Environmental Assessment (EA) For Exclusive Prospecting License (EPL) No. 4866 located North West of Opuwo, Kunene Region, Namibia.

ENVIRONMENTAL ASSESSMENT FINAL REPORT

ECC Application Reference: APP-001866

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September 2020

EXECUTIVE SUMMARY

Mr. Josef Kadila (hereinafter referred to as *The Proponent*), has an interest in Exclusive Prospecting License (EPL) 4866. This EPL was granted to the Proponent by the Ministry of Mines and Energy (MME). The tenure of the licence at hand is from 23 August 2012 and expires on 19 February 2022 as per the information available on the Namibia Mining Cadastre Portal. The EPL Holder has recently applied for other commodities such as Base and Rare Metals, Industrial Minerals and Precious Metals to be added to licence profile. The Proponent has submitted an application to the MME for the addition of new commodities and the application was done in accordance with Section 73 (1) (a) of the Minerals (Prospecting and Mining) Act No. 33 of 1992:

73. (1) Subject to the provisions of subsection (2), the holder of an Exclusive Prospecting License may apply for the amendment of such license –

The tenement is located about 600 km north of Henties Bay and about 160 km northwest of Opuwo in the Kunene Region and covers a surface area of 97 102.6000 hectares (ha). The approximate location of the EPL is shown in **Figure 1** (coordinates: -17.219 °S, 12.276 °E). The Proponent plans to conduct prospecting and exploration activities leading to the estimation and delineation of the target resource. Prospecting and exploration form part of the listed activities that may not be undertaken without an Environmental Clearance Certificate (ECC).

Project Description

The project intends for the prospecting and exploration activities which comprises Precious Stones as a target commodity group. The selected commodity granted (and applied for), taking into consideration the potential mineralization model and exploration targets, was based on the regional and local geology as well as the mineral exploration history of the area. The objective of the planned prospecting and exploration is to delineate the mineral deposits and determine whether the deposits are economically viable. The scoping process will identify sensitive environmental features that might be affected by the proposed prospecting and exploration activities. The level and magnitude of planned exploration work is not clear at this stage. However, 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 geophysical ground-based survey work (i.e. Ground Penetrating Radar, EM and Ground Magnetic surveys). Invasive activities involve soil and rock sampling, trenching and drilling, with bulk sampling being the major activity. The prospecting and exploration activities entail only one commodity group: Precious Stones. The Proponent plans to conduct a staged exploration approach as follows:

Prospecting (Construction/Initiation Phase)

The exploration process is expected to be simple. Prospecting phase include reviewing existing reports and composite stratigraphic, lithological-geochemical maps of the targeted areas to identify prospective lithostratigraphic packages. In addition to literature review, field work (lithological (soil/rock) mapping and sampling) will be conducted to verify desktop work. Up to this point no physical disturbance is required.

The selection of the potential mineralization model and exploration targets has been specially selected based on the regional and likely local geology. The exploration programme will commence upon issuing of the clearance certificate.

Exploration (drilling), Sampling and Analysis (Operational and Maintenance Phase)

This is the phase during which the Proponent is exploring and undertaking related activities on the site. It is also the phase during which maintenance of the exploration works, equipment and machinery is done. The level and magnitude of planned exploration work is not clear at this stage. However, 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. Invasive activities involve soil and rock sampling, trenching, drilling and possibly test mining. A 12 to 18 months exploration period is predicted. The selection of the potential mineralization model and exploration targets will be selected based on the local geology mapping, trenching, and drilling and assay results of the samples collected. The aim of the planned exploration activities is to delineate the mineral deposits and determine whether the deposits are economically feasible mining resources. No processing of the mined commodity with chemicals is planned for onsite at this stage. Other aspects of the exploration operations include:

Access

The intended project area is accessible on the western part via the C34 road from Henties Bay – Mowe Bay to Cape Fria along the coast and on the eastern part via the D3703 route from Opuwo. Accessibility directly to the site can be made through a gravel tract which may be rocky and has a poor condition, especially after heavy rainfall.

Materials and Equipment

The input required for exploration program in terms of vehicles and equipment include; three (4X4) vehicles, earth movers, drilling machines, crushing and screening equipment, compressor and generators, and a drone. Equipment and vehicles will be stored at a designated area near accommodation site or a storage site established within the EPL area.

Human Resources

The project will employ about 30 people, both semi-skilled and skilled.

Services infrastructure

Water: Water required for drinking, sanitation, dust control, and washing equipment will be obtained from the nearest boreholes. The entire area is dependent on groundwater resources for domestic purposes and stock watering. It is estimated that 2000 litres of water for drinking, 3600-4000 litres of water for sanitation, 5000 litres of water for dust control, 2000 litres of water for washing equipment will be used per month.

Power supply: Power required during operation phase will be provided by diesel-run generators.

Accommodation

Exploration crew will be accommodated in at set up camp near the exploration site. Exploration will take place during the day time only and staff will be commuting to exploration site from the accommodation town/place.

Timeframe

The planned ground surveys may last several weeks and will be done in stages on different parts of the property (EPL 4866). The geological mapping, ground surveys and sampling will be done in a period of 12 to 18 months.

Waste Management

It is required that wastewater has to be disposed in evaporation ponds or storage tanks because no effluent may be discharged into the ephemeral, dry river beds in the interior of Namibia. The site will also be equipped with secured waste bins for each waste type. Depending on the amount generated, waste will be sorted and collected on a weekly basis or monthly and taken to the Opuwo landfill site. Ablution facilities will use chemical toilets and/or sealed septic tanks and the sewerage taken to the Opuwo periodically. Alternatively, a general landfill facility (10 ha in extent) may be established and operated on site to deal with inert, non- hazardous waste only.

Security

Temporary storage areas for exploration equipment, materials, machines etc. will be necessary at the exploration camp. Security will be supplied on a 24-hour basis at the exploration camp. A temporary support fence surrounding the storage/camp site will be constructed to ensure people and domestic animals are not put at risk.

Decommissioning Phase

As it is with all exploration projects, exploration activities on EPL 4866 will come to an end. The decommissioning of the exploration operations may be considered due to poor exploration results or declining in the diamond market price. During the operational phase and before decommissioning, the Proponent will need to put site rehabilitation measures in place. Where necessary, stockpiling of top soil for rehabilitation at a later stage will be undertaken. Necessary rehabilitation of exploration areas will be undertaken upon completion of each phase of exploration (drilling, sampling etc.).

Project Alternatives

The conclusions weighed and considered above are summarized below:

No-go alternative: The "No-Go" alternative is the option of not proceeding with the activity, which typically implies a continuation of the status quo. Should the proposed works of the prospecting and exploration plan be discontinued, none of the potential impacts (positive and negative) identified would occur. Furthermore, the local people to be employed for exploration work will be left unemployed and the Proponent would not be able discover and define the targeted resource for possible future mining activities and contribute to the country's economy through revenue and license royalty payments.

If the proposed project is to be discontinued, the current land use for the proposed site will remain unchanged. In considering the proposed project, the 'no-go' option is not considered the preferred alternative.

Exploration location: The prospecting/exploration location is dependent on the geological setting (regional and local), the economic geology, and the exploration and mining history of the area of the EPL. Therefore, finding an alternative location for the planned exploration activities is not possible at this stage. In other words, precious stones are area specific, which means exploration targets are primarily determined by the geology (host rocks) and the geological environment of the site (ore forming mechanism).

Exploration Methods: Both invasive and non-invasive exploration activities are expected to take place. If an economically viable discovery is made, the project will proceed to mining phase. A separate full environmental assessment will be undertaken for the feasibility and mining phase.

Impact Identification

The potential positive and negative impacts that have been identified for the proposed establishment activities are as follows:

Positive impacts:

- Creation of jobs to the locals (primary, secondary and even tertiary employment).
- Improving schools, hospitals and other social facilities in the region.
- Boosting the local economic growth.
- Open up other investment opportunities.
- Contribution to regional economic development.
- Other infrastructure development related benefits

Negative impacts:

- Loss of the Pastoral System
- Land degradation and possible destruction of faunal habitats as well as removal of vegetation that may be encountered within the target areas.
- Generation of dust from the exploration activities and access gravel road
- Environmental pollution
- Visual impacts (scars) on landscape that will, because of low rainfall, remain so for a very long time if not rehabilitated.
- Occupational health and safety risks
- Water quality changes
- Archaeological impact
- Noise and vibrations
- Socio-economic challenges

Impacts Assessment and Mitigations

The key potential impacts associated with prospecting, drilling, sampling and decommissioning phases of the project were identified and assessed. In order to avoid and minimize (where impacts cannot be avoided) the identified project impacts, mitigation measures were recommended. The significant identified impacts for the project phases are summarized below. These impacts can be reduced or minimized by implementing the mitigation measures given under the impact assessment chapter and also management actions plan provided in the Draft EMP.

Loss of the Pastoral System: Nomadic pastoral systems are active in the north-western parts of Namibia and the local residents are dependent on this lifestyle for economic survival. While economic analyses of other local groups may show that they earn more from non-pastoral sources, the concept of nomadic pastoralism is a vital cultural aspect for the people of Kunene region, which remains central to their identities. Performing exploration and mining activity in the area may have effects on the local livelihoods by disrupting grazing pastures for local livestock, and thus disrupting how the residents continue their way of living and making a living. The Consultant therefore advises the Proponent to avoid causing overgrazing in certain areas due to exploration activities. Under the current status, the impact can be considered to be of a medium significance rating. With the implementation of appropriate mitigation measures, the rating will significantly be reduced to low.

Loss of Biodiversity: The drilling activities and earthworks done to expose the diamond bearing rock units will potentially result in land degradation, thus destroying habitats of small animal species that may be encountered under the site soils and rocks. In order to enable the exploration operations, some site vegetation within the footprint of the exploration area may be removed. This might lead to the destruction of protected plant species. Thus, resulting in the loss of such species and eventually leading to a loss of biodiversity in the area. In fragile ecosystems, vegetation is easily disturbed, which often means any disturbance to the environment will result in the loss flora. It is therefore important to identify what species are present, understand them and try to minimize the impact upon them with operational management guidelines. The most obvious impact on vegetation is direct loss due to removal of soil by digging and trenching. 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 quo, the impact can be considered to be of a medium significance rating. With the implementation of appropriate mitigation measures, the rating will significantly be reduced to low.

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

Waste Generation: Prospecting and exploration activities are usually associated with generation of waste of all kinds (domestic and general) and if these are not disposed of in a responsible manner, it will result in the pollution of the site and the surrounding environment. Industrial waste is a given by-product of any exploration operation. Non-biodegradable and biodegradable refuse should be stored in a container and collected on a regular basis and disposed of at a recognized disposal facility. Precautions should be taken to prevent any refuse spreading. The container should be covered with mesh to prevent access from animals. Without any mitigation measure, the impact has a medium significance. The impact will be of low significance from medium, upon implementing the mitigation measures.

Visual Impact (Scars) on Landscape: Visual impact due to exploration results in aesthetic damage to the landscape. Drilling activities usually leave scars on the local landscape. If the exploration sites are located close to or along tourist routes, these scars, in many cases contrasts the surrounding landscape and thus may potentially become a visual nuisance, especially to tourists in tourist-prone areas. Nonetheless, it is a vital to acknowledge that during the prospecting phase, certain measures will need to be taken into consideration regarding the visual aspect. Currently, the visual impact can be rated as slightly medium to low significance, but upon effectively implementing the measures.

Potential Health and Safety Risks: Improper handling of exploration materials and equipment may cause health and safety risks i.e. injuries to workers. The impact is probable and has a medium significance rating. However, with adequate mitigation measures and proper emphasis on the implementation of Personal Protective Equipment (PPE), the impact rating will be reduced to low.

Surrounding Soils: Drilling works will potentially result in soil disturbance which will leave the already exposed site soils vulnerable to erosion. This impact is probable because the proposed site is vacant (bare) with no vegetation cover. Contamination of sewage and mineral processing, extraction and recovery processes can affect large areas. The impact can be rated as medium, if no mitigation measures are implemented. However, with the implementation of mitigation measures, the impact significance will reduce to low.

Archaeological Impact: During exploration works, historical resources may be impacted through unintentional destruction or damage. This may include the excavation of subsurface graves or other archaeological objects. Therefore, information about known heritage is provided in **Section 5.10** of this report. The impact can be rated medium to low, if there are no mitigation measures in place. Upon implementation of the necessary measures, the impact significance will be low.

Noise and Vibrations: The exploration work, especially drilling may be a nuisance to surrounding neighbours. Excessive noise can also be a health risk to site workers. Furthermore, 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, and 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.

Conclusion

The potential positive and negative impacts stemming from the proposed prospecting and exploration activities on EPL 4866 were identified, assessed and mitigation measures made thereof. The mitigation measures and recommendations provided in this EIA 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. The Consultant is therefore confident that these measures are sufficient and thus recommend that the Proponent be issued with the ECC to enable for the commencement of exploration, sampling and drilling activities on the property, EPL 4866. However, the ECC should be issued on a condition that the provided management measures and action plans are effectively implemented on site and monitored. Most importantly, monitoring of the environmental components described in the impact assessment chapter 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 the exploration work 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 as stipulated in the EMA (2007), including;

- Furnishing the MEFT and MME with an environmental report every six (6) months
- Carrying out and submission of an annual Environmental Audit to the MEFT and MME

Limitations

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

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

COVID-19 Influences:

COVID-19 has changed the way the world thinks, acts, and does business. The pandemic has forced a comprehensive review of business practices, a higher level of engagement with technology to offset the constraints due to social distancing, restrictive travel, and a focus on social responsibility. The Consultant had to change very little in the way they operate and provide public consultation services.

Although the Consultant operated with limited travel during the environmental assessment to comply with the measures and regulations put in place to curb the spread of Covid-19, various other platforms were used to communicate the project information. These platforms included emails, registered mails, notices, newspaper adverts, and telephonic communication.

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LIST OF ABBREVIATIONS

Abbreviation	Meaning
AMSL	Above Mean Sea Level
BID	Background Information Document
CV	Curriculum Vitae
DEA	Department of Environmental Affairs
EA	Environmental Assessment
EAP	Environmental Assessment Practitioner
ECC	Environmental Clearance Certificate
EDS	Excel Dynamic Solutions
EIA	Environmental Impact Assessment
EMA	Environmental Management Act
EMP	Environmental Management Plan
EPL	Exclusive Prospecting License
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

KEY TERMS

Alternative	A possible course of action, in place of another that would meet the same purpose and need of the proposal.

Baseline	Work done to collect and interpret information on the condition/trends of the existing environment.
Biophysical	That part of the environment that does not originate with human activities (e.g. biological, physical and chemical processes).
Cumulative Impacts/Effects Assessment	In relation to an activity, means the impact of an activity that in it may not be significant but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area.
Decision-maker	The person(s) entrusted with the responsibility for allocating resources or granting approval to a proposal.
Ecological Processes	Processes which play an essential part in maintaining ecosystem integrity. Four fundamental ecological processes are the cycling of water, the cycling of nutrients, the flow of energy and biological diversity (as an expression of evolution).
Environment	As defined in Environmental Management Act - the complex of natural and anthropogenic factors and elements that are mutually interrelated and affect the ecological equilibrium and the quality of life, including – (a) the natural environment that is land, water and air; all organic and inorganic matter and living organisms and (b) the human environment that is the landscape and natural, cultural, historical, aesthetic, economic and social heritage and values.
Environmental Management Plan	As defined in the EIA Regulations (Section 8(j)), a plan that describes how activities that may have significant environments effects are to be mitigated, controlled and monitored.
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

Mr. Josef Kadila (*The Proponent*), is a holder of Exclusive Prospecting License (EPL) 4866. The locality map of the EPL 4866 exploration site is shown in **Figure 1**. The EPL was granted to the Proponent by the Ministry of Mines and Energy (MME). The tenure of the EPL is from 23 August 2012 and it expires 19 February 2022 as per the agreement with the MME. The earth data of the covered area is prospective to Precious Stones only. The proponent wishes to explore for Precious Stones, with a specific focus on diamond as the main target resource. There are no known impediments to the exploration and evaluation of this EPL.

In terms of Section 27 of the EMA, No. 7 of 2007 and its 2012 Environmental Impact Assessment (EIA), some activities as listed may not be carried out without an Environmental Impact Assessment (EIA) being undertaken and Environmental Clearance Certificate (ECC) being obtained. The relevant listed activities as per EIA regulations are:

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

Consequently, the Proponent appointed Excel Dynamic Solutions (Pty) Ltd (Consultant) an independent team of Environmental Consultants to conduct the required EA process and submit the ECC application to the Environmental Commissioner on their behalf.

1.2 Terms of Reference and Scope of Works

Exploration activities are listed among those that may not be carried out by individuals or organizations without an EIA being undertaken and an ECC awarded. The Consultant was appointed by the Proponent to undertake an environmental assessment for the purpose of applying for an ECC for exploration work on EPL 4866. No formal Terms of Reference (ToR) were provided to the Consultant by the Proponent. The Consultant, instead, relied on the requirements of the EMA (No. 7 of 2007) and its EIA Regulations (GN. No. 30 of 2012) to conduct the study.

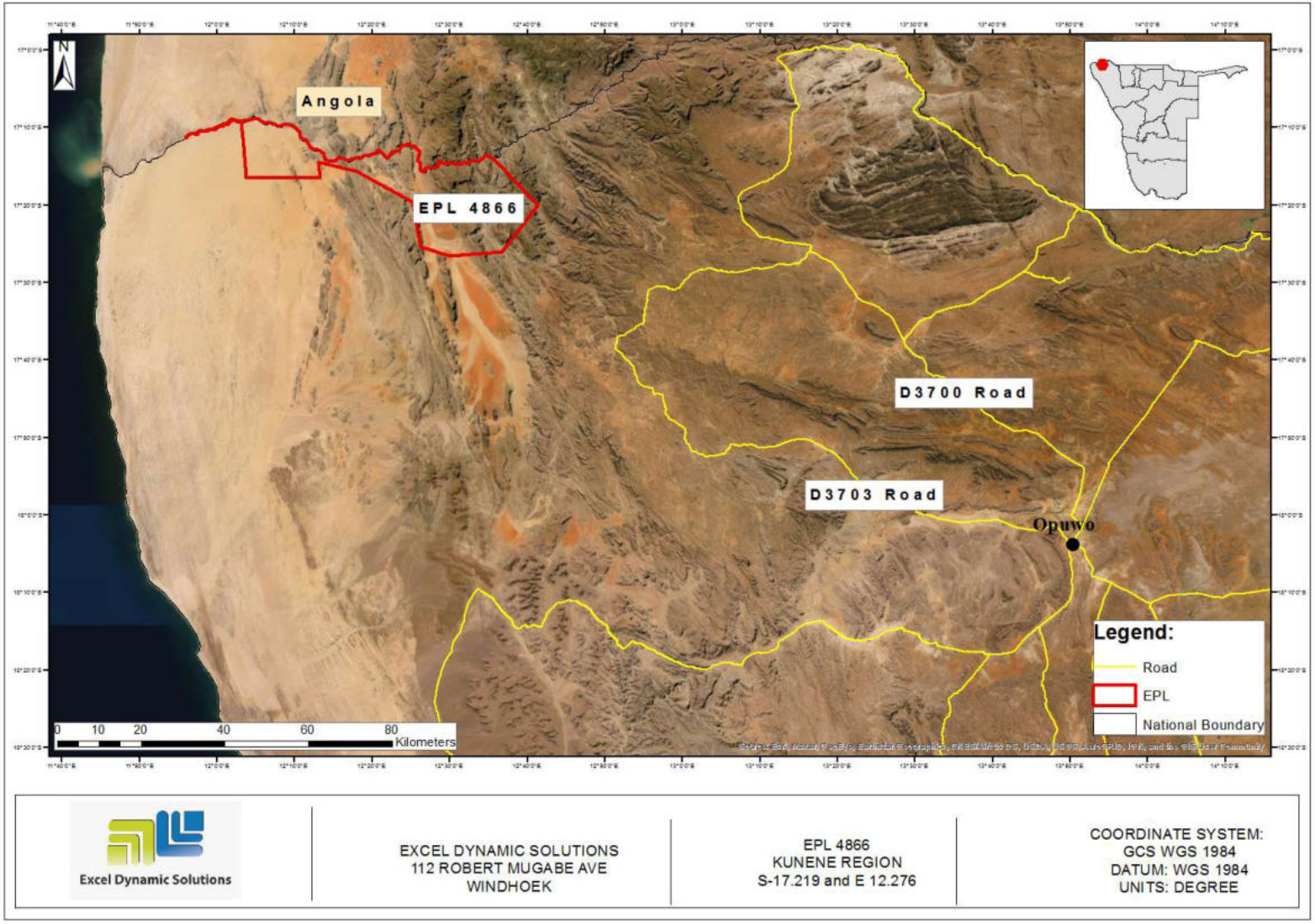


Figure 1: Location of the EPL No. 4866 near Opuwo in the Kunene Region

1.3 Appointed Environmental Assessment Practitioner

In order to satisfy the requirements of the EMA and its 2012 EIA Regulations, the Proponent appointed Excel Dynamic Solutions (Pty) Ltd (Consultant hereafter), an independent consulting company to conduct the required EIA process on their (Proponent's) behalf. The findings of the EIA process are incorporated into this report and the draft Environmental Management Plan (EMP) - (**Appendix B**) will be submitted as part of an application for an ECC to the Environmental Commissioner at the Department of Environmental Affairs (DEA), Ministry of Environment, Forestry and Tourism (MEFT) and the Ministry of Mines and Energy (MME).

The EIA project is headed by Mr. Nerson Tjelos, a qualified and experienced Geoscientist and experienced EAP. The consultation process and reporting are conducted by Ms. Althea Brandt and Ms. Rose Mtuleni. The CV for Mr. Tjelos is presented in **Appendix C.**

1.4 Details of the Project Proponent

The details of the Proponent are presented in **Table 1** below.

Table 1: Proponent contact details and purpose of the required ECC

Full name of Proponent	Physical Address & Contact details	Postal Address	ECC Application for:
Mr. Josef Kadila	2205, Southampton Street, Windhoek Cellphone: +264 (0) 81 574 8449 Tel: +264 61 306770 Fax: +264 88 647786 Email: jkadila@gmail.com	P.O. Box 25475 Windhoek Namibia	Exclusive Prospecting License (EPL) No. 4866 near Opuwo in the Kunene Region, Namibia.

1.5 The Need for the Proposed Project

The Diamond Industry in Namibia is popular for more than 100 years and it remains a steady industry (McKechnie, 2019). A key factor to be considered in undertaking diamond exploration is the inherent prospectivity of the target area, especially if there is a proven track record of production, ease of access, security of tenure and investment, political stability, and an open and

transparent operating and fiscal regime (McKechnie, 2019). Exploration and mining activities contribute to 25% of the country's income, thus rendering it one of the largest contributors to the Namibian economy. Namibia has various natural resources including diamonds (target mineral for this project), uranium, copper, gold, lead, tin, lithium, cadmium, zinc, salt and vanadium. Participation of local communities in prospecting, exploration and mining sector does not only create and increase revenue, but also contribute to the GDP of the country, which in turn, can aid in achieving a balance between the creation and distribution of wealth. Moreover, mining forms the core of some of Namibia's development plans, namely: National Development Plan 5 (NDP5) and Harambee Prosperity Plan (HPP). A discovery of an economic deposit of the EPL will contribute positively, as a solution, to the ever-increasing demand for precious stones for the world's growing population and for prosperity. **Figure 2** indicates how Namibia performed financially between the years of 2004 - 2016, compared to other diamond bearing countries in the Southern African Development Community (SADC) region.

Based on the historical exploration activities undertaken around the EPL area, various minerals occurrences are historically known to occur in the EPL area although very few have been investigated to prove if they are economic or not. Existing exploration/mining activities are limited in the area and currently include the Northern Namibia Development Company (Pty) Ltd (NNDC) diamond mining operation. The prospective creation of employment for local communities and contribution to national GDP from the project, justifies the need for exploration work on EPL 4866 to enable potential future mining works.

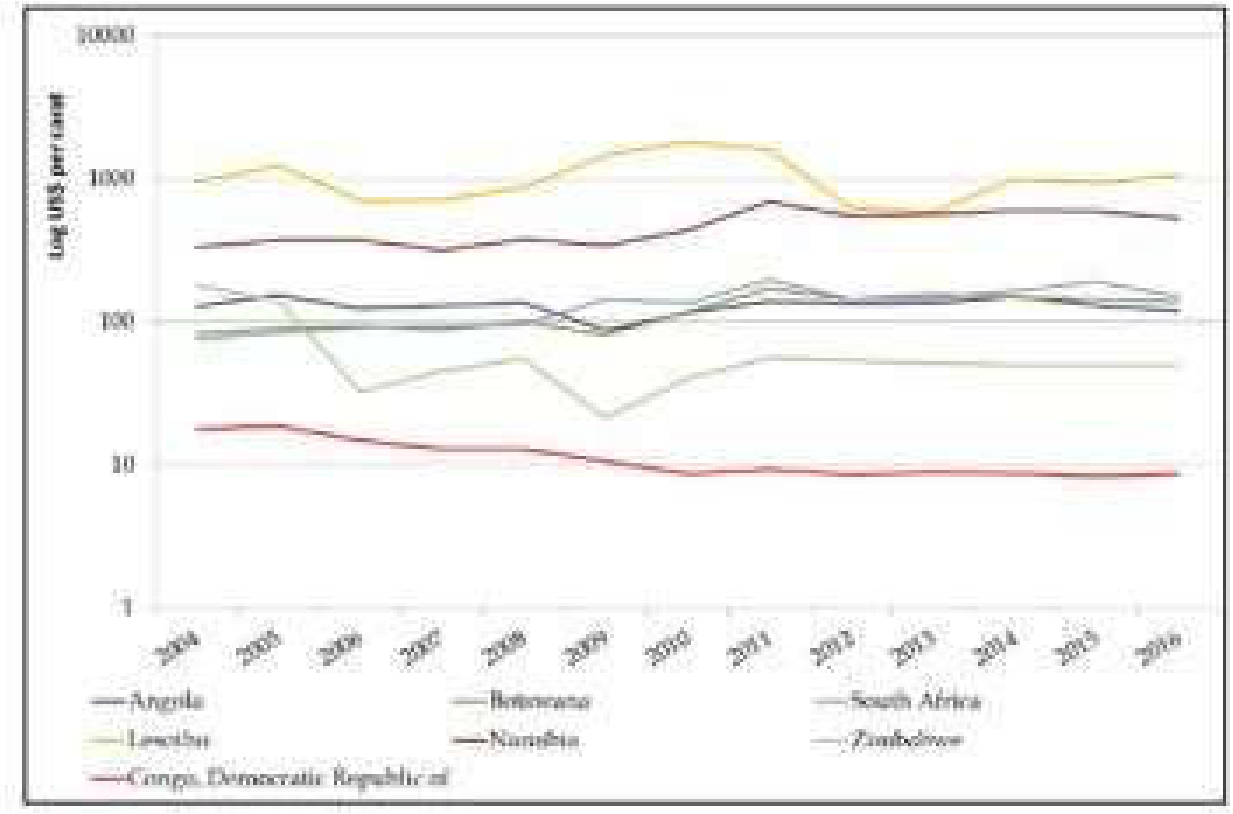


Figure 2: The Average diamond values (dollars per carat) for the diamond-producing countries of Southern Africa (McKechnie, 2019)

2 PROJECT DESCRIPTION: PROPOSED EXPLORATION ACTIVITIES

It is required that activities relating to prospecting and exploration are thoroughly understood prior to initiation. According to Coopersmith et al., (2006), diamonds originate from a kimberlite magma arriving at the earth's surface and is defined by rising processes. In addition, a pulse of magma arrives close to the earth's surface, and the diamond distribution within the resulting consolidated kimberlite depends on the final emplacement processes. Multiple pulses of kimberlite typically form a single body and each pulse has a different diamond content and emplacement history. Thus, the diamond distribution within single kimberlite bodies can be complex. The understanding of the geology and emplacement history of kimberlite bodies plays a critical role from early exploration through to mineral deposit evaluation, resource determination, deposit economics, mining and resource reconciliation. Therefore, proper research based on the history of diamond bearing rocks and tracts are vital during the prospecting phase.

The description of prospecting and exploration activities to be undertaken is presented below in sections 2.1, 2.2 and 2.3.

Figure 3: Diagram of the Life Cycle of a Mine (after Superfund Research Project, 2019). The phase covered by this study is highlighted with a red box.

2.1 Prospecting Phase

The first stage in diamond exploration is the identification of an area or region having the potential to host diamond deposits (STORNOWAY , 2019). Prospecting is regarded as the first stage of a mine (**Figure 3**). Prospecting phase includes reviewing existing reports and composite stratigraphic, lithological-geochemical maps of the targeted areas to identify prospective lithostratigraphic packages. In addition to literature review, field work (lithological (soil/rock) mapping and sampling) will be conducted to verify desktop work. Up to this point no physical disturbance is required. During this phase it is important to take note that there exist two types of diamond deposits, namely Primary and Secondary Deposits.

- **Primary Deposits:** Primary deposits include kimberlites, olivine lamproites and orangeites, which are referred to as “primary source rocks", and contain significant concentrations of diamonds. Besides these, diamonds are also found in traces of ultramafic lamprophyres (mainlyalonites), alkali basalts, ophiolites, komatiites, peridotites and eclogite xenoliths, metamorphic schists or metakimberlites, metalamprophyric breccias and meteorites.
- **Secondary Deposits:** Secondary diamond deposits are formed from sedimentary process. The diamonds present in exposed kimberlite/lamproite bodies, along with other valuable minerals get dissociated by the surficial processes like weathering, transportation and deposition. The dissociated diamonds might occur in consolidated rocks or as placer deposits in unconsolidated alluviums. This is the type of deposit expected in the EPL 4866 area.

The selection of the potential mineralization model and exploration targets has been specifically selected based on the regional and likely local geology as well as the results of the past exploration activities. Upon issuing of the ECC, the exploration program will commence with ground geophysical surveys.

Figure 4: The mineral exploration cycle (after, Savannah Resources, 2019)

2.2 Exploration Phase

During the exploration phase, the exploration program will be in operation. **Figure 4** above is a conceptual example of the mineral exploration cycle. The target areas within the EPL boundaries, which have been identified during the prospecting phase, will then undergo exploration drilling. The preferred drilling technique for this exploration program 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 quick and cheap compared with other techniques like Diamond Drilling. There have been past drilling activities in the neigbouring prospecting areas (i.e. Northern Namibia Development Company (Pty) Ltd), diamond prospecting operation (now defunct) at Rocky Point, some 300km

to the southwest of the project, another defunct uranium exploration project located in the Engo Valley, some 200km to the south west and understandably all used RC Drilling technique. In the advanced stage of exploration activities, larger amount of sample material may be required for analysis and to perform processing trials. A pit may be dug for sampling. The size of the sample size may be adjusted depending on the nature of mineralization observed from drilling. Similar studies done in the region indicated that no adverse geochemistry or metallurgy is required for diamond exploration. Gravel gullies allow for an effective 2D resource evaluation process, while the greater depth of the Proto-Kunene may require a 3D resource data management and modeling system (NNDC, 2015). No explosives will be used during exploration phase.

Other aspects of the exploration of diamond operations include:

2.2.1 Access

The intended project area is accessible on the western part via the C34 road from Henties Bay – Mowe Bay to Cape Fria along the coast and on the eastern part via the D3703 route from Opuwo. Accessibility directly to the site can be made through a gravel tract which may be rocky and has a poor condition, especially after heavy rainfall.

2.2.2 Material and Equipment

The input required for exploration program in terms of vehicles and equipment include; three (4X4) vehicles, earth movers, drilling machines, crushing and screening equipment, compressors and generators, and a drone. Equipment and vehicles will be stored at a designated area near accommodation site or a storage site established within the EPL area.

2.2.3 Human Resources

The project will employ about 30 people, both semi-skilled and skilled.

2.2.4 Services

Water: Water required for drinking, sanitation, dust control, and washing equipment will be obtained from the nearest boreholes. The entire area is dependent on groundwater resources. There is a possibility to use water from Kunene River. However, the certification for water use will be needed. Water supply schemes operated by NamWater provide groundwater to the urban centres of Khorixas, Opuwo, and Kamanjab, as well as to some of the smaller villages such as Anker, Bergsig, Erwee and Fransfontein (Christels and Struckmeier, 2011). However, these water points are far from the project area for consideration to supply water for exploration activities. Sufficient water is available for both exploration and mining activities which can be extracted from the Kunene River. In accordance with the Water Resources Management Act, 2004, (Act No. 24 of 2004) and in view of the arid nature of the Namibian environment, the disposal of wastewater as well as all other types of waste is strictly controlled. Therefore, it is required that wastewater is disposed in evaporation ponds because no effluent may be discharged into the ephemeral, dry river beds in the interior of Namibia. The reclamation, re-use and recycling of waste is encouraged whenever an industry applies for a waste water disposal permit.

Power supply: Power required during operation phase will be provided by diesel-run generators.

2.2.5 Accommodation

Exploration crew will be accommodated in Opuwo or set up camp near the exploration site. Exploration will take place during the day time only and staff will be commuting to exploration site from the accommodation town/place.

2.2.6 Timeframe

The planned ground surveys may last several weeks and will be done in stages on different parts of the property (EPL 4866). The geological mapping, ground surveys and sampling will be done in a period of 12 to 16 months. Exploration work will take place during the day time only and staff will be commuting to exploration site from the accommodation town/place.

2.2.7 Waste Management

The site will be equipped with secured waste bins for each waste type (i.e. domestic, hazardous etc.). It is required that wastewater has to be disposed in evaporation ponds because no effluent may be discharged into the ephemeral, dry river beds in the interior of Namibia. The site will also be equipped with secured waste bins for each waste type. Depending on the amount generated, waste will be sorted and collected on a weekly basis or monthly and taken to the Opuwo landfill site or any nearby certified dumpsite. Ablution facilities will use chemical toilets and/or sealed septic tanks and the sewerage taken to the Opuwo storage periodically.

2.2.8 Security

Temporary storage areas for exploration equipment, materials, machines etc. will be necessary at the camp. Security will be supplied on a 24-hour basis at the storage and/or camp site and exploration camp. A temporary support fence surrounding the storage/camp site will be constructed to ensure people and domestic animals are not put at risk.

2.3 Decommissioning Phase

The exploration activities on EPL 4866 will eventually come to an end. The decommissioning of the exploration operations may be considered due to poor exploration results or other exploration program related reasons. During the operational phase and before decommissioning, the Proponent will need to put site rehabilitation measures in place. Where necessary, stockpiling of top soil for rehabilitation at a later stage will be undertaken. Necessary landscaping of exploration areas will be undertaken upon completion of each phase of exploration (drilling, sampling etc.).

3 PROJECT ALTERNATIVES

Alternatives are defined as: "*different means of meeting the general purpose and requirements of the activity*" (Environmental Management Act (2007) of Namibia (and its regulations (2012))). This chapter will highlight the different ways in which the project can be undertaken and to identify the alternative that will be the most practical but least damaging to the environment.

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

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

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

3.1 Types of Alternatives Considered

3.1.1 The "No-go" Alternative

The "No-Go" alternative is the option of not proceeding with the activity, which typically implies a continuation of the status quo. Should the proposed works of the prospecting plan be discontinued, none of the potential impacts (positive and negative) identified would occur. Furthermore, the local people to be employed for exploration work will be left unemployed and the Proponent would not be able discover and define the targeted resource for possible mining and contribute to the country's economy through revenue and mining license royalty payments. If the proposed project is to be discontinued, the current land use for the proposed site will remain unchanged. In considering the proposed project, the 'no-go' option is not considered the preferred alternative.

3.1.2 Exploration Location

The prospecting/exploration location is dependent on the geological setting (regional and local), the economic geology, and the exploration and mining history of the EPL area. Therefore, finding an alternative location for the planned exploration activities is not possible. In other words, this precious stone mineralization is area specific, which means exploration targets are primarily determined by the geology/mineralization (host rocks) and the tectonic environment of the site

(ore forming mechanism). The tenement has sufficient surface area for future related facilities should an economic mineral deposit be defined.

3.1.3 Exploration Methods

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

3.2 Conclusion on Alternatives

The conclusions weighed and considered above are summarized below:

No-go alternative: Should the proposed prospecting and exploration works on the EPL (4866) be discontinued, none of the potential impacts (positive and negative) identified would occur. Furthermore, the prospective local employees of the project would be denied this opportunity for employment. Additionally, the Proponent would not be able discover and define the targeted resource for possible future mining activities to generate an income and contribute to the country's GDP through revenue and license royalty payments. In considering the proposed project, the 'no-go' option is not considered the preferred alternative.

Exploration location: Finding an alternative location for the planned exploration activities is not possible (refer to section 3.1.2)

Exploration Methods: If there exist any other alternative viable exploration methods, it can be implemented.

The exploration activities have certain legal implications and these applicable legal standards are presented in the following chapter.

4 LEGAL FRAMEWORK: LEGISLATION, POLICIES AND GUIDELINES

A review of applicable and relevant Namibian legislation, policies and guidelines to the proposed development are given in this chapter. This review serves to inform the project Proponent, Interested and Affected Parties and the decision makers at the DEA of the requirements and expectations, as laid out in terms of these instruments, to be fulfilled in order to establish the proposed prospecting and exploration activities.

The Environmental Management Act (No. 7 of 2007)

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

The EMA has stipulated requirements to complete the required documentation in order to obtain an Environmental Clearance Certificate (ECC) for permission to undertake certain listed activities. These activities are listed under the following Regulations:

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

The National Policy on Prospecting and Mining in Protected Areas

This Policy was developed in 2018 to complement various regulations and policies relevant to prospecting and mining, in order to ensure minimal negative impacts on the environment.

The Parks and Wildlife Management Bill (2008)

The bill 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

Integrated Coastal Management Act (draft)

The core objective of this proposed Act is to establish a system of integrated coastal management in Namibia in order to promote the conservation of the coastal environment, maintaining the natural attributes of the coastal landscapes and seascapes, and ensuring the sustainable development and use of the natural resources within the coastal zone that is also socially, economically and ecologically justifiable. A permanent Coastal Management Authority will be established to realise this and other objectives. Functions and powers of the CMA would include, among other, to explore possible regulations for coastal zone use and enforcement capacity for such regulations.

Specifically, conditions for prospecting and exploration activities in the Skeleton Coast National Park are (MET, 2013):

I. Apply safeguards for avoiding and/or reducing impacts to acceptable levels. All prospecting and mining activities already permitted MUST be preceded by an Environmental Impact Assessment in accordance with the word and spirit of Namibia's EA Policy (1995) and legislation (Environmental Management Act No. 7 of 2007, and Minerals (Prospecting and Mining) Act, 1992.).

II. Approved prospecting and/or mining company must provide the MEFT with an environmental report every 6 months, showing its progress towards meeting agreed upon safeguard targets. Once prospecting and/or mining have ceased, the impacts must be rehabilitated in accordance with the stipulations of the EMP.

III. Communication with prospecting and mining companies must be conducted on a regular basis to ensure that mutual expectations are clear and re-enforced. Site visits by MEFT staff must be fully facilitated by mining companies in a spirit of open-cards and transparent partnership.

IV. Monitor implementation of EMPs, paying special attention to the achievement of safeguard targets. A detailed inspection report must be completed after each visit. The report must include an "action" column, where it is clear what action needs to be undertaken by whom and by when, to remedy an environmental concern. As far as possible, the inspecting office should take photographs of key issues of concern. If possible, the inspecting officer must obtain the counter-signature of the prospector/miner who was present during the inspection

V. In the case of non-compliance, the matter must be reported to MEFT office in Windhoek for higher-level attention. If possible (i.e. within the provisions of the law),

the prospector/miner must be responsible for carrying all the costs of external consultants. Refer to the Environmental Management Act (No. 7 of 2007) for specific actions to be taken.

Other legal obligations that are relevant to the proposed activities of EPL 4866 and related activities are presented in **Table 2**.

Table 2: Applicable local, national and international standards, policies and guidelines governing the proposed development

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
United Nation Convention to Combat Desertification 1992	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 in order to support poverty reduction and environmental sustainability	United Nation Convention
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."	
Environmental Management Act EMA (No 7 of 2007)	Requires that projects with significant environmental impacts are subject to an environmental assessment process (Section 27). Details principles which are to guide all EAs.	The EMA and its regulations should inform and guide this EA process.
Environmental Impact Assessment (EIA) Regulations GN 28-30 (GG 4878)	Details requirements for public consultation within a given environmental assessment process (GN 30 S21). Details the requirements for what should be included in a Scoping Report (GN 30 S8) and an Assessment Report (GN 30 S15).	
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

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
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.	
Integrated Coastal Management Act	The core objective of this proposed Act is to establish a system of integrated coastal management in Namibia in order to promote the conservation of the coastal environment, maintaining the natural attributes of the coastal landscapes and seascapes, and ensuring the sustainable development and use of the natural resources within the coastal zone that is also socially, economically and ecologically justifiable. A permanent Coastal Management Authority will be established to realise this and other objectives. Functions and powers of the CMA would include, among other, to explore possible regulations for coastal zone use and enforcement capacity for such regulations.	
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.	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.

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
	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 exclusive prospecting license (EPL) shall contain the particulars of the condition of, and any existing damage to, the environment in the area to which the application relates and an estimate of the effect which the proposed prospecting operations may have on the environment and the proposed steps to be taken 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 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.
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.

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
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 Regional Council; therefore, they should be consulted.
Local Authorities Act No. 23 of 1992	To provide for the determination, for purposes of local government, of local authority councils; the establishment of such local authority councils; and to define the powers, duties and functions of local authority councils; and to provide for incidental matters.	The Opuwo Town Council is the responsible Local 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:	The protection (both quality and quantity/abstraction) of water resources should be a priority.

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
	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)).	
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: 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.	

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
Soil Conservation Act (No 76 of 1969)	The Act makes provision for the prevention and control of soil erosion and the protection, improvement and conservation of soil, vegetation and water supply sources and resources, through directives declared by the Minister.	Duty of care must be applied to soil conservation and management measures must be included in the EMP.
Public Health Act (No. 36 of 1919)	Section 119 states that "no person shall cause a nuisance or shall suffer to exist on any land or premises owned or occupied by him or of which he is in charge any nuisance or other condition liable to be injurious or dangerous to health."	The Proponent and all its employees should ensure compliance with the provisions of these legal instruments.
Health and Safety Regulations GN 156/1997 (GG 1617)	Details various requirements regarding health and safety of labourers.	
Road Traffic and Transport Act, No. 22 of 1999	The Act provides for the establishment of the Transportation Commission of Namibia; for the control of traffic on public roads, the licensing of drivers, the registration and licensing of vehicles, the control and regulation of road transport across Namibia's borders; and for matters incidental thereto. Should the Proponent wish to undertake activities involving road transportation or access onto existing roads, the relevant permits will be required.	Mitigation measures should be provided for, if the roads and traffic impact cannot be avoided, the relevant permits must be applied for.

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
Labour Act (No. 6 of 1992)	Ministry of Labour (MOL) is aimed at ensuring harmonious labour relations through promoting social justice, occupational health and safety and enhanced labour market services for the benefit of all Namibians. This ministry insures effective implementation of the Labour Act no. 6 of 1992.	The Proponent should ensure that the prospecting and exploration activities do not compromise the safety and welfare of workers.

Relevant international Treaties and Protocols ratified by the Namibian Government

- Convention on International Trade and Endangered Species of Wild Fauna and Flora (CITES) (1973).
- Convention on Biological Diversity (1992).
- World Heritage Convention (1972).
- Convention to Combat Desertification (1994).

5 ENVIRONMENTAL BASELINE

The proposed exploration program 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 what was before and what would be after project. This also helps the EAP in identifying the sensitive environmental features that may need to be protected through the recommendation and effective implementation of mitigation measures. The summary of selected biophysical and social baseline information pertaining to the prospecting area is given below.

The baseline information presented below has been sourced from different reports of studies conducted in the Kunene Region.

5.1 Climate

In general, the climate in the Kunene Region can be classified as tropical wet and dry (savannah) climate, influenced by the high altitudes. The climate in the Project area is classified as semi-arid to arid climate.

The climate around Opuwo results directly from the zone between 17^0 and 29^0 south of the equator. This puts Opuwo in an area where it is exposed to air movements driven by three major climate systems/belts; The Intertropical Convergence Zone, the Subtropical High-Pressure Zone, and the Temperate Zone. Additionally, Opuwo is considered to have a desert climate (Koppen climate classification (BWh)). Thus, it is notable that climate conditions have major influences towards the exploration phase (e.g. climate affects the availability of water etc.). Therefore, relevant climatological graphs (i.e. rainfall, temperature, relative humidity and wind speed) that may have an effect on the operation of the project were created from data obtained from the Southern African Service Centre for Climate Change and Adaptive Land Management (SASSCAL) weather station (i.e. Okangwati Station). The Okangwati Station is located about 63.8 km from the project area. Relevant climate graphs are explained in detail below.

5.1.1 Rainfall

The average annual rainfall ranges from 350mm in the east (Ruacana Falls) to 50mm on the coast at the Kunene River mouth. Rainfall in the region (and generally in Namibia) usually occurs during the summer. The rainy season lasts from October to March, with most rainfall events occurring between February and March. The regional variation in rainfall is well reflected by the vegetation pattern and land use (Environmental Resources Management, 2009). Fog is a major source of moisture for the ecosystem living within the desert/semi-desert and the Atlantic Ocean interface that characterizes much of the Namibia and Southern Angola coastline. The approximate number of fog days per year in the lower Kunene River range from one to five in the east to 50-75 days in the west. The vicinity of Opuwo receives very little rainfall, between averages of 50 – 100mm. The highest average rainfall over a time period of 5 years (2016 - 2020) are experienced in March at 51.8mm. Minimal rainfall is experienced in July, September and October. The graph below (**Figure 6**) shows the average rainfall around the EPL.

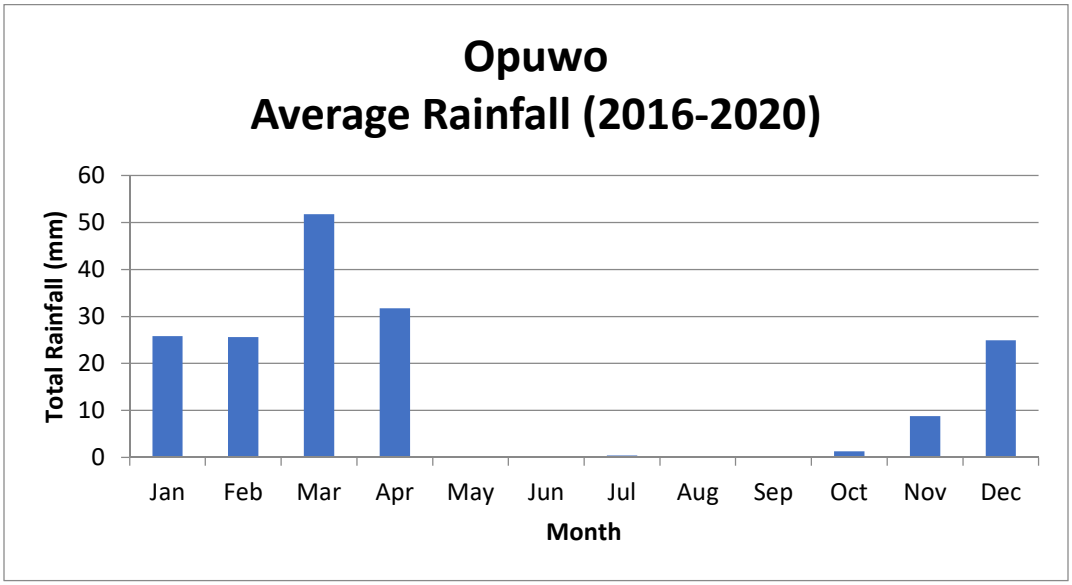


Figure 5: **A graph showing average rainfall patterns in 5 years (2016 - 2020) in Opuwo, Kunene Region**

5.1.2 Temperature

The annual average temperatures within the lower Kunene are at 19-20°C on the coast and 21-22°C inland, towards the Ruacana Falls. Extremely high temperatures, in excess of 40°C, are common in this region, particularly during the summer months (Environmental Resources Management, 2009). Temperatures within the vicinity of the EPL are relatively high and are mostly influenced by the desert climate. The highest average temperature from 2016 – 2020 is experienced around November at 27.7 ^{0}C, and the lowest average temperature is experienced around July at 18.54 ^{0}C. The graph below shows the temperature pattern around the project area.

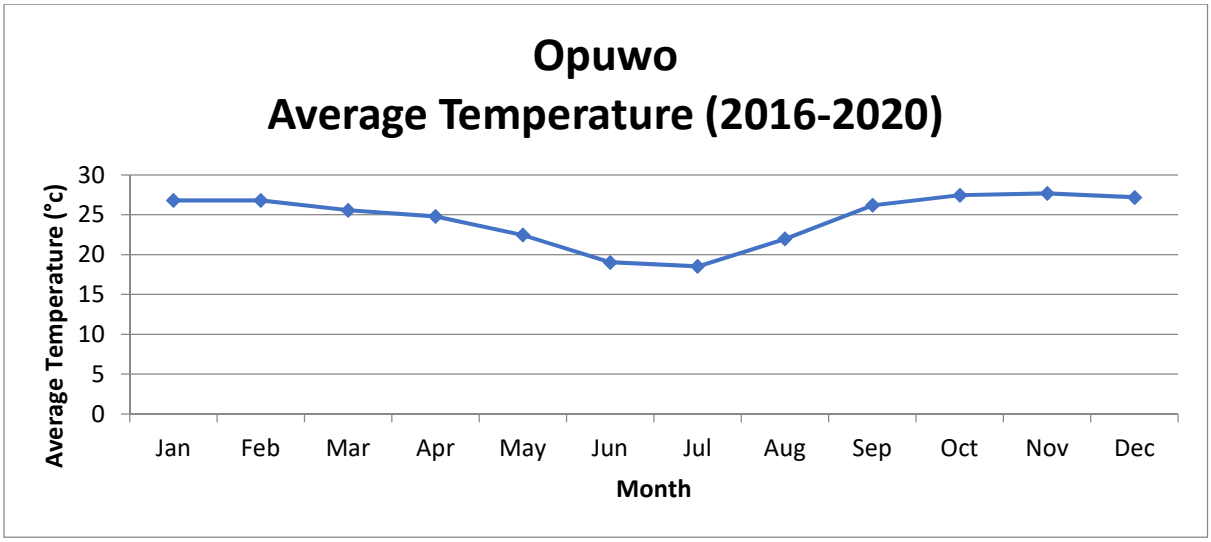


Figure 6: A graph showing average temperature patterns (2016 – 2020) in Opuwo, Kunene Region.

5.1.3 Winds

The winds along the coast are predominantly southerly with the highest wind speeds recorded in the north western-most parts of Namibia. The Benguela current and the associated cold water upwelling system enhanced by winds blowing from the sea supplies moisture for the area in the form of fog that can reach as far as 140 km inland. The cold, north-flowing Benguela current accounts for some of the low precipitation. Air saturated with moisture creates banks of fog in the coastal zone for at least 160 days a year. In addition, the wind experienced around Opuwo is mainly dependent on the relief of the region and other factors such as vegetation cover in the project area. It is notable that wind speed and direction vary in Opuwo throughout the year. Thus, the highest average wind speed experienced around the project area is in January at a speed of 1.575 m/s and the lowest wind speed is experienced in June at a speed of 0.16 m/s. The graph in figure 8 below shows the average wind speed from 2016 – 2020.

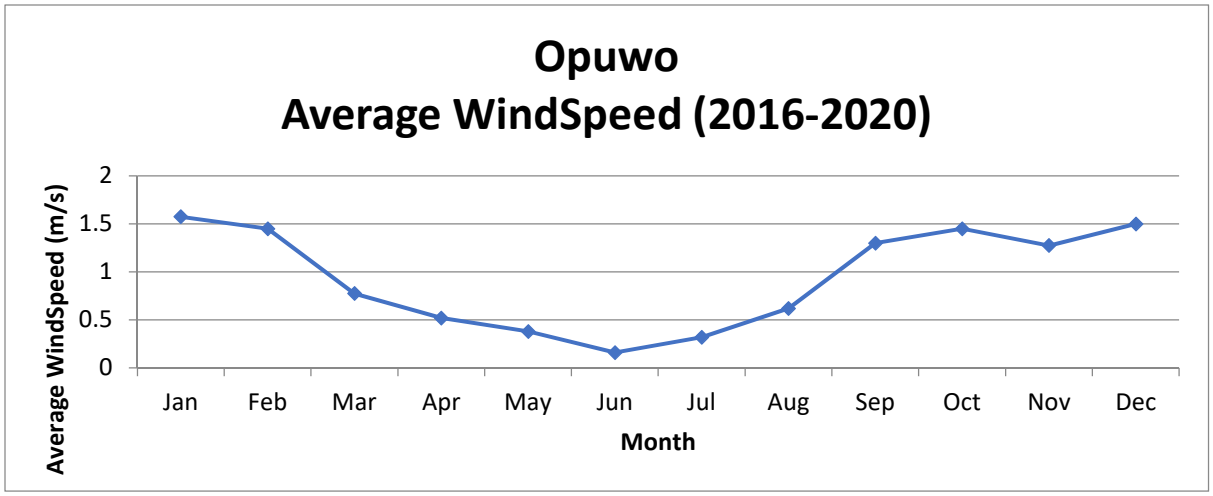


Figure 7: A graph showing average wind patterns for (2016 – 2020) in Opuwo, Kunene Region.

5.1.4 Humidity

Opuwo is generally not a humid area, and the lack of moisture in the air has a major impact on other climate aspects; by reducing cloud cover, rainfall and increasing rates of evaporation. Furthermore, the air's moisture content around Opuwo is measured in terms of its relative humidity, which by definition is the amount of water in the air in relation to how much water the air can hold at a particular temperature. This is due to warm air that can potentially hold more water than cold air. Moreover, the most humid month around the project area from 2016 – 2020 is March, at approximately 50%, while August is the least humid month at approximately 15%. The graph in figure 9 below shows the average humidity from 2016 – 2020 within the project area.

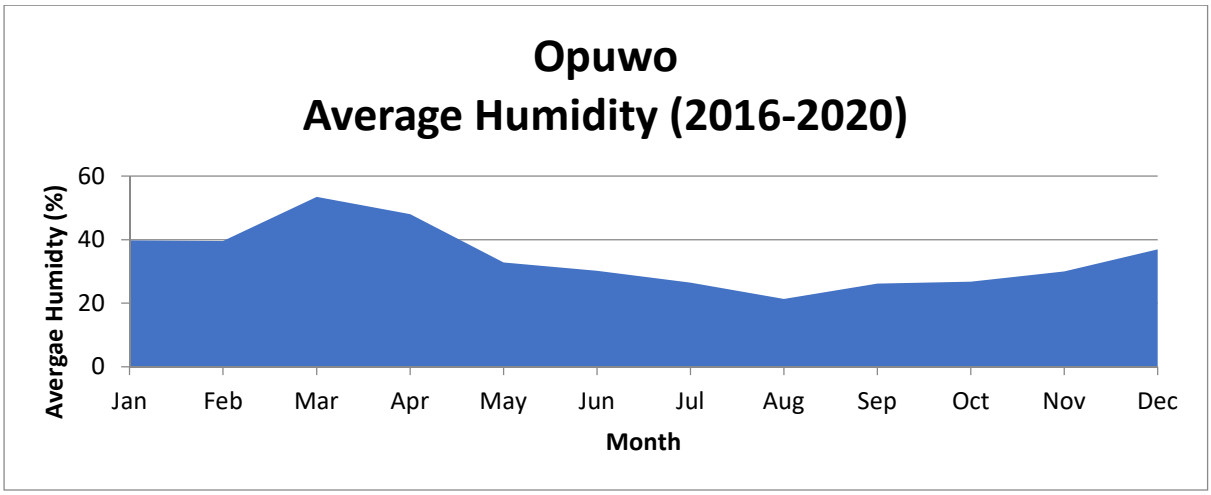
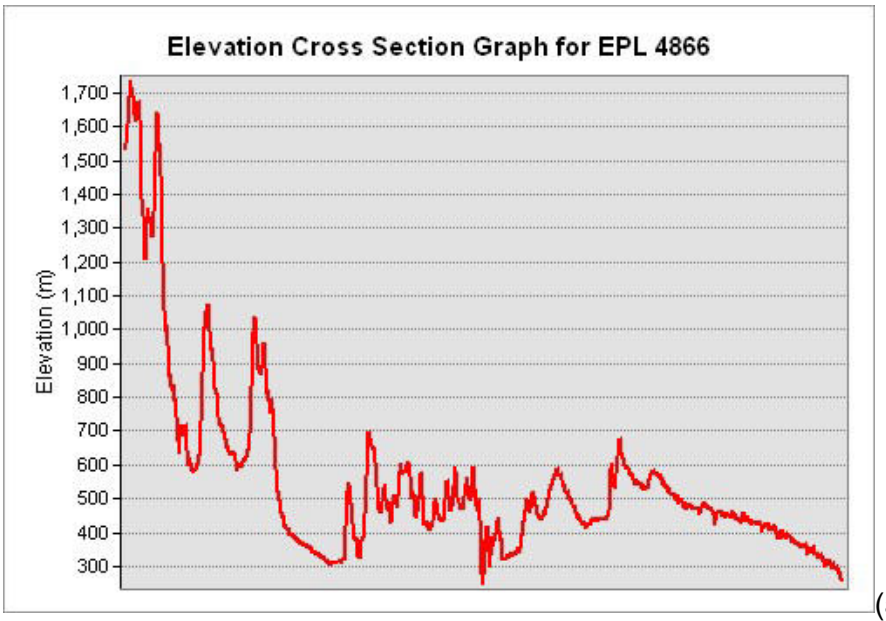


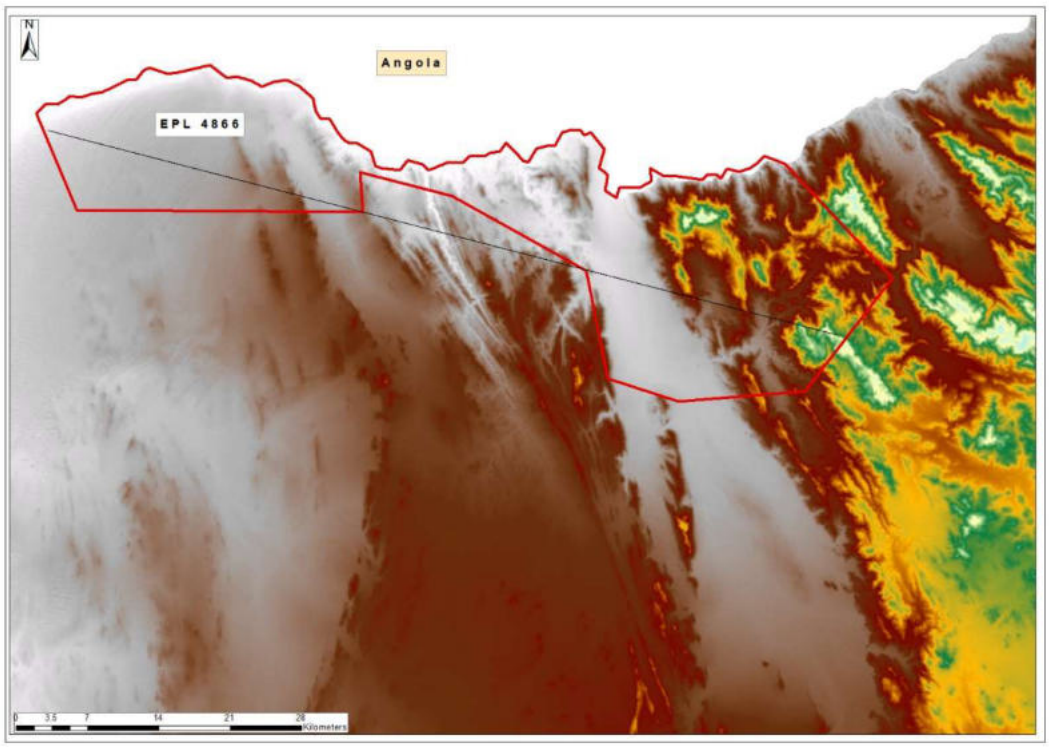
Figure 8: A graph showing average humidity patterns for one year (2016 - 2020) in Opuwo, Kunene Region

5.2 Topography

The EPL 4866 area is being dominated by gently rolling vegetated hills. Furthermore, the altitude within the EPL ranges from 250 m to 1750 m above mean sea level. **Figures 10a and 10b** below show the elevation profile of the site.



(a)



(b)

Figure 9: Elevation profile within the EPL 4866.

5.3 Soils

Generally, soil types are mainly recognised by the way its mineral, organic, water and air components are arranged within the soil body. Therefore, the vertical distribution of these components varies, such that each soil type consists of a unique combination of different layers or horizons. The EPL area is dominated by four soil groups, namely: Petric Calcisols, rock outcrops, eutric regosols and dune sand. Petric Calcisols are mainly found in depressions or other low – lying areas of the landscape and typically contain accumulations of calcium carbonate, often in a cemented form called Calcrete. Although large white blocks of Calcrete are often visible on the surface, Calcrete is generally formed beneath the surface and is also often present in a soft powdery form. Eutric Regosols are medium or fine textured soils of actively eroding landscapes, the thin layers lying directly above the rock surfaces from which they formed. Although not as shallow as the leptosols, these soils never reach depths of more than 50 cm. Vegetation cover on these thin soils is generally sparse because they cannot provide most plants with sufficient water or nutrients. Moreover, sand dunes on the western part of the EPL appear characterised by ridges of sand created by the wind (John Mendelsohn, 2002). See below a map indicating dominant soil (**Figure 11**) and pictures of soil found at the EPL area (**Figure 12**).

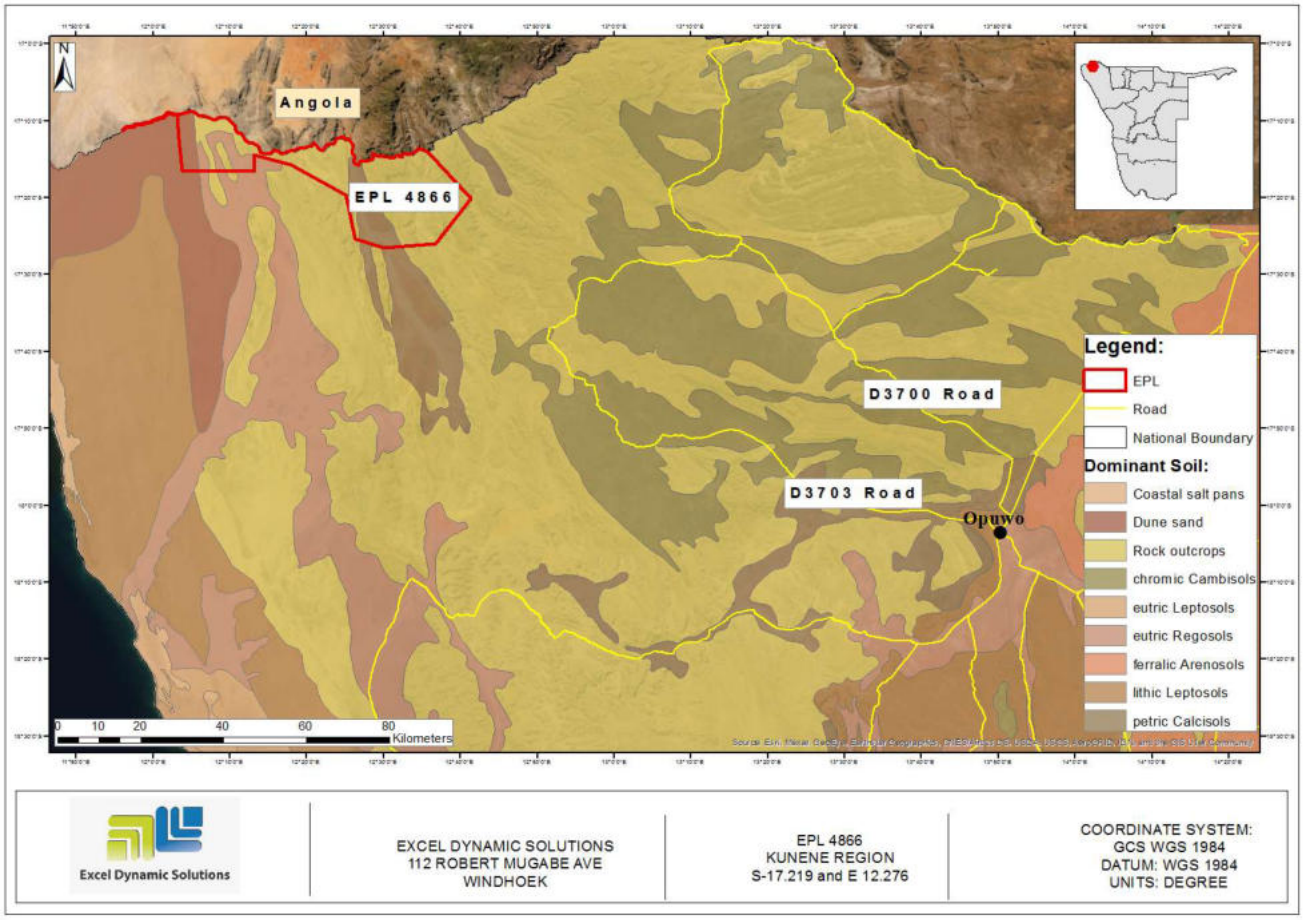
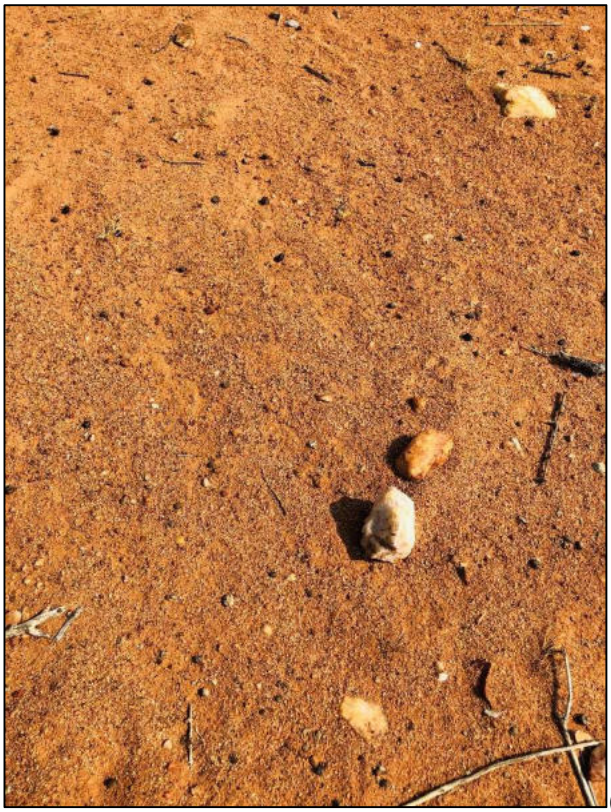


Figure 10: Map of soils at EPL 4866



(a)

(b)

Figure 11: Soils found within the EPL and surrounding

5.4 General and economic geology

The geology underlying the concession, comprises mainly of the basement rock of Epupa metamorphic complex which are unconformably overlain by the rocks of Palaeoproterozoic to Neoproterozoic age. The area contains extensive folded structure on the central part of the EPL resulted from the collision of the Congo and Rio De La Plate Cratons. The geological map for EPL 4866 is shown below in **Figure 13** and rock formations in **Figure 14**.

The main features of the geological setting are dominated by the so-called Proto-Kunene. This is a Dwyka-age glacier valley, coming out of Angola, and curves south-westwards to a position south of the present Kunene River. The present Kunene River is also a glacier valley but post-dates the Proto-Kunene by an unknown amount of time. The basement rock consists mainly of orthogneiss. The deposit is an alluvial diamond deposit that could be split into two main areas, the Gully Zone and the Proto-Kunene. The Gully Zone is an area comprising some N-S trending gullies. These gullies are filled with very thin diamond-bearing gravels, the so-called Shallow Gravels (NNDC, 2015).

5.4.1 Okapuka Formation

The basement rocks of the Epupa metamorphic complex is covered by the Okapuka Formation which is stratigraphically contained of undated succession of conglomerate, phyllites, schists and acid volcanic rocks. These rocks types are younger than post tectonic granite in the Epupa metamorphic complex and older than the Nossib group. The central portion of the EPL, the basal discontinuous layer of Okapuka Formation, consists of an unsorted mass of granite and gneissic debris that fills small depressions in the basements. This layer is overlain by a thick 8-10 m well layered sedimentary breccia comprising of angular to sub rounded fragments of vein quartz, granite, gneiss and lenses of quartzite, in a hard, white, feldspathic quartzite matrix. The grey quartzite is followed by alternating layers between 10 and 25 cm thick of hard, greyish brown quartzite and softer, greenish brown, micaceous quartzite and are characterized by cross bedding and locally developed ripple marks. Then follow a 50 meter of sericite-biotite phyllite with intercalated layers of micaceous quartzite. Some layers are highly calcareous. The succession is then overlain by several horizon of fine-grained, thinly to thickly bedded, greenish grey, tuff-like, acid volcanic rock, many of which have an internal, bedding-parallel, thinly banded to laminated structures. The presence of intercalated lenses of sand and grit, ball and pillow structures, suggest subaqueous deposition (Miller, 2008). The uppermost part of the formation is composed of hard, white, sericite quartzite and light brown flaggy quartzite. Generally, the Okapuka Formation forms a broad synclinorium about 25 km wide between the Baines Mountain, the Marienfluss and Kunene River and are north-south trending. The Okapuka Formation is fairly extensively intruded by dykes and plugs of metabasite with various textures which are now amphibolites. These spectacular dykes consist of fine grained amphibolitic matrix and abundant, rounded glomeroporphyritic cluster of plagioclase crystals, which is variable with the dyke and from dyke to dyke (Miller, 2008).

5.4.2 The Nosib group

The Nosib group have rock formations that are extensively exposed on the eastern part of the property area. The Nosib group is undifferentiated and consists of cycles of feldspathic and arenitic quartzite that grade upwards into metagreywacke and biotite schist over a cycle average thickness of 10 to 20 m.

5.4.3 The Mowe Bay Formation

The Mowe Bay Formation occurs only on the coastal terrane of Western Kaoko Zone (WKZ). This syntectonic gneissic granite was emplaced onto the high-grade Damara para-gneisses in the coastal terrane about 656 Ma. The succession consists largely of greywacke and pelites. It was moreover subjected to syntectonic, granulite-grade metamorphism and forms an exotic terrane that was accreted onto the Kaoko belt along the Three Palm Mylonite Zone suture (Miller, 2008).

5.4.4 Kuiseb Formation

The thinly to thickly bedded turbiditic greywacke of Kuiseb formation occur extensively on the Northern Zone and partially exposed within the EPL area. The formation is stratigraphic subdivided into three units. The lower unit consists of graded metagreywacke and the middle part is composed of slightly marl metapelite with thin subordinate layers of fine–grained metagreywacke. The upper part consists of graded coarse grained metagreywackes with several thin but laterally persistent white orthoquartzite layers at the top of the formation.

5.4.5 The Tsumeb limestone

Tsumeb limestone is mainly composed of laminated micritic limestones with thinly interbedded shale and marls with abundant slump breccias and intra-formational calcirudite bands consisting of angular blocks and fragments of limestone and dolomite. The limestone is literary devoid of stromatolites and algal colonies. The lower most limestone is platy and consists of interbedded argillaceous, laminated, olive green to brown limestone and marl. The upper part consists of thin beds of laminated grey to black, micritic limestone with small dolomite grains and thin interbedded, pyritic, argillaceous laminae and partings (Miller, 2008). The area is purely structural zone, formed under transpressional stress regime during the collision of Congo and Rio De La Plate Cratons. These structures are superimposed by open folds with axes oriented approximately E-W that formed during a late post-transpression phase of N-S shortening (Miller, 2008). The property area is largely obscured by marine terrace and sediment of Namib sand dune and alluvium sediments on the western portion.

Figure 13 shows the geology of the project area and its surroundings, while **figure 14** shows types of rock found within the project area.

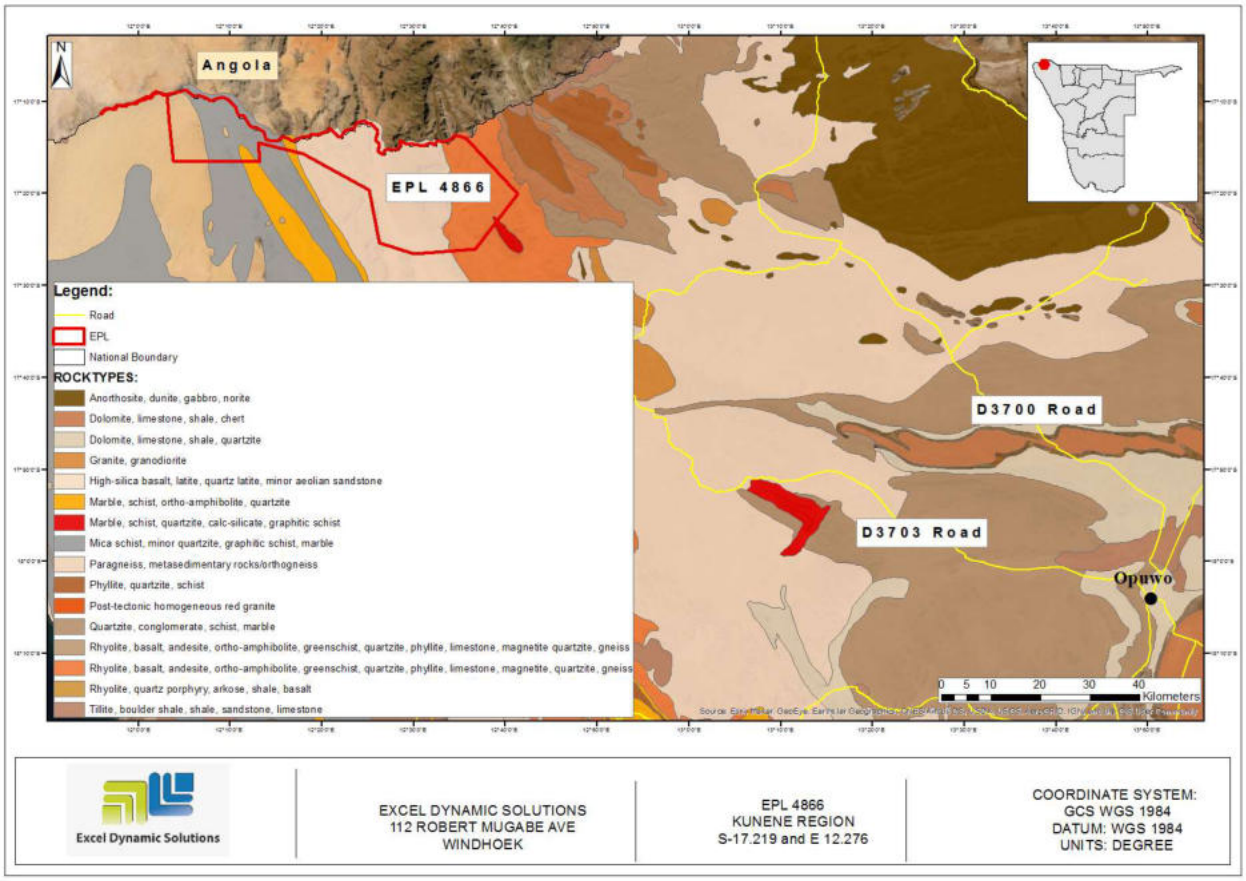


Figure 12: Map displaying geology of the project area.

Figure 13: Rock formations in Opuwo

5.5 Hydrology/Water Resources in Kunene

Water infrastructure in the Kunene Region consists of man-made structures and facilities to abstract, store, treat (if necessary) and deliver water to users. The infrastructure can also serve to collect, transport, treat and dispose of wastewater. Commonly used water infrastructure includes: groundwater well-fields, water supply schemes, sewers and sewage treatment facilities, dams, river water abstraction works, inter-basin transfers (bulk transfers), and canals.

Water infrastructure supports life and helps protect public health, but can have a significant impact on the environment. Practices that encourage the sustainable use and management of water-related infrastructure must therefore be promoted. Improved management practices, efficient water use, suitable pricing of water, and a catchment scale approach to protection can all help in achieving sustainable operations. Parties responsible for the management of infrastructure need to establish ongoing oversight, monitoring, evaluation, maintenance and replacement of assets as needed, in order to maximise the productive life of infrastructure (Kunene River Awareness Kit, 2019).

The water supply scheme of Opuwo comes from a Dwyka shale aquifer, known as the north-western wellfield, and from a sandstone and shale aquifer of the southeastern wellfield. The entire area is dependent on groundwater resources for domestic purposes and stock watering. Since communal farmland occupies most of the area, the Directorate of Rural Water Supply is responsible for most of the water supplied to these farms. Water supply schemes operated by NamWater provide groundwater to the urban centres of Khorixas, Opuwo, and Kamanjab, as well as to some of the smaller villages such as Anker, Bergsig, Erwee and Fransfontein (Christels and Struckmeier, 2011).

The Kunene River, is the only perennial river in the proximity of the project area, flows south and then sharply west from its source in the Angolan highlands to the Atlantic Ocean approximately 1,100 km away. The River turns sharply at the Ruacana falls towards west forming the border between Angola and Namibia.

5.6.2 Groundwater availability and vulnerability

Possible targets for groundwater resources in this area are mainly the open water bodies (i.e. river), fractured zones and faults. The general area has a number of Ephemeral River Channels which could be potential pathways for pollution migration into the main Kunene River especially during the rainy season. Other water sources without impermeable infillings may also be prone to contamination. Discharge of liquid or solid wastes including waste water, chemical, fuels or oils into any public stream is prohibited and the Proponent must implement the provisions of the

EMP on water and waste management as detailed in Section 7.3.7 of this report. It is recommended that a detailed hydrogeological specialist study including groundwater modelling, water sampling and testing be undertaken as part of the full EIA that may be implemented to support any future viable mining project within the EPL area, if economic resources are discovered.

5.6 Fauna

At a national scale, the study area is characterized by medium to low diversity of species (Figure 15), and a relative high mammal and reptile diversity and intermediate amphibian diversity (Mendelsohn et al. 2002). In terms of endemism, the study area is characterized by a relative high number of reptile and mammal species that are endemic to Namibia. It is estimated that at least 67 reptiles, 10 amphibians, 91 mammals and 203 bird species (breeding residents) are known to or expected to occur in the general north western part of Kunene of which a high proportion are endemics species (Mendelsohn, 2020; Cunningham et al., 2018). The Kunene River is viewed as a site of special ecological importance in Namibia due to the presence of sea turtles and migrant shorebirds while the entire coastline is also important due to its biotic richness – e.g. arachnids, birds (Curtis & Barnard 1998).

It is currently not clear how fauna species found in the EPL area will be affected by proposed activities.

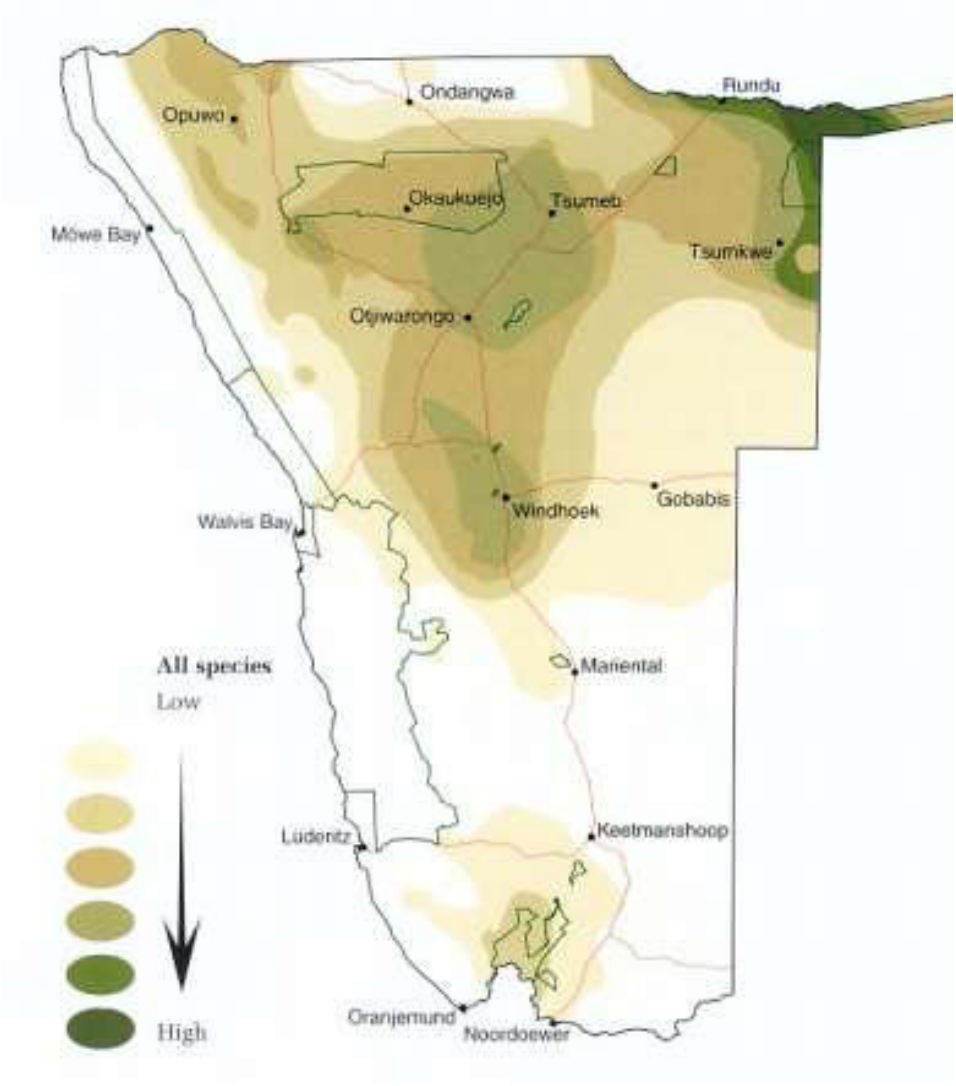


Figure 14: Species Diversity in Namibia (Mendelsohn, 2002)

5.7 Flora

The vegetation of the Kunene region reflects the arid nature of the area with open woodland (Mopane Savanna) Acacia and Mopane trees (Acacia/ Commiiphora and Colophospermum mopane) predominating the steep hill slopes and the colluvial foot slopes. The Environmental Resources Management Report (2009) indicated that the vegetation of the Kunene Region falls within three main biomes, namely the Namib Desert, the Nama Karoo and the Tree and Shrub Savannah. The dominant vegetation types include Namib grasslands in the west and sparse shrublands, grasslands and woodlands for the remainder of the region.

More specifically, the area of Opuwo is identified as a Woodland biome (**Figure 16**). The EPL area is dominated by three different vegetation types which belongs to the Northern desert, north-western escarpment and inselbergs; and to the western highlands. These vegetation types belong to the desert; Nama-Karoo and savanna biome. On the eastern part of the EPL, the area is dominated by the *Acacia reficiens* (commonly known as the red thorn) and cover the EPL coverage between 2-10%. The *Acacia reficiens* is generally regarded as a very aggressive invader in many areas. Their fruit appear to have the ability to form a seed bank and it has the ability to displace other plant species even without disturbance. It is regarded as a conservation concern due to its effects on other species. Furthermore, the habitat of this plant species tends to grow on gravel or rocky/stony substrates, including granite and Calcrete; seldom on sand. Additionally, the gum is edible and the bark of the tree and roots are used medically (Gorge, 2012). *Stipagrostis giesii* is found in centre of the EPL and covers the EPL at a coverage area of less than 0.1 %. This perennial species occurs in the western side only and marks as a preference for little drainage lines (Correia, 1976). Furthermore, *Salsola aphylla* also known as the Ganna bush is found on the western part of the EPL and covers the EPL at a coverage of less than 0.1 %. This species is branched shrub that can reach 1.82 m in height. The branches are slender, thin, straight, bearing very small but distinctly succulent and densely pubescent. Ganna bush in its natural habitat is readily eaten by animals; however, in the past it was used by pioneers and farmers to make soap (Staden, 2020). In addition, Sections 22, 23, 27 and 33, and regulations 8 and 12 of the Forestry Act needs to be extensively adhered to and concurrently a Forestry licence need to be obtained for any removal of vegetation on site during the exploration phase. It is currently not clear how flora species found in the EPL area will be affected by proposed activities.

Figure 15: Vegetation structure of Opuwo (Mendelsohn, 2002)

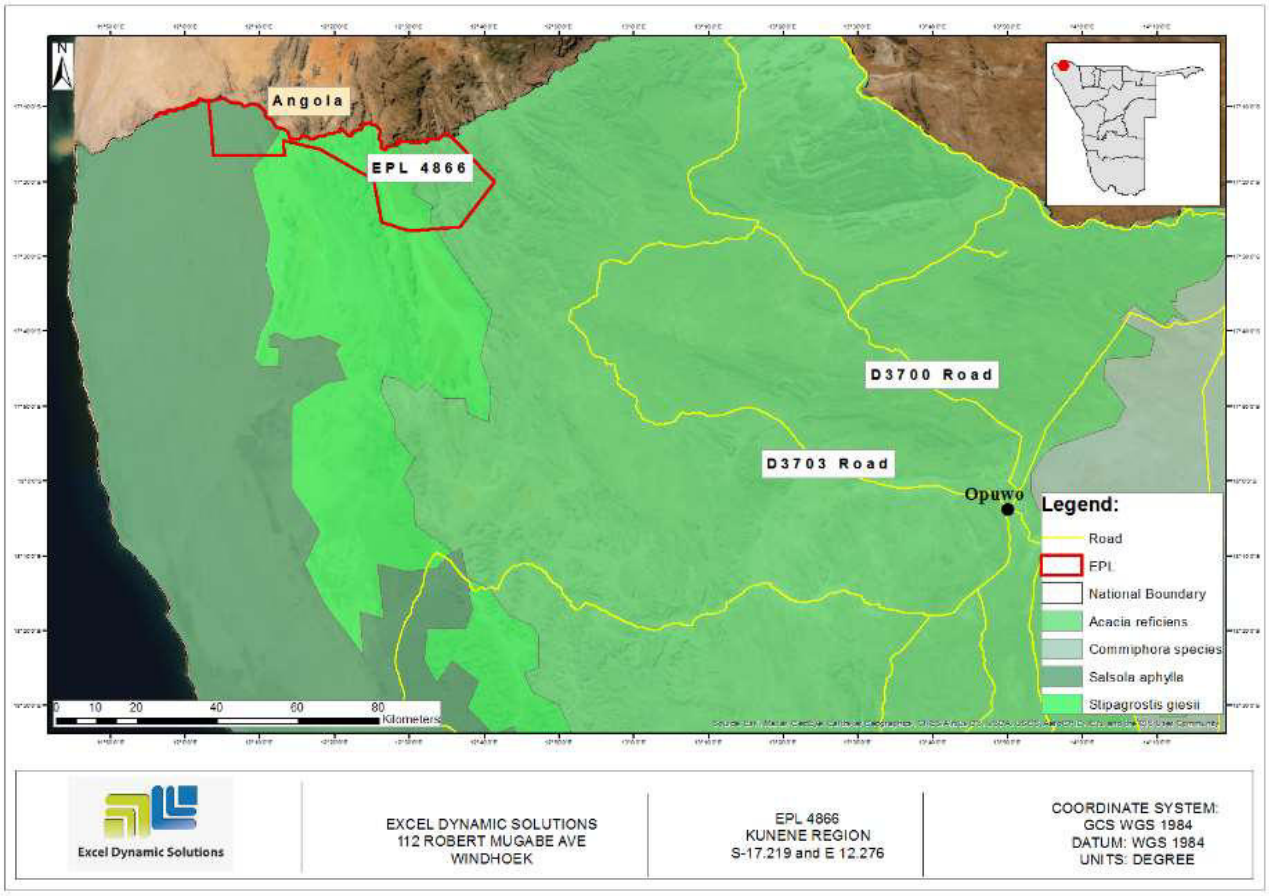
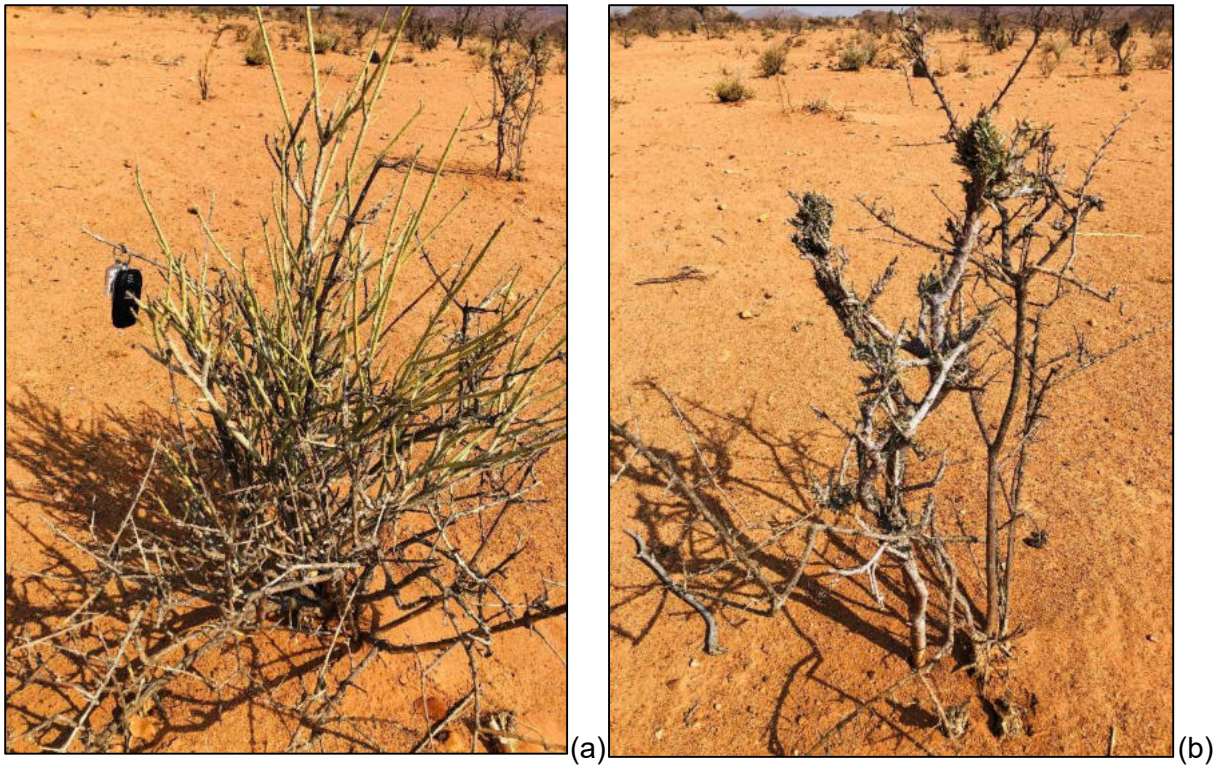


Figure 16: Map indicating vegetation types within EPL 4866



(a) (b)

Figure 17: Shows the typical vegetation type in Opuwo.

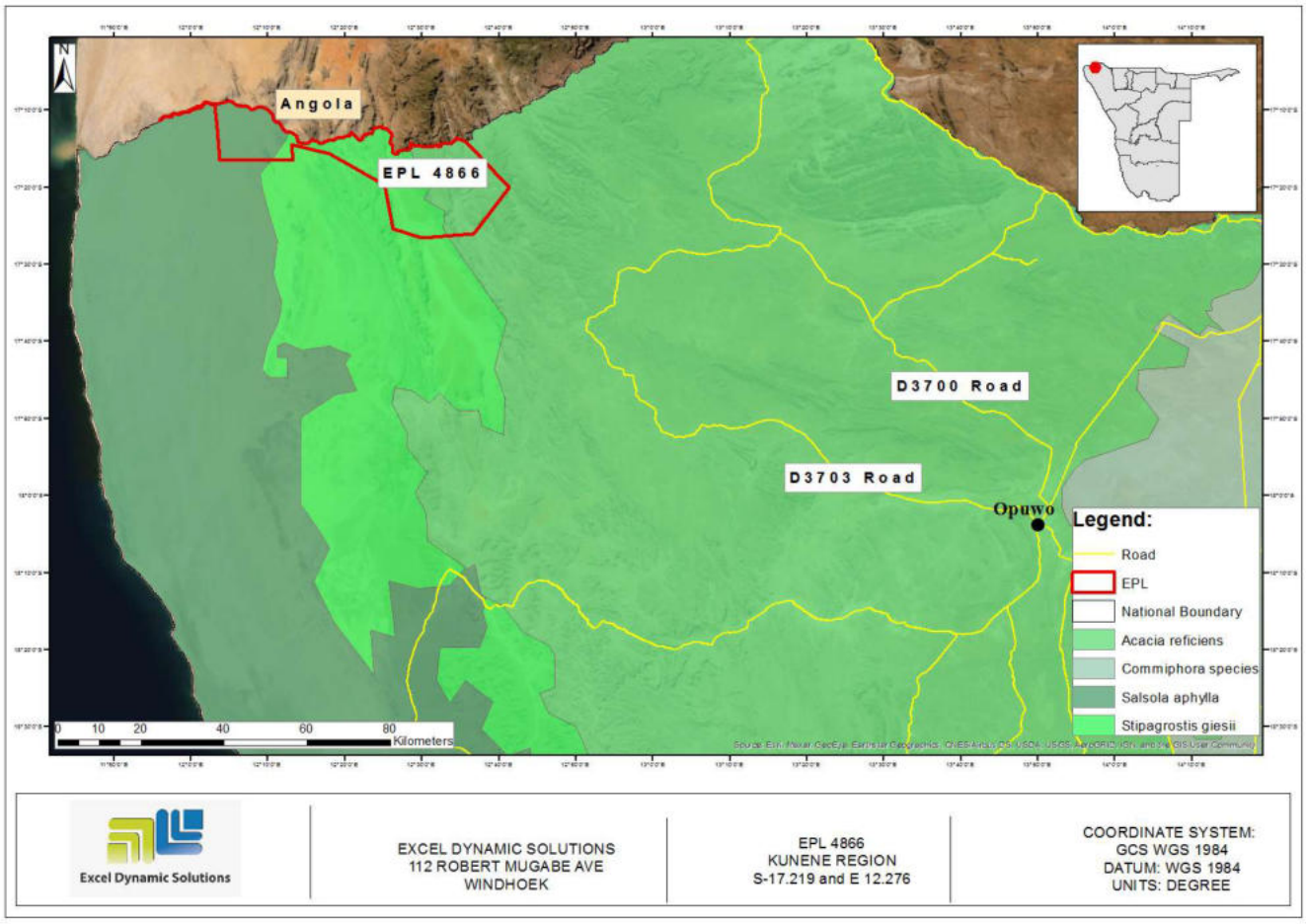


Figure 18: Maps showing vegetation structure and plant diversity levels on EPL 4866

5.8 Population of Kunene Region

The Kunene Region (also known as Kaokoland) is one of the fourteen regions of Namibia. The population of Kunene Region recorded in the Kunene 2011 Census Regional Profile in 2011 was 86 856 (43 253 females and 43 603 males). This figure shows that the Regional population had increased from 68 039 since recorded in 2001 (Namibia Statistics Agency, 2011). The largest town and capital of the region is Opuwo, which has a population of 27 272. In 2011, the total number of females and males recorded were: 13 896 and 13 376, respectively (Kunene Regional Council, 2020).

5.9 Tourism

Kunene's rugged landscape and ancient traditional practices and diversity make tourism a key economic sector for the region. The region offers geo-tourism, eco-tourism and adventure-tourism. About 46% of the nation's conservancies are in the Kunene Region, hosting wildlife such as desert elephants, rhinos, lions and giraffes. The Kunene region is home to some of the most stunning tourism sites in Namibia. A number of attractions to be found in the region include the Petrified Forest, the Epupa Falls, the Skeleton Coast and the Swartbooi Graves. The Hartmann's & Maneuflus valleys, Steep van Zyl's pass, Hoarusib & Hoanib Rivers, and Sesfontein are some of the land marks in the Kunene region. The culture, numerous wild animals, conservancies and national parks make the region an investor's dream (Kunene Regional Council, 2020).

5.10 Other Land Uses

The capital of Kunene Region is Opuwo which is the closest town to the EPL 4866. Furthermore, there are six schools and one branch of University of Namibia (UNAM). The Proponent is not required to secure signed agreements from the affected land owners to be able to gain access to go undertake prospecting and exploration investigations since the EPL falls within the communal land boundaries. The general land use of the area is mainly dominated by communal agriculture, tourism and conservancy conservation.

5.11 Archaeology

The general area around the EPL area may be associated with unknown archaeological resources protected by the National Heritage Act, 2004 (Act No. 27 of 2004) under the National Heritage Council of Namibia. The area of interest for the proposed exploration may have archaeological potential (**Figure 20**). The following expectations were made by Mwiya (2020) in another environmental assessment study on the archaeological potential of the north western part of Kunene:

(i) A high likelihood of Holocene age archaeological sites, including rock art, associated with outcropping granite in the northeast of the EPL.

(ii) A high likelihood of late precolonial settlement sites throughout the entire tenement, especially in the vicinity of Kalkfeld settlement, springs and seepages, and.

(iii) A high likelihood of early colonial settlement remains relating to the historical occupation of area that may be unknown or not recorded.

Kunene region has different ethnic groups such as the Ovaherero/Himba, Aawambo, and Damara/Nama. Cultural festivals are held every year from constituency to regional level where different groups showcase their traditional dress, dancing, and rituals. Various programmes initiated by the Directorate of National Heritage and Culture have been undertaken in order to encourage Namibians from all cultural backgrounds to take part in nation building activities and show mutual respect and understanding for each other. Additionally, the establishment of processes and networks to develop Namibians' material and spiritual culture, to establish and maintain links beyond national borders and to contribute towards human culture development and international understanding are required. The Directorate organizes cultural activities, cultural exchange activities, workshops, conferences and training programmes, exhibitions, culture and heritage conservation activities (Kunene River Awareness Kit, 2019). Should the proponent find any archaeological sites/artifacts during the next project phase (exploration), these will be acknowledged and proper guidelines will be followed to have them protected.

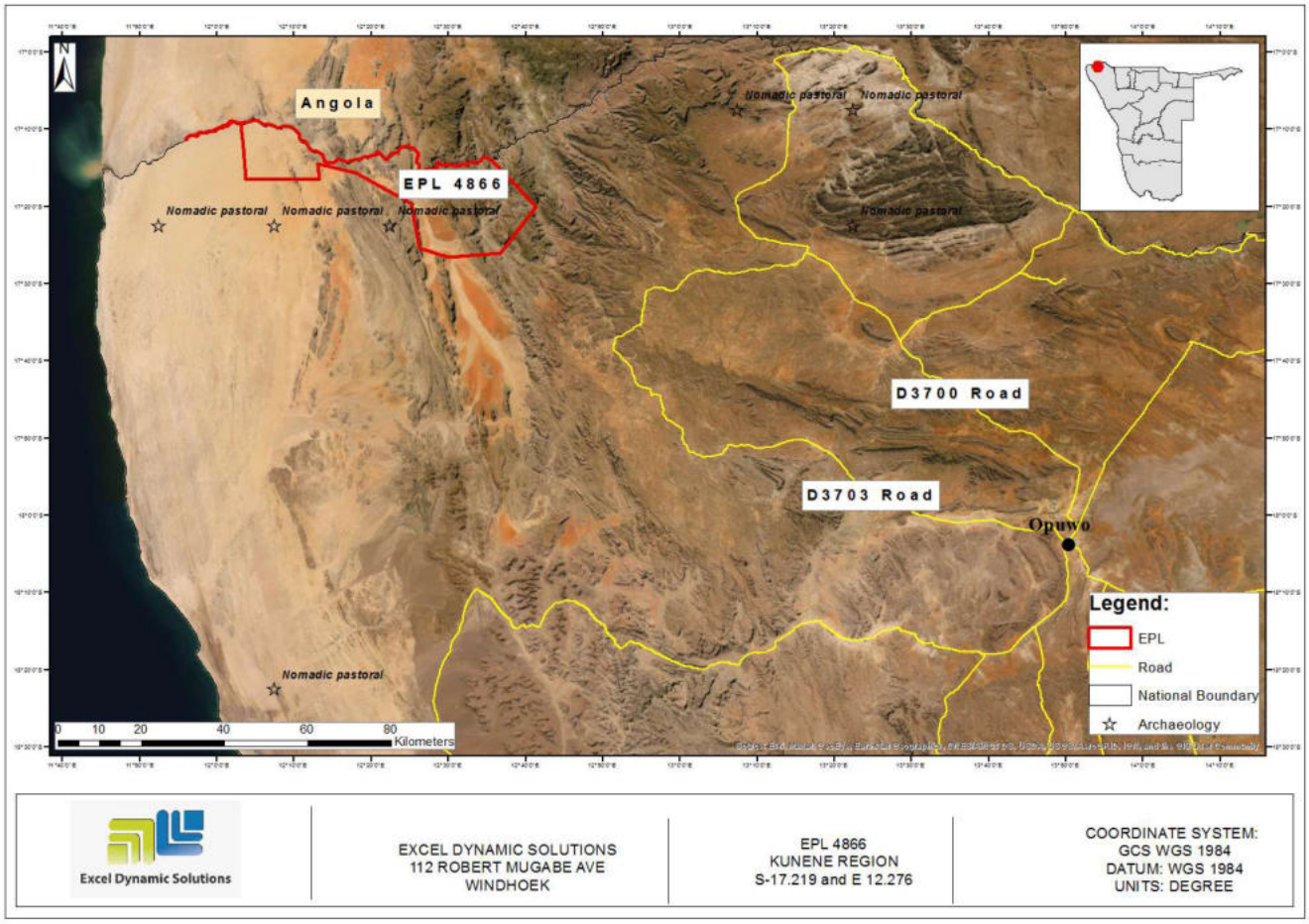


Figure 19: Map of Archaeology at EPL 4866

5.12 Services Infrastructure

Infrastructure on the property is limited to the network of roads and tracks. There are no farms located near on EPL 4866. None of the nearby villages have electricity, running water or sewage facilities. Cell phone coverage is sporadic at best. Long distance communication is accomplished via radio, satellite phone or over the internet using the Inmarsat satellite network. Opuwo is the nearest town to the EPL which is well equipped with services. Opuwo has 2 private schools, 4 Government schools, more than 20 churches, a clinic, postal service, grocery stores, gas stations, hotels and is the seat of government for the Kunene region. The EPL area is not well serviced by infrastructure, such as telephones, petrol stations or 3-phase electricity (power). There exists sufficient manpower to work in the area as unskilled labour; whereas skilled labour can be obtained from various parts of the country. Equipment and supplies are more readily available locally, and if specialized items are not available in Namibia they can be outsourced regionally, e.g. from South Africa and Botswana.

6 PUBLIC CONSULTATION PROCESS

Public consultation forms an important component of an Environmental Assessment (EA) process. Public consultation 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. Public consultation has been done in accordance with both the EMA and its EIA Regulations.

The public consultation process assists the Environmental Assessment Practitioner (EAP) in identifying all potential impacts and to what extent further investigations are needed. Public consultation can also aid in the process of identifying possible mitigation measures.

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

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

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

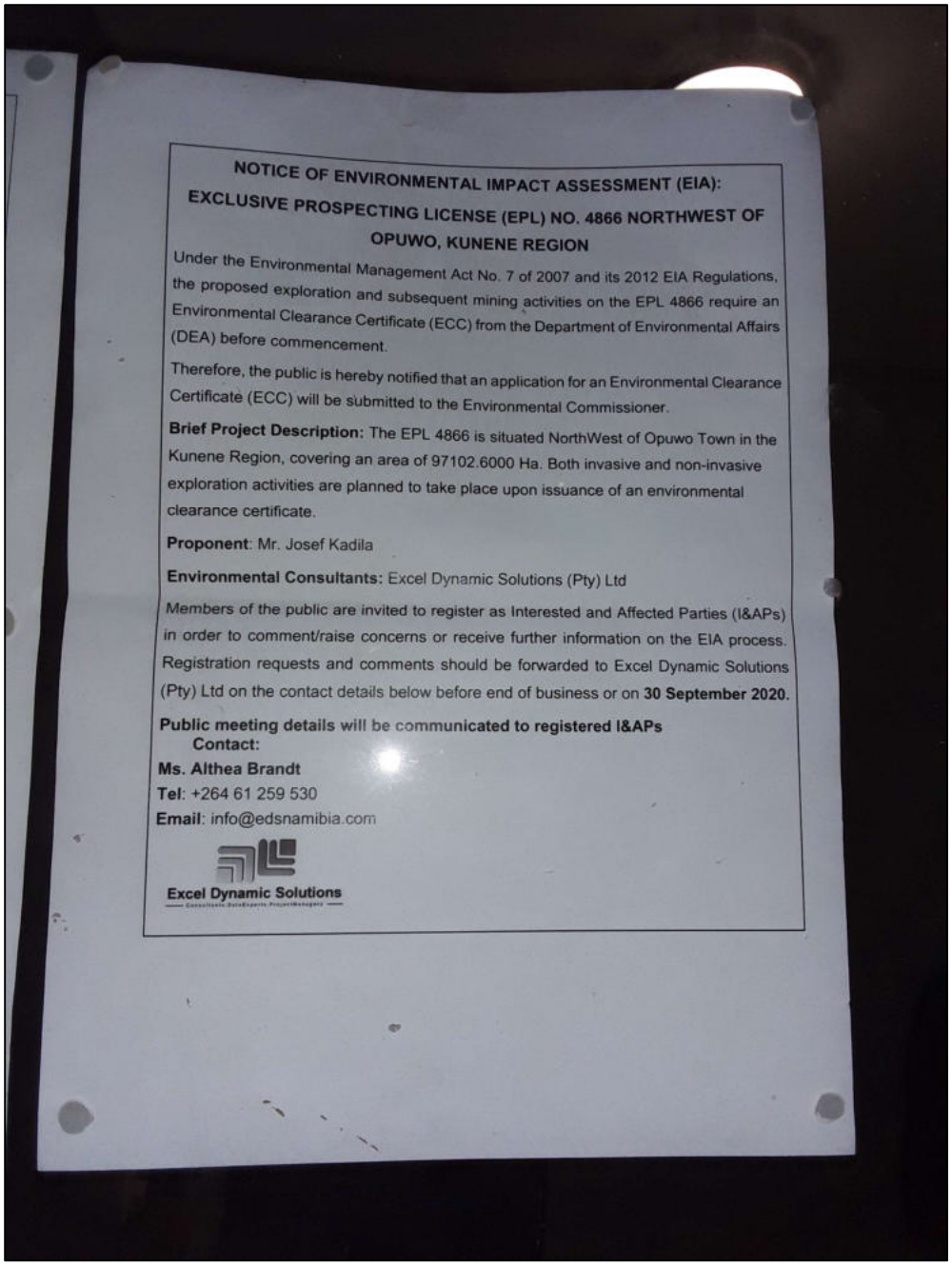
National (Ministries and State-Owned Enterprises)
Ministry of Environment, Forestry and Tourism
Ministry of Mines and Energy
Ministry of Urban and Rural Development
Ministry of Labour, Industrial Relations and Employment Creation
Ministry of Health and Social Services
Ministry of Agriculture, Water and Land Reform
Ministry of Works and Transport
NamWater / NamPower
Roads Authority

Regional, Local and Traditional Authorities
Kunene Regional Council
Opuwo Constituency
#Aodaman Traditional Authority
General Public
Interested members of the public & land owners
Namibia Community Based Tourism Association

6.2 Communication with I&APs

Regulation 21 of the EIA Regulations details steps to be taken during a public consultation process and these have been used in guiding this process. Communication with I&APs 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 Authoritative Ministries and upon request to all new registered Interested and Affected parties (I&APs);
- Project Environmental Assessment notices were published in *The Namibian* and *New Era* newspapers (**Appendix F**) dated **9 September 2020** and **16 September 2020**, briefly explaining the activity and its locality, inviting members of the public to register as I&APs and submit their comments/concerns;
- Public notices were placed at frequented places in Opuwo town and at Opuwo Rural Constituency office (**Figure 21**) to inform members of the public of the EIA process and register as I&APs, as well as submit comments.



NOTICE OF ENVIRONMENTAL IMPACT ASSESSMENT (EIA):
EXCLUSIVE PROSPECTING LICENSE (EPL) NO. 4866 NORTHWEST OF OPUWO, KUNENE REGION

Under the Environmental Management Act No. 7 of 2007 and its 2012 EIA Regulations, the proposed exploration and subsequent mining activities on the EPL 4866 require an Environmental Clearance Certificate (ECC) from the Department of Environmental Affairs (DEA) before commencement.

Therefore, the public is hereby notified that an application for an Environmental Clearance Certificate (ECC) will be submitted to the Environmental Commissioner.

Brief Project Description: The EPL 4866 is situated NorthWest of Opuwo Town in the Kunene Region, covering an area of 97102.6000 Ha. Both invasive and non-invasive exploration activities are planned to take place upon issuance of an environmental clearance certificate.

Proponent: Mr. Josef Kadila

Environmental Consultants: Excel Dynamic Solutions (Pty) Ltd

Members of the public are invited to register as Interested and Affected Parties (I&APs) in order to comment/raise concerns or receive further information on the EIA process. Registration requests and comments should be forwarded to Excel Dynamic Solutions (Pty) Ltd on the contact details below before end of business or on **30 September 2020.**

Public meeting details will be communicated to registered I&APs

Contact:
Ms. Althea Brandt
Tel: +264 61 259 530
Email: info@edsnamibia.com

Excel Dynamic Solutions

Figure 20: Public notice placed at Opuwo Rural Constituency, Otwani village

6.3 First Round Public Feedback

Feedback was received in the form of emails. Apart from this, there were no other comments/concerns/input received by the Consultant either via any other mode of communication after the EIA advertisement in the newspapers or upon placing public notices in Opuwo and Otwani village.

The Draft EIA report together with all its appendices was circulated to all I&APs for review for a period of 7 days. There were no comments received after submission of the draft reports for comments and/or input.

Table 4: Summary of issues or comments received by registered I&APs

Issue No.	Comment by, Date & Mode of communication (presented as received)	Consultant Response (in red)
1.	Colleen Mannheimer, 24 September 2020, email Dear Althea, Thank you, I have read the BID and I have a comment, and a couple of questions. The comment is that I think that you should mention in the BID that the western section of the EPL lies within the Skeleton Coast National Park. It should also be made clear on the map. I was also wondering whether MET is one of your pre-identified I/APs? The list in the BID just says 'ministries', which is not very helpful. I was also wondering what company will be undertaking the exploration. Is it a local company, or an overseas entity? If it is not local then where are they based? I hope not to offend you with this mail. Kind regards, Coleen Mannheimer	Thank you, Coleen, Please see our responses below: The comment is that I think that you should mention in the BID that the western section of the EPL lies within the Skeleton Coast National Park. It should also be made clear on the map. Well noted. We will attend to this comment and share revised BID. I was also wondering whether MET is one of your pre-identified I/APs? The list in the BID just says 'ministries', which is not very helpful. We take note of this concern and will be addressed in the BID. MEFT is listed among other ministries (i.e. MME, MAWLR) in the project database and in this report. I was also wondering what company will be undertaking the exploration. Is it a local company, or an overseas entity? If it is not local then where are they based? According to the EPL holder, Mr. Josef Kadila, there is no involvement of a foreign company at this point. He is also not negotiating with any foreign entities for collaboration/partnership. I hope not to offend you with this mail. We appreciate your contribution
	Pollen Karutjaiva, 29 September 2020, email attachment (BID response)	Noted with thanks. Your concern will be incorporated in the EIA report

	As Lions in the sun LTD PTY, trading as Okahirongo Lodges in the Kaokoland area, specifically one in the Marienfluss area touched by the project EPL 4866, we intend to raise our opposition against any invasive activity that may affect the natural state of the area. We asked for detailed information regarding non-invasive activities, but we must express our concern for any action that may disturb the normal touristic fruition of the territory; the location chosen by the project is one of the most untouched area in the country, chosen by international travelers for its natural purity, therefore any modification may impact severely the local community and the virtuous tourism.	

6.4 Second Round - Follow up Communication

No comments were registered during the second round of public consultation.

6.5 COVID-19 Influences

COVID-19 has changed the way the world thinks, acts, and does business. The pandemic has forced a comprehensive review of business practices, a higher level of engagement with technology to offset the constraints due to social distancing, restrictive travel, and a focus on social responsibility. The consulting team has had to change very little in the way we operate and provide public consultation services.

Although the team operated with limited travel during the environmental assessment to comply with the regulations put in place, various other platforms were used to communicate the project information. These platforms included emails, registered mails, newspaper adverts, and telephonic communication.

7 IMPACT IDENTIFICATION, ASSESSMENT AND MITIGATION MEASURES

7.1 Impact Identification

Proposed developments/activities are usually associated with different potential impacts; positive and/or negative. 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 even tertiary employment).
- Produce a trained workforce and small businesses that can service communities and may initiate related businesses
- Boosting the local economic growth.
- Open up other investment opportunities.
- Contribution to regional economic development.
- Other infrastructure development related benefits

Negative impacts:

- Pastoral system may be lost
- Possible deterioration of customs, beliefs and language
- through outside influences and manners
- Land degradation and possible destruction of faunal habitats as well as removal of vegetation that may be encountered within the target areas.
- Generation of dust from the exploration activities and access gravel road
- Environmental pollution
- Visual impacts (scars) on landscape that will, because of low rainfall, remain so for a very long time if not rehabilitated.
- Occupational health and safety risks
- Water quality changes
- Archaeological impact
- Noise and vibrations

- Socio-economic and cultural issues, including sustainable development
- Climatological impacts on exploration and subsequent mining operations, including precipitation and prevailing winds

7.2 Impact Assessment Methodology

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

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

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

Table 5: Extent or spatial impact rating

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

7.2.2 Duration

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

Table 6: Duration impact rating

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

7.2.3 Intensity, Magnitude / severity

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

Table 7: Intensity, magnitude or severity impact rating

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

Type of criteria	Negative				
	H- (10)	M/H- (8)	M- (6)	M/L- (4)	L- (2)
	processes, extinction of rare species	disturbance of important processes	moderate alteration	species numbers	very little quality deterioration.

7.2.4 Probability of occurrence

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

Table 8: Probability of occurrence impact rating

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

7.2.5 Significance

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

Once the above factors (**Table 5**, **Table 6**, **Table 7** and **Table 8**) have been ranked for each potential impact, the impact significance of each is assessed using the following formula:

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 9**).

Table 9: Significance rating scale

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

For an impact with a significance rating of high, mitigation measures are recommended to reduce the impact to a low or medium 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 both pre-mitigation (before implementing any mitigation) and post-mitigation (after mitigations are implemented).

The risk/impact assessment is driven by three factors and these are:

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.

According to Booth (2011), a pollutant linkage occurs when a source, pathway and receptor exist together. The objective with the mitigation measures is to firstly avoid the risk and if the risk cannot be avoided, mitigation measures to minimize the impact are recommended. Once the mitigation measures have been applied, the identified risk will be of low significance.

The impact assessment for this EIA focuses on the three project phases namely; the prospecting, drilling, sampling (and possible analysis) and decommissioning. The potential negative impacts stemming from the proposed activities of EPL 4866 are described, assessed and mitigation

measures provided thereof. Further mitigation measures in a form of management action plans will be 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 construction and operational (and maintenance phases) identified are; soil disturbance, dust (air pollution), visual impact, loss of biodiversity (fauna), health and safety, archaeological impact, waste generation and noise. Potential impacts identified to be associated with the exploration discontinuation; loss of economic growth for the country.

- *Pastoral system may be lost*
- *Possible deterioration of customs, beliefs and language*
- *Loss of biodiversity* **-** possible destruction of faunal habitats that may be encountered within the EPL site.
- *Generation of Dust (air quality)* **-** generation of dust from the unpaved site access roads during construction and possible gaseous emissions into the air by unserviced vehicles and machinery
- *Waste generation* - potential environmental pollution through uncontrolled waste disposal.
- *Visual impact*
- *Potential Health and safety risk* - potential health and safety risks associated with mishandling of project equipment.
- *Surrounding Soils impacted* **-** disturbance of site soils by exploration, project vehicles and machinery.
- *Archaeological impact* - potential uncovering of unknown archeological objects during construction works or operational phase.
- *Noise and vibrations* – noise from drilling equipment and moving machines

7.3.1 Loss of the Pastoral System

Nomadic pastoral societies are those in which animal husbandry is viewed as an ideal way of making a living and in which movement of all or part of the society is considered a normal and natural part of life (Cultural Survival, 2020). This cultural aspect is vitally important, while

economic analysis of some groups may show that they earn more from non-pastoral sources, the concept of nomadic pastoralism remains central to their own identities. These societies are built around a pastoral economic specialization, but are saturated with values far beyond just doing a job and earning money. Taking away the opportunity for these nomadic groups to continue their way of living and making a living, can have dire effects. This can lead to a massive social impact. The Consultant therefore advises the Proponent to avoid causing overgrazing in certain areas due to exploration activities. Under the current status, the impact can be considered to be of a medium significance rating. With the implementation of appropriate mitigation measures, the rating will significantly be reduced to low. The impact is assessed in **Table 10** below.

Table 10: Assessment of the impacts of exploration on the Pastoral system

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

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

- 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 offroad, and creating unnecessary tracks that may contribute to soil erosion and loss of grazing land.
- Environmental awareness on the importance of the cultural preservation should be provided to the workers.

7.3.2 Loss of Biodiversity

Land degradation will be created due to drilling activities and earthworks done to uncover the diamond bearing rock units. The destruction or drastic modification of the area can have a catastrophic impact on the biodiversity of in the area. This can lead to a massive habitat loss for a diversity of flora and fauna ranging from social microorganisms to large animals. 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 significantly be reduced to low. The impact is assessed in **Table 12** below.

Table 11: Assessment of the impacts of exploration on biodiversity

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

Mitigations and recommendation to minimize the loss of biodiversity

- Vegetation found on the site, but not in the targeted exploration areas should not be removed, but left to preserve biodiversity on the site.
- Even if a certain shrub or tree is found along exploration target spots on sites, this does not mean that it should be removed. Therefore, 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. The medium significance of this impact can be reduced by properly implementing mitigation measures. The impact is assessed in **Table 13** below.

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

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

Mitigations and recommendation to minimize dust

- The Proponent should ensure that the exploration schedule is limited to the given number of days of the week, but not every day. This will keep the vehicle-related dust level minimal in the area.
- Since the project site is in an area where due to little vegetation cover, soils are exposed, it is highly probable that more dust will be generated from exploration activities (excavating). It is therefore advised that in extremely windy days, a reasonable amount of water should be used 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, there is a potential that domestic waste in the field can be generated. Therefore, land pollution can occur on the site of the EPL or around the site if these generated wastes are not disposed in a responsible way. In order to prevent these issues, both non-biodegradable and biodegradable wastes must be stored in containers and collected regularly for disposal at a recognized landfill/dump site. Furthermore, there will be no sewage or other hazardous waste that may have an impact on the animals, vegetation or the environment will be produced on the site. However, without any mitigation measure, the impact has a medium significance. The impact will be of low significance from medium, upon implementing the mitigation measures. The assessment of this impact is given in **Table 14**.

Table 13: Assessment of waste generation impact

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

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

Mitigations and recommendation to waste management

- Workers should be sensitized to dispose of waste in a responsible manner and not to litter.
- After each daily works, the Proponent should ensure that there are no wastes left on the sites.
- All domestic and general operational waste produced 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 waste/domestic.
- A penalty system for irresponsible disposal of waste on site and anywhere in the area should be implemented.

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. If the exploration site is located close to or along tourist routes / nomadic pastoralizing tracts, these scars in many cases contrasts the surrounding landscape and thus may potentially become a visual nuisance, especially to tourists in tourist-prone areas and will also hinder animal husbandry in the area and its surrounding. Nonetheless, 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 slightly medium to low significance, but upon effectively implementing the measures. The assessment of this impact is presented in **Table 15**.

Table 14: Assessment of exploration on visual

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

Mitigations and recommendation to minimize visual impact

- The Proponent should consider the implementation of continuous rehabilitation programme, by using overburden waste rocks or soils.

7.3.6 Potential Health and Safety Risks

As the number of global cases of the novel corona virus (Covid -19) continues to drastically increase, the exploration and mining activities are suspected to slow down in order to keep cases low. However further safety measurements can be implemented. 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 16** below and mitigation measures provided.

Table 15: Assessment of the impacts of exploration on health and safety

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

Mitigations and recommendation to minimize health and safety issues

- Workers should be tested before-hand for high fever prior to exploration, if exploration works are allowed to proceed.
- 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, etc.
- No employee should be allowed to drink alcohol 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.

7.3.7 Surrounding Soils and Groundwater

Improper handling, storage and disposal of hydrocarbon products and hazardous materials at the site may lead to soil and groundwater contamination, in case of spills and leakages. The impact can be rated as medium, if no mitigation measures are implemented. However, with the implementation of mitigation measures, the impact significance will reduce to low. The impact is assessed in **Table 17** below and mitigation measures are provided below.

Table 16: Assessment of the impacts of exploration on soils

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

Mitigations and recommendation to minimize impact on soil and groundwater

- 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 products(s) to the sites.

7.3.8 Archaeological Impact

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 neither known heritage nor site of cultural values within the site nor in the vicinity of the project site area. Therefore, this impact can be rated medium to low, if there are no mitigation measures in place. Upon implementation of the necessary measures, the impact significance will be low. The impact is assessed in **Table 18**.

Table 17: Assessment of the impacts of exploration on archaeological sites

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

Mitigations and recommendation to minimize impact on archaeological sites

- Contractors working on the site should be made aware that under the National Heritage Act, 2004 (Act No. 27 of 2004) any items protected under the definition of heritage found in the course of development should be reported to the National Heritage Council
- The Proponent should consider having a qualified and experience archaeologist on standby during drilling and sampling phase and as required during the entire operational phase. This action will be to assist on the possible of uncovering of sub-surface graves or other cultural/heritage objects and advice the Proponent accordingly.
- Identified graves or any archaeological significant objects on the site should not be disturbed, but are to be reported to the project Environmental officer or National Heritage Council offices.
- The chance finds procedure as outlined in the EMP must be implemented at all times, and.
- Detailed field survey should be carried out if suspected archaeological resources or major natural cavities / shelters have been unearthed during the exploration operations

7.3.9 Noise and vibrations

Prospecting and Exploration works (especially drilling) may be a nuisance to surrounding communities. Excessive noise can also be a health risk to site workers. Furthermore, the exploration equipment used for drilling and blasting on site is of medium size and the noise level is bound to be limited to the site only, and 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 19** below.

Table 18: Assessment of the impacts of noise from exploration

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

Mitigations and recommendation to noise

- Noise from operations' vehicles and equipment on the sites should be reduced to 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 generated by exploration equipment and the movement of vehicles before or after hours.
- When operating the drilling machinery onsite, workers should be equipped with personal protective equipment (PPE) such as earplugs to reduce noise exposure.

7.4 Assessment of Potential Negative Impacts: Decommissioning Phase

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

Impact on Employment Opportunities and Economic Contribution

Should the exploration program come to an end, workers that are employed by the exploration company lose their jobs and source of income. This will also mean that there will be no more revenue and royalties paid to the government. This impact can be rated as of medium significance and given that the program has defined timeframe, only so much can be done by the Proponent to assist the workers in this regard. Regarding the national revenue and royalties' payment, there will be unfortunately nothing that the Proponent would do to mitigate this. The impact significance of unemployment can be reduced from medium to low, by implementing mitigation measures. The impact assessed in **Table 20** below is that of employment loss only.

Table 19: Assessment of the impacts of exploration activities closure on employment

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

To conclude this chapter, it is found that most of the identified potential negative impacts are rated as medium significant. Therefore, in order to reduce the significance from medium to low, it is recommended that the Proponent effectively implement mitigation measures. Furthermore, in order to maintain low significance, the implementation of measures will need to be continuously monitored.

8 RECOMMENDATIONS AND CONCLUSIONS

8.1 Recommendations

The key potential impacts associated with the proposed the exploration program and its associated activities were identified and assessed. In order to avoid and minimize (where impacts cannot be avoided) the identified project impacts, mitigation measures were recommended. The significant identified impacts for the project phases on the environmental features are summarized below. These impacts can be reduced or minimized by implementing the mitigation measures and given under the impact assessment chapter and also management actions plan provided in the Draft EMP.

- **Loss of the Pastoral System and Culture:** The Consultant has advised the Proponent (in **section 7.3.1**) to create awareness on the importance of the culture, customs, beliefs and languages preservation among workers. Under the current status, the impact can be considered to be of a medium significance rating. With the implementation of appropriate mitigation measures (provided in the EMP, Appendix B), the rating will significantly be reduced to low.
- **Loss of Biodiversity:** The Consultant has advised the Proponent (in **section 7.3.2**) 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 (provided in the EMP, **Appendix B**), the rating will significantly be reduced to low.
- **Generation of Dust (Air Quality):** The generation of dust by exploration operations is considered minimal, and therefore of medium significance without any mitigation measures. The medium significance of this impact can be reduced by properly implementing mitigation measures (provided in the EMP, **Appendix B** and **Section 7.3.3**).
- **Waste Generation:** Without any mitigation measure, the impact has a medium significance. The impact will be of low significance from medium, upon implementing the mitigation measures (provided in the EMP, **Appendix B** and **Section 7.3.4**).
- **Visual Impact (Scars) on Landscape:** Currently, the visual impact can be rated as slightly medium to low significance, but upon effectively implementing the measures (provided in the EMP, **Appendix B** and **Section 7.3.5**).

- **Potential Health and Safety Risks:** 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 (provided in the EMP, **Appendix B** and **Section 7.3.6**).
- **Soils and Groundwater:** The impact can be rated as medium, if no mitigation measures are implemented. However, with the implementation of mitigation measures, the impact significance will reduce to low (provided in the EMP, **Appendix B** and **Section 7.3.7**).
- **Archaeological impact:** There is no information provided and/or established about neither known heritage nor site of cultural values within the sites or in the vicinity of the project site area. Therefore, this impact can be rated medium to low, if there are no mitigation measures in place. Upon implementation of the necessary measures, the impact significance will be low (provided in the EMP, **Appendix B** and **Section 7.3.8**).
- **Noise and vibrations:** 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 (provided in the EMP, **Appendix B** and **Section 7.3.9**).

8.2 Conclusion

The potential positive and negative impacts stemming from the proposed exploration activities 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 impossible) the risks to acceptable levels.

The Consultant is therefore confident that these measures are sufficient and thus recommends that the Proponent be issued with the Environmental Clearance Certificate (ECC) to enable the exploration works on EPL 4866. However, the ECC should be issued on condition that the provided management measures and action plans are effectively implemented on site. Most importantly, monitoring of the environmental components described in the impact assessment chapter 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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