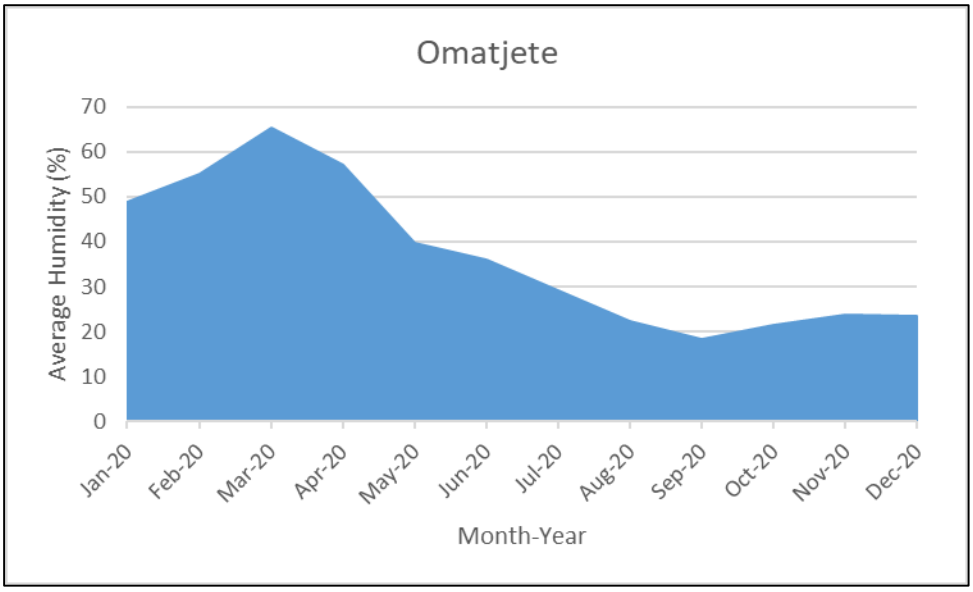
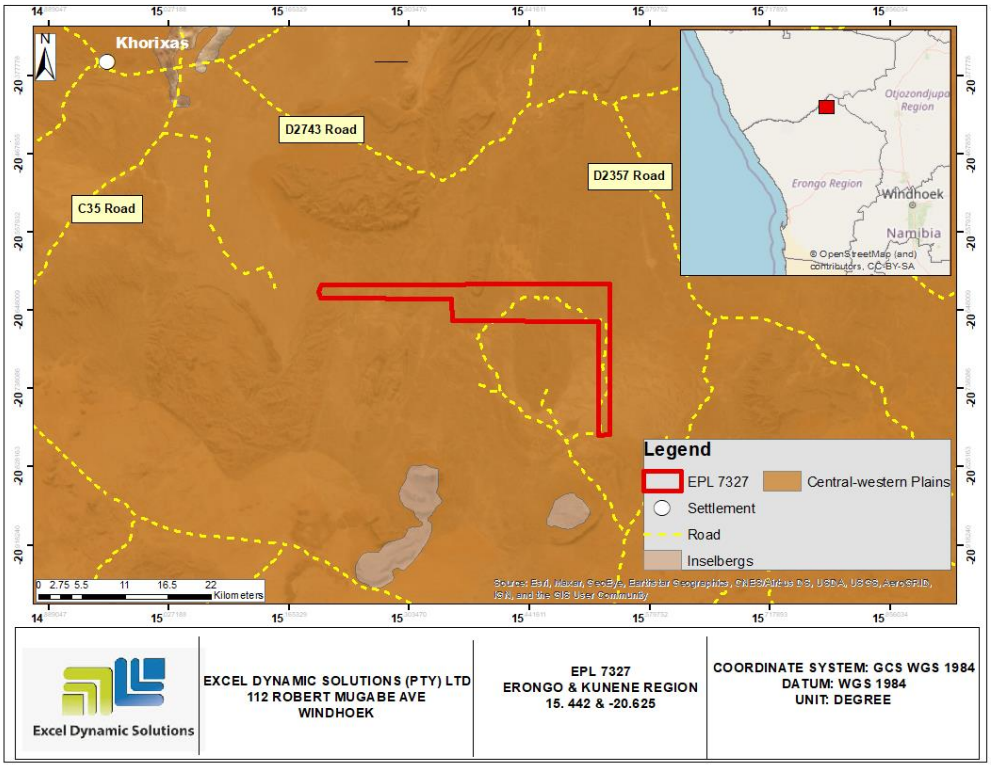


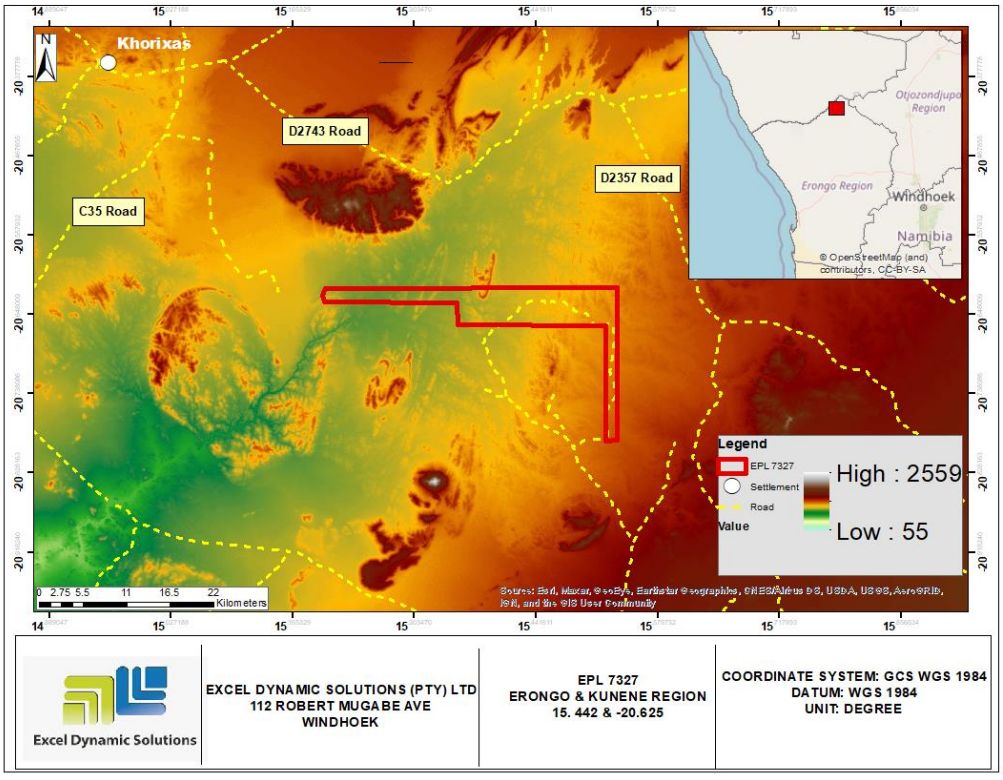
Figure 5: A graph showing relative humidity patterns in the project area

4.3 Topography

The EPL 7327 is located within the central-western plain. These plains were largely formed by erosion cutting back into higher ground and carving out the catchment areas of several major rivers. The Khan, Omaruru, Swakop and Ugab rivers are the most prominent of these. Much of the area lies between 500 and 1000 m above sea level, and consists of metamorphic rocks that were forced up out of the sea during the formation of the Gondwana continent some 550 million years ago, (Mendelsohn, 2003)**. Figures 6a** and **6b** below show the landscape map, Elevation Model.


Khorixas
D2743 Road
D2357 Road
C35 Road
Otjozondjupa Region
Erongo Region
Windhoek
Namibia
© OpenStreetMap (and) contributors, CC-BY-SA
Legend
EPL 7327
Central-western Plains
Settlement
Road
Inselbergs
0 2.75 5.5 11 16.5 22
Kilometers
Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Excel Dynamic Solutions
EXCEL DYNAMIC SOLUTIONS (PTY) LTD
112 ROBERT MUGABE AVE
WINDHOEK
EPL 7327
ERONGO & KUNENE REGION
15. 442 & -20.625
COORDINATE SYSTEM: GCS WGS 1984
DATUM: WGS 1984
UNIT: DEGREE

(a)


Khorixas
D2743 Road
D2357 Road
C35 Road
Otjozondjupa Region
Erongo Region
Windhoek
Namibia
© OpenStreetMap (and) contributors, CC-BY-SA
Legend
EPL 7327
Settlement
Road
Value
High : 2559
Low : 55
0 2.75 5.5 11 16.5 22
Kilometers
Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
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UNIT: DEGREE

(b)

Figure 6: 9a: Landscape of project area; 9b: Elevation 3D Model of project area.

4.4 Geology and Soil

The EPL lies within the Damaran Supergroup. Around the EPL there are mixtures of metamorphic and intrusive or plutonic rocks, tracks known as migmatitic terranes, crystalline moderately to high metamorphosed rocks of unknown origin with or without intrusions. This classification is inherently prone to variable interpretation, as other compilers which might distinguish some packages by their metamorphic or gneissic protoliths, and the associated age ranges may be more variable (Giller, 2003). **Figure 7** below shows the general geology map for the project.

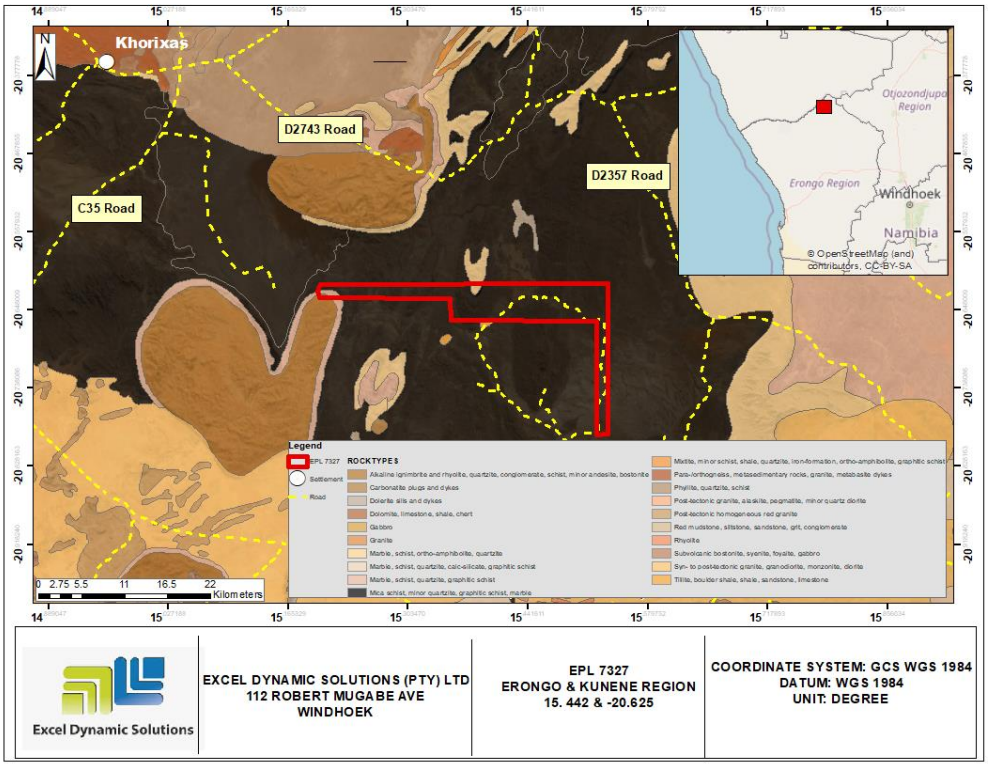

Figure 7: A map of the general geology of the project area

Soil

The EPL is covered by two soil types, namely: Lithic Leptosols and the Eutric Regosols. The Lithic Leptosols typically form in actively eroding landscape, especially in the hilly or undulating areas

that cover much of the EPL. These course-textured soils are characterized by their limited depth caused by the presence of a continuous hard –rock, highly calcareous or cemented layer within 30 cm of the surface. The Lithic Leptosols are the shallowest soil to be found in Namibia and they often contain much gravel. The Eutric Regosols are medium and fine textured soils of actively eroding landscapes, the thin layers lying directly above the rock surface from which they formed. Although not as shallow as the Lithic Leptosols, these soils never reach a depth of more than 50 cm, (Mendelsohn, 2003**). Figure 8** below shows the soil types found within the EPL area.

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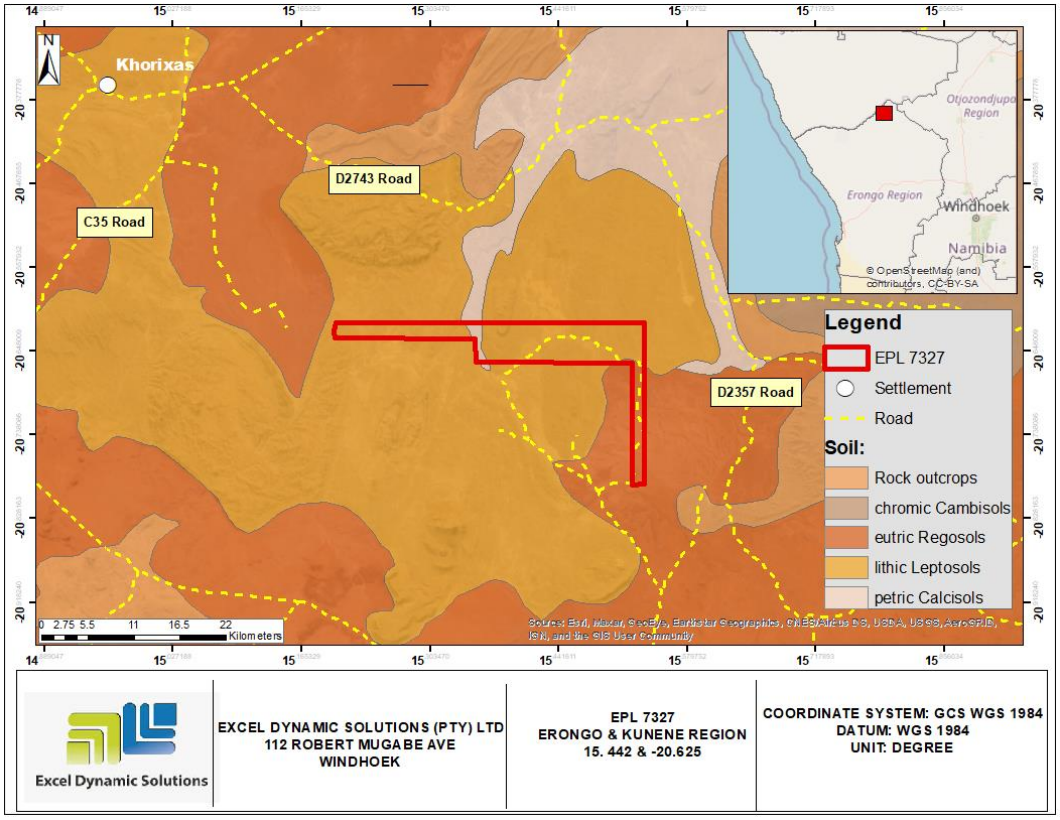

Figure 8: shows the dominant soil types found within the EPL

4.5 Hydrology and Water Resources

In terms of rivers (surface water/ hydrology), the Ugab and Ozongombo river cross the EPL. With regards to groundwater (hydrogeology), the EPL is mainly covered by the rock bodies with little

groundwater potential. The little potential is attributed to the type of rocks units underlying the EPL and their non-fractured/faulted nature limit the storage, transmission and flow of groundwater. Therefore, the rocks are not good aquifers. **Figure 9** shows the hydrology map pf the EPL area.

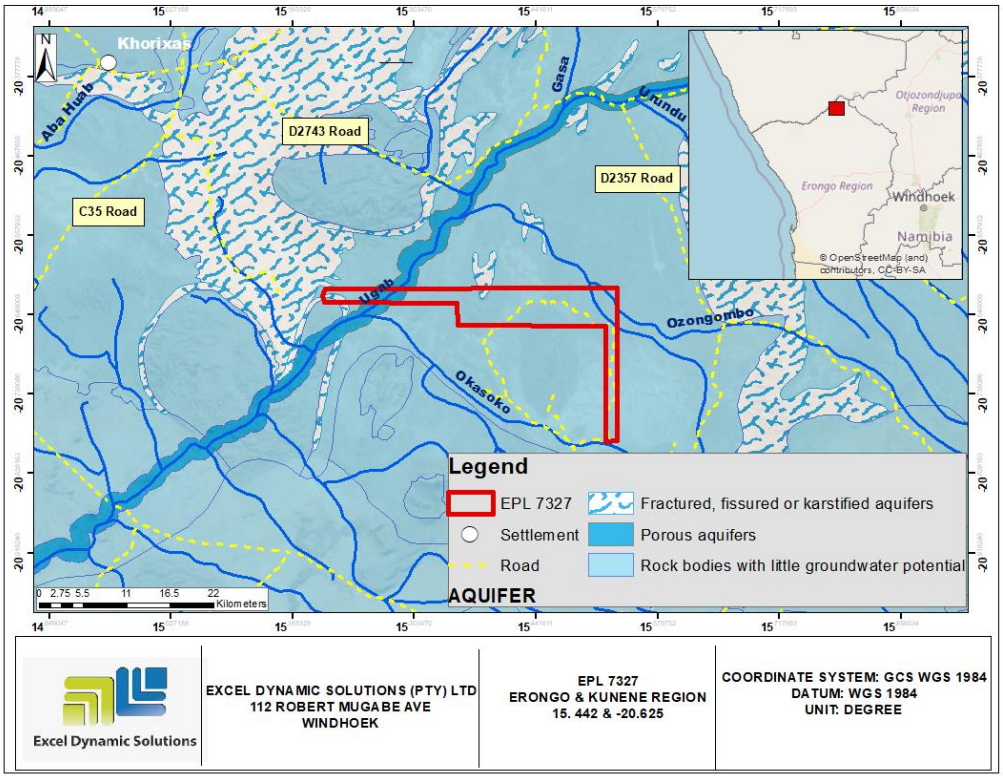

Figure 9: shows the hydrology map of the project area

The EPL lie in an area of high level of sensitivity to groundwater drought. **Figure 10** shows the groundwater drought map for the project.

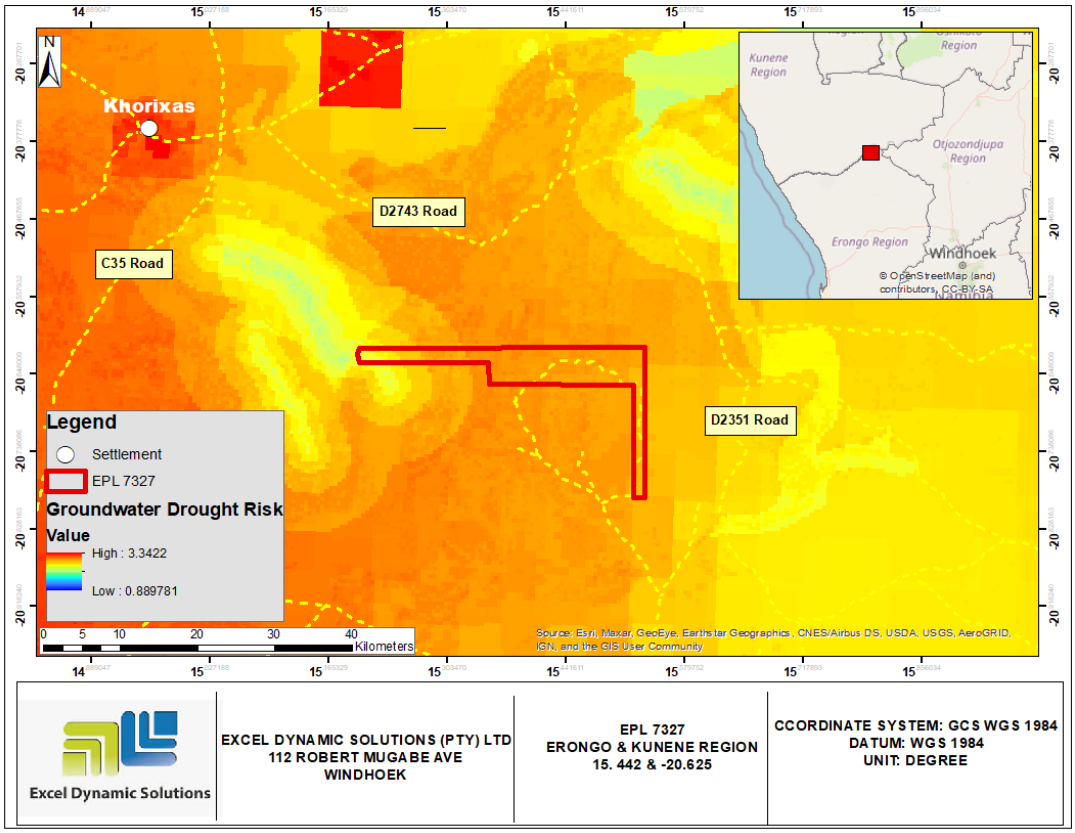

Figure 10: Shows Groundwater Drought Risk map around the project area.

4.6 Flora and Fauna

Flora

The EPL area is covered by the Acacia Reficiens commonly known as the red-thorn. This thorn is a v- shaped shrub with reddish bark when in younger growth. Their thorns are paired, either both hooked, both straight, or one hooked and the other straight. Leaves with 1 – 4 pinna pairs and 5 – 11 leaflets pairs, no hairs on margins. Flowers in creamy white balls. Fruits tend to be a flat, linear- oblong, reddish- brown pod, slightly pointed at the tips (Mannheimer, 2005). **Figure 11** below shows the map.

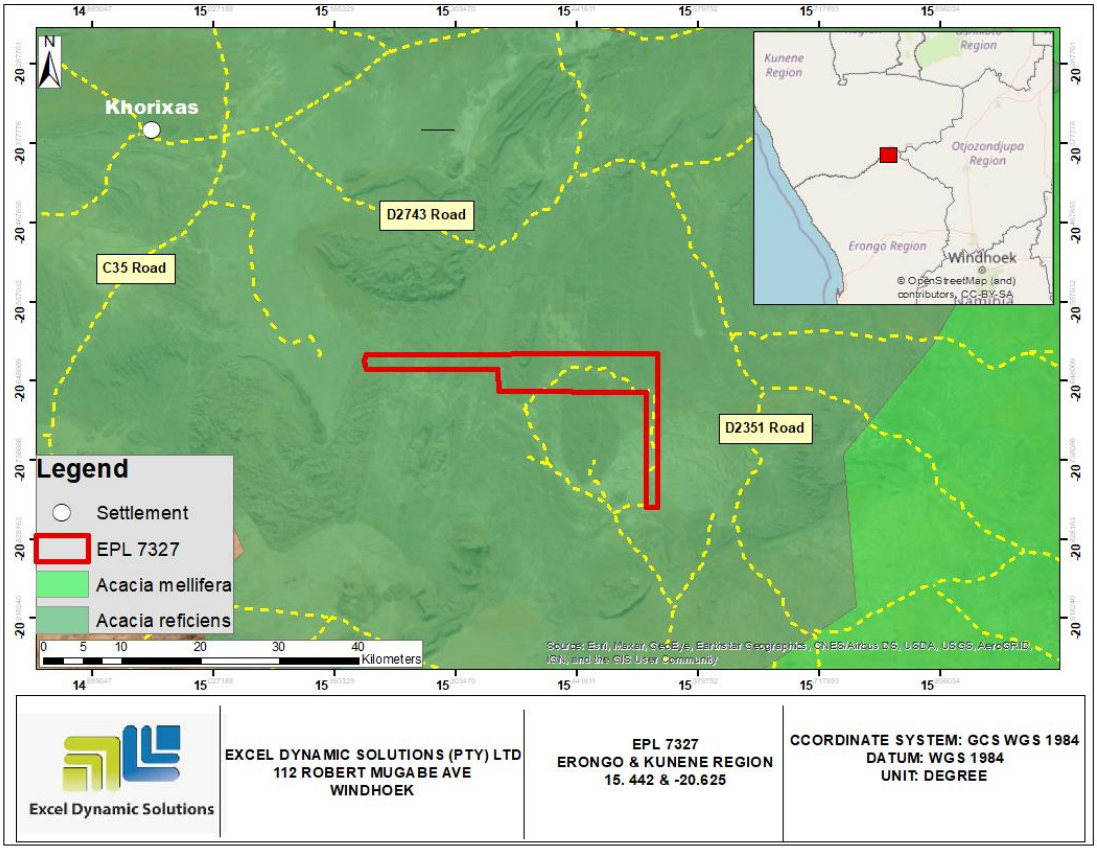

Figure 11: Vegetation map around the EPL

In terms of fauna, during the public consultation conducted on the 15th September 2021. Generally, the EPL area is mostly surrounded by bird species and mammals such as: ostriches, Guinea Fowls, and Jackals are found around the vicinity of the project area.

4.7 Heritage and Archaeology

There are nationally or locally recognized archaeological sites recorded within the EPL area. However, there is a possibility that unrecorded or undiscovered archaeological features or artifacts may be discovered during the exploration phase. The area surrounding the project site is archaeologically identified as nomadic pastoral land and has historical artefacts located in the in the project area. In the event of an archaeological discovery during exploration works, the procedures outlined in Section 55, Sub-section 4 of the National Heritage Act, No. 27 of 2004, requires that any archaeological or paleontological object or meteorite discovered are reported to

the National Heritage Council as soon as practicable. **Figure 12** shows the general archaeology map for the project.

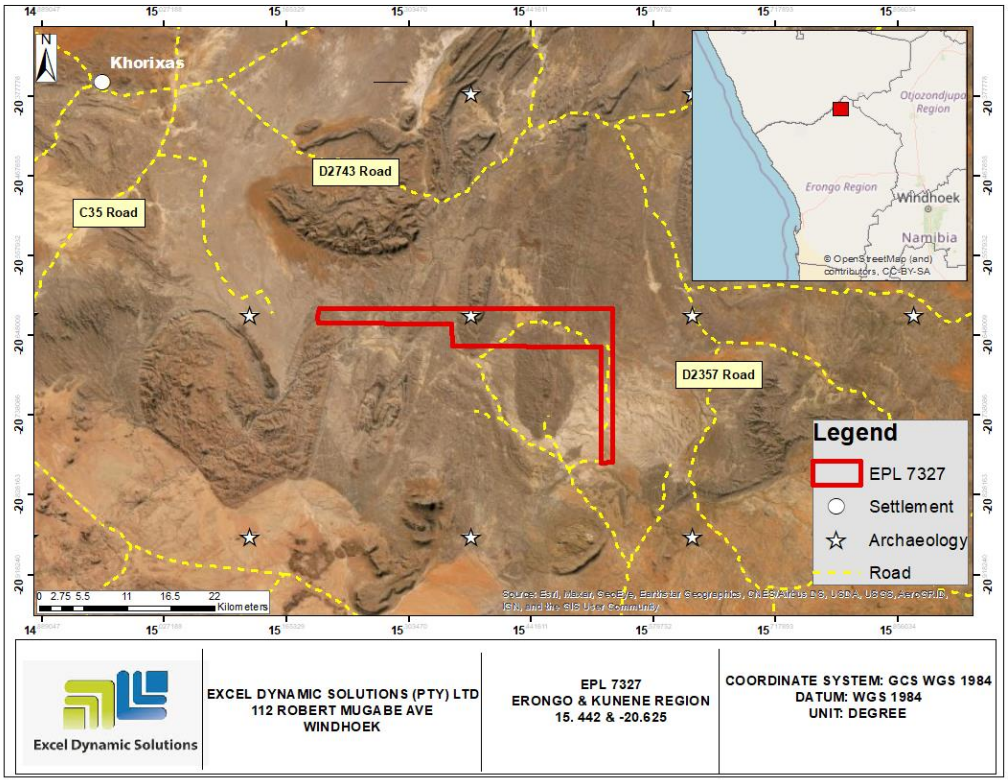

Figure 12: Map showing heritage/archaeological sites in the EPL area

4.8 Surrounding Land Uses

The EPL falls within 100% on farm land as shown in **Figure 13**. The Proponent is required to secure a signed agreement from the affected landowners and farmers to gain access to the areas of interest for prospecting and exploration investigations as per the Section 52 of the Minerals (Prospecting and Mining) Act No. 33 of 1992 and Section 2.2.3 of the Minerals Policy of Namibia.

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

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

waked any right to such compensation and has submitted a copy of such agreement or waiver to the Commissioner.

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

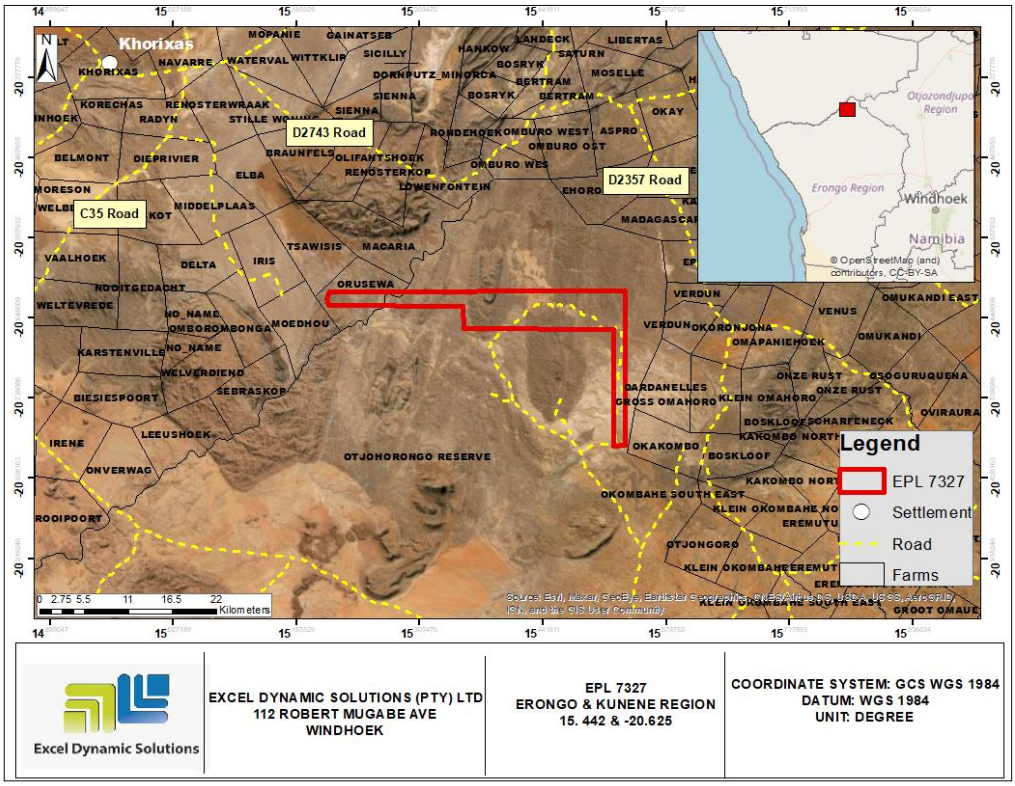

Figure 13: Map showing land use (farm) within and surrounding the EPL

4.9 Socio-Economic conditions

The EPL area is situated in a semi-arid farming region and have a homogenous farming pattern, which is mostly stock-raising. It also combines communal farming with commercial farming. The needs for production and marketing are therefore very similar and the farming community has a distinct mutual interest around industrial farming. Various mining operations occur within this region at places such as Navachab and on a smaller scale at places surrounding the EPL area. About 150,400 people were counted in the Erongo Region during the 2011 National Census, which is 7.1 percent of the total population of Namibia of 2,104,900, (NSA, 2011).

5 PROJECT ALTERNATIVES

5.1.1 The "No-go" Alternative

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

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

- Loss of foreign direct investment.
- About 10 job opportunities for community members will not be realized.
- No realization of local businesses supports through the procurement of consumable items such as Personal Protective Equipment (PPE), machinery spare parts, lubricants, etc.
- Loss of potential income to local and national government through land lease fees, license lease fees and various tax structures.
- Improved geological understanding of the site area regarding the targeted commodities.
- Socio-economic benefits such as skills acquisition to local community members would be not realized.

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

6 PUBLIC CONSULTATION PROCESS

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

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

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

Table 2: Summary of Interested and Affected Parties (I&APs)

National (Ministries and State-Owned Enterprises)
Ministry of Environment, Forestry and Tourism
Ministry of Mines and Energy
Ministry of Health and Social Services
Regional, Local and Traditional Authorities
Erongo & Kunene Regional Council
Daures Constituency
Zeraeua Traditional Authority

General Public
land owners /Interested members of the public
Namibia Community Based Tourism Association

6.2 Communication with I&APs

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

- A Background Information Document (BID) containing brief information about the proposed facility was compiled (**Appendix E**) and hand delivered to relevant Authoritative Ministries, and upon request to all new registered Interested and Affected parties (I&APs);
- Project Environmental Assessment notices were published in *The Namibian newspaper* (**06 September 2021** and **13 September 2021)** and *New Era* (**06 September 2021** and **13 September 2021)** (**Appendix F**), briefly explaining the activity and its locality, inviting members of the public to register as I&APs and submit their comments/concerns;
- Public notices were placed at frequented places at Zeraeua Traditional Authority Office, Omatjete (**Figure 14**) to inform members of the public of the EIA process and register as I&APs, as well as submit comments.
- A public meeting was scheduled and held on **15 September 2021** in Zeraeua Traditional Authority Office at 14:00**.**

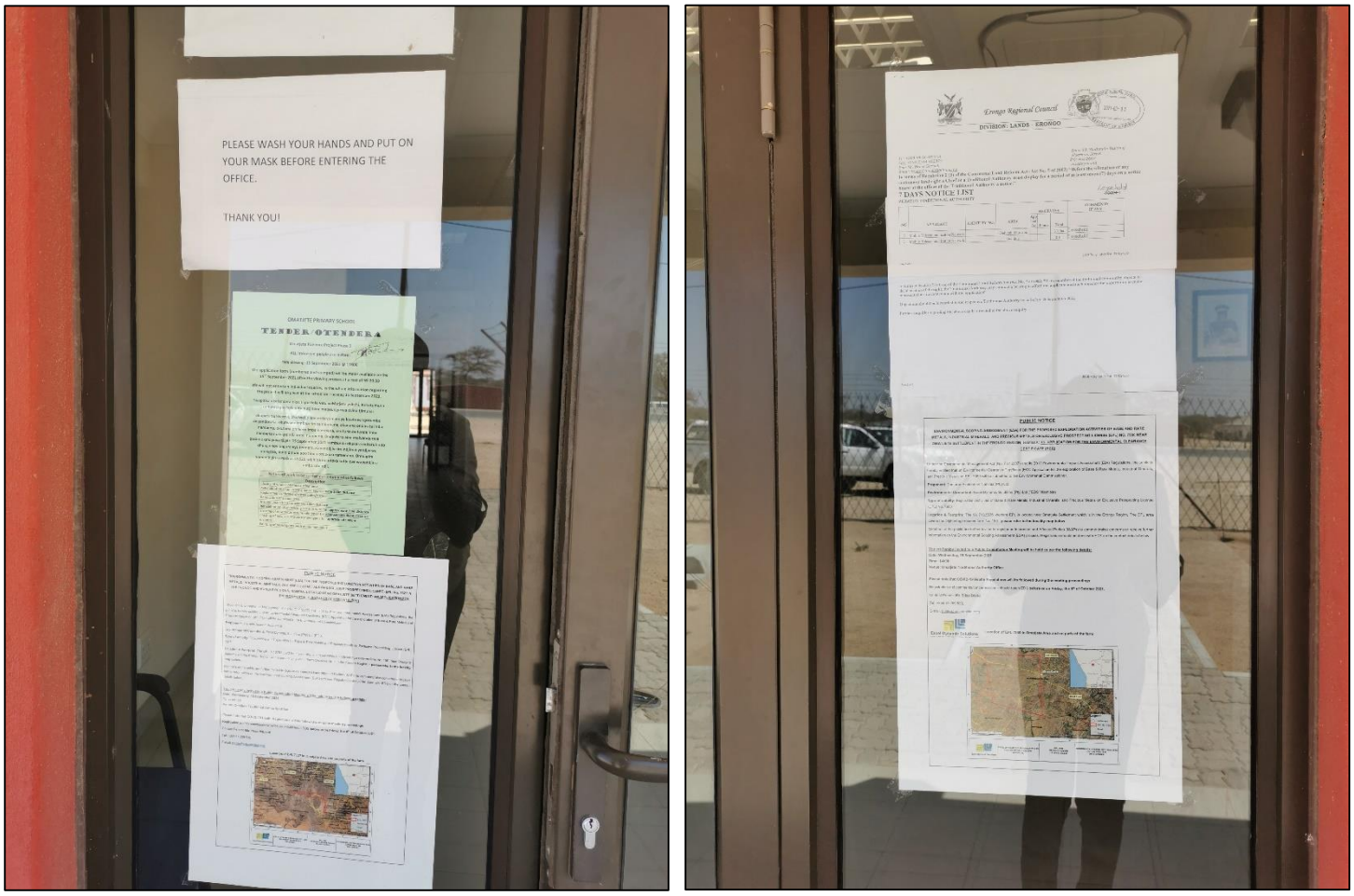

Figure 14: **Public notices placed at Zeraerua Traditional Authority Office, Omatjete**

Figure 15: First Public meeting scheduled on 14 September 2021 in Omatjete (Zeraerua Traditional Authority Office)

Issues were raised by affected and interested parties and these issues have been recorded and incorporated in the environmental report and EMP. The summarized issues raised during the public meeting are presented in **Table 3** below. The issues raised and responses by EDS are attached under **Appendix G** and **H**

Table 3: Summary of main issues and comments received during the first public meeting engagements

Issue	Concern
Boreholes water	Can the boreholes groundwater supplied to the communities.
Consultation	Where communities consulted by Damaran Exploration Namibia (DEN) when exploring other EPLs
Compensation	Since exploration activities will be done on pastoral land. Will there be compensation for affected farmers for the grazing areas
Employment	Will the Omatjete residents be employed during the operation phase of the project or will DEN come with its own people
Involvement	Can the community be included in the drafting and implementation of the EMP
Theft	Setting up campsites in the wilderness and far from communities and all the criminal activities happens there without consent.
Uncapped boreholes	Boreholes should be capped as it oppose a risk to the livestock and some boreholes may be big that animals can fall in.

7 IMPACT IDENTIFICATION, ASSESSMENT AND MITIGATION MEASURES

7.1 Impact Identification

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

Positive impacts:

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

Negative impacts:

- Existing pastoral systems may be disturbed
- Land degradation and Biodiversity Loss.
- Generation of dust
- Generation of waste
- Visual impacts (scars) on landscape
- Potential occupational health and safety risks
- Possible disturbance to heritage/archaeological resources
- Vibrations and noise from exploration works
- Impacts associate with closure and decommissioning of exploration works

7.2 Impact Assessment Methodology

The Environmental Assessment process primarily ensures that potential impacts that may occur from project activity are identified, and addressed with environmentally cautious approaches and

legal compliance. The impact assessment method used for this project is in accordance with Namibia's Environmental Management Act (No. 7 of 2007) and its Regulations of 2012, as well as the International Finance Corporation (IFC) Performance Standards.

The identified impacts were assessed in terms of scale/extent (spatial scale), duration (temporal scale), magnitude (severity) and probability (likelihood of occurring), as presented in **Table 4**, **Table 5**, **Table 6** and **Table 7**, respectively.

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

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

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

7.2.1 Extent (spatial scale)

Extent is an indication of the physical and spatial scale of the impact. **Table 4** shows rating of impact in terms of extent of spatial scale.

Table 4: Extent or spatial impact rating+

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

7.2.2 Duration

Duration refers to the timeframe over which the impact is expected to occur, measured in relation to the lifetime of the project. **Table 5** shows the rating of impact in terms of duration.

Table 5: Duration impact rating

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

7.2.3 Intensity, Magnitude / severity

Intensity refers to the degree or magnitude to which the impact alters the functioning of an element of the environment. The magnitude of alteration can either be positive or negative. These ratings were also taken into consideration during the assessment of severity. **Table 6** shows the rating of impact in terms of intensity, magnitude or severity.

Table 6: Intensity, magnitude or severity impact rating

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

Type of criteria	Negative				
	H- (10)	M/H- (8)	M- (6)	M/L- (4)	L- (2)
	extinction of rare species	important processes			

7.2.4 Probability of occurrence

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

Table 7: Probability of occurrence impact rating

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

7.2.5 Significance

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

Once the above factors (**Table 4**, **Table 5**, **Table 6** and **Table 7**) have been ranked for each potential impact, the impact significance of each is assessed using the following formula:

SIGNIFICANCE POINTS (SP) = (MAGNITUDE + DURATION + SCALE) X PROBABILITY

The maximum value per potential impact is 100 significance points (SP). Potential impacts were rated as high, moderate or low significance, based on the following significance rating scale (**Table 8**).

Table 8: Significance rating scale

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

Positive (+) – Beneficial impact

Negative (-) – Deleterious/ adverse+ Impact

Neutral – Impacts are neither beneficial nor adverse

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

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

The risk/impact assessment is driven by three factors:

Source: The cause or source of the contamination.

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

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

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

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

7.3 Assessment of Potential Negative Impacts: Surveys, Drilling, Sampling Phases

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

7.3.1 Disturbance to the Pastoral System

As an aspect of local culture, pastoral farming is vital, as it serves as livelihood for local communities as they depend greatly on livestock farming for subsistence and commercial purposes. These societies are, to a large extent, built around a pastoral economic specialization.

The effect of exploration works on the land may hinder animal husbandry in the area and its surroundings. Exploration works may cause disturbance to grazing pastures for local livestock, and if exploration methods occur over a wider spatial extent, the project area might experience loss of its pastoral system over time. Losing grazing pastures for livestock minimizes the amounts of livestock and overall farming activity in the area, and lead to loss of livelihoods and household level income. Under the current status, the impact can be considered to be of a low significance rating. With the implementation of appropriate mitigation measures, the rating will be reduced to a lower significance. The impact is assessed in **Table 9** below.

Table 9: Assessment of the impacts of exploration on the Pastoral system

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	L/M: -2	M/H: -4	L/M: -4	L/M: 2	L: -20
Post mitigation	L: -1	M/H: -4	L: -2	L: 1	L: -7

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

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

7.3.2 Land Degradation and Loss of Biodiversity

Drilling activities and earthworks done to uncover the mineral bearing rock units could result in land degradation. This would lead to habitat loss for a diversity of flora and fauna ranging from microorganisms to large animals and trees. Endemic species are most severely affected since even the slightest disruptions in their habitat can results in extinction or put them at high risk of being wiped out. The Consultant advises the Proponent to avoid unnecessary removal of vegetation, in order to promote a balance between biodiversity and their operations. Under the current status, the impact can be considered to be of a medium significance rating. With the implementation of appropriate mitigation measures, the rating will be reduced to a low significance rating. The impact is assessed in **Table 10** below.

Table 10: Assessment of the impacts of exploration on biodiversity

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M: -3	M: -3	M: -6	M/H: 4	M: -48
Post mitigation	L/M: -2	L/M: -2	L/M: -4	L/M: 2	L: -16

Mitigations and recommendation to minimize the loss of biodiversity

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

7.3.3 Generation of Dust (Air Quality)

Dust emanating from site access roads when transporting exploration equipment and supply (water) to and from site (time-to-time) may compromise the air quality in the area. Vehicular movements create dust even though it is not always so severe. The hot and dry environment, loose and in some places sandy nature of the substrate and low vegetation cover causes ambient fugitive dust levels. Additionally, activities carried out as part of the exploration works would contribute to the dust levels in the air. The medium significance of this impact can be reduced to a low significance rating by properly implementing mitigation measures. The impact is assessed in **Table 11** below.

Table 11: Assessment of the impacts of exploration on air quality

Mitigation Status	Extent	Duration	Intensity	Probability	Significance

Pre mitigation	L/M - 2	L/M - 2	L/M- 3	L/M - 2	M – 14
Post mitigation	L - 1	L - 1	L- 2	L - 1	L - 4

Mitigations and recommendation to minimize dust

- Exploration vehicles should not drive at a speed more than 60 km/h to avoid dust generation around the area.
- The Proponent should ensure that the exploration schedule is limited to the given number of days of the week, and not every day. This will keep the vehicle-related dust level minimal in the area.
- Reasonable amount of water should be used on gravel roads, using regular water sprays on gravel routes and near exploration sites to suppress the dust that may be emanating from certain exploration areas on the EPL.

7.3.4 Waste Generation

During the prospecting and exploration phase, domestic and general waste is produced on site. If the generated waste is not disposed of in a responsible way, land pollution may occur on the EPL or around the site. The EPL are located in an area of moderate sensitivity to pollution. Improper handling, storage and disposal of hydrocarbon products and hazardous materials at the site may lead to soil and groundwater contamination, in case of spills and leakages. Therefore, the exploration programme needs to have appropriate waste management for the site. In order to prevent these issues, biodegradable and non-biodegradable wastes must be stored in separate containers and collected regularly for disposal at a recognized landfill/dump site. Any hazardous waste that may have an impact on the animals, vegetation, water resources and the general environment should be handled cautiously. Without any mitigation measures, the general impact of waste generation has a medium significance. The impact will reduce to low significance, upon implementing the mitigation measures. The assessment of this impact is given in **Table 12**.

Table 12: Assessment of waste generation impact

Mitigation Status	Extent	Duration	Intensity	Probability	Significance

Pre mitigation	L/M - 2	L/M - 2	M - 6	M - 3	M – 30
Post mitigation	L - 1	L - 1	L - 2	L/M - 2	L - 8

Mitigations and recommendation to waste management

- Workers should be sensitized to dispose of waste in a responsible manner and not to litter.
- After each daily works, the Proponent should ensure that there are no wastes left on the sites.
- All domestic and general operational waste produced on a daily basis should be contained until such that time it will be transported to designated waste sites.
- No waste may be buried or burned on site or anywhere else.
- The exploration site should be equipped with separate waste bins for hazardous and general/domestic waste.
- Sewage waste should be stored as per the portable chemical toilets supplied on site and regularly disposed of at the nearest treatment facility.
- Oil spills should be taken care of by removing and treating soils affected by the spill.
- A penalty system for irresponsible disposal of waste on site and anywhere in the area should be implemented.
- Careful storage and handling of hydrocarbons on site is essential.
- Potential contaminants such as hydrocarbons and waste water should be contained on site and disposed of in accordance to municipal wastewater discharge standards so that they do not contaminate surrounding soils and eventually groundwater.
- An emergency plan should be available for major/minor spills at the site during operation activities (with consideration of air, groundwater, soil and surface water) and during the transportation of the product(s) to the sites.

7.3.5 Visual Impact (Scars) on Landscape

Visual impact due to exploration works is aesthetic damage to the landscape. Drilling and sampling activities usually leave scars on the local landscape. The exploration site is located close to or along tourist routes, and these scars would contrast the surrounding landscape and may potentially become a visual nuisance, especially for any tourism significant parts of the EPL.

It is a vital to acknowledge that during prospecting phase, certain measures will need to be taken into consideration regarding the visual aspect. Currently, the visual impact can be rated as Medium, and can be reduced to low significance upon effectively implementing the measures. The assessment of this impact is presented in **Table 13**.

Table 13: Assessment of exploration on visual

	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	L/M - 2	L/M - 2	M - 6	M - 3	M – 30
Post mitigation	L - 1	L - 1	L/M - 4	L/M -2	L - 12

Mitigations and recommendation to minimize visual impact

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

7.3.6 Occupational Health and Safety Risks

As the number of global cases of the novel corona virus (Covid -19) continues to increase, the exploration and mining activities are suspected to slow down in order to keep cases low. However, safety measures can be implemented to allow such works to continue. Improper handling of exploration materials and equipment may cause health and safety risks such as injuries to workers. The impact is probable and has a medium significance rating. However, with adequate mitigation measures, the impact rating will be reduced to low. This impact is assessed in **Table 14** below and mitigation measures provided.

Table 14: Assessment of the impacts of exploration on health and safety

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

Mitigations and recommendation to minimize health and safety issues

- Workers should be tested before-hand for high fever prior to commencement of exploration.
- As part of their induction, the workers should be provided with an awareness training of the risks of mishandling equipment and materials on site.
- When working on site, employees should be properly equipped with personal protective equipment (PPE) such as coveralls, masks, gloves, safety boots, earplugs, safety glasses, and hard hats.
- No employee should be allowed to consume alcohol or other intoxicants prior to and during working hours as this may lead to mishandling of equipment which results into injuries and other health and safety risks.
- Employees should not be allowed on site if under the influence of alcohol or any other intoxicants.

7.3.7 Disturbance to Heritage/Archaeological resources

During exploration works, historical resources may be impacted through inadvertent destruction or damage. This may include the excavation of subsurface graves or other archaeological objects. There was no information provided about either known heritage or site of significant cultural values within the EPL or in the vicinity. Therefore, this impact can be rated as medium significance, if there are no mitigation measures in place. Upon implementation of the necessary measures, the impact significance will be reduced to a lower rating. The impact is assessed in **Table 15**.

Table 15: Assessment of the impacts of exploration on archaeological sites

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	L - 1	L/M - 2	M/L - 4	M - 3	L – 21
Post mitigation	L - 1	L- 1	L - 2	M/L -2	L - 8

Mitigations and recommendation to minimize impact on archaeological sites

- A detailed field investigation will be crucial that will involve identifying, assessing and recording of the archaeological/heritage resource available at the site.
- During the exploration phase, it is important to take note and recognize any significant material being unearthed, and making the correct judgment on which actions should be taken.
- The footprint impact of the proposed prospecting and exploration activities should be kept to minimal to limit the possibility of encountering chance finds within servitude. The Proponent should keep a buffer of 50 meters on all the sites observed within the project area.
- A landscape approach of the site management must consider culture and heritage features in the overall planning of exploration infrastructures within and beyond the license boundaries;
- The Proponent is advised to make an application to the National Heritage Council for a Consent to allow detailed assessment of the area in relation to activity or development believed to be an archaeological site/s.;
- The Proponent and Contractors should adhere to the provisions of Section 55 of the National Heritage Act in event significant heritage and culture features are discovered in the course of exploration operations.

7.3.8 Noise and vibrations

Prospecting and Exploration works (especially drilling) may be a nuisance to surrounding communities due to the noise produced by the activity. Excessive noise and vibrations can be a health risk to workers on site. The exploration equipment used for drilling on site is of medium

size and the noise level is bound to be limited to the site only, therefore, the impact likelihood is minimal. Without any mitigation, the impact is rated as of medium significance. In order to change the impact significance from the pre-mitigation significance to low rating, the mitigation measures should be implemented. This impact is assessed in **Table 16** below.

Table 16: Assessment of the impacts of noise from exploration

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

Mitigations and recommendation to noise

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

7.3.9 Impacts associated with closure and decommissioning of exploration works

Identified impacts associated with the closure of the exploration program include loss of employment by workers at the exploration site, and missed opportunity for contribution to the national economy (revenue and royalties' payments). Another concern that stems from exploration program closure is the rehabilitation of the sites.

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

Table 17: Assessment of the impacts of closure and rehabilitation

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	L/M - 2	M/H - 4	M - 6	M/H - 4	M – 48
Post mitigation	L/M - 2	L/M - 2	L/M - 4	L/M - 2	L - 16

Mitigations and recommendation for rehabilitation

Rehabilitation of the exploration sites may include the revegetation of bare areas with species consistent with surrounding vegetation; refilling of trenches in such a way that subsoil is replaced first, and topsoil replaces last. Any drilling holes should not only be filled with sand alone, as wind will scour the sand and re-establish the holes. Necessary landscaping of exploration areas will be undertaken upon completion of each phase of exploration (drilling, sampling, etc.).

7.3.10. Impact on Employment Opportunities and Economic Contribution

Should the exploration program come to an end, exploration workers may lose their jobs and source of income. The exploration program has a defined timeframe, which the workers should be made aware of in advance. Additionally, if no valuable commodities are discovered during exploration, there will be no further opportunities from this project to contribute to national level royalties and regional level economic development, and there is no mitigation measure expected from the Proponents side in this regard. This impact can be rated as of Medium significance. The impact significance of unemployment can be reduced from a medium to a low significance, by implementing mitigation measures. The impact of loss of employment from the exploration workers is assessed in **Table 18** below.

Table 18: Assessment of the impacts of exploration activities closure on employment

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	L/M - 2	L/M - 2	M - 6	M/H - 4	M – 40

Post mitigation	L/M - 2	L/M - 2	L/M - 4	L/M - 2	L - 16

Mitigations and recommendation to minimize joblessness

- The Proponent should inform the employees on time, of its intentions to cease the exploration works and the expected date of such closure. This will provide the employees with enough time to search for work elsewhere.
- The Proponent should raise awareness of the possibilities for work in a similar or another industrial sector.

8 CONCLUSIONS AND RECOMMENDATIONS

The potential positive and negative impacts stemming from the proposed exploration activities on EPL No. 7327 were identified, assessed and mitigation measures made thereof. The mitigation measures recommended in this report and management action plans provided in the draft EMP, can be deemed sufficient to avoid and/or reduce (where impact avoidance is impossible) the risks to acceptable levels.

EDS is, therefore, confident that these measures are sufficient, and thus recommends that an ECC may be issued to the Proponent to enable the exploration works on the EPL, under the suggested mitigation and monitoring measures. However, in order to ensure that the Proponent approaches the project with caution and abides to the mitigation measures provided herein, the ECC should be issued on condition that the provided management measures and action plans are effectively implemented and monitored on site. Monitoring of the environmental components described in the impact assessment should be conducted by the Proponent and applicable Competent Authority. This is to ensure that all potential impacts identified in this study and other impacts that might arise during implementation are properly identified in time and addressed. Lastly, should the ECC be issued, the Proponent will be expected to be compliant with the ECC conditions as well as legal requirements governing the mineral exploration and related activities.

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