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Environmental Scoping Assessment (ESA) Report for the:

Proposed Exploration of Dimension Stone on Exclusive Prospecting License (EPL) 7241 in the Erongo Region, Namibia

MEFT APPLICATION NO.:	**APP-001871**
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EXECUTIVE SUMMARY

MKN Mining Consultants CC (hereinafter referred to as MKN Mining or the Proponent), a 100 % Namibian-owned company proposes to undertake exploration for dimension stone on the Exclusive Prospecting License (EPL) 7241 in the Erongo Region. EPL 7241 is located about 20 km southeast of Karibib and covers an area of about 2 355 hectares (ha). The EPL extends over Portion 2 of Farm Okakoara No.43, Portion 5 of Farm Kaliombo No. 119, Remainder Ext. of Farm Kaliombo No. 119, and Remainder of Farm Ombujomenge No. 39.

The EPL is owned by the Proponent and the commodities that can be found on the EPL are dimension stone. The commodities targeted by the exploration activities on the EPL is the dimension stone (quartzite and possibly marble). It should be noted that no mining activities are planned for nor will be part of the proposed activities and therefore it (mining) will not be discussed nor be part of the environmental scoping assessment (ESA).

The proposed exploration works are however among the listed activities in the Environmental Management Act (EMA) No. 7 of 2007 and its 2012 Environmental Impact Assessment (EIA) Regulations that may not be undertaken without getting the environmental clearance certificate (ECC). Consequently, MKN Mining Consultants appointed OMAVI Geotechnical & Geo-Environmental Consultants CC (hereinafter referred to as OMAVI Consultants) to undertake the required Environmental Scoping Assessment process and apply for the ECC for the proposed project activities.

It is for this reason, that this Environmental Scoping Assessment (ESA) Report was compiled. The Report contains all the information that was gathered from the environmental assessment process. The information contained herein include the description of the proposed project activities and alternatives, legal requirements, the pre-project environmental conditions, public consultation means, identified potential impacts (both by the Consultants and registered interested and affected parties), their assessment and provision of the necessary practical measures to manage avoid and or minimize each impact' significance.

Public consultation, Key issues Raised and Identified Potential Impacts

First Round of Public Consultation: Consultation Means (from newspaper adverts to draft ESA Report compilation)

The first round of public consultation took place from the 10th of September to the 28th of September 2020. The public was informed of the ESA process and consulted through the following means:

- Newspaper adverts (on 10 and 17 September 2020 through *Die Republikein, Namibian Sun and Allgemeine Zeitung* newspapers).

- Email notifications sent to all pre-identified Interested & Affected Parties (I&APs) on 10 September 2020.
- Site notices placed at the Karibib Regional Constituency Office in Karibib.
- A Joint Public Consultation Meeting (for EPL 7008, 6139 & 7241) held on the 26th of September 2020 at Unit A of Farm Neu Schwaben, neighbouring Farm Habis to the south. **It is of utmost importance to note that the gap between the Public Consultation Process and submission of the ESA Report has been caused by the delay owing to issues surrounding the unavailability of some landowners residing abroad, and delayed access to some of the farms covered by the EPL. The Environmental Consultant had to wait for these hindrances to be sorted to ensure that reliable and sufficient data was obtained from site to compile a reliable ESA Report and associated documents. These factors therefore prolonged the finalization and submission of the EIA Report to the DEAF and timely submission of an ECC for the work onsite and renewal of the EPL' rights at the MME.**

Issues and concerns to the proposed project: Public (I&APs) Feedback

The main issues (potential negative impacts) that were raised during the first round of public consultation are as follows:

1. Potential impacts on protected, endemic, and red data species biodiversity (flora / vegetation)
2. Social issues raised as summarized below:
    - Emphasis on the importance of public participation process with local and affected communities to avoid future conflicts.
    - Provision of sufficient information to affected farm//landowners and or occupiers of land to be able to understand the potential current and future impacts associated with the proposed projects to be able raise concerns and make well-informed decisions.
    - Mutual respect and consideration of small-scale mining activities by the ''larger'' mining industries in the same area.
    - Damaging of the biophysical environment by proposed activities and similar activities.
    - Management of waste generated from the project activities.
3. Timely liaison and consultation with property/landowners or occupiers of land regarding signing of land use consent (agreements) prior to commencement of exploration activities.
4. Adverse impact of the proposed activities on the heritage (archaeological) sites and objects – National Heritage Council requirement for the Archaeological Assessment.

5. The community (small-scale miners') fear of big exploration and mining companies impacting their livelihood because these companies will have big machine and equipment, therefore impacting their operations (small-scale miners' work).

The proposed project has the potential to improve the sustainability of existing dimension stone factories and to provide employment opportunities to the local people, which in turn contributes to the region's economy. Additionally, the exploration programme will allow acquisition of skills through on-the-job training. However, the project also has the potential to negatively impact the receiving environment. Impacts identified were assessed by considering the potential risk areas associated with the receiving biophysical and social environment and the issues raised during the public consultation process. The key impacts resulting from this process are as follows:

- **Impact on Soils** – was divided into soil pollution and soil disturbance. Potential sources of soil pollution include petrochemical spills from vehicles (bakkies), water trucks, the drill rig, diesel operated generator as well as the trailer mounted diesel tank for fuel storage. In terms of soil disturbance, most of it is anticipated during the early stages of the project, whereby roads will need to be created, exploration camp to be erected and clearing of selected areas for detailed mapping traverses.
- **Impact on air quality** - The possible source of air pollution would be the dust and fumes generated by project vehicles and trucks, diesel powered machinery, as well as dust from drilling and cutting.
- **Impact on biodiversity and habitat destruction** – could potentially result from the removal of vegetation to create access roads and erect temporary exploration camps onsite during field exploration. However, this is likely to be minimal, given that the vegetation is scattered. The scrapping of overburden to expose rocks for drilling and cutting might result in habitat disturbance.
- **Impact on surface and groundwater resources** – it was established that there is no surface water in the area as it seldom receives rainfall, and communities rely on groundwater. Therefore, to avoid putting pressure on this scares resource, the project will source water offsite and transport it in water tankers on a weekly basis. This takes away possible lowering of the groundwater table because of abstraction. In terms of water quality, potential sources of pollution can be spills of petrochemicals from vehicles (bakkies), water trucks, the drill rig as well as the trailer mounted diesel tank for fuel storage.

- **Visual impact** – this is a potential impact during the feasibility stage where blocks of rock will be taken or cut from selected areas for testing. However, the significance of this impact is lowered by the fact that exploration test mining will only cover selected areas, which reduces the spatial extent of impact. Additionally, if test mining does not yield positive results, such that there will be a need to apply for a mining licence, the testing blocks will be put back and the area will be rehabilitated.
- **Noise impact**: There is an inconvenient impact of noise to neighbouring locals associated with exploration vehicles, trucks and equipment. The noise from machinery may also pose a health risk to workers that operate them or the ones working directly in noisy areas.
- **Impact on vehicular traffic safety** - having water trucks, heavy trucks on the road for drill rigs as well as those transporting mined blocks from site to the factories for testing may impact traffic safety.
- **Impact on archaeology -** Destruction of archaeological sites might occur during excavation and test mining using a butterfly cutter. However, the likelihood or probability of this happening is minimal as there are no other known archaeological sites or sites of heritage importance known in the project area, except the ones considered in this assessment.
- **Impacts the health and safety of workers** – from the handling of equipment and use of machinery as well as potentially contracting diseases.

The significance of these impacts has been assessed in terms of the scale, duration, intensity or magnitude as well as probability of occurrence. All impacts were assessed in Section 6.3, and they had medium to low significance. Mitigation measures were recommended in the scoping report and outlined in the EMP for implementation by respective parties. Based on this assessment and the information provided in this report, OMAVI is confident that the identified risks associated with the project can be reduced to acceptable levels, if the measures recommended in the EMP are implemented and monitored. It is therefore recommended that the project receive Environmental Clearance, provided that the EMP be implemented.

Recommendations and Conclusions

The aim of this environmental scoping assessment was to identify the potential impacts associated with the proposed exploration activities on the EPL, assess and recommend practical mitigation measures. The public was consulted as required by the EMA and its 2012 EIA Regulations (Section 21 to 24). The public was informed via the newspapers (*Die Republikein*, *Namibian Sun* and *Allgemeine Zeitung* for two consecutive weeks on 10 and 17 September 2020) and site/public notices placed at the Regional Constituency Office's notice board (in Karibib).

A joint public consultation meeting (for EPL 7008, 6139 and 7241 ESA Study) in a form of an interaction session was held with the public on the 26th of September 2020 at Farm Neu Schwaben (Unit A) – to accommodate both I&APs for EPL 7008, 6139 and 7241. The interested and affected parties raised their comments and concerns on the proposed project activities, and these were noted down during the meeting. The concerns and comments received from the public and the local community members formed the basis for this report and development of the Draft EMP.

The conclusions reached and recommendations provided are presented below.

Recommendations

It is therefore recommended that an Environmental Clearance Certificate be issued for the proposed exploration on EPL 7241, subject to the following recommendations:

- All required permits, licenses and approvals for the proposed activities should be obtained as required (please refer to the Permitting and Licensing Table in the Environmental Management Plan (**Appendix B**). These include permits and licenses for land/farm access agreements to explore and ensuring compliance with these specific legal requirements.
- The Proponent complies with the legal requirements governing this type of project and its associated activities.
- All mitigations provided in this ESA Report and the management action plans in the EMP should be implemented and monitoring conducted as recommended.
- All the necessary environmental and social (occupational health and safety) precautions provided should be adhered to.
- Site areas where exploration activities have ceased should be rehabilitated, as far as practicable, to their original state.
- The monitoring of the implementation of mitigation measures should be conducted, applicable impact's actions taken, reporting done and recorded as recommended in the Draft EMP.

Conclusions

The potential (positive and negative) impacts stemming from the proposed exploration activities were identified. The two impact types were described, assessed and mitigation measures where provide (where necessary).

As main potential impacts of concern, the negative impacts were carefully described, assessed, and mitigation measures provided thereof to avoid and/or minimize their significance on the environment. These impacts were found to be of medium significance. The effective implementation of the recommended management actions (mitigation measures) will see the significance reduction in impacts (that cannot be avoided) from medium to low rating. However, to maintain a low significance rating, monitoring of the potential impacts by the Proponent (an Environmental Control Officer (ECO)) is highly recommended. **Monitoring will not only be carried out to maintain the low rating of impacts' significance but also to ensure that new potential impacts that might arise during project implementation are well identified in time, properly addressed and that suitable mitigation measures are provided and implemented.**

Based on the assessment from experience, research information, inputs by the public, and technical information provided by the Proponent, it can be concluded that that the proposed activities may be granted an Environmental Clearance Certificate. The ECC issuance will be on condition that the recommendations and impact mitigation measures in this report and all the provisions in the EMP are adhered to.

In conclusion, it is unlikely that the proposed project activities will have a high significant of negative impact on the biophysical and social environments in the project area. Therefore, it is vital for the Proponent and their contractors (if any) to effectively implement and monitor the recommended management measures to protect the environment and promote environmental sustainability.

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ABBREVIATIONS

DEA	Department of Environmental Affairs
DSMGMR	Dimension Stone Mining Global Market Report
EA	Environmental Assessment
EIA	Environmental Impact Assessment
ECC	Environmental Clearance Certificate
EMP	Environmental Management Plan
EMA	Environmental Management Act
EPL	Exclusive Prospecting Licence
ESA	Environmental Scoping Assessment
I&APs	Interested and Affected Parties
MEAC	Ministry of Education, Arts and Culture
MAWLR	Ministry of Agriculture, Water & Land Reform
MEFT	Ministry of Environment, Forestry and Tourism
MLIEC	Ministry of Labour, Industrial Relations and Employment Creation
MME	Ministry of Mines and Energy
MoHSS	Ministry of Health and Social Services
MURD	Ministry of Urban and Rural Development
NBG	National Botanical Gardens
OGGC	OMAVI Geotechnical and Geo-environmental Consultants cc
TA	Traditional Authority(s)

1 INTRODUCTION

1.1 Project background

MKN Mining Consultants (hereinafter referred to as MKN or the Proponent), a 100% Namibian-owned company proposes to undertake exploration on the Exclusive Prospecting License (EPL) 7241 in the Erongo Region, in search for dimension stones. The EPL 7241 is located about 20 km southeast of Karibib and covers an area of about 2355 hectares (ha). The EPL extends over Portion 2 of Farm Okakoara No.43, Portion 5 of Farm Kaliombo No. 119, Portion A of Farm Kaliombo No.42, and Portion C of Farm Ombujomenge No. 39. The map showing the location of EPL 7241 is shown in Figure 1-1 and the farms covered are shown in Figure 1-2. Although this is the case, the unit of interest to this exploration campaign (the white marble) is found primarily on Farm Kaliombo No. 119 and Ombujomenge, as seen in Figure 1-3. Exploration activities will focus on the western edge of the marble ridge.

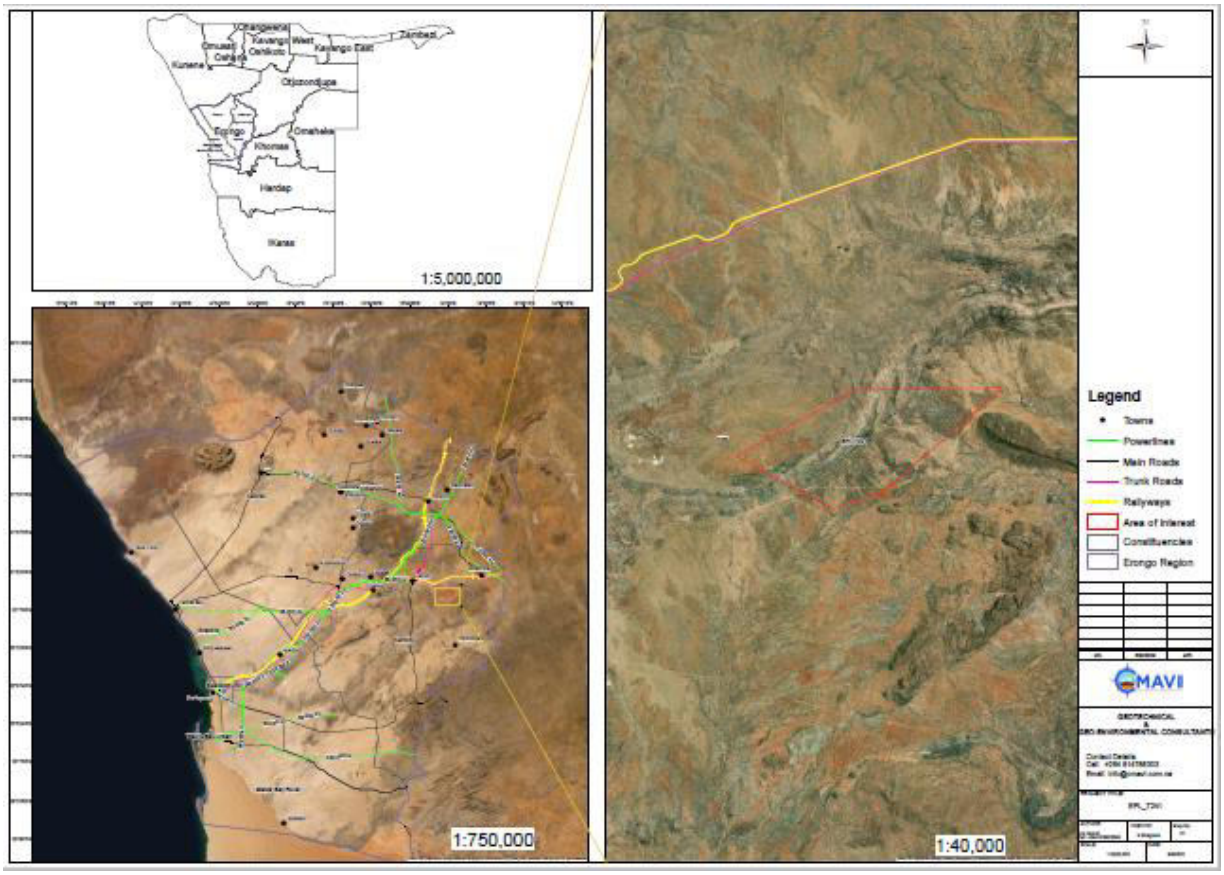

Figure 1-1: The location of EPL 7241, found about 20 km east-southeast of Karibib in the Erongo Region

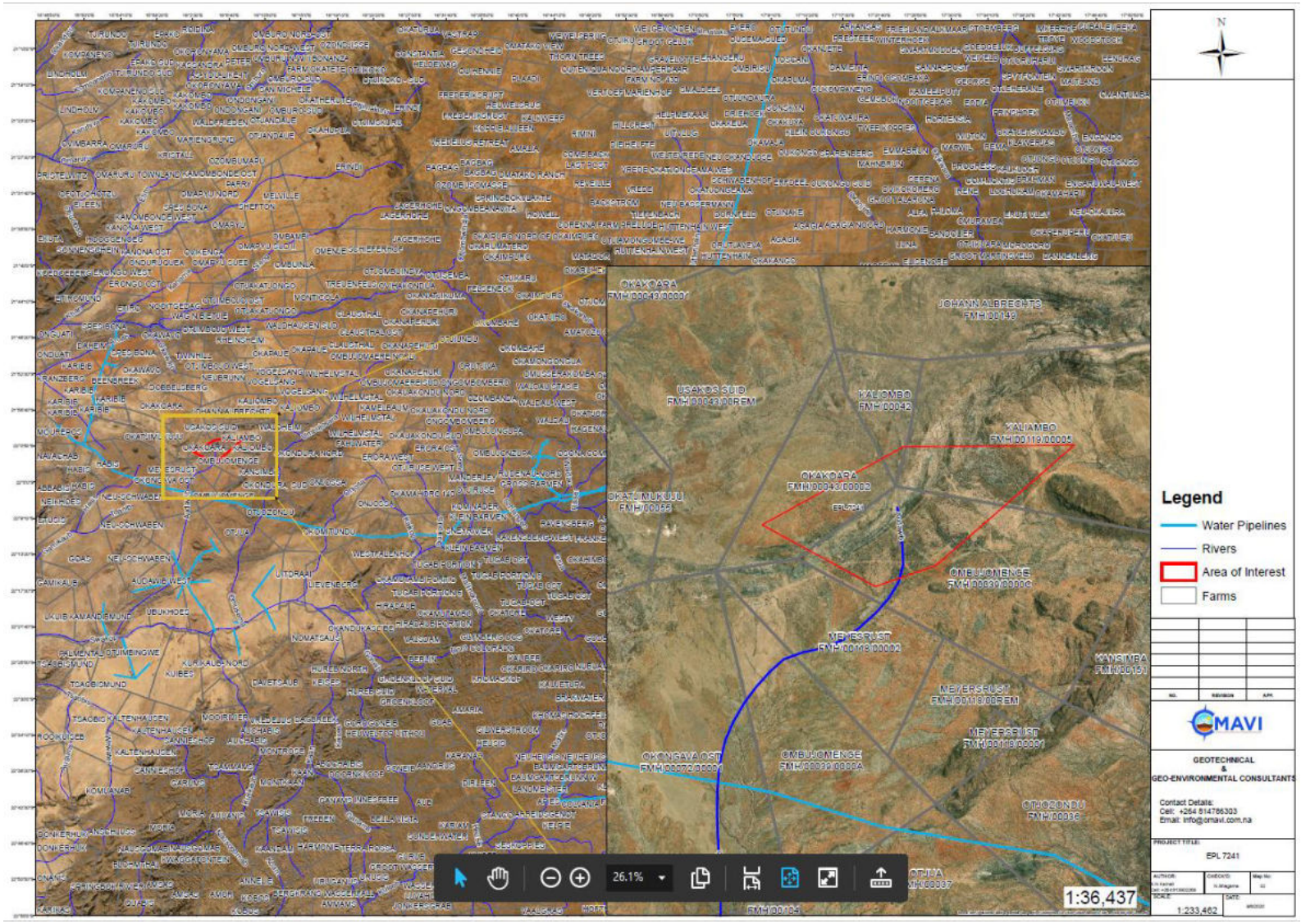

Figure 1-2: The extend of EPL 7241, covering Portion 2 of Farm Okakoara No.43, Portion 5 of Farm Kaliombo No. 119, Portion A of Farm Kaliombo No.42, and Portion C of Farm Ombujomenge No. 39.

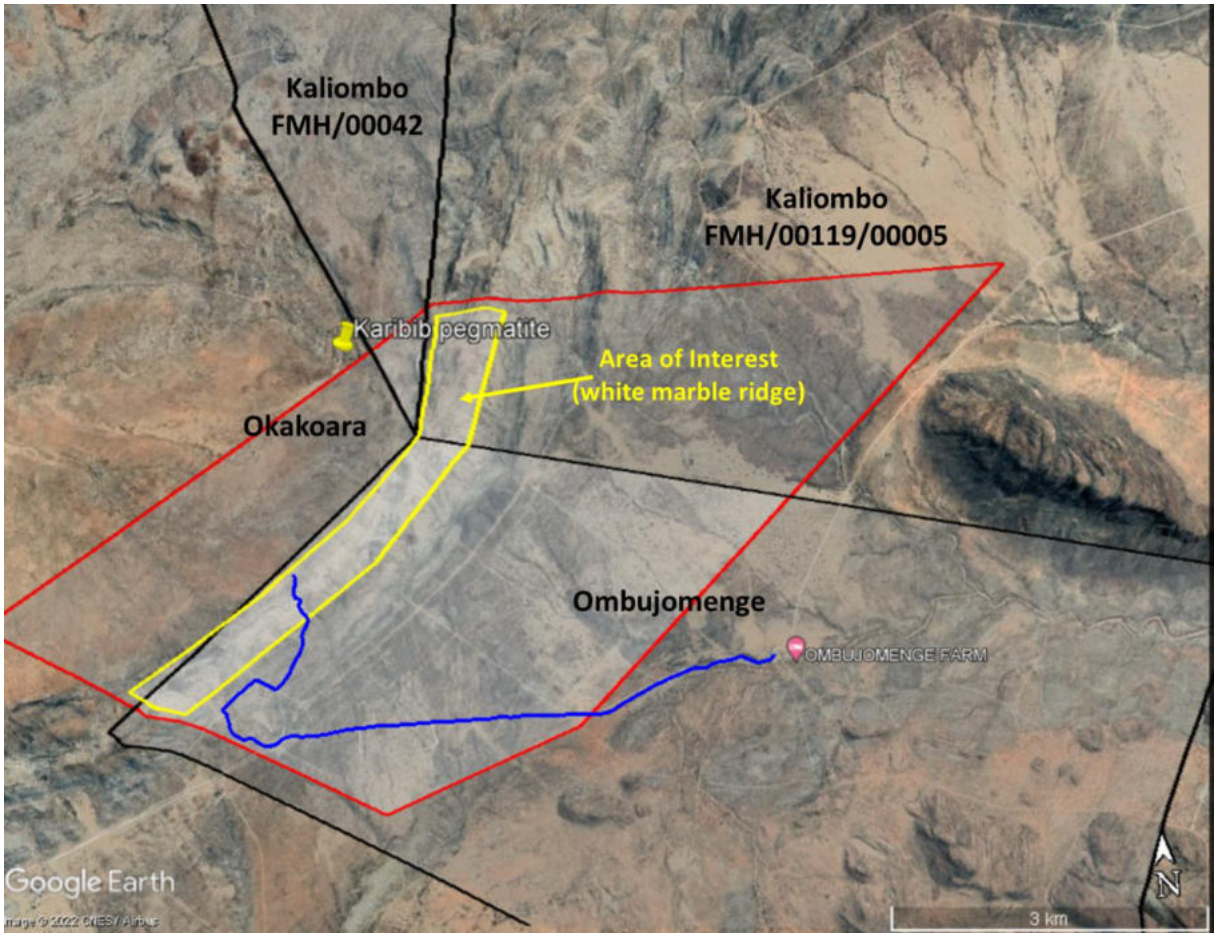

Figure 1-3: The location of EPL 7241 and the area being targeted by the present exploration programme.

1.2 Ownership of EPL 7241

The EPL 7241 on which the exploration activities are proposed to be undertaken is owned by MKN Mining Consultants, and it is listed as an active licence by the Ministry of Mines and Energy (MME), with tenure from 29/04/2019 and expiration date of 28/04/2022. The licence was granted for the exploration of dimension stones, which may only be undertaken once an environmental clearance certificate (ECC) has been granted by the Ministry of Environment, Forestry and Tourism (MEFT), hence the present environmental scoping assessment.

At the time of ESA reporting, an application for renewal has been lodged with MME to extend the tenure. Therefore, the renewal is pending approval by MME, subject to an environmental clearance certificate (ECC) by the Ministry of Environment, Forestry and Tourism (MEFT) which would also be the resulting decision from this ESA.

The status of EPL 7241 is shown in Figure 1-4 below as accessed on 03 June 2022 on the Namibia Mining Cadastral Portal (upon searching) on this link https://portals.landfolio.com/namibia/ .

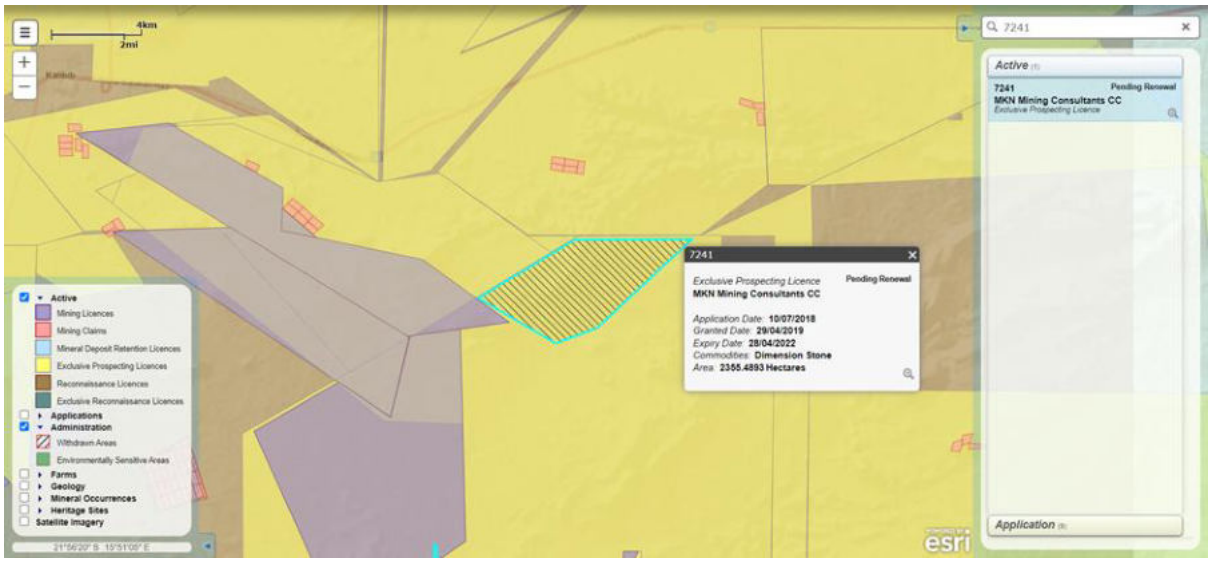

Figure 1-4: Details of EPL 7241 as displayed on the Namibia Mining Portal (As accessed on 03 June 2022 via: https://portals.landfolio.com/namibia/).

1.3 Project justification

The consumption of dimension stones is growing at a rate significantly higher than most mineral products, with a compounded annual growth rate of about 0.8% anticipated in 2020 and an expected global value of nearly US$5.22 billion by 2022 according to the 2020 Dimension Stone Mining Global Market Report. This growth is largely driven by increasing demand for high value natural stones in the construction and real estate sectors in China, India and Eastern Europe.

To meet the demand and consumption needs of both the local and international markets, it is important that the exploration and mining of dimension stones continues in Namibia. This will supplement the already operational dimension stone quarries in the region, whose resources are depleting, and will help to sustain the local processing factories. It is partly on these grounds that MKN Mining Consultants decided to pursue the project under review.

This exploration project will equip the local communities with technical skills as well as job opportunities, which in turn can improve the socio-economic standing of the region. Additionally, this exploration project can potentially advance to mining works, which will contribute to the Namibian economy.

1.4 The need for Environmental Scoping Assessment

The Environmental Management Act (Act No. 7 of 2007) (EMA) and its 2012 EIA Regulations lists activities that must not be undertaken without an Environmental Clearance Certificate (ECC). The following sections are relevant to the proposed exploration works:

- *''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.''*

To satisfy these conditions and to inform the ECC decision, an Environmental Scoping, or Impact Assessment (ESA/EIA) must be conducted, as per the requirements of the EMA (Act No. 7 of 2007) and its 2012 EIA Regulations. It was in line with these requirements that MKN Mining Consultants appointed an Environmental Assessment Practitioner (EAP) to carry out this assessment.

1.5 Appointed Environmental Assessment Practitioner

MKN Mining Consultants (*the proponent*) appointed OMAVI Geotechnical & Geo-environmental Consultants CC (*OMAVI hereafter*) as an independent environmental consultant, to investigate the potential biophysical and socio-economic environmental impacts that would arise from the planned exploration activities. The findings of the scoping assessment are aimed at providing the Ministry of Environment, Forestry and Tourism's (MEFT) Department of Environmental Affairs and Forestry (DEAF) with sufficient information to make an informed decision on the granting of an ECC for the proposed activities. Ms. Fredrika Shagama (a qualified and experienced hydrogeologist and experienced and registered Environmental Assessment Practitioner (EAP), with over 6 years of experience) facilitated the public consultation process and compiled the ESA Report and EMP. The CV of the Environmental Assessment Practitioner is attached hereto (Appendix A).

1.6 The Environmental Scoping Assessment Process

The environmental scoping assessment process followed for the current project is summarised below:

1. Project screening process.
2. Preparation of the Background Information Document (BID) and ECC Application and their submission to the Office of the Executive Director in the Ministry of Mines and Energy (MME) (Competent Authorities on the 14th of September 2020) for notification and recommendations. The date stamped copy of the ECC Application

from the MME was uploaded to the MEFT's EIA online portal for registration (**Application number APP-001871**) and notification of the commencement of the ESA. The copy of the ECC application is attached as Appendix B.

3. Invitation to stakeholders (I&APs) and the public to participate in environmental scoping assessment process. This invitation was extended in the form of advertisements in local newspaper, notices on selected sites as well as via direct emails communications to key authoritative institutions such as Line Ministries, Regional and Local Governments (authorities), farm/landowners or occupiers of land.
4. The public consultation process which includes meetings and engagements with I&APs. **A face-to-face public consultation meeting was carried out on the 26th of September 2020**.
5. Site walk over and undertaking of an Archaeological specialist study on the 1st – 2nd of May 2022: **this process was delayed due to issues surrounding the unavailability of some landowners residing abroad, and delayed access to some of the farms covered by the EPL. The EAP had to wait for these hindrances to be sorted to ensure that reliable and sufficient data was obtained from site to compile a reliable ESA Report and associated documents. These factors therefore prolonged the finalization and submission of the EIA Report to the DEAF and timely submission of an ECC for the work onsite and renewal of the EPL' rights at the MME.**
6. Compilation of the Draft environmental scoping assessment (ESA) Report (consolidating all findings in terms of impacts identified as well as comments and concerns raised from the I&APs/public consultation), and a draft Environmental Management Plan (EMP) (which outlines impact mitigation measures).
7. Finalization of the ESA and draft EMP and further inclusion of comments from the engagement with the farm owners during the site visit on the 1st – 2nd of May 2022.
8. Submission of the final ESA report (and EMP including all appendices to the report) to the Department of Environmental Affairs and Forestry in fulfilment of all the requirements of the Environmental Impact Assessment (EIA) Regulations No. 30 of 2012 and the Environmental Management Act, (EMA), 2007, (Act No. 7 of 2007) for application of the Environmental Clearance Certificate (ECC) for the proposed project.

A summary of the process followed is provided in Figure 1-5 below.

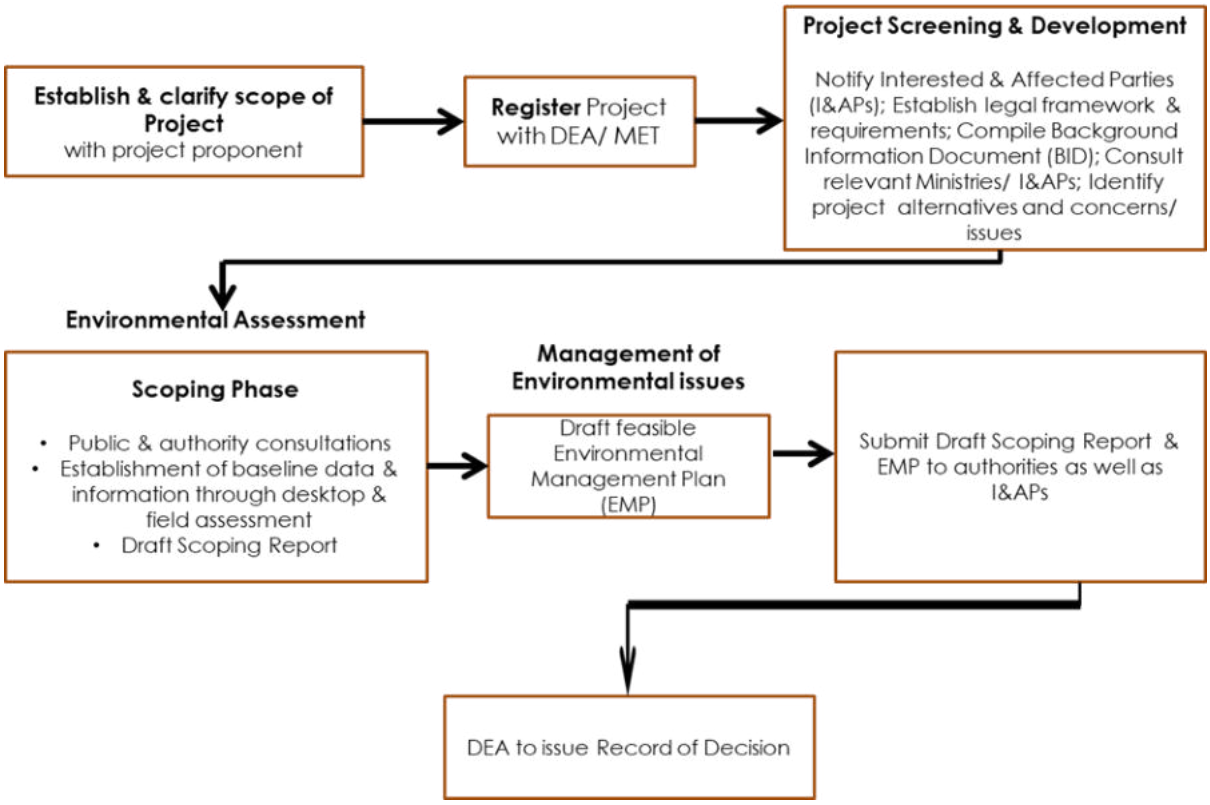

Figure 1-5: Schematic process flow of Namibia's Environmental Assessment Procedure

This environmental scoping assessment report investigated the significant potential positive and negative impacts of the proposed exploration activities on the biophysical and socio-economic environment. In addition, this scoping assessment process provided Interested and Affected Parties (I&APs) with an opportunity to comment and participate in the impact assessment process. **It is worth noting that this scoping assessment is only for exploration phase. However, should a promising resource be found, an application will be launched with the Ministry of Mines and Energy (MME) for a mining licence, which will be accompanied by a separate environmental impact assessment for mining.** This scoping assessment was conducted considering potential impacts for the entire life cycle of the project, inclusive of the different stages, namely: exploration, decommissioning of exploration infrastructure and rehabilitation of explored sites areas on the EPL after completion of the works.

1.7 Limitations of the Study

The following assumptions apply to this scoping assessment and its report (this document):

- This report has been compiled on a scoping level with the Archaeological Assessment Study only that has been undertaken for it, i.e., no other specialist studies were done as part of this scoping assessment.

- The project specific information used in this document is as provided by the Proponent, site observations, OMAVI Consultants experience and relevant literature reviewed/research as well as the project specialist (the Archaeologist).
- OMAVI Consultants assumes that all the project technical information and data that is relevant to the scope of the environmental scoping assessment process provided by the Proponent is correct and accurate, and that all necessary information has been disclosed.
- It is also assumed that the relevant information obtained from different literature consulted is accurate; and
- This environmental scoping report has been compiled on an assumption that there will be no significant changes to the proposed project activities or the affected biophysical and social environment between the time of compiling this report and implementation of the proposed project that could substantially influence findings of this document. **New potential impacts that may arise during the project life cycle would need to be addressed as soon as they are identified, and mitigation measures thereof provided (hence the emphasis on monitoring in the Draft EMP** – **Appendix B** of this document); and
- It is also assumed that there will be no significant changes to the project activities that could substantially influence the mitigation measures given and recommendations made for the management and protection of the host environment.

2 PROJECT DESCRIPTION

As part of exploration, MKN Mining Consultants intends to adopt a systematic prospecting approach in search for dimension stones, particularly white marble. The proposed exploration activities are anticipated to last for six (6) to twelve (12) months.
This section discusses the activities to be undertaken as well as the required and associated infrastructure. It must be noted that these proposed activities are only to be undertaken once the ECC has been granted by the Environmental Commissioner.

2.1 Planned Activities: Proposed Exploration Methods (Technologies)

The exploration techniques to be applied can be classified as invasive or non-invasive depending on the impact they can have on the environment. Exploration works will be undertaken as per the following phases:

2.1.1 Desktop Study

The exploration program will commence with a review of geological maps as well as historical drilling and / or quarrying data for the area. This is a non-invasive technique aimed at establishing an environmental baseline.

2.1.2 Field evaluation

Field evaluation will be carried out by a competent and qualified geologist, aimed at locating suitable outcrops in the field and subsequently delineating potential marble units. Marble bodies identified will be ranked in order of priority for follow up exploration based on various factors such as:

- Lateral extent of the marble outcrop and general soundness of the rock,
- Appearance - patterns and colour of the marble, and
- Presence of joints and other discontinuities and their spacing.

At this stage, small hand samples (of about 30 cm^3 in dimension) will be taken for cutting and polishing to provide insight on hardness of the stone and whether the stone can be polished to an acceptable finish. As a product, a geological map of the area will be produced to assist in target generation for subsequent detailed exploration such as drilling and possibly test quarrying.

2.1.3 Detailed exploration

At this stage, down the hole (DTH) drilling will be undertaken in predetermined areas to establish the following:

- Vertical extent of the marble formation.
- Color and texture.
- Joint spacing or
- Possible defects at depth.

This will aid delineation of major geological structures such as fault and shear zones, the extent of veins, frequencies of fracture/ discontinuity, thereby refining the produced geological map. The refined map will then be used to define targets for feasibility or test quarrying. It is anticipated that drilling activities will require a small (6m wide) tracked access roads to gain access to the actual drilling sites for the air compressor and water truck.

2.1.4 Feasibility study: Test Quarrying

Where drilling yields positive results, test quarrying by means of butterfly cutting will be conducted to fully evaluate the recovery of saleable blocks, and better optimize the extraction methods, production rates and operational costs. This test quarrying will only be carried out in selected areas and shall be performed on as small an area as possible to minimize environmental impacts.

It is important to note that the test quarrying referred to above is only a component of exploration activities, to be done at a very small-scale level on targeted sites of the EPL, to enable the Proponent to get sufficient and reliable exploration data. Areas found to comprise good quality rocks in economic volumes will then be delineated and an application will be launched with the Ministry of Mines and Energy (MME) for granting of a valid mining license,

for which a separate EIA will be done for mining. Therefore, it should be noted that this ESA process and its subsequent reporting will only cover exploration activities.

2.1.5 Rehabilitation of Explored Sites and Decommissioning

The impact on the physical environment can be lessened by implementation of progressive / ongoing rehabilitation will be carried out by the Proponent. This will entail for instance rock shading, and partial backfilling with topsoil, to ensure that the disturbed sites are reinstated and restored to their pre-exploration state.

The rehabilitation and decommissioning referred to herein also entails the dismantling and removal of campsite, and associated structures from the project sites and area.

2.2 Project inputs and Associated Infrastructure

2.2.1 Temporary shelter / accommodation

The exploration team will comprise about ten (10) people, including skilled, semi-skilled and unskilled, personnel, who may or may not be from the surrounding area. A temporary camp will be set up to accommodate the team onsite. It will primarily be an erection of tented facilities or prefabricated structures, with an option to lease farm infrastructure. Other temporary structures would be for office and storage space. All this will take place subject to approval by the farmer or landowners. **Therefore, the proponent and the landowners will need to have agreements in place prior to the commencement of the exploration project**.

2.2.2 Vehicles, Machinery and Equipment

These will include 4 x 4 exploration bakkies, pickup trucks, butterfly cutter, dump trucks, diamond wire-saw cutter and coring and excavator / front-end loader to scoop sandy overburden. Further necessary machinery and equipment include Down-The-Hole (DTH) drill rig, air compressor, diesel generator, two-way radios (for communication) and dozers (to clear vegetation along planned drilling site access paths). All equipment, machinery and vehicles will be stored at a designated area near the temporary accommodation on site.

2.2.3 Power Requirements (for vehicles, machinery and domestic use)

It is anticipated that onsite machinery will be diesel powered. Therefore, a trailer mounted diesel tank of about 3 000 litres will be kept onsite, designed and constructed according to the South African Bureau of Standards (SABS). This fuel/diesel will mainly be used in powering the compressors for surface cleaning, drilling and for cutting machinery.

Fuel for domestic use will mainly be firewood, which will be provided by the proponent from an approved firewood supplier, therefore no firewood will be collected onsite or from nearby farms without landowners' or occupiers' permission. **Therefore, no connection will be made to the national power grid**.

2.2.4 Water supply (for exploration works and domestic use)

Water tanks with dispersion pipelines (for domestic consumption) will be on site. The anticipated water requirement is 20,000 liters per week. This water will not be abstracted from the farm or site boreholes, but it will be carted to site from elsewhere and stored in tanks. To minimize traffic, water transportation to site will only be done on certain days of the week and not daily.

This water will mainly be used for down-the-hole drilling, butterfly cutting during exploration, cleaning, and cooling off drilling/exploration equipment. Water recycling will be prioritized to conserve water. **Therefore, no water will be sourced or abstracted from the local boreholes, as all the water required for the project will be brought in and stored in tanks onsite.**

2.2.5 Roads

The project area will be accessed from the main road (C32) onto an existing road (D1958) from Karibib Town. The project will utilize existing farm roads and where necessary, temporary informal access routes will be created to gain access to the actual targeted sites for the drilling rig, air compressor and water trucks.

The Proponent may need to do some upgrade on the access roads to ensure that it is fit to accommodate project related vehicles, such as heavy trucks and erect temporary road signs for the duration of the exploration works.

2.2.6 Waste production and sanitation

Different waste containers will be provided onsite for safe disposal of waste generated onsite. These will be collected on a weekly basis and sent to nearest approved waste management facility in the area.

Movable ablution facilities with septic tanks will be put up for sanitation purposes for the exploration team and will be emptied according to manufacturers' instructions.

2.2.7 Personnel and site safety

All workers will be equipped with adequate and appropriate personal protective equipment (PPE), that will be replaced or repaired to ensure that workers' occupational health and safety is not compromised. A minimum of two first aid kits will be readily available on site to attend to potential minor injuries.

For safety and security reasons, the localized high-risk working sites will be demarcated and temporarily fenced off. Exploration vehicles will also be equipped with fire extinguisher as well as at the drilling site in cases of fire outbreaks while carrying out exploration activities.

2.3 Project Alternatives

Project alternatives can be defined as a possible course of action, in place of another, that would meet the same purpose and need. The role of alternatives is to find the most effective

way of meeting the need and purpose of the proposed project, either through enhancing the environmental benefits of the proposed activity, and/ or through reducing or avoiding potentially significant negative impacts. The concept of considering alternatives thus ensures that the environmental assessment is not reduced to the defense of a single project proposal that is the desire of the proponent, and therefore, provides an opportunity for unbiased considerations of options, to determine the most optimal course of action.

The alternatives weighed and considered for this project are with regards to:

- Project location,
- Exploration methods (techniques),
- Supporting infrastructure during different stages of the project, and
- The "No-go" alternative option

2.3.1 Project location alternative

The EPL locality is determined by the mineral deposits in the area, and in this case the proponent is in search for dimension stones. These rocks are found elsewhere in Namibia; however the pursuit of such resources is subject to licencing. Which means the proponent may only prospect for dimension stones within the boundaries of his/her licence. For this reason, alternative localities of the resource have not been considered. Information pertaining to EPL 7241 is available on the Namibia Mining Cadastral Map (https://portals.landfolio.com/namibia/).

2.3.2 Exploration methods (techniques)

For the creation of simple and narrow access roads shallow excavation with the front-end loader bucket is deemed to be most economically and environmentally feasible option. Where the ground is flat this method would basically entail dragging the front-end loader's bucket across the envisaged footprint of the road, thus creating a pathway that can be used by small and large vehicles. Unlike in conventional road construction where the subgrade is ripped and re-compacted, this method ensures less modification of the soil's structure.

Roads for accessing the marble hill which involve dozing of surficial rubble into gently sloping access ramps, placing borrowed sandy material on top of such rubble, and ultimately, compacting the sandy material on those access ramps. The sand material will be borrowed along trenches at the toe of these hills particularly targeting patches that are free of vegetation.

Once the surficial overburden rubble has been removed, the underlying rock surfaces shall be exposed using air compressors. From an efficiency and effectiveness point of view air compressor technology is deemed to be most suitable compared to other traditional methods such as sweeping.

Down-the-hole rotary air blast drilling was selected as the preferred method for both block splitting and creation of holes for the diamond wire sawing cutting process. This is because in comparison to other drilling methods such as percussion drilling and diamond core drilling it is quick and relatively inexpensive, and therefore works well for block splitting purposes which typically require high drilling densities. Although the method typically produces debris and dust the rig to be used is fitted with a cyclone that prevents most dust from escaping.

For test quarrying, butterfly and diamond saw wire cutting techniques were selected as the most favourable extraction methods for separating, cutting, and splitting blocks due to the following reasons:

- Diamond wire sawing permits efficient cutting through the hardest of materials, and is thus deemed suitable for this project because the targeted host rock is hard
- Both butterfly and diamond wire saw cutting are associated with low noise levels and low dust generation compared to other block splitting technologies such as controlled blasting.
- Cutting is more accurate thereby enhancing recovery and minimizing generation of waste rock.

2.3.3 Alternative supporting infrastructure

Alternatives were considered for the different envisaged supporting infrastructures, to ensure that the most feasible options were selected. Due consideration was given to technological, economic, and environmental limitations in selecting the most feasible option (Table 2-1).

Table 2-1: A summary of the alternative infrastructure considered for the project.

Category of Infrastructure	Alternatives Considered	Justification for selected option
Ablution facilities	Install fixed facility with septic tank	To avoid long-term visual impacts & minimize rehabilitation costs, portable facilities were selected as the best option
	Portable facilities with septic tank	
Shade Structure for working areas	Shade structure made from blue/ red corrugated sheets	Shade structure made from corrugated sheets deemed most suitable due to robustness, & resistance to wind destruction
	Shade structure made with shade net	
Water supply	Use existing farm boreholes	To avoid putting pressure on existing water resources, the option to bring in water from elsewhere was chosen.
	Drill own new borehole	
	Bring water from elsewhere	
Diesel storage	Install fixed above-ground diesel tank on site	The use of a trailer mounted diesel tank for fuel storage was chosen due to great mobility requirements during exploration
	Trailer mounted diesel tank	

Category of Infrastructure	Alternatives Considered	Justification for selected option
Power supply	Diesel generator set	Most practical & economically viable for exploration and test quarrying phase.
	Install photovoltaic panels	Option likely to be considered for long-term operations if economic deposit with high life of mine is found.
Offices, accommodation	Erect dis-mountable prefabricated units	Favoured during field exploration phase due to: - Ease of installation - Low installation costs - Ease of dismantling & moving
	Erect Permanent buildings	Lease favoured & unlikely
	No office, accommodation structures on site	Option likely to be considered in future, should the project proceed to quarrying/ mining phase. This will minimize risk of veld fires, bush hunting, visual impact from such structures, security risk, & minimize number of people on site.

2.3.4 No-go alternative

The "No-Go" alternative is the option of not proceeding with the proposed activity, which typically implies a continuation of the status quo. Should the proposed project be discontinued, none of the potential impacts identified in **Chapter 6** will occur. On the other hand, if the project is to be discontinued, the potential economic benefits of the project will not come to fruition. These include:

- Loss of foreign direct investment
- Jobs for community members will not be realized
- Loss of potential income to local and national government through land lease fees, license lease fees and various tax structures
- Loss of support to local businesses through the procurement of consumable items such as Personal Protective Equipment (PPE), machinery spare parts, lubricants, etc.
- Socio-economic benefits such as skills acquisition to local community members
- Compromise towards ensuring sustainability of dimension stone processing factories

Considering the above losses, the 'no-go' option was not considered a preferred alternative.

The project activities described above are governed by certain legislations, which should be complied with throughout the project life cycle. The applicable/relevant legislations, policies and guidelines are presented under the next chapter.

3 LEGAL REQUIREMENTS

3.1 Applicable Legislations and Compliance Status

In Namibia all mineral rights, related to small to medium-scale mining, are vested in the state and are regulated by the Ministry of Mines and Energy (MME), with the Minerals Prospecting and Mining Act (Act no. 33) of 1992 as the principal act governing exploration and mining of mineral resources in the Republic of Namibia. From an environmental management standpoint this Act stipulates the undertaking of an environmental impact assessment during prospecting or mining operations, coupled with the development of a thorough and implementable environmental plan (EMP) where any pollution is anticipated. The Ministry of Mines and Energy is the custodian agency for the administration of the mining act.

Meanwhile, the Ministry of Environment, Forestry and Tourism (MEFT) regulates sustainable exploitation of natural resources and management of the environment and use is regulated by the under the Environmental Management Act (EMA) of 2007 and its Environmental Impact Assessment (EIA) Regulations of 2012. This administration and enforcement is specifically entrusted with the Department of Environmental Affairs within MEFT. This Act stipulates that possession of an Environmental Clearance Certificate (ECC) is a pre-requisite for issuing any license or permit by any authority for any activities related to the ones listed under the Environmental Impact Assessment Regulations of 2012. The Act further sets out under Section 58 and in the Government Notice No. 29 of 2012 a detailed framework and schedule for conducting Environmental Impact Assessments for mining companies.

In addition to these two governing acts, relevant and applicable legislation, policies and guidelines are given in this chapter, with consideration of local (national) and where necessary international legislation. These were considered when undertaking this ESA process, however they serve to inform the project Proponent, Interested and Affected Parties and the decision makers at the DEAF of the requirements and expectations, as laid out in terms of these instruments, to be fulfilled for them to carry out the proposed exploration activities. for are host of legal and policy documents and guidelines to mining projects as indicated Table 3-1.

Table 3-1: Summary of relevant Acts and their applicability to the proposed project.

LEGISLATION CONSIDERED	CUSTODIAN ORGAN OF STATE	ASPECT OF PROJECT
Relevant Acts		
The Constitution of the Republic of Namibia (1990)	Government of the Republic of Namibia	The Namibian government has adopted several policies that promote sustainable development. Most of these originate in clauses of the Constitution of the Republic of Namibia. In Article 95 (i), the State undertakes to actively promote and maintain the welfare of the people by adopting policies aimed at the utilisation of natural resources on a sustainable basis for the benefit of all Namibians. Articles 91(c) and 95(l) are also of relevance to sound environmental management practice. In summary, these refer to: • Guarding against over-utilisation of biological natural resources. • Pursuing sustainable natural resource use • Limiting over-exploitation of non-renewable resources. • Maintaining biological diversity • Ensuring ecosystem functionality. • Protecting Namibia's sense of place and character. Through implementation of the mitigation measures set out in this Scoping Report (ESA) and Environmental Management Plan (EMP), the owner of the ECC shall be advocating for sound environmental management as set out in the Constitution.
Environmental Management Act No. 7 of 2007 and its	Ministry of Environment, Forestry and Tourism: Department of Environmental Affairs and Forestry	Part 2 of the Act sets out 12 principles of environmental management, summarized as follows: • Community involvement in natural resources management, must be promoted and facilitated. • The participation of all I&APs must be promoted and decisions must consider the

LEGISLATION CONSIDERED	CUSTODIAN ORGAN OF STATE	ASPECT OF PROJECT
Relevant Acts		
2012 EIA Regulations Government Notice 28-30 (Government Gazette 4878		interest, needs and values of I&APs. • Equitable access to environmental resources must be promoted and the functional integrity of ecological systems must be considered to ensure sustainable systems. • Assessments must be undertaken for activities which may have significant effects on the environment or the use of natural resources. • Sustainable development must be promoted in all aspects relating to the environment. • Namibia's cultural and natural heritage including, its biological diversity, must be protected and respected. • The option that provides the most benefit or causes the least damage to the environment, at a cost acceptable to society must be adopted to reduce the generation of waste and polluting substances at source. • The reduction, re-use and recycling of waste must be promoted. • A person who causes damage to the environment must pay the costs associated with rehabilitation of damage to the environment and to human health caused by the pollution. • Where there is sufficient evidence which establishes that there are threats of serious or irreversible damage to the environment, lack of full scientific certainty may not be used as a reason for postponing cost-effective measures to prevent environmental degradation; and • Damage to the environment must be prevented and activities which cause such damage must be reduced, limited, or controlled. The Proponent has the responsibility to ensure that the proposed activity, as well as the ESA

LEGISLATION CONSIDERED	CUSTODIAN ORGAN OF STATE	ASPECT OF PROJECT
Relevant Acts		
		process, conforms to the principles of this Act. In developing the ESA process, OGGC has been cognizant of these requirements, and accordingly the ESA process has been undertaken in conformance with this Act and the EIA Regulations (2012). Several listed activities in terms of the Act, are triggered by the proposed activities.
Mineral Prospecting & Mining Act (Act no. 33 of 1992)	Ministry of Mines and Energy	Sections 50, 52, 54, 57 and 130 of this Act sets out provisions for environmental management for activities arising from mineral exploration as follows: • That the mineral license holder is required to prepare an ESA or EIA and an EMP and make revision of such EMP from time to time • That the mining license holder is liable to pay compensation where in course of the exploration operations; any damage is done to the surface of land, water source, cultivation, building or any other structure • That the holder of a mineral license cannot exercise any rights on a private land until the holder has entered into an agreement with the owner regarding payment of compensation • That the minister is empowered to direct the mineral license holder for carrying out good reconnaissance, mining, and prospecting practices for the protection of the environment, and conservation of natural resources payment of liability fees and royalty and remedial steps for any damages and • That the mineral or mining license holder shall report pollution in course prospecting operations and make remedial measures for such. The abovementioned provisions are all relevant to the proposed activities and were thus

LEGISLATION CONSIDERED	CUSTODIAN ORGAN OF STATE	ASPECT OF PROJECT
Relevant Acts		
		considered in the ESA process and drafting of the EMP.
Pollution Control & Waste Management Bill	Ministry of Environment, Forestry and Tourism and others	This Bill serves to regulate and prevent the discharge of pollutants to air and water as well as providing for general waste management. The Bill repeals the Atmospheric Pollution Prevention Ordinance (11 of 1976). In terms of water pollution, it will be illegal to discharge of, or dispose of, pollutants into any watercourse without a Water Pollution Licence (apart from certain accepted discharges). Similarly, an Air Quality Licence will be required for any pollution discharged to air above a certain threshold. The Bill also provides for noise, dust or odour control that may be considered a nuisance. The Bill advocates for duty of care with respect to waste management affecting humans and the environment and calls for a waste management licence for any activity relating to waste or hazardous waste management. The proposed exploration of dimension stone would not entail the discharge of large quantities of gaseous pollutants into air but might result in the generation of noise and dust during operations.
Water Act (No. 54 of 1956)	Ministry of Agriculture, Water and Land Reform: Department of Water Affairs	Makes provision for several functions pertaining to the management, control and use of water resources, water supply and the protection of water resources. **The Proponent should prevent any potential pollution of groundwater. Water should be used in a sustainable way. Water abstraction and use should be done in a responsible and sustainable manner.**
Water Resources		This Act provides a framework for managing water resources based on the principles of integrated water resources management. It provides for the management, development,

LEGISLATION CONSIDERED	CUSTODIAN ORGAN OF STATE	ASPECT OF PROJECT
Relevant Acts		
Management Act (Act No. 11 of 2013)		protection, conservation, and use of water resources. Should the proponent wish to undertake activities involving water abstraction and/or effluent discharge, the relevant permits will have to be applied for. Furthermore, any watercourse on/or near the site and associated ecosystems should be protected in alignment with the principles above. Mitigations measures were included in the EMP to reduce impacts on watercourses that could not be avoided
Nature Conservation Ordinance (Act No. of 1996)	Ministry of Environment, Forestry and Tourism	The Nature Conservation Amendment of 1996 (section 73.1) provides for an economically based system of sustainable management and utilization of game in communal areas; to delete references to representative authorities; and to provide for matters incidental hereto. Although the proposed sites for development are not located within protected areas, there is indigenous vegetation on the sites and therefore this Ordinance is relevant. A permit is required should any species onsite, with a protected or endangered status, be damaged or removed. If required, the proponent will apply for such a permit prior to commencing with the proposed activities.
Forestry Act (Act No. 12 of 2001)	Ministry of Environment, Forestry and Tourism	The Act provides for the management and use of forests and forest products. Section 22. (1) provides: "Unless otherwise authorised by this Act, or by a licence issued under subsection (3), no person shall on any land which is not part of a surveyed erven of a local authority area as defined in section 1 of the Local Authorities Act, 1992 (Act No. 23 of 1992)

LEGISLATION CONSIDERED	CUSTODIAN ORGAN OF STATE	ASPECT OF PROJECT
Relevant Acts		
		cut, destroy or remove - (a) vegetation which is on a sand dune or drifting sand or on a gully unless the cutting, destruction or removal is done for the purpose of stabilising the sand or gully; or (b) any living tree, bush or shrub growing within 100 m of a river, stream or watercourse." The proponent will apply for the relevant permit under this Act if it becomes necessary.
Soil Conservation Act (Act No. 76 of 1969)	Ministry of Agriculture, Water and Land Reform	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. This Act is applicable since stripping of topsoil will take place to expose the targeted rock units. Mitigation measures are included in the EMP to preserve topsoil and reduce impacts on topsoil.
Regional Councils Act (Act No. 22 of 1992)	Ministry of Urban and Rural Development	The Regional Councils Act legislates the establishment of Regional Councils that are responsible for the planning and coordination of regional policies and development. The main objective of this Act is to initiate, supervise, manage, and evaluate development in the regions. The relevant Regional Council for this project is the Erongo Regional Council which is an I&AP and has been provided with the opportunity to comment on the proposed project.
Petroleum	Ministry of Mines and Energy:	Regulation 3(2)(b) states that "No person shall possess or store any fuel except under authority

LEGISLATION CONSIDERED	CUSTODIAN ORGAN OF STATE	ASPECT OF PROJECT
Relevant Acts		
Products and Energy Act (No. 13 of 1990) Regulations (2001)	Petroleum Affairs Division	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 authorization from the MME for the storage of fuel on-site.**
The Road Traffic and Transport Act (No. 22 of 1999)	Ministry of Work and Transport: Roads Authority	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**.
Traditional Authority Act (Act No. 25 of 2000)	Ministry of Urban and Rural Development	Namibian legislation recognizes both statutory and customary forms of governance. The Traditional Authorities Act recognizes Traditional Authorities (TAs), as the customary leadership of traditional communities as legal entities. The primary functions of these authorities are to promote peace and welfare amongst the community members, as well as to supervise and ensure the observance of the customary law of that community by its members. The Act also stipulates that TAs should ensure that natural resources are used on a sustainable

LEGISLATION CONSIDERED	CUSTODIAN ORGAN OF STATE	ASPECT OF PROJECT
Relevant Acts		
		basis that conserves the ecosystem. The implications of this Act are that TAs must be fully involved in the planning of land use and development for their area. It is the responsibility of the TA's customary leaderships, the Chiefs, to exercise control on behalf of the state and the residents in their designated area. The EPL considered under this project is located on Farm Habis 71, which is a commercial farm falling under the jurisdiction of the Karibib Regional Constituency. Therefore, the Traditional Authority is not applicable to this project. However, the owners of the land are key I&APs and should be consulted and afforded an opportunity to comment on the proposed project activities.
National Heritage Act (Act No. 27 of 2004)	Ministry of Education, Arts and Culture: National Heritage Council of Namibia	The Act makes provision for the protection and conservation of places and objects of heritage significance and the registration of such places and objects. Part V Section 46 of the Act prohibits removal, damage, alteration, or excavation of heritage sites or remains, while Section 48 sets out the procedure for application and granting of permits such as might be required in the event of damage to a protected site occurring as an inevitable result of development. Part VI Section 55 Paragraphs 3 and 4 require that any person who discovers an archaeological site should notify the National Heritage Council. Section 51 (3) sets out the requirements for impact assessment. No objects of heritage concern were noted onsite. However, should any objects of heritage significance be identified during exploration, the work must cease immediately in the affected

LEGISLATION CONSIDERED	CUSTODIAN ORGAN OF STATE	ASPECT OF PROJECT
Relevant Acts		
		sites and the necessary steps taken to seek authorisation from the National Heritage Council of Namibia.
Public Health Act (Act No. 36 of 1919) Public and Environmental Health Act No. 1 of 2015	Ministry of Health and Social Services: Occupational Health Ministry of Health and Social Services	The Act serves to protect the public from nuisance and states that no person shall cause a nuisance or shall suffer to exist on any land or premises 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 should ensure that the project infrastructure, vehicles, equipment, and machinery are designed and operated in a way that is not unsafe, or injurious or dangerous to public health and that the noise and dust emissions which could be considered a nuisance remain at acceptable levels. The Proponent should ensure that the public as well as the environmental health is preserved and remain uncompromised.
Labour Act No 11 of 2007	Ministry of Labour, Industrial and Employment Creation	Sections 3, 4, 5, 11, 16, 23-27, 44 and 135 make provision for the following: • That a person may not employ a child under the age of 14years • That children are prohibited for employment in a mine and other dangerous circumstances • That forced employment of persons is prohibited • That an employee is entitled to monetary remuneration daily, weekly, fortnightly, or monthly in cash, cheque, and direct deposit into a bank account • That the work hours of an employee are 45 hours in a week, over and above which an employee is entitled to additional payment overtime wage

LEGISLATION CONSIDERED	CUSTODIAN ORGAN OF STATE	ASPECT OF PROJECT
Relevant Acts		
		• That employees are entitled to (a) annual leave based on the average number of days worked over the year, (b) a day's sick leave for every 26 days worked, (c) compassionate leave for a period of 5 days in 12 months which is fully paid, and (d) leave on public holidays, • That female employees that have completed 6 months of employment are entitled to 12 weeks of maternity leave, which can be extended for a further period of one month • That the minister is empowered to make regulations in relation to safety, health, hygiene, sanitation, and welfare of persons employed in or about mines, including sea-bed operations The Proponent is expected to be compliant with the above provisions and as such the above provisions were accounted for in the ESA report and EMP.
Relevant Policies and Regulations		
Environmental Assessment Policy (1994)	Ministry of Environment, Forestry and Tourism: Department of Environmental Affairs and Forestry	This policy aims to promote sustainable development and economic growth while protecting the environment in the long term by requiring environmental assessment prior to undertaking of certain activities. Annexure B of the policy contains a schedule of activities that may have significant detrimental effects on the environment, and which require authorisation prior to undertaking. **Please see Table 4 for a summary of the activities that would require authorisation for the proposed exploration of dimension stone.**
Mine Health &	Ministry of Mines and Energy:	These set of regulations are aimed at ensuring that mines are operated in a safe manner to

LEGISLATION CONSIDERED	CUSTODIAN ORGAN OF STATE	ASPECT OF PROJECT
Relevant Acts		
Safety Regulations (under section 138A of the Mining Act, 1992)	Mine Safety & Services Division Ministry of Health and Social Services: Occupational Health Division	prevent fatalities, injuries, and long-term health hazards. The regulations make provision for: • Employee's right to leave unsafe working places • Obligation of a mine manager to provide for all safety measures in a working area. • Reporting of accidents to the chief inspector and keeping a record of such accidents • Requirements for the mine manager to provide occupational health services at area of exploration activity • Requirements for stability of excavations; provision of waiting areas; provision of fencing and gates; schemes for working in vicinity of water body. • Provision for exploration dump facility • Ensuring that all parts of a mine are well ventilated with minimum standards of air quality • The mine manager's responsibility to formulate a scheme for safe movement of vehicles being use for the exploration activities. • The exploration manager's responsibility to formulate a scheme for identifying hazards at the area of exploration activities and provision of appropriate protective equipment • Ensure that the mine manager provides first aid and firefighting equipment and procedures where exploration activities are being conducted All the above-mentioned provisions are relevant to this project and were thus considered in the ESA process and EMP.
Atmospheric Pollution Prevention	Ministry of Health and Social Services	This ordinance provides for the prevention of air pollution and is affected by the Health Act 21 of 1988. Under this ordinance, the entire area of Namibia, apart from East Caprivi, is proclaimed as a controlled area for the purposes of section 4(1) (a) of the ordinance.

LEGISLATION CONSIDERED	CUSTODIAN ORGAN OF STATE	ASPECT OF PROJECT
Relevant Acts		
Ordinance (1976)		
Hazardous Substance Ordinance, No. 14 of 1974	Ministry of Health and Social Services	The ordinance provides for the control of toxic substances. It covers manufacture, sale, use, disposal and dumping as well as import and export. Although the environmental aspects are not explicitly stated, the ordinance provides for the importing, storage, and handling.
Road Ordinance 1972 (Ordinance 17 of 1972)	Ministry of Works and Transport: Roads Authority	Width of proclaimed roads and road reserve boundaries (S3.1) Control of traffic on urban trunk and main roads (S27.1) Infringements and obstructions on and interference with proclaimed roads. (S37.1)

3.2 Relevant Listed Activities in terms of EMA

Some of the project activities as distinctively listed in the EIA Regulations will require authorizations (permit or license) prior to commencement. The activities are presented below (Table 3-2), and the specific permits or license required will be provided in the EMP for implementation.

Table 3-2: Applicable listed activities in terms of the EMA EIA Regulations of 2012

ACTIVITY	DESCRIPTION OF ACTIVITY	RELEVANCE OF LISTED ACTIVITY
Activity no. 2.1	The construction of facilities for waste sites, treatment of waste and disposal of waste	The proposed activity will require development of stockpiles topsoil stripped off to access the targeted rock unit
Activity No.	The construction of facilities for any	The proposed project will entail exploration activities, both of which require environmental

ACTIVITY	DESCRIPTION OF ACTIVITY	RELEVANCE OF LISTED ACTIVITY
3.1	process or activities which requires a license, right or other form of authorization, and the renewal of a license, right or other form of authorization, in terms of the Minerals (Prospecting & Mining Act), 1992	clearance and prospecting permitting prior to commencement
Activity No. 3.2	Other forms of mining or extraction of any natural resources whether regulated by law or not	The proposed project would require surface clearing and excavation over the footprint of the targeted rock unit, followed by subsequent butterfly cutting & splitting of the targeted bedrock (during exploration) and finish diamond wire-saw cutting (for exploration test quarrying of dimension stone blocks).
Activity No. 9.4	The storage and handling of a dangerous goods, including petrol, diesel, liquid petroleum gas or paraffin, in containers with a combined capacity of more than 30 m^3 (30 000 litres) at any one location	It is anticipated that a portable diesel generator will initially be used for power generation for both domestic and industrial use at the site. Therefore, a permit to store fuel (petroleum products) on site should be applied for and obtained from the Ministry of Mines and Energy.
Activity No. 10.1 (b)	The construction of – public roads	The proposed project may not necessarily include the construction of access roads for access to the sites, but road upgrade may be required and erection of road signs.

3.3 International Policies, Principles, Standards, Treaties and Conventions

The international policies, principles, standards, treaties, and conventions applicable to the project are as listed in Table 3-3 below.

Table 3-3: Applicable International Policies, Principles, Standards, Treaties and Convention

STATUTE	PROVISIONS	PROJECT IMPLICATIONS
Equator Principles	A financial industry benchmark for determining, assessing, and managing environmental and social risk in projects (August 2013). The Equator Principles have been developed in conjunction with the International Finance Corporation (IFC), to establish an International Standard with which companies must comply with to apply for approved funding by Equator Principles Financial Institutions (EPFIs). The Principles apply to all new project financings globally across all sectors. **Principle 1:** Review and Categorization **Principle 2**: Environmental and Social Assessment **Principle 3:** Applicable Environmental and Social Standards **Principle 4:** Environmental and Social Management System and Equator Principles Action Plan **Principle 5:** Stakeholder Engagement **Principle 6:** Grievance Mechanism **Principle 7:** Independent Review **Principle 8:** Covenants **Principle 9:** Independent Monitoring and Reporting **Principle 10:** Reporting and Transparency	These principles are an attempt to: '…encourage the development of socially responsible projects, which subscribe to appropriately responsible environmental management practices with a minimum negative impact on project-affected ecosystems and community-based upliftment and empowering interactions.'
The International Finance	The International Finance Corporation's (IFC) Sustainability	The Performance Standards are directed towards clients,

STATUTE	PROVISIONS	PROJECT IMPLICATIONS
Corporation (IFC) Performance Standards	Framework articulates the Corporation's strategic commitment to sustainable development and is an integral part of IFC's approach to risk management. The Sustainability Framework comprises IFC's Policy and Performance Standards on Environmental and Social Sustainability, and IFC's Access to Information Policy. The Policy on Environmental and Social Sustainability describes IFC's commitments, roles, and responsibilities related to environmental and social sustainability. As of 28 October 2018, there are ten (10) Performance Standards (Performance Standards on Environmental and Social Sustainability) that the IFC requires a project Proponents to meet throughout the life of an investment. These standard requirements are briefly described below. **Performance Standard 1**: Assessment and Management of Environmental and Social Risks and Impacts **Performance Standard 2**: Labour and Working Conditions **Performance Standard 3:** Resource Efficient and Pollution Prevention and Management **Performance Standard 4:** Community Health and Safety **Performance Standard 5:** Land Acquisition, Restrictions on Land Use, and Involuntary Resettlement **Performance Standard 6:** Biodiversity Conservation and	providing guidance on how to identify risks and impacts, and are designed to help avoid, mitigate, and manage risks and impacts as a way of doing business in a sustainable way, including stakeholder engagement and disclosure obligations of the Client (Borrower) in relation to project-level activities. In the case of its direct investments (including project and corporate finance provided through financial intermediaries), IFC requires its clients to apply the Performance Standards to manage environmental and social risks and impacts so that development opportunities are enhanced. IFC uses the Sustainability Framework along with other strategies, policies, and initiatives to direct the business activities of the Corporation to achieve its overall development objectives.

STATUTE	PROVISIONS	PROJECT IMPLICATIONS
	Sustainable Management of Living Natural Resources **Performance Standard 7**: Indigenous Peoples/Sub-Saharan African Historically Undeserved Traditional Local Communities **Performance Standard 8:** Cultural Heritage **Performance Standard 9:** Financial Intermediaries (FIs) **Performance Standard 10:** Stakeholder Engagement and Information A full description of the IFC Standards can be obtained from http://www.worldbank.org/en/projects-operations/environmental-and-social-framework/brief/environmental-and-social-standards?cq_ck=1522164538151#ess1	
The United Nations Convention to Combat Desertification (UNCCD)	Addresses land degradation in arid regions with the purpose to contribute to the conservation and sustainable use of biodiversity and the mitigation of climate change	The project activities should not be such that they contribute to desertification.
Convention on Biological Diversity 1992	Regulate or manage biological resources important for the conservation of biological diversity whether within or outside protected areas, with a view to ensuring their conservation and sustainable use. Promote the protection of ecosystems, natural habitats, and the maintenance of viable populations of species in natural	Removal of vegetation cover and destruction of natural habitats should be avoided and where not possible minimised

STATUTE	PROVISIONS	PROJECT IMPLICATIONS
	surroundings	
Stockholm Declaration on the Human Environment, Stockholm (1972)	It recognizes the need for: "a common outlook and common principles to inspire and guide the people of the world in the preservation and enhancement of the human environment.	Protection of natural resources and prevention of any form of pollution.

The proposed project and its activities will be undertaken in a specific biophysical and social environment. Therefore, to understand the baseline environment with regards to the potential impacts stemming from the proposed project, the affected environmental components and features are presented under the next chapter.

4 THE RECEIVING ENVIRONMENT

An understanding of the existing or receiving environment can inform the management of potential impacts. This chapter provides an overview of the baseline biophysical and social environmental conditions, with which the proposed project will interact. It discusses the receiving environment from literature, existing online datasets, previous reports of work done in the area. This information was also supplemented by the observations of the environmental practitioner from the site visit which was undertake on the 1st to 2nd May 2022, in combination with the Archaeological specialist site visit. Additional information was obtained through verbal communication with the landowners.

4.1 Biophysical environment

4.1.1 Climatic Conditions

The proposed project area is in the Karibib District in Central Namibia, which according to Mendelsohn *et al.* (2009) has a semi-desert climate, characterized by low rainfall, high evaporation, and a large range of temperatures. Minimum temperatures generally range between 8°C and 20°C in Winter, while the highest temperatures experienced in Summer between late October and end March, when average temperatures range between 25 °C and 35 °C. A summary of the average annual temperatures is depicted in Figure 4-1.

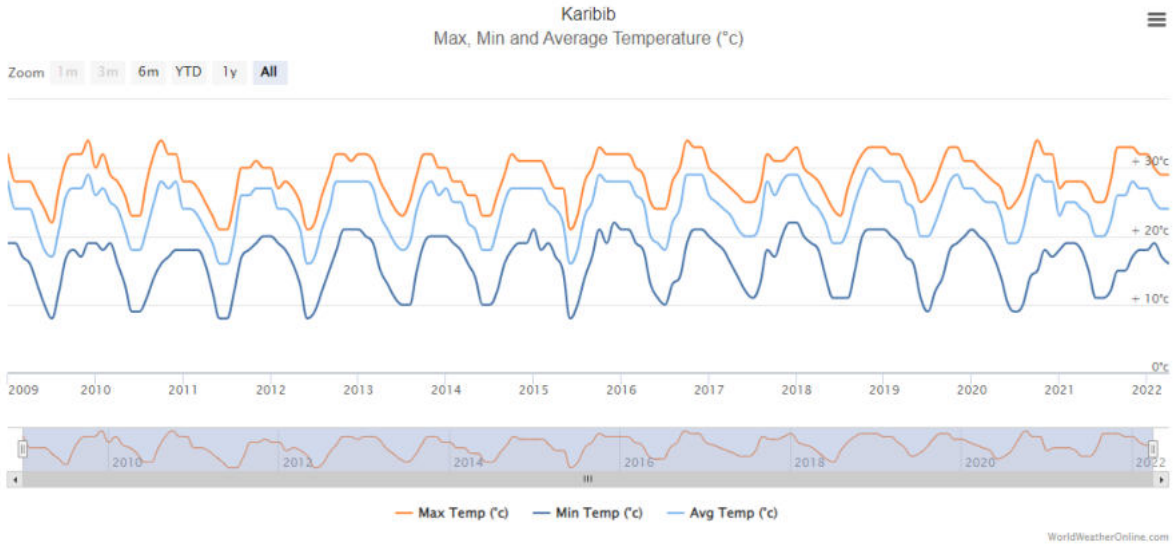

Figure 4-1: The maximum, minimum and average temperature for the Karibib area (World Weather Online, 2022).

In terms of rainfall, it is noted that annual rainfall in the Erongo Region generally increases with distance from the coast. The project site is situated in a belt that receives average rainfalls of about 150 t0 200mm of per annum (Mendelsohn *et al.* 2020). Although rainfall is quite variable in this area, most of the rain is received during Summer (i.e., between November and April), when the temperatures are the highest. For this reason, there is often

no surface water in the area, except during rare periods of exceptional rainfall. According to the spatial potential evaporation distribution map of Namibia by BGR (2005), the area falls in the range of 300 to 320mm/a, which could be accredited to high desert temperatures. A summary of the average annual rainfall figures is depicted in Figure 4-2.

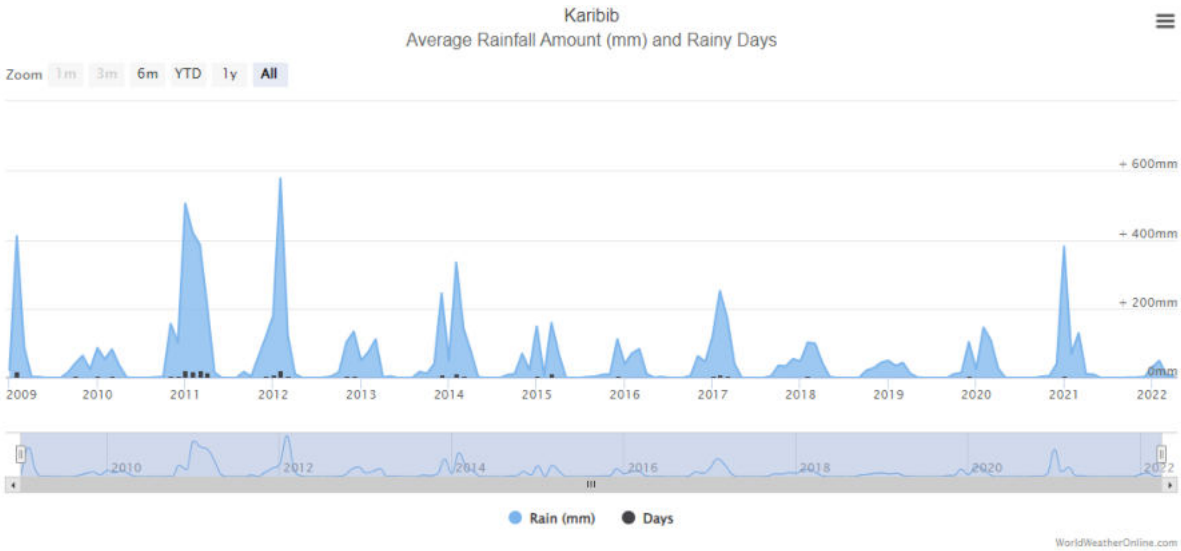

Figure 4-2: The rainfall patterns around Karibib (after World Weather Online, 2022).

The prevailing wind regime for the Karibib area includes prominent south-westerly winds, at minimum speeds of 15km/h (Enviro Dynamics, 2015).

4.1.2 Geology of the area

4.1.2.1 Regional Geology

The Karibib area falls within the southern Central Zone (sCZ) of the Neo-Proterozoic Damara Orogenic Belt. This area is underlain by the Kheisian Abbabis Metamorphic Complex (AMB) characterised by basement dome structures and antiforms. These basement rocks are form northeast elongations exposed along the Swakop and Khan Rivers.

The Abbabis Metamorphic Complex is overlain unconformably by the Neoproterozoic Damara Supergroup, which comprises mainly metasedimentary rocks deposited in the period from about 900 to 700 Ma (Miller, 1983a). The Damara Supergroup is dominated by alternating siliciclastics and carbonates of the Swakop Group with interbedded diamictites bearing evidence of periods of glaciation. The lower part of the Damara Supergroup is dominated by meta-arkoses and calc-silicate rocks of the Nosib Group, while the upper portion of the sequence consists of alternating marble, calc-silicate rock and schist (Swakop Group).

These were later intruded by numerous syn- to post-tectonic granitic plutons, which include minor meta-gabbro, diorite and tonalite, abundant coarse-grained granite, leucogranite

and pegmatite (Miller, 2008), covered by the unconsolidated Quaternary sediments consisting mainly of elluvium, alluvium, fanglomerates and calcretes.

4.1.2.2 Local Geology and soils

The project area is underlain by the Abbabis Metamorphic Complex which is a succession of augen gneisses, granite gneisses, biotite-silimanite gneisses, migmatites and metavolcanics. These basement gneisses are exposed on the western side of the EPL, where they are in contact with the Otjongeama and Onguati Members rocks of the Swakop Group. These include the white dolomites, calc-silicates and white and light grey marbles occurring as a ridge, which is targeted area for the current exploration proposal (Figure 4-3).

Figure 4-3: One of the locations where the marble ridge was observed. The photo was taken facing south, whereby the ridge is on the west and the slope becomes gentler towards the east in a plain.

Other minor occurrences of rock include the quartzite-biotite schists of the Fahlwater Formation, as well as occasional occurrences of younger pegmatite intrusions in the west. The eastern half of the EPL on the other hand is predominantly covered by unconsolidated Quaternary sediments comprising of soils, gravels, rock fragments and exfoliation chips that form because of mechanical weathering of rocks (Figure 4-4).

Figure 4-4: Soils found on EPL 7241 on Farm Ombujomenge, consisting of a mixture of transported and residual soils derived from underlying and nearby rocks.

Of interest for the EPL 7241 are rocks of the Swakop Group which are primarily marbles and dolomites, for use as dimension stones. The local geology of the project area is summarized in Chyba! Nenalezen zdroj odkazů. and is shown in Figure 4-5.

Table 4-1: A summary of the stratigraphy observed in the project area (EPL 7241 after MME, 2011.

Group	**Subgroup**	**Formation**	**Member**	**Lithology**
		Quaternary sediments		Sand, soil, calcrete, pans, scree, gravel, tidal deposits
Khomas Complex		Fahlwater		Quartz-biotite schist
Swakop	Navachab	Karibib	Onguati	Marble, clac-silicate rock, schist
			Otjongeama	Marble, marble breccia, dolomite
Nosib				
Abbabis Metamorphic complex				Schist, gneiss; minor amphibolite

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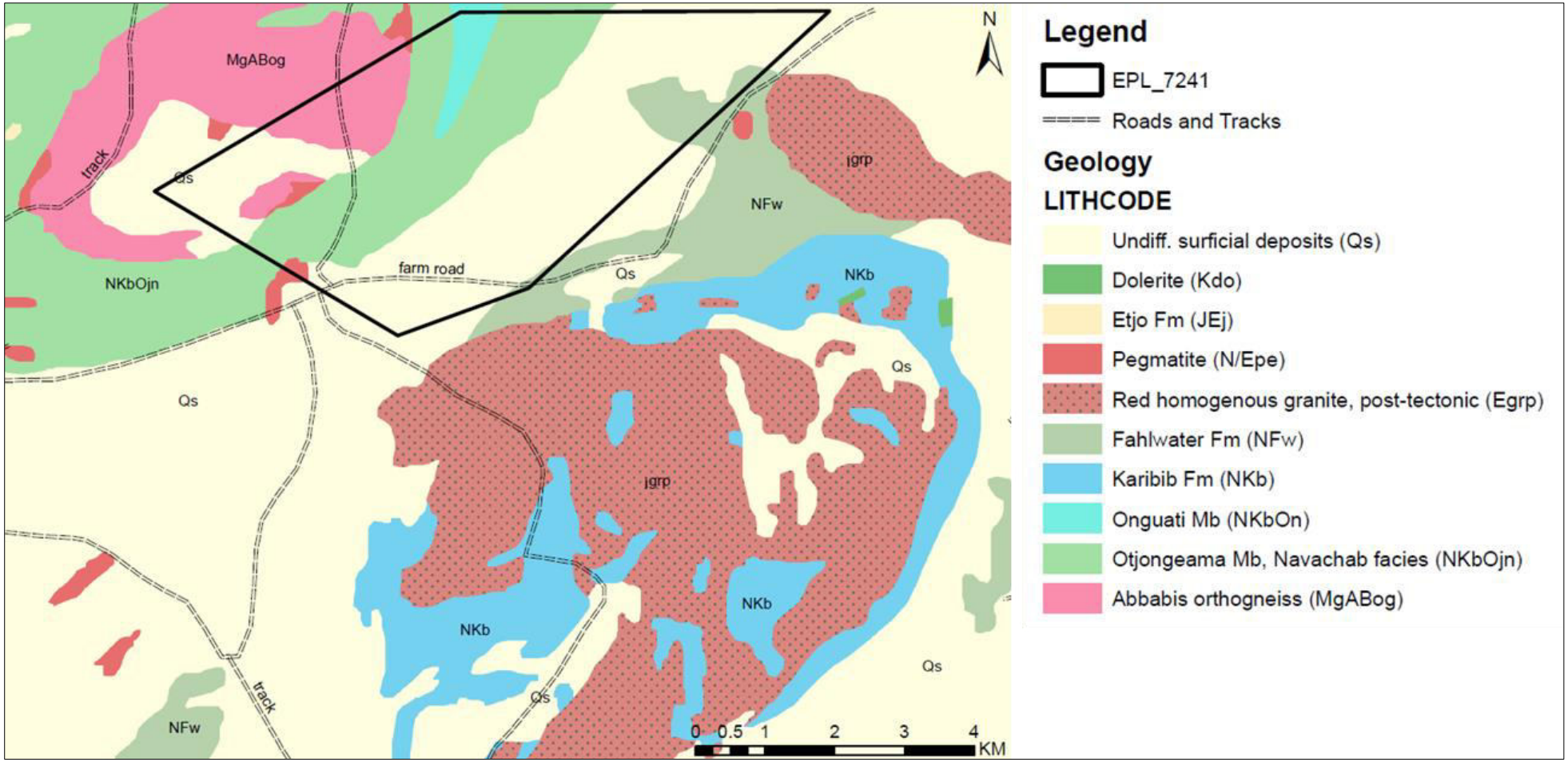

Figure 4-5: A geological map of EPL 7241, indicating the position of the Otjongeama and Onguati Members rocks which are of interest to the proposed exploration works.

4.1.3 Topography and Drainage of the Area

The general topography of the Erongo Region is such that there is a gradual decrease in altitude from east to west. The town of Karibib is located some 900 meters above mean sea level. The Namib Desert land surface is mostly flat to undulating gravel plains, punctuated with occasional ridges and isolated 'inselberg' hills and mountains (Southern African Institute for Environmental Assessment (SAIEA), 2011). The EPL 7241 lies in the southeastern part of the region, where the terrain is rather rocky and rugged in nature, with steep slopes characterizing the mountainous sections whilst the foothills of the mountains are flat and gently undulating. For EPL 7241, the terrain is rather gentle, with vast stretches of flat land with a mountain ridge (see Figure 4-6) on the western side of the EPL.

Figure 4-6: The terrain features on EPL 7241, comprising of a NE-SW striking mountain ridge and a flat terrain towards the eastern side.

In terms of the surface water flow or hydrology of the area, it can be said that it is governed by the topography and terrain. For this reason, although local drainage may vary, the surface water in the area has an overall westward flow direction, i.e., from highlands to the Atlantic in the west. The project area lies within the Swakop River catchment (see Figure 4-7), which is one of the major ephemeral rivers of western Namibia. The drainage is generally dendritic in nature with ephemeral streams, often steeply incised, forming small early-stage tributaries into the Swakop River.

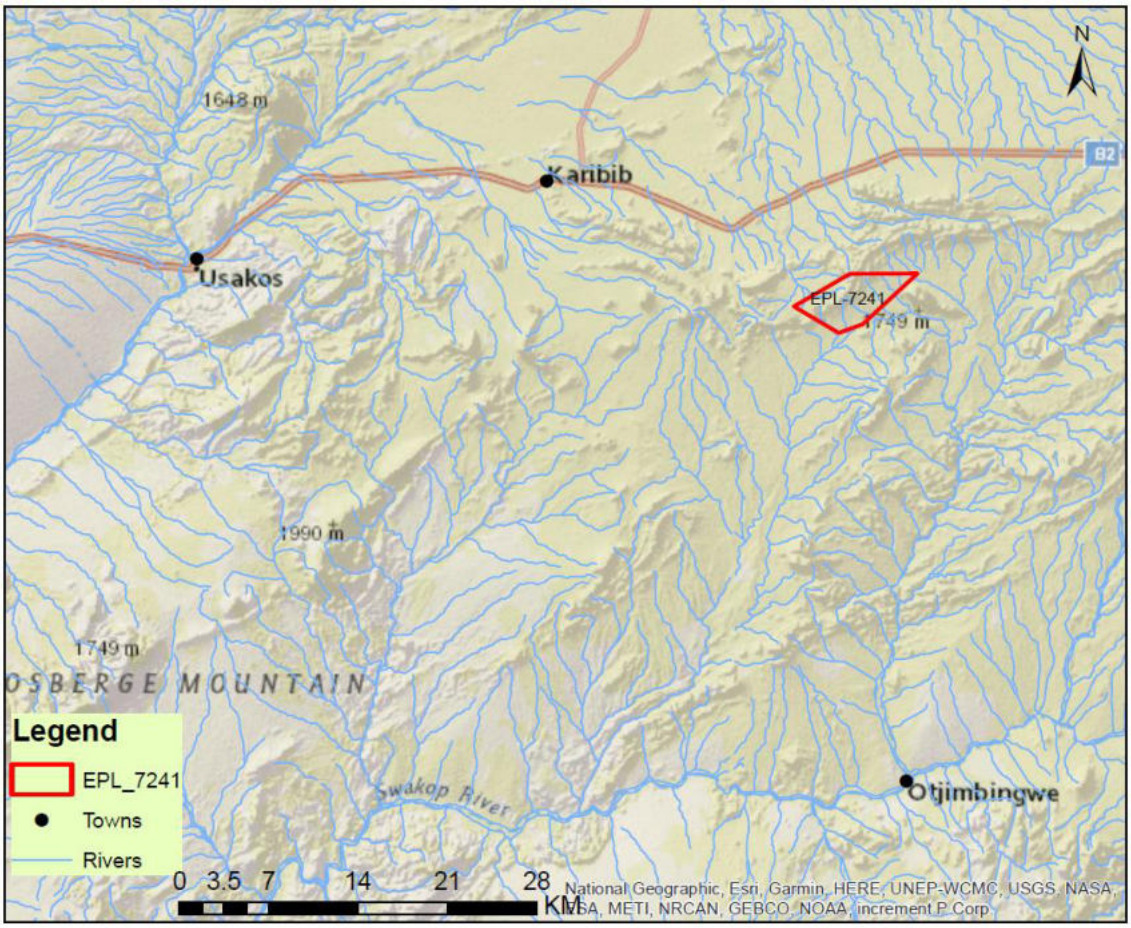

Figure 4-7: A map showing the location of the EPL 7241, relative to topography and drainage.

Another determinant for surface water flow is rainfall, which is known to vary across the region. During the rainy season from November to March, many of the ephemeral rivers only flow for short periods (hours) or even months. According to Limpitlaw and Hoadley (2009), surface water flow only occurs during rare periods of exceptional rainfall but the major rivers in the region, such as the Swakop River usually flow less than five times in a decade. Occasional thunderstorms however do occur, turning the small river courses into fast flowing rivulets and may cause flashflood conditions (Speiser and Mulder, 2012).

4.1.4 Groundwater Resources

4.1.4.1 Water potential

The project area falls within the Central Namib-Windhoek Groundwater Basin and according to Limpitlaw and Hoadley (2009) the area generally has low and limited groundwater potential which often is of poor quality due to high salinity. The Damara Supergroup rocks have poor primary porosity, therefore secondary porosity developed by faulting and karstification are usually the main sources of groundwater. This is

especially the case for intact granites, quartzites, schists, calcsilicate as well as gneisses and other metamorphic rocks. However, the carbonates (dolomite, limestones, and marbles) are said to have moderate potential and at properly selected targets like fracture zones and karsitifed contact zones, high yields can be found depending on the amount of rainfall and associated weathering and recharge. This was also highlighted by Christelis and Struckmeier (2011), who noted that the limited quantities of groundwater in the region is partly due to the low rainfall and lack of recharge, and partly due to the generally unfavourable aquifer properties of Damara Sequence rocks.

The main aquifer in the Karibib area is the fractured and slightly karstified marble band of Karibib Formation, which belongs to the geosynclinal Damara Supergroup. This unit has moderate to high groundwater potential (Namib Hydrosearch, 2017). The borehole yields in the area however would depend on the type and characteristics of the rock (aquifer) that they are drilled in i.e., in areas of low/limited or moderate groundwater potential.

4.1.4.2 Water quality

According to Christelis and Struckmeier (2011), groundwater in fractured aquifers between the coast and 20-150 km inland is mostly saline. According to Steven and Badenhorst (2006), the regional groundwater of the Karibib District has a pH range of 6.6 to 8.1 which is near-neutral and of similar salinity to that of Navachab (pH 6.5-7.1). This could be attributed to the presence of carbonate rocks (marbles limestone and dolomites) in the area that help to neutralize possible acidic conditions in the water.

4.1.5 Biodiversity Baseline Information

Biodiversity refers to the relative abundance of the different types of life forms in an area. It is influenced by climatic factors such as rainfall and temperature as well as substrate / soil and topography.

The biodiversity of the region is generally well understood, with the Strategic Environmental Impact Assessment (SEIA) for the Central Namib Uranium Rush (2010) classifying the region into biodiversity 'red' and 'yellow' flag areas in terms of certain biodiversity, tourism and heritage hotspots. "Red Flag" status means that the area is by default unavailable for mining and prospecting unless an extraordinary mineral deposit of national importance occurs in the area. Yellow Flag' status means mineral licence applications in these areas will be considered only after careful assessment. The map in Figure 4-8 shows the different biodiversity zones, proposed based on the following guiding principles:

- Areas with high levels of endemicity and diversity.
- Conservation status of species.

- The extent to which habitats are threatened or vulnerable to disturbance; and
- Habitats or migration routes which are critical for species' survival

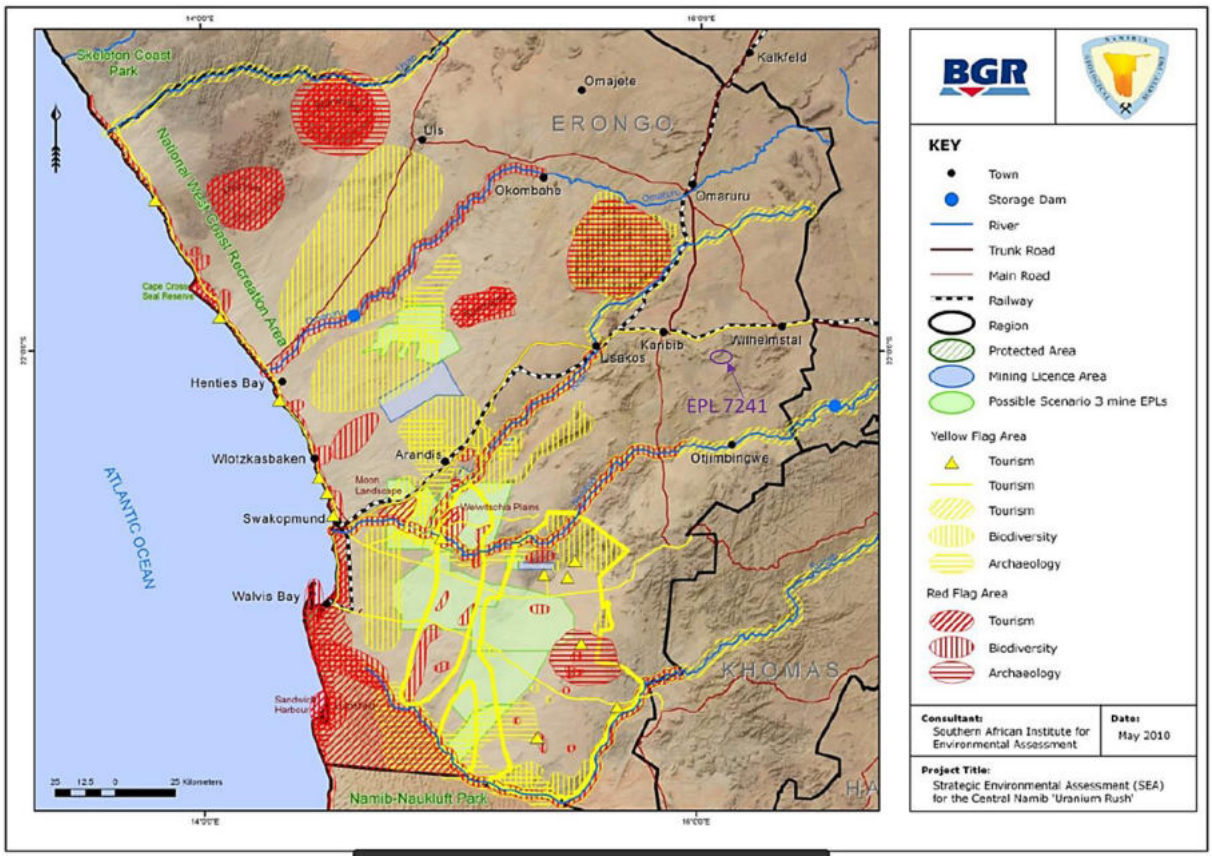

Figure 4-8: Areas of high biodiversity value in the central Namib in the context of the uranium rush (MME, 2010).

As it can be seen in Figure 4-8 above, the project area (indicated with a purple circle) is not within an area of high biodiversity. It is rather between two areas that are yellow flagged in terms of tourism. However, this does not mean the area is poor in biodiversity, as it is characterized by certain environments that could be of importance to local biodiversity.

4.1.5.1 Flora

In Namibia, rainfall is one of the major influencing factors resulting in sparse and short vegetation in the arid west and southern parts of the country, in contrast to the tall and lush plants in the northeast. Therefore, it can be said that the greatest variants affecting the diversity of plants are habitat and climate with the highest plant diversity generally associated with high rainfall areas. The Karibib area is known to have 6 species of trees and shrubs classified as endemics while 16 are protected under the Forestry Ordinance No. 37 of 1952 or Forest Act No. 72 of 1968, 5 species are protected are under the Nature Conservation Ordinance No. 4 of 1975. Escarpments, mountains, and inselbergs are generally considered as sites of special ecological importance with

granite domes (Karibib & Omaruru districts) high in biotic richness and endemism (Curtis and Barnard 1998).

The study area lies in the central – western escarpment inselbergs which consists of varied shrublands and grasslands. It is characterized by moderate rainfalls of about 180mm/a with extreme temperatures and unique climatic factors influencing the natural environment and biodiversity. According to Giess (1971), this semi-desert and savannah transition zone is typified by shrubs ("fodder bushes") such *as Blepharis pruinosa, Leucosphaera bainesii* and *Monechma genistifolia* and larger woody species such as *Acacia erioloba* are confined to the drainage lines. The trees common in the area are *Commiphora glaucescens, C. virgata* and *C. dinteri* as well as *Boscia albitrunca* and B. *foetida*. The karibib area is also known to have sparse grass cover is and consists of the climax grasses *Stipagrostis obtusa* and *S. uniplumis* (Giess 1971).

During a sit walk over conducted on EPL 7241, the area was found to generally be covered in grass on the flat areas and rather encroached by bushes and shrubs on the gentle slopes leading to mountains, while the mountains were low to medium vegetated as seen in Figure 4-9.

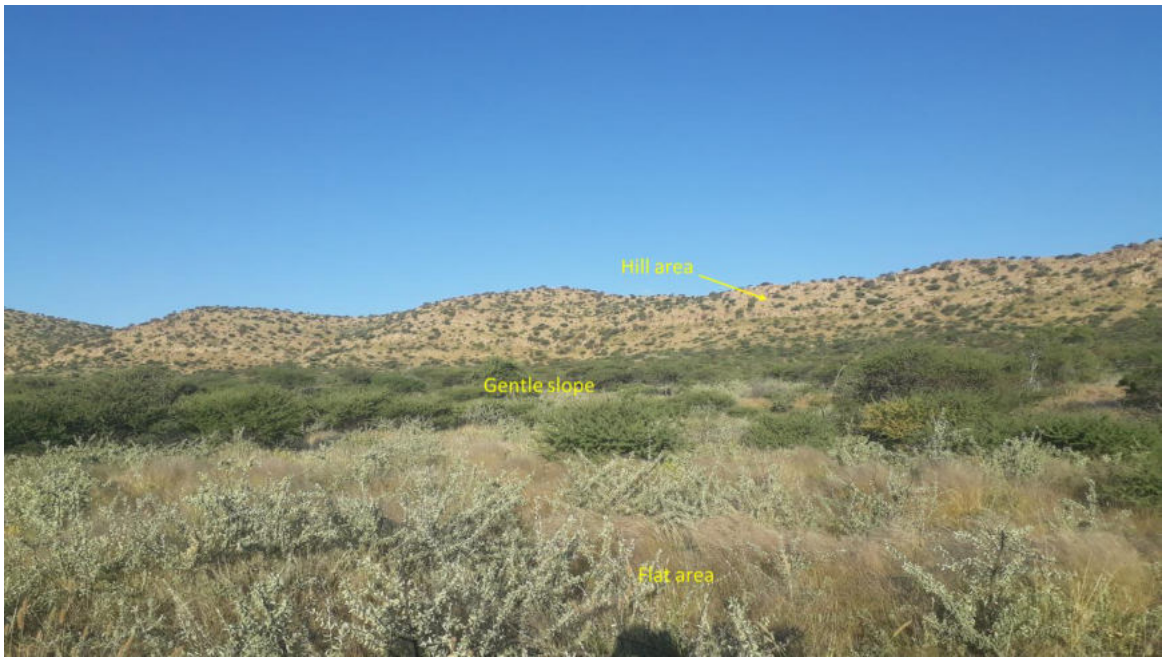

Figure 4-9: The distribution of vegetation relative to topography and climate.

The common plant species observed in the area are presented in Table 4-2.

Table 4-2: A summary of observed vegetation.

Plant name	Occurrence	Photograph
Commiphora saxicola	Observed to be confined to hill areas.	
Camelthorn (*Acacia erioloba*)	These Acacia bushes were densely populating the riverines and minor tributaries as well as on the gentle slopes at the foot of the mountains.	
Acacia mellifera	Acacia trees were sparsely distributed on the flatter portion of the farm.	

Plant name	Occurrence	Photograph
Stipagrostis uniplumis	Forming thick grass cover over a vast stretch of the flat area.	
Albizia anthelmintica	These were sparsely distributed on the flatter portion of the farm.	

4.1.5.2 Fauna

In terms of fauna, the determinants of diversity include favourable habitats and breeding sites, migratory routes as well as availability of food and water, grazing site to wild animals. According to the Vertebrate Fauna and Flora specialist study in Risk-Based Solutions (2020), it is estimated that at least 75 species of reptile, 7 amphibian, 87 mammal, 217 birds occur in the general or immediate Karibib. Overall terrestrial diversity and endemism – all species – is classified as "average" and "high" respectively in the general Karibib area (Mendelsohn et al. 2002).

4.1.5.3 Mammals

At least 87 species of mammals are known/expected to occur in the general Karibib area, of which 9 species (i.e. 10,3%) are classified as endemic (Risk-Based Solutions, 2020). The area is considered to have an abundance of large herbivorous mammals (kudu, zebra, oryx and large carnivores such as leopards and cheetahs. Currently 14 mammal species are considered endemic to Namibia of which 11 species are rodents and small carnivores of which very little is known. Most endemic mammals are associated with the Namib and escarpment with 60% of these rock-dwelling (Griffin 1998c). According to Griffin (1998c) the endemic mammal fauna is best characterized

by the endemic rodent family *Petromuridae* (Dassie rat) and the rodent genera *Gerbillurus* and *Petromyscus*. Risk-Based Solutions (2020) further indicated that species of greatest concern in the general area are those viewed as ''rare'' in Namibia -i.e., Namibian wing-gland bat and Southern African hedgehog and species classified as ''near threatened'' – i.e., Commerson's roundleaf bat, striped leaf-nosed bat, and brown hyena, leopard-and ''vulnerable'' by the IUCN in 2016, i.e., cheetah and Hartmann's Mountain zebra.

According to personal communication with the owners of Ombujomenge Farm, the following animals are found in the area: baboons, Gemsbok, Kudus, Giraffes, Wildebeast, Springboks and a healthy population of leopards, hyenas, impala, and zebras. Of the above-mentioned animals, only giraffes were seen during the site visit as seen in Figure 4-10. Other additional mammals present in the area are the domesticated animals such as sheep and horses, with a population of 50 sheep kept on Ombujomenge Farm.

Figure 4-10: A giraffe seen on Farm Ombujomenge during the site visit.

4.1.5.4 Reptiles

At least 75 species of reptiles are expected to occur in the Karibib area with 34 species (– i.e., 45.3%) considered endemic endemic (Risk-Based Solutions, 2019). The high percentage of endemic reptile species (45%) associated with the rocky escarpment region of central western Namibia underscores the importance of this area without formal state protection. The most important species expected to occur in the general area are viewed as tortoises *Stigmochelys pardalis* and *Psammobates oculiferus; pythons – P. anchietae* and *P. natalensi)*. Reptiles that are considered ''rare'' are *Rhinotyphlops lalandei, Mehelya vernayi* and *Afroedura Africana*, although very little is known about them (Risk-Based Solutions, 2019).

None of these reptiles were observed during the site visit, however this does not mean they are not found in the area. It could be attributed to the fact that the site visit was conducted during the day, when most reptiles were probably hiding under site rock outcrops and in the vegetation.

4.1.5.5 Amphibians

Most amphibians require water to breed and are therefore associated with the permanent water bodies, mainly in northeast Namibia. According to Risk-Based Solutions (2020), amphibians are underrepresented in the Karibib area, with at least seven (7) species finding suitable habitat. This includes 2 endemic species (*Poyntonophrynus hoeschi* and *Phrynomantis annectens*), 2 toads, and 1 specie that is classified as ''near threatened'' (*Pxicephalus adspersus*), i.e., high level (42.9%) of amphibians of conservation value from the general area. Apart from these important species and because there is no open permanent surface water in the area, amphibians are not viewed as very important in the broader area.

For the EPL 7241, potential amphibian breeding sites can be rock pools that hold water temporarily or within the minor tributaries. Similarly, to reptiles, there were no amphibians observed on site due to the dryness of the area (the site visit was not done during a rainy season) and absence of prominent surface water bodies in the area.

4.1.5.6 Birds: avifauna

According to Risk-Based Solutions (2020), at least 217 bird species occur and/or could occur in the general Karibib area at any time. This includes 12 of the 14 Namibian endemic species (85.7% of all Namibian endemic species). The endemic classified from the general area are the most important bird species, and these include Damara hornbill and Herero chat. These are viewed as the most important due to the overall lack of knowledge of these species.

Other species of concern are those classified as endangered (violet wood-hoopoe, Ludwig's bustard, white-backed vulture, black harrier, tawny eagle, booted eagle, martial eagle, black stork). Vulnerable species include lappet-faced vulture, secretary bird) and near threatened species include Ruppel's parrot, kori bustard, Verreaux's eagle, peregrine falcon, and marabou stork (Risk-Based Solutions, 2020).

Karibib is not considered an Important Birding Area (IBA) in Namibia (Simmons, 1998a), however the closest such sites are located to the west at the coast – i.e. Walvis Bay, Sandwich and Mile 4 Saltworks – while the closest inland IBA's are Brandberg and Naukluft.

During the site visit, some birds could be seen flying over the site area from time to time. However, these could not be identified nor confirmed to what category of above-listed species they could belong.

4.2 The socio-economic environment

4.2.1 Population Density and Socio-economic Profile

The project area falls within the Karibib Constuency in Erongo Region. The total population of the Erongo Region as per the 2011 National Population and Housing Census was recorded at 150 809, with an annual population growth rate estimated at 3.4%. The region also recorded the highest net immigration than any other regions between 2010 and 2011 (Republic of Namibia, 2014a). This resulted in a mixed population with diverse languages, with Oshiwambo languages reported in most of the households (38.8%), Afrikaans in 20.4% of households, Nama/Damara 18.8 %, Otjiherero Languages 9.4%, English 5.3% while San, Setswana and Asian languages each were reported as spoken in only about 0.1% of the households.

The region's economic growth has been largely due to mining, habour operation and fishing industry, as well as tourism, giving the region the second highest per capita income after Khomas (MME, 2010). It was also noted that 60% of the Erongo Region population are in working-age (between 15-59 years of age) and 33% are young people in age group of 0 to 14 years. 13% are children from 0 to 4 years old and 20% are youth from 5 to 14 years old (Republic of Namibia, 2014b). The main sources of income for households in Erongo are from farming (3%), wages and salaries (73%), cash remittance (5%), business and non-farming (9%) and pension (8%) (Namibia Statistics Agency, 2011a). In terms of mining, Erongo Region accommodates the mining of commodities such as gold, marble, granite, salt, and semi-precious stones (Erongo Regional Council, 2015)

The nearest town to the site proposed for this project is Karibib, located about 20km north-northwest of the EPL 7241 and had a total population of 5100 people in 2011, with 48.1% females and 51.9% being the male population (Population and Housing Census, 2011). The 2011 Population and Housing Census indicated that the population of Karibib Constituency is 13 320, which is 8.8% of the total population of Erongo Region (150 809). The town of Karibib has several schools, tourist attraction sites (such as the Roesemannhaus building). It is also home to a dimension stone processing plant called the Marmorwerke Cutting and Polishing Plant, which provides polished marble and granite products to the local market. For this reason, the Karibib population is mostly dependent on income in the form of wages and salaries. Mines and quarrying sites provide most jobs, with the Navachab Gold Mine said to employ about 750 residents.

4.2.2 Current Land Use of the area

4.2.2.1 Farming and conservancies

Majority of Erongo Region forms part of the desert, most of which is state owned as protected areas under conservation management (MME, 2010). This includes the Namib-Naukluft Park, the Dorob National Park, National Coast Tourist Recreational Area, etc. managed by MEFT. Further inland is communal land, which is also under conservation management by conservancies such as ≠Gaingu (centred around Spitzkoppe); Tsiseb (focused on Brandberg), Otjimboyo and Ohungu. Most of the population currently residing within the conservancies or on communal land is dependent on small stock farming and small-scale mining. East of the communal land are commercial farms which are privately owned and practice mostly large stock farming (cattle, horses), small stock farming (sheep and goats), game ranching (hunting farms) and ecotourism (particularly desert excursions). The arid nature of the landscape means that very little of the area has agricultural potential and according to Van der Merwe (1983) sheep farming takes up about 70-80% of stock farmed with, and the remaining 20-30% is goats and cattle.

The EPL 7241 is not within any conservancies or protected areas. The site rather lies on private farms. The main activity on Ombujomenge Farm, which is mainly affected by the proposed activity is game hunting. Verbal communication with the farm owner revealed that hunting takes place on the open lower lying veld and rarely on the mountains and it is usually prescheduled with the farm manager to takes place during the day. Other activities on the farm includes small stock farming with sheep (Figure 4-11) and keeping a few horses.

Figure 4-11: A photo of the sheep kraal on Ombujomenge Farm, with some sheep seen in the far end and a small vegetable garden.

4.2.2.2 Mining

There are several mining and mineral exploration activities happening in the region. Some large projects include: two operating uranium mines, Rössing and Swakop Uranium / Husab, and Langer Heinrich which is under care and maintenance due to a drop in uranium price. Other mining activities in the region include salt mining at the Walvis Bay Salt Works, Swakopmund and Cape Cross, as well as mining of semi-precious stones by small scale miners in the Spitzkopje and surrounding. Mining activities near Karibib include the gold mining at Navachab Mine which is located about 10km southwest of Karibib. There are also several dimension stones (marble and granite) quarries in the area, with known operations such as Okatji Marble Mine, BAA Dimension Stones located about 4km south-southeast of Karibib.

The area is generally not pristine as there has been historic mining activities. About 4km to the southwestern side of EPL 7241 are some excavations, waste rocks and old tailings dumps from historical mining and exploration by three former producing lithium mines. However these operations were resurrected by Desert Lion Energy which acquired a mining licence over that area in 2017, now taken over by under Lepidico Chemicals Namibia (which took over from Desert Lion) and !Huni-/Urib.

Within the EPL 7241 however are some exploration cuts that expose the targeted marble as seen in Figure 4-12Figure **4-12**

Figure 4-12:The white marble exposed on Ombujomenge Farm.

4.2.3 Existing infrastructure

Transport infrastructure: The project site is well connected to the national road network (C32 and D 1958 roads), with the B2 road which links it to the neighbouring urban centres (to Karibib, Swakopmund and Walvis Bay going west or to Okahandja, Windhoek going south) and to the rest of the country. Additionally, the Trans-Namib Railway runs through the town of Karibib, with one of the major stations in central town. The major function of the railroad is to transport goods between Walvis Bay Port and inland, making a junction in Omaruru, where the one railroad goes to Tsumeb and Grootfontein, while the other proceeds to Windhoek and down south of Namibia. The town also has an airstrip to the northern side, which is mainly used for the command of the Air Force.

Power infrastructure: The town is connected to the national power grid, with powerlines running parallel to the main road. Power distributors include NamPower and ErongoRed. Households that may not be connected to the regional power grid rely on other sources of energy such as domestic solar, generators and even firewood in some households.

Water: The Erongo Regional bulk water supply is done by NamWater supplied in bulk to industries, municipalities by (the bulk water supplier). NamWater abstracts water from

the large Kuiseb River and Omaruru delta (model) aquifers, which is then pumped to several reservoirs that provide water to towns in the Region such as Walvis Bay, Swakopmund, Henties Bay, Arandis, Karibib and the mining industry. The desalination plant built and owned by AREVA as well as the Swakopoort Dam which is located about 80km southeast of Karibib also supplement this supply. Water in areas outside the urban centres is either supplied by the Directorate of Rural Water Supply or sourced from privately owned boreholes on farms.

Health and Educational Facilities: there is a health facility (clinic) in Karibib as well as primary and secondary schools that cater for the Karibib Constituency and other citizens, when needed.

4.2.4 Air quality and Noise levels

The overall quality of air in the Erongo Region is influenced by its climatic conditions as well as the activities in the region. In terms of climate, the region experiences episodic or even sporadic dust storms, which are mostly more pronounced during Winter when strong easterly winds are prevalent (Liebenberg-Ensli et al. 2006). The high wind speeds coupled with mining operations and unpaved roads were seen to contribute to dust emission in the region. Fugitive dust sources associated with mining activities include drilling and blasting operations, materials handling activities, vehicle-entrainment by haul vehicles and wind-blown dust from tailings impoundments and stockpiles.

In addition to dust, gaseous and particulate emissions also impact air quality. Main sources include vehicles that contributes to gaseous emissions (such as CO2, CO, hydrocarbons (HCs), SO2, NOx, particulates and lead) as well as ore processing which is associated with emissions of fugitive particulate matters and greenhouse gasses such as methane (CH4), sulphur dioxide (SO2) and oxides of nitrogen (NOx).
These activities are also great contributors to noise levels. This includes vehicle movement on the public road network, rail transport activities, aircrafts flying to local airports, etc. Potential receptors of noise are the residents of the nearby farms, the town of Karibib and tourists that frequently visit the various attractions in the surrounding area, as well as fauna.

4.2.5 Archaeology and Heritage Resources

Sites of heritage and archeological importance are common in Namibia and are important as an independent material record of past events. The remains of indigenous settlements, wells, burial grounds and other sites are valuable material evidence of indigenous land ownership and can provide crucial support for land claims. These sites range from large and easily recognizable ones such as, natural rock shelters with evidence of occupation, including rock art, and stone features such as

hut circles, hunting blinds and larger grave cairns, to smaller rock paintings and stone artefacts. All this evidence, including its landscape setting, is accorded protection under the National Heritage Act (No. 27 of 2004).

For their preservation, the National Heritage Council of Namibia (NHC) made Archaeological Assessment a mandatory requirement for all environmental assessments of exploration and mining projects, with works subject to issuance of a Consent Letter by the NHC. This letter is one of the required documents when submitting environmental assessment report to the Ministry of Environment, Forestry and Tourism for evaluation and consideration of the ECC. For this reason, an archaeological survey was conducted on the 1st and 2nd of May 2022 and the findings are presented below. The detailed **Archaeological Assessment Report** has been submitted to NHC for evaluation and has been appended to this report together with proof of submission in Appendix D.

4.2.5.1 Archaeological background

Archaeological evidence available in the Erongo Region is because of short periods of relatively intense occupation by the early settlers and subsequent desertion because of environmental and climatic changes (Kinahan, 2011). Climatic changes resulted in the movement and migration of wildlife northward, and in their pursuit, humans migrated which resulted in the desertion of the rock paintings and engravings by the original artists.

The Erongo Region has been the focus of several archaeological surveys and assessments during the last two decades, which resulted in a good understanding the archaeological sequence as well as the relationship between these sites and the terrains in which they are found (Kinahan (2020) in Nakale and Mowa (2022)). Although this is the case, the past archaeological surveys have proven that archaeology of a specific localized area do not as a rule reflect the wider archaeology of the entire spatial area that shares similar topography and geologic composition characteristics (Nakale and Mowa, 2022). For this reason, a site-specific survey was conducted.

4.2.5.2 Site specific archaeology

An archaeological survey for the proposed project area was conducted on the 1st and 2nd May 2022 by a qualified and experienced Archaeologist, who also held a one-on-one interview with Mr. Romano (owner of Farms) and Mr. Louis (the farm manager), before undertaking a site walk over.

According to Nakale and Mowa (2022), a total of three potential archaeological/heritage sites were recorded within farm Ombujomenge during the field survey, although not necessarily within the targeted areas. The three sites are: **Site 1** a graveyard that was well fenced off, **Site 2** an old suspended historical reservoir (dam) and **Site 3** a granite cave that had rock art paintings, evidence of pottery and suspected weapons. These findings are summarized in **Table 4-3**.

Table 4-3: A summary of the archaeological and heritage findings from the site visit to the project area (source: Nakale and Mowa, 2022).

Heritage or Archaeological Resource	**Description**	**GPS Coordinates (as provided by the Archaeologist)**
Site 1: Historical reservoir	Old suspected historical reservoir dam	S 22° 01'25.87" E 16°06'46.36"
Site 2: Graveyard	Two fenced-off and well-built graves, belonging to the first farm owner and dating back to the German era.	S 22°02'04, 28'' E 16°04'13,52''
Site 3: Cave with rock art paintings, pottery, and weapons	Granite rock bolder/cave with rock paintings. About 25 different features of rock paintings, Ranging from human figures to different types of animals such as impalas, zebras, Oryx, leopards, and many unknown figures. There are several stone tools and pieces of clay scattered around the boulder. This cave is located far away from the provided target area.	S 22°02'46.98" E 16°06'57.85"

The respective locations of these items are shown in Figure 4-13, and photos of the rock art paintings and other items found in the area in Figure 4-14. **It is evident that all three sites occur outside of the EPL 7241 and are very far from the project area. Therefore, the general impact of these activities on these sites will be very minimal to none.** According to Nakale and Mowa (2022), Sites 1 is a historical dam, however it has no heritage significance. Sites 2 and 3 are of high significance, with Site 3 being a major archaeological or palaeontological site and could be under threat from the dust generated by the proposed activities. Therefore, dust control and suppression can aid to keep this impact at minimum.

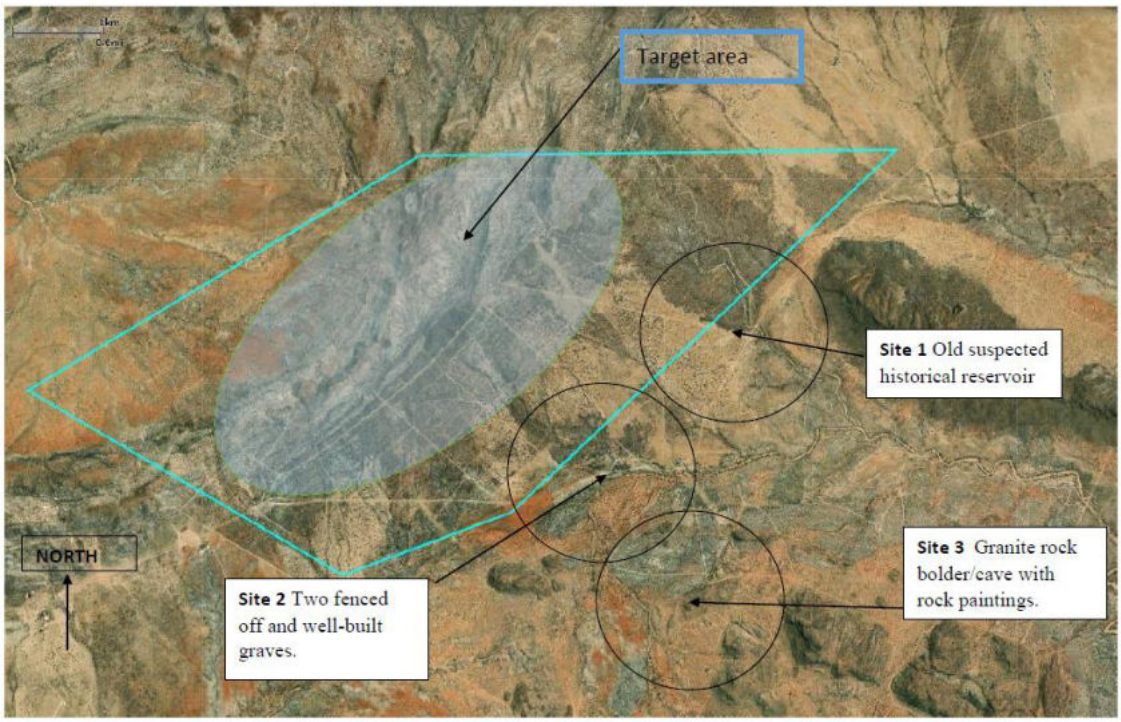

Figure 4-13: Location of sites of heritage and archaeological importance found on Ombujomenge Farm, relative to the location of EPL 7241.

Figure 4-14: All photos were taken from Site 3. (A and C) Rock art paintings in a granite cave, (B) remnants pieces of pottery around the cave and (D) suspected stone tools near the cave (source: Nakale and Mowa, 2022).

5 THE PUBLIC PARTICIPATION PROCESS

The public participation process (PPP) forms an important part of this scoping report, as it provides all persons or organizations (interested and affected parties (I&APs) an opportunity to comment on the proposed activity and register their views and concerns. This was done in accordance with both the EMA and its 2012 EIA Regulations.

5.1 Stakeholders and Interested & Affected Parties (I&APs)

OMAVI identified stakeholders from national, regional and local organs of state as well as other members of the public, i.e., interested and affected parties (I&APs) who were deemed relevant to the proposed activity, to form the initial stakeholder / I&APs' List. This list was constantly updated by adding names of other members of the public who reached out in response to the public notices as well as those who attended the public consultation meeting. A summary of I&APs identified are presented below and the complete stakeholders list is provided in Appendix E.

- **Key Ministries:** Ministry of Environment, Forestry & Tourism, Ministry of Mines & Energy, Ministry of Works & Transport, Ministry of Agriculture & Land Reform, Ministry of Urban &Rural Development, National Heritage Council of Namibia (under the Ministry of Education, Ats & Culture).
- **Regional governance**: Erongo Regional Council and Karibib Constituency
- **Local authorities:** Karibib Town Council
- **Parastatals**: NamWater and Roads Authority
- **Service providers (NGOs and SEOs):** Namibian Chambers of Mine, Botanical Society
- **Members of the public:** Farm owners and caretakers of the farms

5.2 The Public Consultation Process

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

5.2.1 Background Information Document (BID)

- A Background Information Document (BID) containing descriptive information about the proposed exploration activities was compiled in the initial stages of the environmental scoping assessment (ESA) process and sent out to all pre-identified stakeholders via email. Printed copies of this document were also couriered to stakeholders who were not reachable via email, and some copies were distributed to the attendees of the public consultation meeting on the

26th of September 2020. Proof of sharing this document is included in Appendix F.

5.2.2 *Project notices*

- For the project information to reach a bigger public audience, newspaper advertisements were placed in three (3) widely circulated newspapers in the area namely, The Namibian Sun, *Allgemeine Zeitung* and *Die Republikein*. The adverts briefly explained the proposed activity, its locality and invited members of the public to register as I&APs. As per the EMA requirements, the adverts were placed in these papers for two consecutive weeks on 10 and 17 September 2020. These adverts are included in Appendix G.
- Site notices were printed in A3 size and were placed at visible locations in the Erongo Regional Office as well as at the Karibib Constituency Office notice boards as seen in Figure 5-1).

Figure 5-1: A site notice placed on Erongo Regional Council - Karibib Constituency Office notice board.

5.2.3 *Public consultation meeting*

- A face-to-face public meeting was arranged, and invitation sent out on the Karibib Constituency Councillor (on 22 September 2020) for local community announcement and via emails to the registered I&APs with email addressed on the 23rd of September 2020 (Appendix H). Although the meeting invitation notice was only sent out on 22 and 23 September 2020, the public was already informed in the newspaper adverts that a public meeting would be held once

the date had been finalized. The public consultation meeting was held on the 26th of September 2020 at 11h00 at the water point and Neu Schwaben Independent Miners Association (NIMA) offices on Farm Neu Schwaben Unit A. This was a joint meeting for EPLs 6139, 7008 and 7241 since they impact the same communities. Some photos from the public meeting are shown in Figure 5-2.

- Additional consultation was done on the 1st – 2nd of May 2022 with Mr. Romano (owner of Farms Ombujomenge and a portion of Kaliombo – collectively known as Leventina) and Mr. Louis (the farm manager) when the team visited the site.
- During the meeting, a short presentation was given by OMAVI Geotechnical and Geo-environmental Consultants cc, with the assistance of two members of the community who translated to Afrikaans, Damara-Nama and Otjiherero. The presentations entailed a description of the proposed project, the environmental assessment process and the main potential impacts identified.
- The meeting was attended by sixty (60) people, including three OMAVI Consultants. However, due to the COVID-19 Regulations that were in place at the time (in September 2020) limiting the maximum number of people at gatherings to fifty (50), the community was set up to sit in two separate groups. Additional Covid-19 measures observed were wearing of masks, social distancing as well as sanitizing. The attendees from each group were requested to fill in an attendance register and both registers.
- The attendees voiced their comments and concerns during the meeting, some of which were responded to immediately, and others were noted down to be addressed in the ESA report. The community was also encouraged to send additional comments after the meeting by e-mail or short message service (SMS), either individually or through the chairperson of Neu Schwaben Independent Miners Association (NIMA) – as most of them were members of NIMA.
- Minutes for this meeting can be found in Appendix I together with the attendance register. All the issues and concerns raised in the meeting were summarized and presented under the following subsection (5.3).

Figure 5-2: Pictures from the public meeting held at the water point on Farm Neu Schwaben.

It is of utmost importance to note that the gap between the Public Consultation Process and submission of the ESA Report has been caused by the delay owing to issues surrounding the unavailability of some landowners residing abroad, and delayed access to some of the farms covered by the EPL. The Environmental Consultant had to wait for these hindrances to be sorted to ensure that reliable and sufficient data was obtained from site to compile a reliable ESA Report and associated documents. These factors therefore prolonged the finalization and submission of the EIA Report to the DEAF and timely submission of an ECC for the work and renewal of the EPL at the MME.

5.3 Key issues raised

A few issues and concerns were raised during the public participation period, some of which were registered via email and others during the public consultation meeting as well as during the comments period provided for during the environmental scoping assessment process. These are summarized in Table 5-1 below.

Table 5-1: A summary of key issues received.

Environmental component	Concern	Response
Socio-economic	Mutual respect and consideration of small-scale mining activities by the ''larger'' mining industries in	This EPL 7241 has no small-scale mining, therefore no such conflict will be expected.

Environmental component	Concern	Response
	the same area	
Animal safety during mining	Given that there is stock farming	This impact will be minimal, as no actual mining will be taking place. Sites from which testing blocks will be extracted will be fenced off until they are reinstated.
Groundwater	Limited groundwater in the area and poor groundwater quality from the borehole on Farm Neu Schaben.	No water will be sourced from the area for works on the current EPL. It will be imported from elsewhere and recycled. Additionally, the water on Farm Neu Schwaben will not be affected by the works on EPL 7241.
The biophysical environment	Damaging of the biophysical environment	This impact has been assessed under section 6.3 of the environmental scoping assessment (ESA) report. Measures towards preservation of fauna and flora in the area have been outlined in the EMP
Archaeology	Impact of the proposed activities on the heritage (archaeological) sites and objects	A specialist study was done for Archaeology and the findings of this assessment were included in the ESA report. Additionally, the report was submitted to the NHC for evaluation to the council's satisfaction and further granting of a Consent letter that gives permission for works to proceed.
Communication and Accountability	Emphasis on the importance of public participation process with local and affected communities to avoid future conflicts.	Effective liaison with landowners and land occupiers as well as other licence holders in the area.
Visual impact	The test quarrying to be undertaken during exploration has the potential to spoil the view and aesthetic of the landscape from the hunting	Exploration will largely be confined to the north and west facing slopes of the marble ridge to ensure that any quarrying activities do not spoil the view and aesthetic landscape from the

Environmental component	Concern	Response
	veld and farmhouse.	hunting veld and farmhouse

The above listed issues and concerns have been responded to as part of the impact and issues assessment under Chapter 6 as well as under the Issues and Response Trail (Appendix J). A copy of all the original email and written correspondence is attached as Appendix K.

There were no further comments submitted whether via communication directly to OMAVI Consultants or via the Karibib Constituency Office and NIMA Chairperson. For this reason, the ESA Report was finalised for submission to the Ministry of Environment, Forestry and Tourism: Department of Environmental Affairs and Forestry (MEFT: DEAF) for environmental clearance.

The proposed exploration activities have the potential to impact the immediate and surrounding socio-economic and biophysical environment. Understanding these impacts, especially the negative ones and their significance will aid in providing the suitable mitigation measures. The recommended measures can then be implemented to minimize the impacts' significance, and where possible, avoid these impacts all together. Some impacts might be insignificant while others might need special attention or even further investigation.

The subsequent chapter presents the positive and negative impacts that are anticipated from the project activities, their description, assessment, and mitigations thereof.

6 IMPACT IDENTIFICATION AND ASSESSMENT

The proposed project activities are associated with different environmental impacts, whether positive or negative. The general aim of an environmental assessment is to assess these impacts, mainly the negative ones as they are likely to cause more damage to the environment if measures are not properly implemented. This is done to ensure that the potential negative impacts are adequately addressed, so that impact's significance is brought under control, while maximizing the positive impacts.

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

Potential positive impacts:

- Socio-economic development through employment creation and skills transfer.

- Increased support for local businesses through the procurement of consumable items such as Personal Protective Equipment (PPE), machinery spare parts, lubricants, etc.
- Contribution to the national economic development through annual levies paid to the Government (through the Ministry of Mines and Energy) for Exclusive Prospecting Licenses (EPLs).
- Improved geological understanding of the site area regarding dimension stones.

Potential negative impacts:

- **Physical land / soil disturbance:** The invasive exploration activities could potentially lead to site soils or land disturbance.
- **Air quality issue**: potential dust generated from surface excavation, drilling and diamond wire sawing could compromise the surrounding air quality.
- **Impact on local biodiversity (fauna and flora):** some vegetation may need to be removed to create access roads and working space. This may potentially lead to loss of the vegetation and habitat disturbance. Some exploration activities such as drilling may disturb local / farm and wildlife (poaching) on the farms.
- **Noise:** potential increase in noise levels from exploration vehicles and machinery through the area covered by the EPL may be a nuisance to locals.
- **Environmental pollution** through different types of waste generated on the site due to improper management and disposal.
- **Impact on service infrastructure such as local roads:** the temporary potential increase in vehicular traffic during exploration may exert additional pressure on the local roads, especially by heavy vehicles such as trucks carrying project materials and equipment (drilling rig).
- **Visual / aesthetic impact** of the affected sites of the EPL, especially in hilly and mountainous targeted sites areas in areas.
- **Archaeological or cultural heritage** impact through unintentional uncovering of unknown archaeological objects or sites by certain project activities.
- **Soil and water resources pollution:** the potential risk of hydrocarbon spillages and wastewater in the working areas and workshops if not properly managed may contaminate the site soils and eventually reach groundwater systems.
- **Health and safety hazards** to personnel associated with the movement / operating of machinery. Not only to project personnel but also residents (locals) in the affected area.

- **Impact of poor communication (proper liaison)** between the Proponent and the farmers or occupier of land with regards to the project activities could result in long-terms unresolved conflicts.
- **General social nuisance to farmers / landowners:** The project personnel might intrude on private farm areas such as houses and other restricted areas. This may include attempted farm animal hunting and snaring. Another nuisance is when some project personnel forget to close farm gates when entering or leaving the farm which may lead to farm animal (both domestic and wildlife) escaping the property. These would potentially result in conflicts and tensions between the farm owner(s) and the Proponent.

6.1 Impact Assessment Methodology

The methodology used to assess and determine the significance of the above-listed potential project impacts on the biophysical and social environmental components is as explained below.

6.1.1 Impact Assessment Screening

The potential impacts identified by Interested and Affected Parties (I&APs), presented as issues during public consultation period and by OMAVI Consultants based on professional experience was screened according to a set of questions (Figure 6-1). This resulted in highlighting the key impacts requiring further detailed assessment of each impact in the respective sections of this chapter.

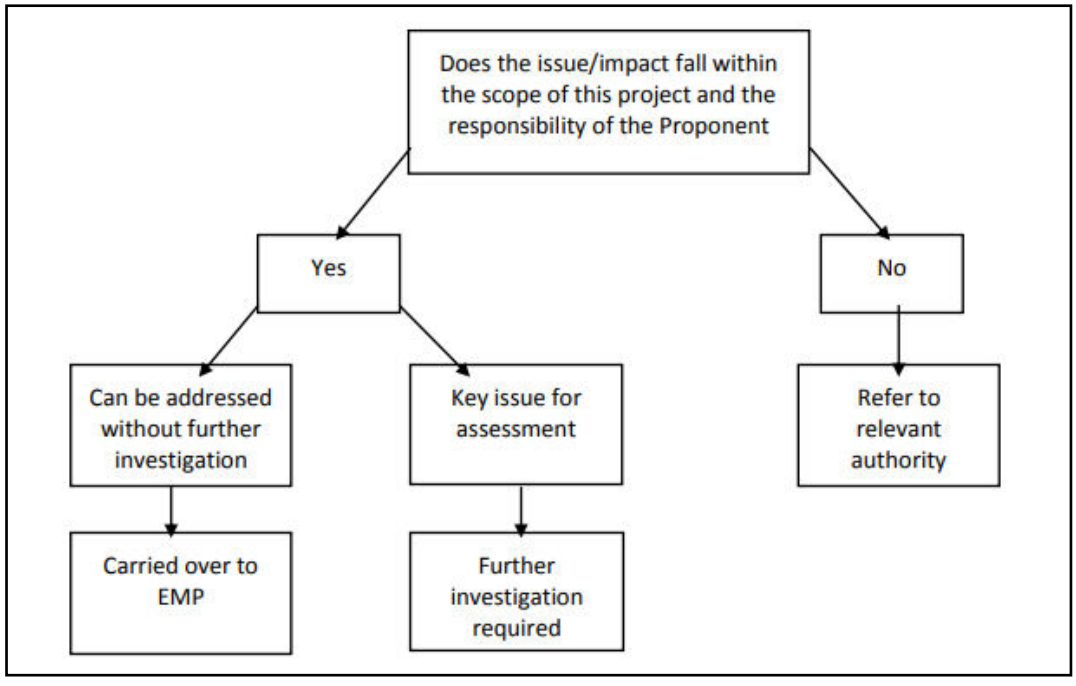

Figure 6-1: Screening process for determining key impacts (source: Resilient Environmental Solutions, 2019)

6.1.2 Impact Assessment Criteria

The methodology employed for this assessment was adopted from other environmental assessment reports based on research and analysis of other consultants' reports (GCS Water & Environmental Consultants, 2017a) on the suitable project impacts' assessment methodology.

The proposed exploration activities will likely to some scale/extent (spatial scale), magnitude (severity) and duration (temporal scale) have impacts on certain biophysical and social components. The potential impacts were assessed as per criteria presented in Table 6-1. 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.

Table 6-1: Impact Assessment Criteria employed to assess the potential negative impacts

Nature	Description	Rating
Extent (Spatial scale)	An indication of the physical and spatial scale of the impact.	**Low (1):** Impact is localized within the site boundary: Site only. **Low/Medium (2):** Impact is beyond the site boundary: Local. **Medium (3):** Impacts felt within adjacent biophysical and social environments: Regional. **Medium/High (4):** Impact widespread far beyond site boundary: Regional **High (5):** Impact extend National or over international boundaries.
Duration	The timeframe, over which the	**Low (1):** Immediate mitigating measures,

Nature	Description	Rating
	impact is expected to occur, measured in relation to the lifetime of the project.	immediate progress **Low/Medium (2):** Impact is quickly reversible, short-term impacts (0-5 years) **Medium (3):** Reversible over time; medium term (5-15 years). **Medium/High (4):** Impact is long-term. **High (5):** Long term; beyond closure; permanent; irreplaceable or irretrievable commitment of resources
Intensity, Magnitude / Severity (Qualitative criteria)	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	**Medium/low (4):** Low deterioration, slight noticeable alteration in habitat and biodiversity. Little loss in species numbers. **Low (2):** Minor deterioration, nuisance or irritation, minor change in species / habitat / diversity or resource, no or very little quality deterioration.
Probability of occurrence	Probability describes the likelihood of the impacts occurring. This determination is based on previous experience with similar projects and/or based on professional judgment	**Low (1):** Improbable; low likelihood; seldom. No known risk or vulnerability to natural or induced hazards. **Medium/low (2):** Likely to occur from time to time. Low risk or vulnerability to natural or induced hazards. **Medium (3):** Possible, distinct possibility, frequent. Low to medium risk or vulnerability to natural or induced hazards. **Medium/High (4):** Probable if mitigating measures are not implemented. Medium risk of vulnerability to natural or induced hazards. **High (5):** Definite (regardless of preventative measures), highly likely, continuous. High risk or vulnerability to natural or induced hazards.

6.1.3 Impact Significance

This is determined through a synthesis of the above impact characteristics (in Table 6-1 above). 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 6-1) have been ranked for each potential impact, the impact significance of each is assessed using the following formula:

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 6-2).

Table 6-2: Impact 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 to enable the confirmation of the significance of the impact as low or medium and under control.

The assessment of the project impacts is done for both pre-mitigation (before implementing any mitigation) and post-mitigation (after mitigations are effectively implemented).

The potential impacts listed under section 6.1 above are described and assessed under the subsequent sections.

6.2 Positive Impacts: Description and Assessment

6.2.1 Socio-economic development (Employment and Social Responsibilities)

A. <u>Employment Creation</u>

The exploration activities will create some temporary job opportunities for the locals (both skilled, semi and unskilled), resulting in socio-economic development through employment creation and skills transfer.

The skills transferred to these workers (existing and new ones) will ensure improved employability for those workers in the industry or at other similar project operations in future. The income earned by the employed locals (workers) will positively impact their lives, individually and that of their households (families). This impact is assessed as follows.

- **Impact type:** positive
- **Extent:** Local to regional
- **Duration:** short-term
- **Probability:** Probable
- **Significance (no mitigation):** Low, **Significance (post-mitigation):** medium
- **Mitigation measures:** Namibian citizens and permanent residents from the area should be employed for the unskilled labour preferentially to out-of-area people (outsiders) where possible. Out-of-area employment should be justified, for example by the unavailability of local skills only.

  - Equal opportunity should be provided for both men and women, when and where possible.

6.2.2 Socio-economic development (Value Added Taxes and Royalty)

The continued contribution to the national economic development through annual levies paid to the Government (through the Ministry of Mines and Energy) for Exclusive Prospecting Licenses (EPLs). The impact assessment is as follows:

- **Impact type:** positive
- **Extent:** national
- **Duration:** Long-term
- **Probability:** Probable
- **Significance:** medium
- **Mitigation measures:** The Proponent to ensure compliance with their project's requirements of annual levies with the Ministry of Mines and Energy.

6.2.3 Improved geological understanding of the site

The geological information reviewed and gathered during exploration will be made available to the Ministry of Mines and Energy. The Ministry would then consolidate the information as a public institution for archiving and future use a baseline for projects or educational research. This impact is assessed as follows:

- **Impact type:** positive
- **Extent:** Local to national
- **Duration:** Long-term
- **Probability:** Probable
- **Significance:** medium
- **Mitigation measures:** The Proponent to ensure availability and accessibility of exploration findings to the responsible department at the Ministry of Mines and Energy (Mines Department and possibly Geological Survey of Namibia) for archiving.

6.3 Negative Impacts: Description and Assessment

The potential negative impacts have been described and assessed. The mitigation measures have also been provided under each assessed impact. These measures are then ''translated'' into management plan actions in the project's Environmental Management Plan (EMP).

6.3.1 Impact on Groundwater Quantity (Over-abstraction)

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

Based on the groundwater potential map of Namibia the project site is found in a generally low, locally moderate to moderate groundwater potential area. The abstraction of more water than it can be replenished from low groundwater potential areas would negatively affect the local communities (farmers) that depend on the same groundwater resource (aquifer) and low yielding boreholes.

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

The drilling method to be employed for this project's exploration activities is down-the hole (DTH). According to Jeansson (2014), water is required and used to power the impact mechanism of the hammer at a high frequency rate and bring any cuttings to the surface and clean the borehole.

The required water for exploration is about 20,000 litres per week for domestic use and drilling purposes as well as cooling drilling equipment. Given the low to medium groundwater potential of some project site areas, the required water will be carted from outside the area by the Proponent and stored in industry standard water reservoirs/tanks on site. Although exploration may be requiring a lot of water, this would also be dependent on the duration of the exploration works and number of exploration boreholes required to make reliable interpretation on the commodity explored for.

Without the implementation of any mitigation measures, the impact can be rated as medium, but upon effective implementation of the recommended measures, the impact significance would be reduced to low as presented in the Table 6-3 below.

Table 6-3: Assessment of the project impact on water resources abstraction (quantity)

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M - 3	M - 3	M - 6	M - 3	M – 36
Post mitigation	L - 1	L/M - 2	L - 2	L/M -2	L - 10

Mitigation measures

- Although the Proponent will not abstract water from the local sources (boreholes), they should aim to use water efficiently, recycle and re-use where necessary and possible.
- Water reuse/recycling methods should be implemented as far as practicable such that the water used to cool off exploration equipment should be captured and used for the cleaning of project equipment, if possible.
- Water storage tanks should be inspected daily to ensure that there is no leakage, resulting in wasted water on site.
- Water conservation awareness and saving measures training should be provided to all the project workers in both phases so that they understand the importance of conserving water and become accountable.

6.3.2 Impact on Soils (Physical Land Disturbance)

The exploration activities such as excavations and land clearing to enable siting of project structures and equipment will potentially result in soil disturbance which will leave the site soils exposed to erosion as desert soils. This impact would be probable at site areas with little to no vegetation cover that would hold the soils in place with their roots. However, with most parts of the EPL covered by grass, shrubs, and trees, the vulnerability to erosion impact is minimal.

Regardless, the impact can be rated as medium if no mitigation measures are implemented. However, with the effective implementation of mitigation measures and monitoring, the impact significance will be reduced to low. The impact is assessed in Table 6-4.

Table 6-4: Impact assessment of project activities on soils (physical disturbance)

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M - 3	M/H - 4	L/M - 4	M/H - 4	M - 44
Post mitigation	L/M - 2	M - 3	L - 2	L/M - 3	L - 21

Mitigation measures

- Overburden should be handled more efficiently during exploration works to avoid erosion when subjected erosional processes.
- Prevent creation of huge piles of waste rocks by performing sequential backfilling.
- Stockpiled topsoil and overburden waste rocks should be used to backfill the explored and disturbed site areas/spots.
- Soils that are not within the intended and targeted footprints of the site areas should be left undisturbed and soil conservation implemented as far as possible.
- Project vehicles/machinery should stick to access roads provide and or meant for the project operations but not to unnecessarily create further tracks on site by driving everywhere resulting in soil compaction.

6.3.3 Soils and Water Resources Pollution

In areas where activities such as extensive agricultural, mining, waste management and industrial activities are practiced with poor planning prior to project implementations, soil, and water, particularly groundwater pollution becomes one of the main environmental and social concerns. This mainly caused by improper storage and handling of hazardous waste such as hydrocarbons (fuel) spills, and wet waste such as effluents on project sites. These may lead to surrounding soil and eventually water resources systems pollution resulting into poor water quality.

However, poor water quality does not only come from direct pollution from the ground surface, but also from over-abstraction of aquifers, especially the poorly recharged and managed ones. Given the nature, type and scale of the proposed project activities, groundwater vulnerability to pollution owing to the project activities is rather low.

The anticipated potential source of pollution to groundwater resources from the project activities would be hydrocarbons (oil) from project vehicles, machinery, and equipment as well as potential wastewater/effluent from exploration works. The spills (depending on volumes spilled on the soils) from these machinery, vehicles and equipment could infiltrate into the ground and pollute the fractured or faulted aquifers on site, and with time reach further groundwater systems in the area.

The Groundwater Resources Vulnerability Map of Namibia shows that the vulnerability of groundwater to pollution in the project area is moderate. The main concern regarding groundwater pollution would be on areas that are underlain by fractured/faulted rock units or partly overlain by sediments. These sediments or fractured rock structures would provide ready passage for pollutants into groundwater, but without faults or fractures, these rock units would behave as aquitards, but not aquifers. If there is a significant point source of pollution, the pollution vulnerability would be bound to fractured/faulted rock units, therefore low (for fractured/faulted rocks) and slightly moderate (for distinctive unconsolidated sediment aquifer areas).

Groundwater pollution risk can also arise from low and prolonged periods of no recharge (less water with increased concentrations of groundwater chemical constituents) as well as localized pollution sources, in combination with the aquifer's vulnerability to pollution. However, the project area receives average annual rainfall which could promote groundwater recharge, by carrying polluted water into the local aquifers during infiltration.

From the above description of the impact, it can be concluded that without implementing any measures to avoid or minimize the impact, the impact significance will be moderate and once the recommended mitigation measures have been implemented, the significance will be reduced to low. The assessment also presented in Table 6-5 below.

Table 6-5: Assessment of the project impact on soils and water resources (quality)

Mitigation Status	**Extent**	**Duration**	**Intensity**	**Probability**	**Significance**
Pre mitigation	M - 3	M/H - 4	L/M - 4	M/H - 4	M - 44
Post mitigation	L/M - 2	L/M - 2	L - 2	L/M - 2	L - 12
Mitigation measures • Spill control preventive measures should be in place on site to management soil contamination, thus preventing and or minimizing the contamination from reaching groundwater bodies. Some of the soil control preventive measures are: ✓ Identification of oil storage and use locations on site and allocate drip trays and polluted soil removal tools suitable for that specific surface (soil or hard rock cover) on the sites.					

- ✓ Maintain equipment and fuel storage tanks to ensure that they are in good condition thus preventing leaks and spills.
- ✓ The oil storage and use locations should be visually inspected for container or tank condition and spills.
- ✓ Maintain a fully provisioned, easily accessed spill kit. Spill kits should be located throughout the active project sites contain the floor dry absorbent material and absorbent booms, pads, mats. These would be suitable for ground surface areas that are covered mainly by hard rocks.
- ✓ All project employees should be sensitized about the impacts of soil pollution and advised to follow appropriate fuel delivery and handling procedures.
- ✓ The Proponent should develop and prepare countermeasures to contain, clean up, and mitigate the effects of an oil spill. This includes keeping spill response procedures and a well-stocked cache of supplies easily accessible.
- ✓ Ensure employees receive basic Spill Prevention, Control, and Countermeasure (SPCC) Plan training and mentor new workers as they get hired.

- Exploration site areas where hydrocarbons will be utilized, the surface should be covered with an impermeable plastic liner (e.g., an HDPE liner), carefully placed to minimize risk of puncturing, to prevent any spillages from getting into direct contact with the soils and prevent eventual infiltration into the ground.
- Project machines and equipment should be equipped with drip trays to contain possible oil spills when operated on site.
- All wastewater and hydrocarbon substances and other potential pollutants associated with the project activities should be contained in designated containers on site and later disposed of at nearby approved waste sites in accordance with MAWLR's Water Environment Division standards on waste discharge into the environment. This is to ensure that these hazardous substances do not infiltrate into the ground and affect the local groundwater quality.
- In cases of accidental fuel or oil spills on the soils from site vehicles, machinery and equipment, the polluted soil should be removed immediately and put in a designate waste type container for later disposal as per the preceding bullet point. The removed polluted soil should either be completely disposed of or cleaned and returned to where it was taken from on site or can be replaced with a cleaner soil. This is to ensure that the pollutants contained int the soil does not infiltrate into the site soils and eventually reach to groundwater.
- Although fuel (diesel) required for exploration equipment will be stored in a tank mounted on a mobile trailer, drip trays must be readily available on this trailer and monitored to ensure that accidental fuel spills along the tank trailer path/route around the exploration sites are cleaned on time (soon after the spill has happened).
- Polluted soil must be collected and transported away from the site to an approved and appropriately classified hazardous waste treatment facility.
- Washing of equipment contaminated hydrocarbons, as well as the washing and servicing of vehicles should take place at a dedicated area, where contaminants are prevented from

contaminating soil or water resources.

- Toilet water should be treated using one of the following methods:
    - ✓ Discharged into chemical toilets and periodically emptied out before reaching capacity and transported to a wastewater treatment facility.
    - ✓ A type of pit latrine (where excreta in the pit is treated to prevent the waste from being a water pollution risk).

6.3.4 Impact on Biodiversity (Fauna and Flora)

The proposed activities usually have some potential impacts on both surrounding fauna (animals) and flora (vegetation) and these are described below.

6.3.4.1 Fauna

The project site covers mainly privately owned land or farms, which rely on wild animals and to a lesser extent, on small stock farming. The movement of heavy project vehicles may disturb the local grazing areas on the farms and may scare away the wild animals. However, it has been established, through personal communication with the landowners that hunting takes place on the open lower lying veld and rarely on the mountains, and it is usually prescheduled with the farm manager, to take place during the day. Furthermore, the exploration works will largely be confined to the north and west facing slopes of the marble ridge to reduce interaction with the low laying plain (hunting veld) and the farmhouse. Therefore, it is unlikely that there will be any interference between hunting and the proposed prospecting activities.

Another potential impact of the project activities is the faunal habitat loss and reptiles and small mammals that live under the targeted rock units in the EPL. Although this impact may not be entirely avoidable, the workers will need to be educated on the importance of conserving faunal biodiversity by not killing any of the small mammals or reptiles encountered while performing their tasks. These animals may be trying to migrate from the targeted and disturbed rock outcrops to seek shelter and habitat elsewhere, therefore, the workers (project personnel) will be sensitized to not harm them in any way.

6.3.4.2 Flora

This impact is anticipated through the removal of site vegetation that may be found within the project footprints (target site areas), especially protected and endemic plant species. This would be done to enable exploration activities and movement of vehicles and machines. The moving and displacement of some site rocks may lead to loss of habitats for vegetation. The movement of project vehicles may also destroy the vegetation within project site tracks, especially small shrubs, if care is not taken.

If no preventative measures are taken to mitigate the impact on site fauna and flora, the project related actions will potentially lead to the destruction of animal and plant species within the targeted exploration sites within the EPL. Thus, resulting in the loss of such species and eventual biodiversity loss in the area.

Additionally, exploration activities that may impact flora (such as drilling and test quarrying) will not be undertaken on every area of the EPL but selected target sites only and after verification of feasibility to carry out such work on these sites. Therefore, the impact on flora would be of slightly medium significance with no mitigation measures in place for implementation to protect the existing vegetation. This conclusion would also apply to the existing fauna (both farm livestock and site rock animal species). Therefore, to reduce the pre-mitigation impact significance from medium to low, the recommended measures in Table 6-6 below will need to be effectively implemented.

Table 6-6: Impact assessment of project activities on biodiversity.

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

Mitigation measures

Flora

- At any water course such as site creeks, streams or rivers, exploration works should not be done within 50 m of these water courses to avoid the destruction of flora habitat.
- Extensive exploration drilling and test quarrying should be done away from the crests.
- The Proponent and their workers should avoid unnecessary removal of vegetation, thus promoting a balance between biodiversity and project operations.
- Vegetation found on the site, but not in the targeted exploration areas should not be removed but left to preserve biodiversity on the site areas.
- The movement of vehicles and machinery should be restricted to existing roads and if necessary, newly established tracks only to prevent unnecessary damage to the site vegetation.
- No onsite vegetation should be cut or used for firewood related to the project's operations. The Proponent should provide firewood for his onsite camping workers from authorized firewood producer or seller.
- Even if a certain shrub or tree is found along exploration sites, this does not mean that it should be removed. Therefore, care should be taken when exploring without destroying the site vegetation.

Fauna

- Workers should refrain from killing species (big or small and all types) that may be found on and around the site.
- The illegal hunting (poaching) and disturbance of wildlife on the farms is strictly prohibited for all exploration personnel, project related visitors, auditors, and inspectors alike. If desired to hunt, permission to do so must be granted by the farm manager.
- Workers should refrain from disturbing, killing or stealing locals' animals and killing small soil and rock

outcrops' species found on sites. This prohibition also applies to future re-appearance of wild animals in the area during good rain seasons.

- Environmental awareness on the importance of biodiversity preservation should be provided to the workers.

6.3.5 Visual impact

Exploration activities for dimension stones usually leave scars on the local landscape, depending on the site characteristics, exploration method and intensity of such activities. If the worked sites are located close to or along roads or frequently used areas, these scars in many cases contrasts with the surrounding landscape and thus may potentially become a visual nuisance, especially in touristic areas.

The current proposed activities are only for exploration and not mining where significant visual impact would exist. Additionally, the exploration works will largely be confined to the north and west facing slopes of the marble ridge to ensure that exploration quarrying activities do not spoil the view and aesthetic landscape from the hunting veld and farmhouse. Therefore, the visual impact significance from the proposed exploration activities is minimal.

Without any mitigation measures, the impact will be of slightly medium significant, but after implementing the measures, the significance will be low as assessed in Table 6-7.

Table 6-7: Visual impact assessment

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

Mitigation measures

- The explorational activities on the mountain should be limited to the northern and western sides only.
- The Proponent should consider the implementation of continuous rehabilitation programme, by using overburden waste rocks from exploration works.
- The Proponent to utilize waste rubble to rock blind exposed rock faces and stockpiled topsoil to partially back fill site areas used for test quarrying.
- The Proponent should carry out progressive working and restoration/rehabilitation over the shortest timescale possible, to avoid excessive areas of disturbance.
- Consider a phased exploration and direct placement of overburden (topsoil and waste rocks) and other site-derived materials to allow progressive restoration around the margins of the explored-out site areas.
- Drilling/cutting for dimension stone exploration should be done away from the crests of koppies and outcrops as possible particularly for the EPL areas where test quarrying will be undertaken.

6.3.6 *Noise*

The excavation activities as well as heavy vehicle movements associated with exploration on site may lead to increase in noise levels which can be a nuisance to the hosting farms and immediate neighbours. High levels of noise may also pose a health risk to workers that are working within proximity to noisy equipment and machinery.

Excavations and drilling will be limited to a certain area and, exploration activities all within site boundaries only. The activities will be limited to working hours of the day only and five days in a week. With that said, noise level will be limited to the active worked sites only for the duration of the works on the sites, and therefore, the impact likelihood is minimal. The nearest neighbours (noise receptors) at the site will be the people who reside in the farms close to the explored sites.

With regards to project workers working with or operating noisy machines, they will be provided with appropriate personal protective equipment (PPE) during working hours and while onsite.

Without any mitigation measures being implemented, the impact is rated as of medium significance. To change the impact significance from the pre-mitigation significance to low rating, the mitigation measures have been provided for this. The impact is assessed in Table 6-8 below.

Table 6-8: Noise impact assessment

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M - 3	M/H - 4	L/M - 4	M/H - 4	M - 44
Post mitigation	L - 1	L/M - 2	L - 2	L/M -2	L - 10

Mitigation measures

- The transportation of exploration materials, equipment and machinery should be limited to once or twice a week only, but not every day.
- Noise from project vehicles and equipment on site should be reduced to acceptable levels.
- The exploration times should be set such that, no such activities are carried out during the night or very early in the mornings (to be limited between 8am and 5pm on weekdays).
- Project hours should be restricted to between 8am and 5pm to avoid noise generated by project equipment and the movement of vehicles before or after hours.
- When operating the blasting and drilling machinery onsite, workers should be equipped with personal protective equipment (PPE) such as earplugs to reduce noise exposure.
- Target exploration sites that may be found to be within less than 1 km from the residence (farmhouses) should be avoided at all costs. This is done to preserve some tranquillity for the residents.
- If the Proponent does not already have a blasting expert or the experience, an experienced blasting contractor for test quarrying should be hired to carry out exploration activities in a professional manner such that noise is kept at minimum due to very good ''know-how'' with the

utilized blasting machinery and equipment.

6.3.7 Vehicular Traffic

The main road B2 is the main transportation route for all vehicular movement between Karibib and Walvis Bay (and the towns and settlements in between). Project associated heavy vehicles will obtain access to the site from the B2 road via the D1953 that connect the EPL area to the service providers (water carting, exploration machinery, equipment, and others).

For exploration, water trucks will be frequenting the area once or twice a week to cart water to exploration sites on the EPL. This would potentially increase slow moving heavy vehicular traffic along the B2 and D1953. The impact would not only be felt by the B2 road users but the local road users including D1953 to the farms (via local access gravel and single-track roads). This would add additional pressure on the roads.

However, only so many times a week or even monthly that the exploration related heavy trucks will be transporting materials and equipment from and to site for the period of 12 months. Therefore, the risk is anticipated to be short-term, not frequent, and therefore of medium significance.

Pre-mitigation, the impact can be rated medium and with the implementation of mitigation measures, the significance will be low as assessed in Table 6-9 below.

Table 6-9: Vehicular traffic impact assessment

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

Mitigation measures

- The transportation of exploration materials, equipment and machinery should be limited to once or twice a week only, but not every day.
- The heavy truck loads should comply with the maximum allowed limit while transporting materials and equipment/machinery on the public and access roads.
- The carted water into the area (from other source of water supply) should be done once or twice a week in container that can supply and store water for most of the week, thus reducing the number of trucks on the road daily.
- Drivers of all project phases' vehicles should be in possession of valid and appropriate driving licenses.
- Vehicle drivers should adhere to the road safety rules.
- Drivers should drive slowly (40km/hour or less), and on the lookout for livestock and wildlife.
- The Proponent should ensure that the site access roads are well equipped with temporary road signs condition to cater for vehicles travelling to and from site throughout the project's life cycle
- Project vehicles should be in a road worthy condition and serviced regularly to avoid accidents

because of mechanical faults of vehicles.

- Vehicle drivers should only make use of designated site access roads provided.
- Vehicles drivers should not be allowed to operate vehicles while under the influence of alcohol.
- Sufficient parking area for all project vehicles should be provided for and clearly demarcated son sites.
- The Proponent should make provision for safe materials and equipment offloading and loading areas on sites.
- No heavy trucks or project related vehicles should be parked outside the project site boundary or demarcated areas for such purpose.
- Truck movements, frequency, times, and routes should be carefully planned and scheduled – please refer to the next point.
- To control traffic movement on site, deliveries from and to site should be carefully scheduled. This should optimally be during weekdays and between the hours of 8am and 5pm.
- The site access road(s) should be upgraded to an unacceptable standard to be able to accommodate project related vehicles and access permits obtained from the Roads Authority.
- The site access road(s) should be provided for in such ways that they do not interfere with other traffic movement and/or compromise traffic safety on the host farms.

6.3.8 Impact on Surrounding Air Pollution (Dust)

The project activities and vehicles may potentially generate dust and gas emissions from vehicles (due to unpaved access roads, including the D1953). Dust emanating from unpaved roads when transporting project equipment and supply (water) to and from site (time-to-time) and excavation/drilling works may compromise the air quality in the area. This is likely at site areas with little to no vegetation cover and dry conditions of the project area.

The dust generated from operating the geological drill rigs could result in the production of respirable dust (particulate matter smaller than 50 µm or even 10 µm in size), which could impact the respiratory health of the drill rig operators/workers. The dust produced might also settle on nearby vegetation and may affect rates of photosynthesis and transpiration. The settled dust on plant leaves may not only affect the vegetation's functionality but livestock that feed on the vegetation (i.e., browsing) too (Resilient Environmental Solutions, 2019).

Furthermore, the main respiratory diseases related to inhaled mineral dusts include, pneumoconiosis (which includes silicosis, asbestosis, and coal miner's pneumoconiosis), and cancer (including bronchogenic carcinoma and malignant mesothelioma). It should be noted however that the scale and nature of the operation (i.e., drilling for exploration purposes only) is done such that prolonged and continuous exposure to mineral dust is not expected.

Given the scale and nature of the activities (i.e., drilling for exploration purposes only), the impact on the rates of photosynthesis and transpiration of nearby plants on selected targeted sites are expected to be limited in extent and duration and therefore negligible.

The impact can be rated as medium (significance) if no mitigation measures are implemented. However, once this is done, the impact significance can be reduced to low - please refer to the assessment below (Table 6-10).

Table 6-10: Air quality impact assessment

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

Mitigation measures

- Drill and excavating/blasting equipment should be regularly maintained to ensure drilling and excavation efficiency and reduce dust generation.
- Dust masks, eye protective glasses and other respiratory PPE accessories should be provided to the workers on site, specifically the ones exposed to dusty site area and activities.
- The impact mitigation measures should be covered in the relevant farm access agreement as required by law on commercial farms. This should also be considered for resettled farms.
- The Proponent should ensure that the project activities schedules are 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.
- In extremely windy days, a reasonable amount of water should be used to supress the dust that may be emanating from certain exploration areas at the sites. In other words, Dry dust suppression methods such as reasonable amount of water should be employed to minimise onsite dust generation.
- The transportation of exploration materials, equipment and machinery should be limited to certain days of the week only as so to reduce dust generated by heavy vehicles in the area.

6.3.9 *Impact of Poor Communication (Proper Liaison): Proponent and Landowners*

A temporary residence of "outsiders" on farmland will be required (campsite) and because of this, some of the project workers may behave contrary to the wishes of the farmers/landowners or occupiers of land. Not only the workers' potential unacceptable behaviors but other inconveniences to the landowners biophysical and social aspects related to the project activities. If not managed effectively, these have the potential to result in destructive conflicts between the Proponent and the affected owners or occupiers of land.

Without any mitigation measures and their effective implementation (for example an appointment of a project Liaison/Public Relations Officer), this impact is rated as medium significant. However, upon implementation of the provided measures, the significance would be reduced to low. This potential impact is assessed below (Table 6-11).

Table 6-11: Impact of poor communication between the Proponent and landowners (occupies)

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M - 3	M/H - 4	L/M - 4	M/H - 4	M - 44
Post mitigation	L - 1	L/M - 2	L - 2	L/M -2	L - 10
Mitigation measures • A Public Relation Officer (PRO) should be appointed for the project. They will be responsible for ongoing consultations (liaising) with the affected farmers/landowners as well as handling potential grievances related to the project activities, as and when required. • The PRO should be introduced to the farm/landowners and his or her contact details provided to them prior to undertaking activities for easy communication during the exploration activities. • The Proponent should compile a clear communication procedure/plan which should include a grievance and response mechanism.					

6.3.10 Impact on Farms and Surrounding services Infrastructure (roads, fence, and pipelines)

The movement of vehicles such as heavy truck around communal/public farms may lead to the destruction / damaging of buried farm or even public water pipelines and or power supply cables. This is likely to happen; especially during rainy seasons when the buried pipes get compacted or deformed once driven over by heavy vehicles.

Other impacts on farm infrastructure include farm gates being left open and heavy exploration machinery or equipment damaging farm fences if extensive work is done too close to the fences. This impact is assessed as follows in Table 6-12.

Without any implementation of the mitigation measures provided, the potential impact' significance will be rated medium. However, upon effective implementation of these measures, the impact significance will be reduced to low.

Table 6-12: Assessment of impacts on local (farms) infrastructure

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
Mitigation measures • A Public Relation Officer (PRO) should consult with the farmers to help in locating possible buried cables and pipelines on their properties (farms) to avoid damages to buried services such as water and power supply lines and cables. • If possible, heavy trucks should avoid driving over farm areas that are known to have pipelines or any related infrastructure buried. • The project personnel should be informed not to leave the farms' gates open, but close or lock them as instructed by the farm owners.					

- Project equipment and machinery should not be left leaning on the farm fences (using the fences as support).
- Agreement and continued engagement with landowners / farm owners on use and maintenance of farm infrastructure (roads, fences, gates, boreholes, etc.) should be implemented and maintained.

6.3.11 Health and Safety

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

The use of heavy equipment, especially during excavation, drilling and the presence of hydrocarbons on sites may result in accidental fire outbreaks. This could pose a safety risk to the project personnel, equipment, and vehicles too.

If machinery and equipment are not properly stored and packed, the safety risk may not only be a concern for project workers but residents too, especially children, given the fact that the project sites are within farms, where children reside too. This is true because, the local children may try to access the active site areas and play with dangerous materials and equipment.

Another potential health risk stemming from the proposed project activities is the handling of project hazardous waste on site in relation to the local community. The impact is likely because some of the unsuspecting and uniformed local people may be wandering around and if they see improperly stored or kept empty hazardous containers on site, they may be tempted to take these containers without the site workers or Proponent's knowledge. The locals may then use the containers for domestic use like water and/or food storage without proper container treatment or cleaning. The storage of and eventual consumption of water and/or food from such containers may lead to serious health risks to the locals.

The impact can be rated as medium to slightly high to medium significant if no mitigation measures are implemented, but upon implementation, the impact will be of low significance (as per Table 6-13 below).

Table 6-13: Health and Safety impact assessment

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M - 3	M - 3	M/H - 8	M/H - 4	M – 56

Post mitigation	L/M - 2	M - 3	L - 2	L/M - 3	L - 21

Mitigation measures

- The Labour Act's Health and Safety Regulations should be complied with.
- As part of their induction, the project workers should be provided with an awareness training of the risks of mishandling equipment and materials on site as well as health and safety risk associated with their respective jobs.
- When working on site, employees should be properly equipped with adequate personal protective equipment (PPE) such as coveralls, gloves, safety boots, earplugs, dust masks, safety glasses, etc.
- Heavy vehicle, equipment and fuel storage site should be properly secured, and appropriate warning signage placed where visible.
- Drilled exploration boreholes that will no longer be in use or to be used later after being drilled should be properly marked for visibility and capped/closed off.
- Ensure that after completion of exploration holes, drill cuttings are put back into the hole and the holes filled and levelled.
- An emergency preparedness plan should be compiled, and all personnel appropriately trained.
- Workers should not 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.
- Workers should not be allowed on site if under the influence of alcohol.
- The site to be equipped with "danger" or "cautionary" signs for any potential danger or risk area identified on site.
- Temporary enclosed boundaries should be erected around high-risk area sites for the duration of project activities at that specific site area. This is done to control access to the site, in such a way that the public, especially children do not access the site and play with equipment and machinery on days when no work is done.
- A security guard or guards should be part of the team so that they can look after the project equipment and vehicles that would be left on site in weekends or public holidays (when no work is done) to ensure that no unauthorized person enters the area.
- To discourage the unsuspecting and uniformed local community from eyeing the empty hazardous containers, the site workers should, if possible, drill holes in these containers while kept on site (before transporting the containers to the waste site).
- All employees and contractors (personnel) to be trained on environmental awareness, the Proponent's internal Environmental Health and Safety Policy, Environmental Management Plan, and engagement with key stakeholders, specifically the key government ministries and farmers.
- With regards to accidental fire outbreaks, the following should be implemented:
    - ✓ Portable fire extinguishers should be provided on sites (per vehicle and working site).
    - ✓ No open fires should be created by exploration personnel.
    - ✓ Potential flammable areas and structures such as fuel storage tanks should be marked as such with clearly visible signage.

6.3.12 Impact on Archaeological and Heritage Resources

The archaeological survey done within the proposed project area and surrounding found three (3) sites of heritage and archaeological importance within farm Ombujomenge. The three sites are: Site 1 a graveyard that was well fenced off, Site 2 an old suspended historical reservoir (dam) and Site 3 a granite cave that had rock art paintings, evidence of pottery and suspected weapons.

All three sites were found to occur outside of the EPL 7241 and very far from the project area. Given the remoteness of these sites relative to the project area, it was concluded that the general impact of the proposed exploration activities on these sites will be very minimal to none.

According to Nakale and Mowa (2022), Sites 1 is a historical dam, however it has no heritage significance. Sites 2 and 3 are of high significance, with Site 3 being a major archaeological or palaeontological site and could be under threat from the dust generated by the proposed activities.

Aside from these three sites, no other sites were found. However, the absence of other confirmable and significant archaeological cultural heritage site is not evidence that such sites did not exist in the proposed EPL area. Subsurface remains may be exposed during site explorations within the confines of EPL 7241 and it is therefore recommended that the proponent adheres to the Chance Find Procedure Guidelines (Nakale and Mowa, 2022). This may include the excavation of subsurface graves or other archaeological objects and damaging of heritage sites. The results of the study indicate that the proposed development project will not have an impact of great significance on these and potentially other archaeological remains.

With that said, the potential impact significance is slightly medium if no mitigation measures, are implemented. However, after the implementation of the measures provided below, this impact significance will be low. The assessment of the impact is shown in Table 6-14 below.

Table 6-14: Archaeological impact assessment

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M - 3	M - 3	M - 6	M - 3	M – 36
Post mitigation	L - 1	L - 1	L - 2	L/M - 2	L - 8
General Mitigation measures • Caution should be exercised when carrying out excavations associated with the exploration activities if archaeological/heritage remains are discovered. • Identified of any archaeological significant objects on the site should not be disturbed but are to be reported to the project Environmental/Safety officer or National Heritage Council offices for further instructions and actions. • Workers should be educated to not destroy or throw away but report (to the Environmental/Safety officer) of any unknown object found/discovered on site.					

- The Proponent should familiarise themselves with the National Heritage Council's Chance Finds Procedure (CFP) and if uncertain about the procedure should receive training by a suitably qualified archaeologist with respect to the identification of archaeological/heritage remains and the procedures to follow if such remains are discovered throughout the project activities' duration. The Chance and Finds Procedure is attached to the EMP.

Site specific Mitigation measures by the Archaeologist

- A Professional Archaeologist must be on site to monitor during clearing on the affected areas.
- **A one (1)-kilometre buffer zone must be established around each of these sites to prevent direct and indirect site disturbance by exploration, especially with highly sensitive archaeological resources such as rock paintings that can be impacted by seemingly mild matters such as dust**
- Access roads that fall within the proposed buffer zones need to be closed and redirected elsewhere to prevent disturbance to heritage resources outlined in this report.
- Regular site inspection by the heritage council in respect to the outlined buffer zone to ensure the proponent abides by the conditions as set in this report or as determined by the heritage council.
- **Emphasis:** sub-surface materials may still be lying hidden from surface surveys. Therefore, **absence (during surface survey) is not evidence of absence all together**. The recommended and necessary measures, monitoring and reporting procedures must be followed in the event of a chance find, to ensure compliance with heritage laws and policies for best practice
- Although the possibility of encountering previously unidentified burial sites is low within the proposed EPL 7241 exploration sites, should such sites be identified during subsurface exploration work, they are still protected by applicable legislations, and they should be protected. Therefore, the preceding recommended actions given above should be taken

- **It is recommended that:**
    - The Project Public Participation Process should ensure that any cultural heritage related matters for this project are given due attention whenever they arise and are communicated to the NHC throughout the proposed project exploration. This form of extended community involvement would pre-empt any potential disruptions that may arise from previously unknown cultural heritage matter that may have escaped the attention of this study.
    - The footprint impact of the proposed exploration should be kept to minimal to limit the possibility of encountering chance finds within servitude.
    - In situations where unpredicted impacts occur (such as accidentally disturbing a previously unknown grave), exploration should be stopped, and the heritage authority notified immediately. In the unlikely event of chance archaeological material or previously unknown human remains being disturbed during subsurface exploration, the finds should be left in situ subject to further instruction from the project archaeologist or heritage authorities.
    - It is recommended that the old windmill and its drinking trough which are currently in use by the current farm owner be protected and any exploration near the facility be minimised if not avoided.

6.3.13 Waste Generation

Exploration activities are associated with generation of waste of all kinds (domestic, hazardous, and general). Improper handling, storage and disposal of wastes may lead to environmental degradation/pollution. If not handled, store and disposed of properly, the waste may scatter around the project site and pollute the immediate project area.

Without any mitigation measures, the impact significance is rated as medium, but implementation of the recommended measures, the significance will be reduced to low. This assessment is presented below (Table 6-15).

Table 6-15: Impact assessment of waste generation on the environment

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M - 3	M/H - 4	L/M - 4	M/H - 4	M - 44
Post mitigation	L/M - 2	L/M- 2	L/M - 4	L/M -2	L - 16

Mitigation measures

- Project workers should be sensitized to dispose of waste in a responsible manner and not to litter.
- After each daily works, there should not be waste left scattered on site, but rather be disposed of in allocated site waste containers.
- No waste may be buried or burned on site or anywhere else throughout the project lifecycle.
- All domestic and general waste produced daily should be contained until such that time it will be transported to designated waste sites on a weekly basis.
- The sites should be equipped with separate waste bins for hazardous and general waste/domestic.
- Hazardous waste, including emptied chemical containers should be safely stored on site where they cannot be accessed and used by uniformed locals for personal use. These containers can then be transported to the nearby approved hazardous waste sites for safe disposal. No waste should be improperly disposed of on site or in the surroundings, i.e., unapproved waste sites.
- As an emphasis on the preceding point, empty hazardous substance containers should not be disposed of anywhere on the project site or its surrounding, but instead they should be kept at a designated storing place on site until such time that they can be safely taken to the nearest approved hazardous waste sites.
- A penalty system for irresponsible disposal of waste on site and anywhere in the area should be implemented.

6.3.14 Social Nuisance: Job seeking and Differing Norms, Culture and Values

Like any new development tor project in an area, the proposed project activities may attract a potential influx of people from outside the project area in search of job opportunities. Such influxes may lead to social annoyance and conflicts. This is generally considered a concern given the current unemployment rate of youth in Namibia, that people from other areas in different regions may hear about the project intentions (especially from the ESA newspaper adverts) and be forced to go look for work opportunities in the project area. Different people may come with different ways of living to the area, which could interfere with the local norms, culture, and values. This could potentially lead to social crashes between the locals and outsiders.

The influx of people into the project area may also lead to sexual relations between these out-of-area workers and the locals. This would lead to the spreading of sexual transmitted diseases (i.e., HIV/AIDS) when engaging in unprotected sexual intercourse.

Pre-implementation of mitigation measures, the impact is rated as of slightly high to medium significance. However, upon mitigation (post-mitigation) – see mitigation measures below, the significance will change from medium to low rating. The impact is assessed in Table 6-16 below.

Table 6-16: Social impact assessment of outsiders' influx into the area (job seeking)

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M - 3	M - 3	M/H - 8	M/H - 4	M – 56
Post mitigation	L/M - 2	L/M - 2	M - 6	L/M - 2	L - 20

Mitigation measures

- The Proponent should prioritize the employment of local people, and only if necessary and due to lack of skills in the area, out-of-area people can be given some of the work. This is to avoid the influx of outsiders into the area.
- The locals to be employed during the project phases should be provided with the necessary training of skills required for the project to avoid bringing in many out-of-area employees.
- The workers should be engaged in health talks and training about the dangers of engaging in unprotected sexual relations which results in contracting HIV/AIDS and other sexual related infections.
- Out-of-area workers that may be employed (due to their unique work skills) on site should be sensitized on the importance of respecting the local values and norms, so that they can co-live-in harmony with the local communities during the duration of their employment on site.

6.3.15 Social Nuisance: Property intrusion and Disturbance or Damage

The presence of some out-of-area workers may lead to social annoyance to the local community, particularly when they or some of those workers enter or damage properties of the locals. The locals' private properties could be homes, yards/fences, vegetation, or animals (livestock and wildlife) or any properties of value to the farm owners or occupiers of the land. The damage or disturbance to properties may not only be private but community properties. The unpermitted and unauthorized entry to private properties may cause social crashes between the local community (affected property owners) and the Proponent (being responsible for the overall project activities).

Pre-implementation of mitigation measures, the impact is rated as of medium significance. However, upon mitigation (post-mitigation), the significance will change from medium to low rating. The impact is assessed below (Table 6-17).

Table 6-17: Social impact assessment of outsiders' influx into the area (locals' properties)

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

Mitigation measures

- The Proponent should inform their workers on the importance of respecting the locals' properties by not intruding or damage their homes, fences or snaring and killing their livestock.
- Any workers or site employees that will be found guilty of intruding peoples 'privately owned properties should be called in for disciplinary hearing and/or dealt with as per their employer' (Proponent)'s code of employment conduct
- Site workers should be advised to respect the community and local's private properties, values, and norms.
- No worker should be allowed to wander in people's private yards or fences without permission.
- Site workers are not allowed to kill or in any way disturb local livestock.
- No worker should be allowed to, without permission cut down or damage trees belonging either the farm owner, the neighbouring farms.

6.4 Cumulative Impacts

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

The cumulative impacts to which the project would contributes are listed below:

- **Soil Disturbance:** The site soils have been degraded by activities such as marble mining on the Farm in the past. Regardless, the Proponent will be expected to implement the recommended measures herein and, in the Draft, EMP to mitigate the impacts of their project activities on site soils.
- **Fauna**: There is already existing behavioral impact (fear of being hunted) on animals, as they are already being hunted. Therefore, the exploration vehicles and other equipment movement may also contribute to animals fearing for their lives.

- **Road infrastructure** (vehicular traffic): The proposed exploration activities will on a short-term duration, cumulatively contribute to various activities such as commuting, farming activities, and travelling associated with tourism and existing mining activities in the Erongo Region. The contribution of the proposed project to this cumulative impact is however not considered being very significant given the scale and extent of the proposed project activities itself. Although most road users on the B2 are travelers (in vehicles of all sizes and types), the significance of the impact on the roads is placed mainly on the heavy trucks that are transporting various products for different businesses (commercial) and services deliveries within the Region, from and to different destinations in other regions. The past, current and future use of the road infrastructure by other users and for different operations on the B2 road will be beyond the Proponent's control. Therefore, to ensure that the Proponent do their part to reduce this impact with regards to their project operations (heavy vehicle loads and frequency on the roads), they will implement the provided management (mitigation) measures and comply with the legal obligations and requirements as set out by the Roads Authority.
- **Archaeology: H**ighly sensitive archaeological resources such as rock paintings can be impacted by seemingly mild matters such as dust that will be produced by exploration activities. However, this will be contribution to dust in addition to existing activities on the farm that produce dust, such as vehicular traffic. Therefore, the recommended measures herein and, in the Draft, EMP must be implemented to mitigate these impacts.

6.5 Site Rehabilitation

One of the main challenges faced by the mining industry, which includes small-to-medium scale miners in Namibia and worldwide, is the rehabilitation of mined-out areas. However, the scope of this document deals with exploration only where intensive land disturbance is not expected, given the scale and duration of the activities.

Successful rehabilitation requires careful consideration of the local ecological context in combination with rehabilitation goals. The most important steps in undertaking a successful rehabilitation are planning and environmental awareness (environmental education) on the importance of progressive rehabilitation (or post-activity rehabilitation) and its importance to the environment. Furthermore, to successfully implement the planned rehabilitation, practically, this will depend on a few factors, namely the rehabilitation program, characteristics of an activity, nature of disturbance, rehabilitation methods, as well as resources availability.

Regardless, the following measures are recommended for consideration by the end of the exploration works:

1. After planning for rehabilitation of explored site areas, the first step is to clean up and make the area to be rehabilitated, safe. This involves the following:
    a) Removal of infrastructure and unused or unwanted equipment. No facilities or equipment should remain on site unless with the written approval of the landowner/occupier of land or relevant authority.
    b) Removal of rubbish for disposal at approved waste sites. Care is required with regards to residual toxic or hazardous materials including contaminated packaging and containers.
    c) Removal of all services.
    d) Removal or burial of concrete slabs, footings (if any), etc.
    e) Backfilling or securely and permanently covering any boreholes, pits, or similar excavations.
    f) Restricting or preventing public access by removal or closure of access roads and tracks leading to high-risk explored areas until such a time that the area is clear of exploration activities induced ''risk or danger''.

Conclusion on the impact assessment: it is found that the impact significance rating is average. Therefore, to reduce the significance from medium to low, it is recommended that the Proponent effectively implement mitigation measures. Furthermore, to maintain low significance, the implementation of measures will need to be continuously monitored.

7 RECOMMENDATIONS AND CONCLUSIONS

The aim of this environmental scoping assessment was to identify the potential impacts associated with the proposed exploration activities on the EP 7241L, assess and recommend practical mitigation measures. The public was consulted as required by the EMA and its 2012 EIA Regulations (Section 21 to 24). The public was informed via the newspapers (*Die Republikein*, *Namibian Sun* and *Allgemeine Zeitung* for two consecutive weeks on 10 and 17 September 2020) and site/public notices placed at the Regional Constituency Office's notice board (in Karibib).

A joint public consultation meeting (for EPL 7008, 6139 and 7241 ESAs) in a form of an interaction session was held with the public on the 26th of September 2020 at Farm Neu Schwaben (Unit A). The interested and affected parties raised their comments and concerns on the proposed project activities and these were noted down during the meeting. The concerns and comments received from the public and the local community members formed the basis for this report and development of the Draft EMP.

The conclusions reached and recommendations provided are presented below.

7.1 Recommendations

It is therefore recommended that an Environmental Clearance Certificate be issued for the proposed exploration on EPL 7241, subject to the following recommendations:

- All required permits, licenses and approvals for the proposed activities should be obtained as required (please refer to the Permitting and Licensing Table in the Environmental Management Plan (Appendix C). These include permits and licenses for land/farm access agreements to explore and ensuring compliance with these specific legal requirements.
- The Proponent complies with the legal requirements governing this type of project and its associated activities.
- All mitigations provided in this ESA Report and the management action plans in the EMP should be implemented and monitoring conducted as recommended.
- All the necessary environmental and social (occupational health and safety) precautions provided should be adhered to.
- Site areas where exploration activities have ceased should be rehabilitated, as far as practicable, to their original state.

- The monitoring of the implementation of mitigation measures should be conducted, applicable impact's actions taken, reporting done and recorded as recommended in the Draft EMP.

7.2 Conclusions

The potential (positive and negative) impacts stemming from the proposed exploration activities were identified. The two impact types were described, assessed and mitigation measures where provide (where necessary).

As main potential impacts of concern, the negative impacts were carefully described, assessed, and mitigation measures provided thereof to avoid and/or minimize their significance on the environment. These impacts were found to be of medium significance. The effective implementation of the recommended management actions (mitigation measures) will see the significance reduction in impacts (that cannot be avoided) from medium to low rating. However, to maintain a low significance rating, monitoring of the potential impacts by the Proponent (an Environmental Control Officer (ECO)) is highly recommended. **Monitoring will not only be carried out to maintain the low rating of impacts' significance but to also ensure that new potential impacts that might arise during project implementation are well identified in time, properly addressed and that suitable mitigation measures are provided and implemented.**

Based on the assessment from experience, research information, inputs by the public, and technical information provided by the Proponent, it can be concluded that that the proposed activities may be granted an Environmental Clearance Certificate. The ECC issuance will be on condition that the recommendations and impact mitigation measures in this report and all the provisions in the EMP are adhered to.

In conclusion, it is unlikely that the proposed project activities will have a high significant of negative impact on the biophysical and social environments in the project area. Therefore, it is vital for the Proponent and their contractors (if any) to effectively implement and monitor the recommended management measures to protect the environment and promote environmental sustainability.

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APPENDIX A –CV OF EAP

APPENDIX B — ECC APPLICATION (PROJECT REGISTRATION WITH MEFT)

APPENDIX C – ENVIRONMENTAL MANAGEMENT PLAN (EMP)

APPENDIX D – ARCHAEOLOGICAL REPORT AND PROOF OF SUBMISSION

APPENDIX E – STAKEHOLDERS LIST (INTERESTED AND AFFECTED PARTY DATABASE)

APPENDIX F – PROOF OF COMMUICATION

APPENDIX G – NEWSPAPER ADVERTISEMENTS

APPENDIX H – PUBLIC MEETING INVITATION

APPENDIX I – PUBLIC MEETING MINUTES AND ATTENDANCE REGISTER

APPENDIX J – RESPONSES TRAIL BY OMAVI

APPENDIX K – WRITTEN CORRESPONDENCE AS RECEIVED (PROOF OF EMAIL COMMUNICATION)

ARCHAEOLOGICAL AND CULTURAL IMPACT

ASSESSMENT REPORT FOR MINERALS EXPLORATION ON AN EXCLUSIVE PROSPECTING LICENSE (EPL) NO. 7241, ERONGO REGION, NAMIBIA

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Compiled for:

MKN Mining Consultants

Item	Description
Proposed project and location	**MKN Mining Consultants (The Proponent)** proposes to undertake exploration on the Exclusive Prospecting License (EPL) 7241 in the Erongo Region. EPL 7241 is located about 20 km southeast of Karibib and covers an area of about 2 355 hectares (ha). The EPL extends over Portion 2 of Farm Okakoara No.43, Portion 5 of Farm Kaliombo No. 119, Remainder Ext. of Farm Kaliombo No. 119, and Remainder of Farm Ombujomenge No. 39.
Title	**ASSESSMENT REPORT FOR MINERALS EXPLORATION ON AN EXCLUSIVE PROSPECTING LICENSE (EPL) NO. 7241, ERONGO REGION, NAMIBIA**
Purpose of the study	The purpose of this document is an Archaeological and Heritage Impact Assessment report that describes the cultural values and heritage factors that may be impacted on by the proposed exploration activities.
Coordinates	22° 01'25.87" S 16°06'46.36" E
Municipalities	Karibib – Erongo Region
Predominant land use of surrounding area	Farming and Mining
Proponent	MKN Mining Consultants
Heritage Consultant	Omapipi Tageya Heritage Consultancy & ESM Cultural Heritage Consultants
Date of Report	01 June 2022
Contact person	Henry Nakale +264816680633

Author(s) identification	Henry Nakale & Dr. Eliot Mowa (Archaeologists and Heritage specialists)
Project Number	024

In terms of land ownership, EPL 7241 overlies the following commercial farms:

- Farm Okakoara No.43, Portion 5 of Farm Kaliombo No. 119, Remainder Ext. of Farm Kaliombo No. 119, and Remainder of Farm Ombujomenge No. 39.

Authorship: This A/HIA Report has been prepared by Mr. Henry Nakale and Dr. Eliot Mowa. The report is for the review of the National Heritage Council of Namibia.

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Geographic Co-ordinate Information: Geographic co-ordinates in this report were obtained using a hand-held Garmin Global Positioning System device. The manufacturer states that these devices are accurate to within +/- 5 m.

Maps: Maps included in this report use data extracted from the NTS Map and Google Earth Pro.

Disclaimer: The Authors are not responsible for omissions and inconsistencies that may result from information not available at the time this report was prepared.

The Archaeological and Heritage Impact Assessment Study was carried out within the context of tangible and intangible cultural heritage resources as defined by the National Heritage Council Regulations and Guidelines as to the authorisation of proposed exploration project being proposed by MKN Mining Consultants.

Signed by:

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1.0 Introduction

ESM Cultural Heritage Consultants (ESM CHC) was appointed on behalf of the proponent to conduct a Heritage Impact Assessment (AIA) at the Exclusive Prospecting License (EPL) 7241.The EPL is situated approximately about 20 km southeast of Karibib and covers an area of about 2 355 hectares (ha). The EPL extends over Portion 2 of Farm Okakoara No.43, Portion 5 of Farm Kaliombo No. 119, Remainder Ext. of Farm Kaliombo No. 119, and Remainder of Farm Ombujomenge No. 39. The map showing the location of EPL 7241 is shown in **Figure 1** and the covered farms are shown in **Figure 2.**

MKN Mining Consultants., hereinafter referred to as the proponent intends to carry out the following activity:

- **To undertake exploration and drilling activities on Exclusive Prospecting License (EPL) 7241 and to explore for good quality marble rock that is suited for dimension stone production.**

Due to the destructive tendency of such exploration activities, which may include earth-moving/ land alteration operations, it is a pre-requisite to conducting an Archaeological and/ or Heritage Impact Assessment (AIA) as obligated by the National Heritage Act, Act No. 27 of 2004 and, in part, by the Environmental Management Act, Act No. 7 of 2007. The main thrust of the provisions of the aforementioned legislation is to protect and salvage cultural/ archaeological and environmental resources from potential destruction resulting from exploration or mining activities.

The exploration activities envisaged by the proponent will involve site clearing at localized points where drilling is to take place; clearing of access tracks leading from the main access road located west and Northwest of the targeted marble ridge to the exploration points; exploration drilling; test quarrying at sites where drilling results are positive; and subsequent rehabilitation.

It was against this background that an Archaeological Impact Assessment (AIA) was carried out on EPL 7241 to fulfil the following objectives:

a) To identify and document cultural/ archaeological materials and sites occurring in the area within and around the EPL.

b) To assess the nature and scale of archaeological impact of the exploration activities on heritage resources.

c) To suggest some conservation strategies for the cultural heritage resources that might occur in the area proposed for explorations which can be potentially destroyed in the course of such activities.

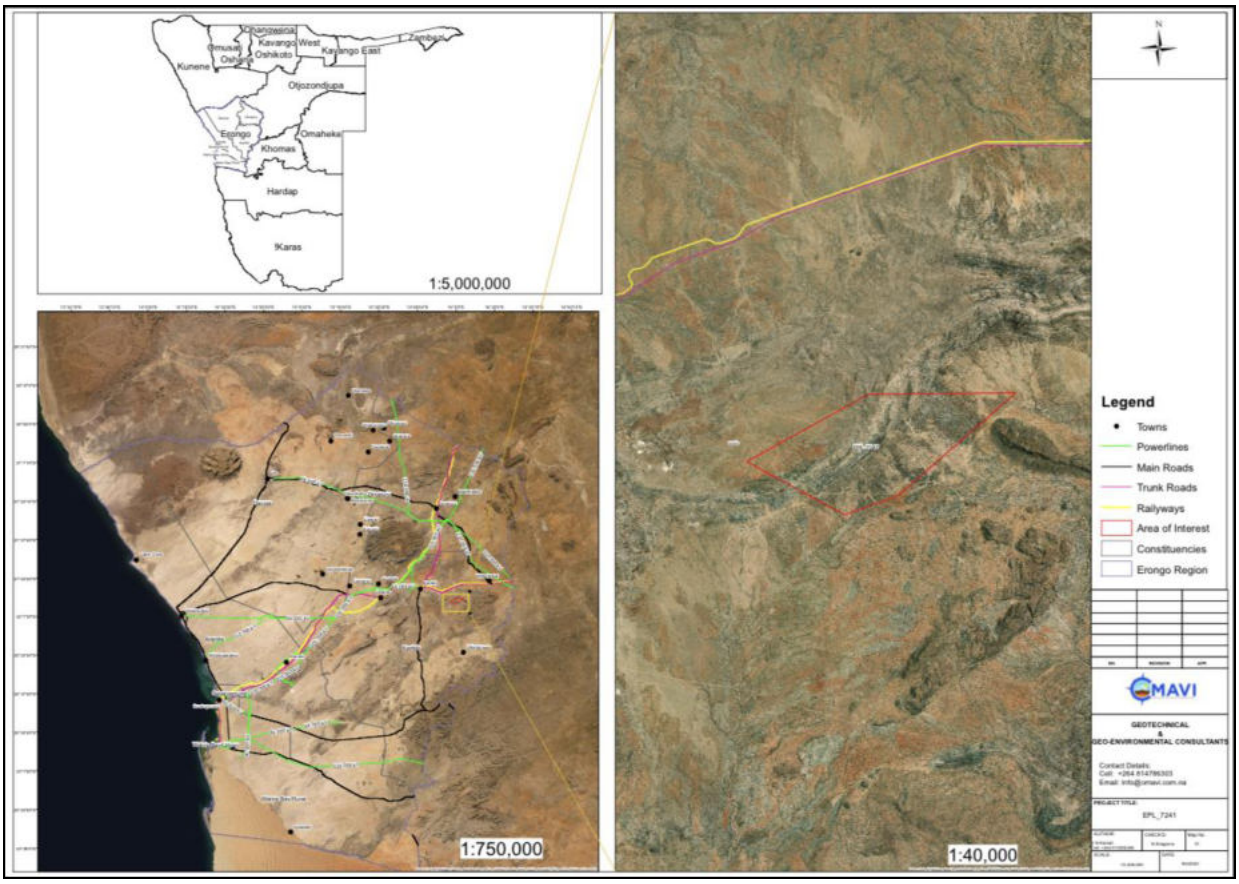

Figure 1: Locality map of EPL 7241 near Karibib in Erongo region (source: Omavi Geotech 2020).

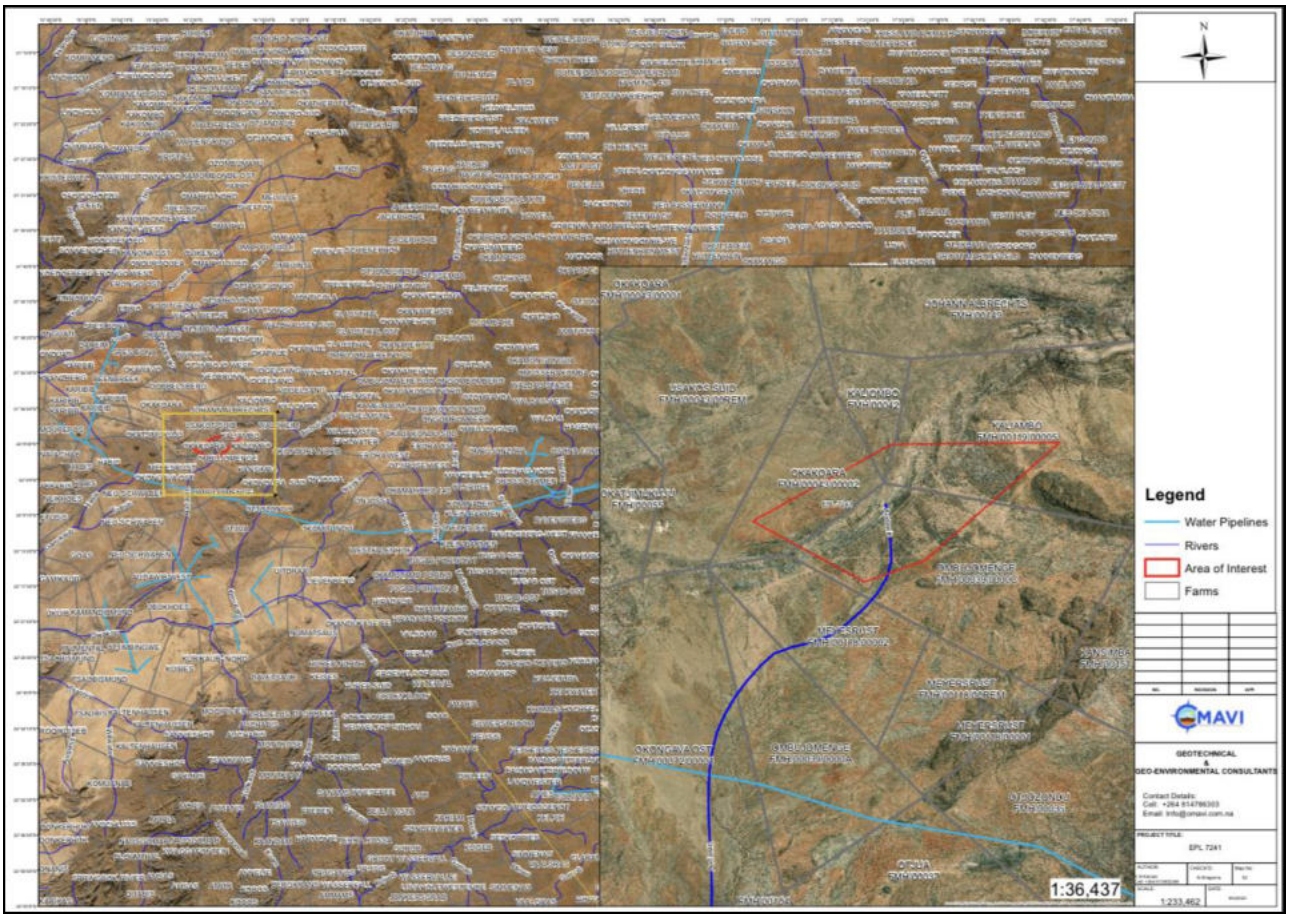

Figure 2: Spatial view of the commercial farms covered by EPL 7241 (Source Omavi Geotech 2020).

2.0 Legislations

In most cases where the aspect of mining is involved, cultural and archaeological evidence located within areas earmarked for development or mining usually faces the danger of either complete erasure or destruction. The legal instrument for the protection of heritage sites and objects in Namibia is the National Heritage Act (No. 27 of 2004).

To ensure that this unique heritage of our past is protected and well documented, the National Heritage Act 27 of 2004 and EIA Terms of Reference concerning the assessment of impacts of the proposed development on the cultural and heritage resources associated with the receiving environment shall be used to guide the exploration exercise. The statutory mandate of heritage impact assessment studies is to encourage and facilitate the protection and conservation of archaeological and cultural heritage sites, following the provisions of the National Heritage Act,

Act 27 of 2004 and Environmental Management Act (EMA) No. 7 of 2007 and its 2012 EIA Regulations. The National Heritage Act (Section 1 of 2004) defines heritage resources as those of geological and rare objects; paleontological; archaeological; ethnographic objects; historical objects/sites; maritime heritage; built monuments; mining sites as well as objects of scientific interests.

3.0 Approach to study

3.1 Terms of Reference

The main essence of the archaeological survey and assessment was to identify and record all sensitive archaeological sites within the limits of EPL 7241 that could negatively be affected by the above–mentioned project. The assessment is also intended to establish the heritage significance of possible resources and assess their vulnerability, estimate the extent of the possible impacts and establish the site and project-specific mitigation measures. This study is intended to satisfy the requirements of the Environmental Management Act (7 of 2007), and those of the National Heritage Act (27 of 2004).

3.2 Methodology

This Heritage & Archaeological Impact Assessment followed desktop-based assessments and field surveys. These methodologies are standards for environmental and heritage assessment in Namibia, which are in line with international best practices. Desktop information was fashioned from current and existing heritage archives. These were taken from existing heritage records comprising those from the National Heritage Council, archaeological GIS spatial data and record that has been substantially exposed during the last decades, by a series of detailed archaeological assessments carried out the during the mineral investigation and mining operations, and the development of infrastructure required by these operations. These sources were then supplemented by site visit fieldwork within EPL 7241.

Sensitivity and susceptibility rating scales, aimed at establishing the nature of vulnerability and sensitivity of heritage resources that are likely to be impacted by the exploration activities, were adopted as per assessment objectives. Their vulnerability to the disturbance in the course of exploration that includes drilling was evaluated according to parallel 0-5 scales, abridged in Table 1.

Table 1: Rating scales for the assessment of archaeological significance and vulnerability as developed by the QRN.

Significance Rating
0 No heritage significance
1 Disturbed or secondary context, without diagnostic materials
2 Isolated minor finds in undisturbed primary context, with diagnostic materials
3 Archaeological and paleontological site (s) forming part of an identifiable local distribution or group
4 Multi-component site (s), or central site (s) with high research potential
5 Major archaeological or paleontological site (s) containing unique evidence of high regional significances
Vulnerability Rating
0 Not vulnerable
1 No threat posed by current or proposed development activities
2 Low or indirect threat from possible consequences of development (e.g., soil erosion)
3 Probable threat from inadvertent disturbance due to proximity of development
4 High likelihood of partial disturbance or destruction due to close proximity of development
5 Direct and certain threat of major disturbance or total destruction

Concerning each specific source of impact risk to heritage resources, the assessment methodology estimated the extent of the impact, the magnitude of impact, and the duration of these impacts. The scales of estimation are set out and explained in Table 2.

Table 2: Assessment criteria for the evaluation of cumulative impacts on archaeological sites developed by the QRN.

CRITERIA	CATEGORY	DESCRIPTION
Extent or spatial influence of impact	**National** **Regional** **Local**	Within Namibia Within the Region On site or within 200 m of the impact site impact
Magnitude of impact (at the indicated spatial scale)	**High** **Medium** **Low** **Very Low** **Zero**	Social and/or natural functions and/ or processes are severely altered Social and/or natural functions and/ or processes are notably altered Social and/or natural functions and/ or processes are slightly altered Social and/or natural functions and/ or processes are negligibly altered Social and/or natural functions and/ or processes remain unaltered
Duration of impact	**Short Term** **Medium Term** **Long Term**	Up to 3 years 4 to 10 years after construction More than 10 years after construction

4.0 Assumptions and Limitations

This heritage impact assessment described here relies on desktop studies and is supported by field assessments undertaken. It is possible to predict the likely occurrence of further archaeological sites with some accuracy and to present a general statement of the local archaeological site distribution. Nevertheless, it is critical as a precautionary measure and best practice, we are recommending the proponent to strictly follow the chance find procedure as the project progresses should any archaeological objects be found during drilling and trenching. The Chance finds procedure is outlined in the National Heritage Council booklet, (2017) and the proponent will be supplied with a copy. Failure to follow and implement such a procedure will result in appropriate action being taken against the proponent as per the Heritage Act of 2004.

5.0 Brief heritage setting of the Project Area

This western part of Namibia is arid and presents a harsh environment for human habitation. However, these harsh environmental condition still retains some attractive attributes that led to the habitation of the Erongo Mountains, Brandberg mountains and Twyfelfointein. According to Nankela (2020) these areas accorded humans minimum basic needs such as water and wild game since the mountain topography enables orographic rainfall that forms localized micro-climates to meet the basic needs of the early settlers. Available archaeological evidence is characterized by short periods of relatively intense occupation, and long periods in which there appears to have been little or no human presence (Kinahan 2011). This is apparent as observed by the early researchers within the greater Erongo, it has been theorized that such evidence of human occupation and subsequent desertion by the original artists of the many rock paintings and engravings in the Erongo region, is a consequence of environmental and climatic changes. Resulting in the movement and migration of wildlife northward, which was subsequently pursued by humans resulting in the desertion of the rock paintings and engravings by the original artists.

The Erongo region has been the focus of several archaeological surveys and assessments during the last two decades. These surveys have helped to determine the local archaeological sequence and to establish the relationship between archaeological sites and the types of terrain that characterize the area, including gravel outwash fans, granite outcrops, and the many dolerite ridges that crisscross the landscape. However, archaeological surveys for mining and

infrastructure projects are highly focused on a specific localized area of particular projects and do not therefore as a rule reflect the wider archaeology of the entire spatial area that shares similar topography and geologic composition characteristics. Cumulative results of earlier surveys indicate the archaeological importance of this general area, although the intensity of the survey varies considerably and large parts of the area are archaeologically unknown (Kinahan 2020).

According to Kinahan (2011) the general sequence and archaeological characteristics of the area under consideration, based on current knowledge, are as follows:

a. Early to mid-Pleistocene (ca. 2my to 0.128my; OIS 6, 7, 19 &c): represented by surface scatters of stone tools and artifact debris, usually transported from original context by fluvial action, and seldom occurring in sealed stratigraphic context.

b. Mid- to upper Pleistocene (ca. 0.128my to 0.040my; OIS 3, 4 & 5a-e): represented by dense surface scatters and rare occupation, evidence in sealed stratigraphic context, with occasionally associated evidence of food remains.

c. Late Pleistocene to late Holocene (ca. 0.040my to recent; OIS 1 & 2): represented by increasingly dense and highly diverse evidence of settlement, subsistence practices, and ritual art, as well as gravesites and other remains.

6.0 Fieldwork Findings and Observations

A detailed field survey of target areas surrounding EPL 7241 on farms Kaliombo No. 119, Okakoara, and Ombujomenge No. 39 was carried out. The essence of the field survey was to locate and record any sensitive archaeological resources. The assessment was carried out on the 1st and 2nd of May 2022 in the Erongo Region. The field survey involved a combined approach which included a foot survey employing surface observation as a key tool. This was within and around the targeted area as indicated in **figure 6,** and a one-on-one interview with Mr Romano (owner of Farms) and Mr Louis (the farm manager). A total of three potential archaeological/heritage sites were recorded within farm Ombujomenge during the field survey. However, it is important to note that all these three potential heritage sites are not located within the provided target area but are worth acknowledging in this report. The site locations are set out below together with brief remarks on the significance and vulnerability of the sites given in terms of their distance from the explorations target area.

Site 1;

Site coordinates: 22° 01’25.87” S 16°06’46.36” E

Description: Old suspected historical reservoir dam

Significance rating: 0 (No heritage significance)

Vulnerability rating: 1 (No threat posed by current or proposed exploration activities because it is far from target)

Site 2;

Site coordinates: 22°02’04, 28’’ S 16°06’19, 41’’ E

Description: Two fenced-off and well-built graves, belonging to the first farm owner and dating back to the German era.

Significance rating: 4 (Multi-component site (s), or central site (s) with high research potential)

Vulnerability rating: 1 (Currently no threat posed by current or proposed exploration because it is further away from the target.).

Site 3:

Site coordinates: 22°02’46.98” S 16°06’57.85” E

Description: Granite rock bolder/cave with rock paintings. About 25 different features of rock paintings, Ranging from human figures to different types of animals such as impalas, zebras, Oryx, leopards, and many unknown figures. There are several stone tools and pieces of clay scattered around the boulder. This cave is located far away from the provided target area.

Significance rating: 5 (Major archaeological or paleontological site (s) containing unique evidence of high regional significances)

Vulnerability rating: 3 (Probable threat from inadvertent disturbance due to proximity of development, construction of access road, dust etc, proponent is advised to respect 1 kilometer buffer zone to mitigate or lessen this).

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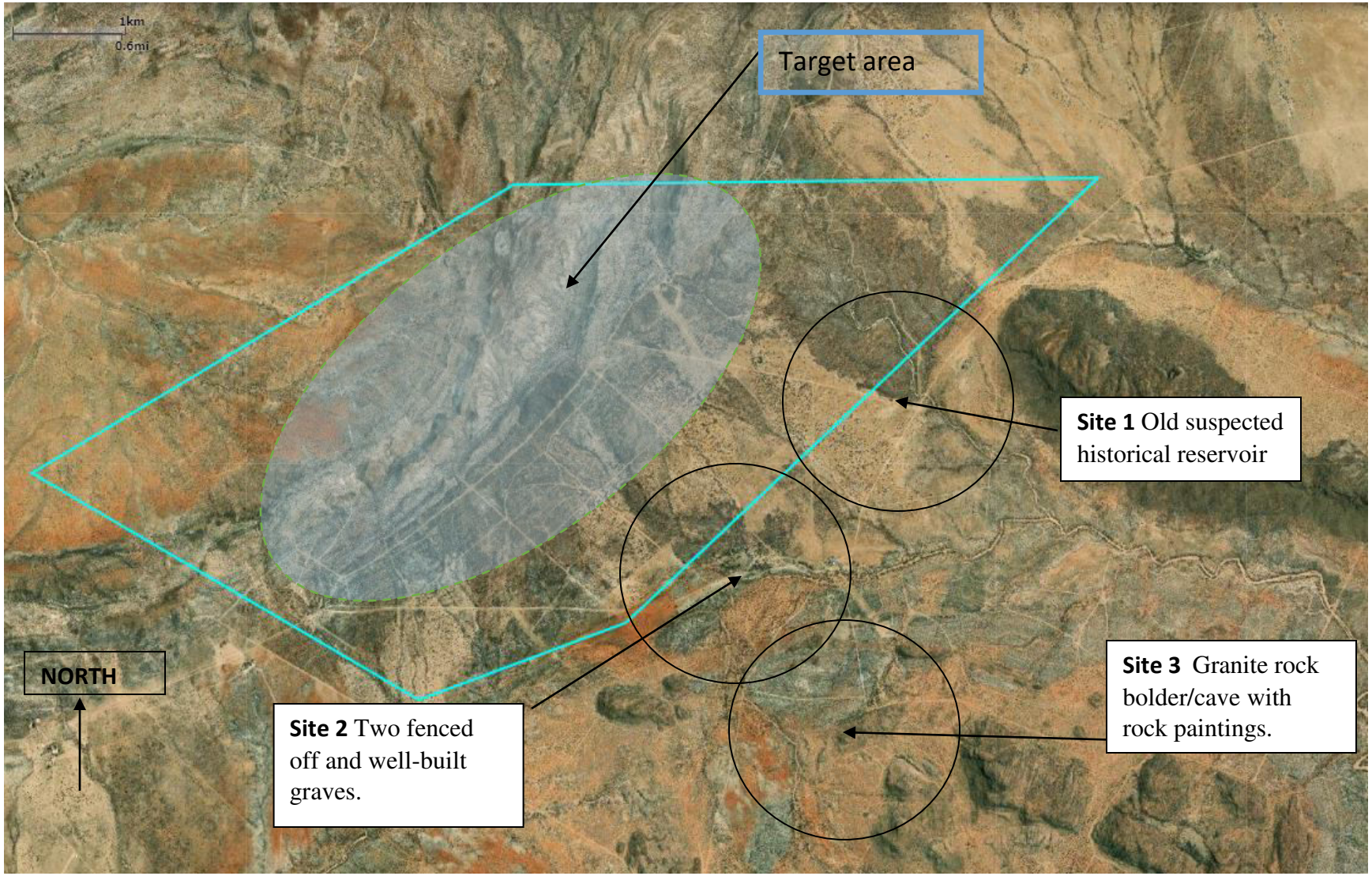

Figure 3 Map indicating the target EPL 7241 inclusive of Potential heritage sites (arrow) and buffer zones, circles.

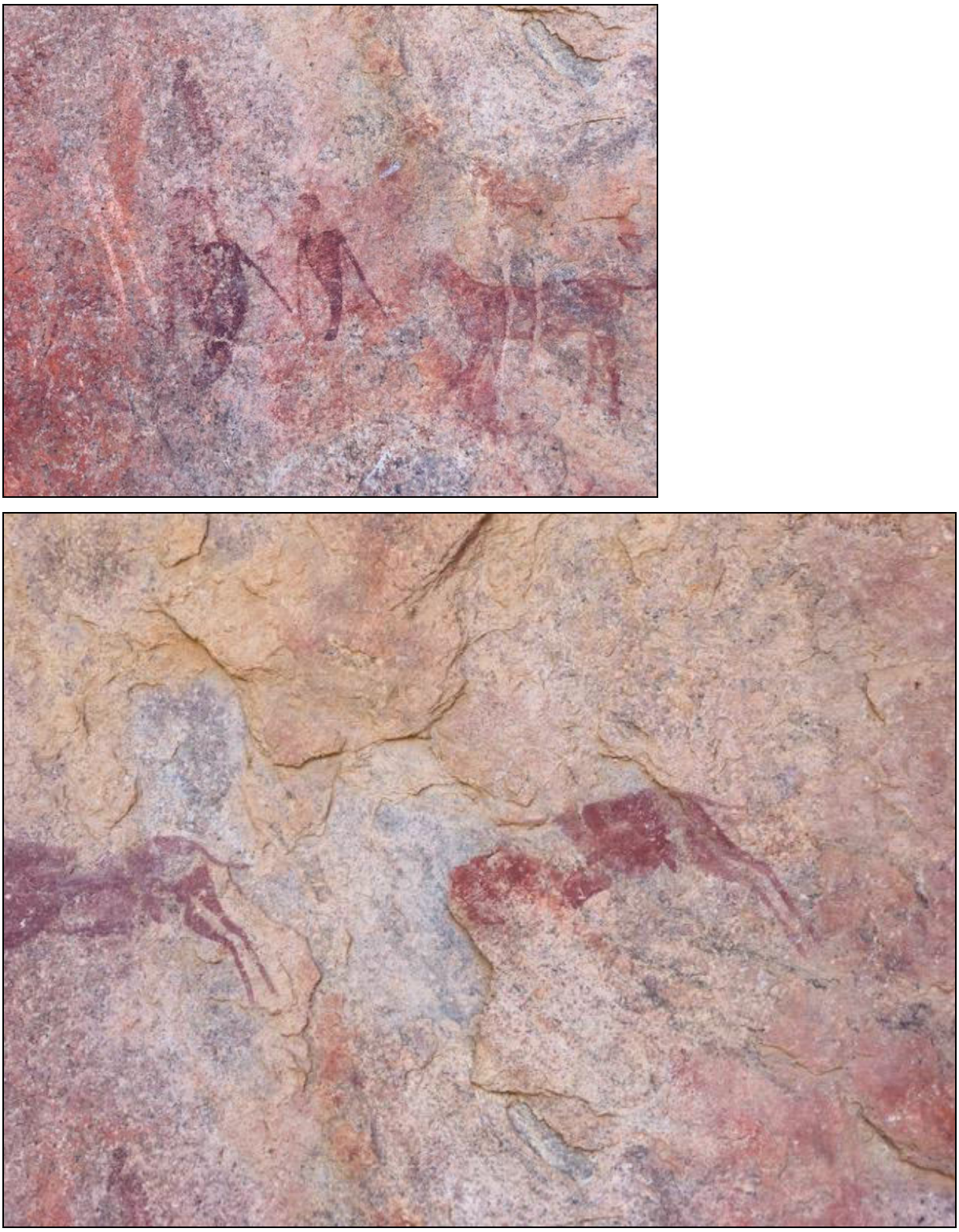

Figure 4: Two rock art paintings in a cave on farm Ombujomenge site 3 (Source: Nakale 2022).

Figure 5: Some of pieces of pottery scattered around the cave site 3(Source: Nakale 2022).

Figure 6; Suspected stone tools around the cave site 3 (Source Nakale 2022).

Figure 7: Area of interest in Ombujomenge farm (Source: Omavi Geo Tech 2022).

7.0 Results of Desktop Research

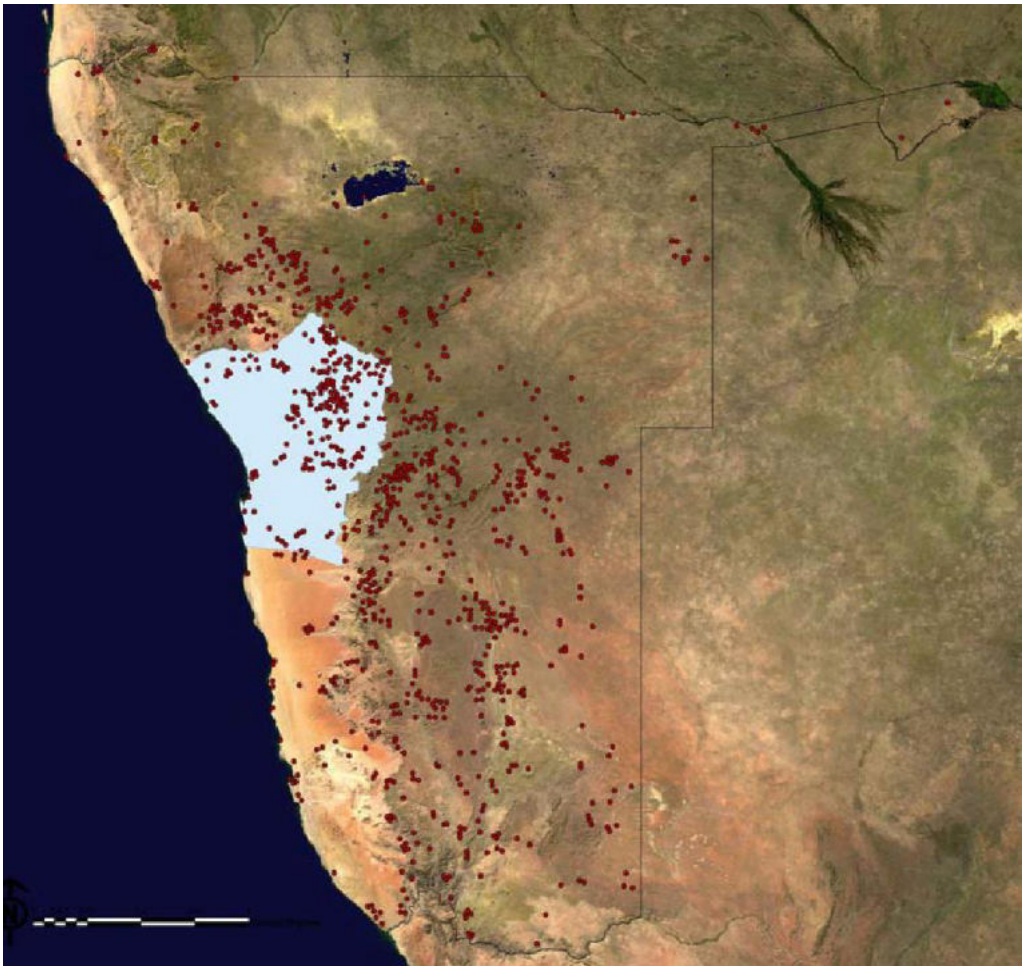

Figure 8: General distribution of archaeological sites in Erongo region (blue) concerning sites in Namibia. Credits: (John Kinahan, 2012).

Information from the NHC shows that the project area falls under the cultural landscape occurring in Erongo Region. The national monuments list has 37 national monuments recorded within Erongo Region.

8.0 Conclusions and Recommendations

Farm Ombujomenge No. 39 has recorded some sensitive archaeological sites dating back to the pre-colonial era and colonial era as presented in the previous section. These include two fenced-

off graves that belonged to the first farm owner and his family (Romno pers.comm 2022). A cave shelter with regionally highly sensitive and significant significantly unique rock paintings near Karibib was noted and recorded during this study. Moreover, subsurface remains may be exposed during site explorations within the confines of EPL 7241 and it is therefore recommended that the proponent adheres to the Chance Find Procedure Guidelines, this is not precluding decision by the heritage council on EPL 7241.

The significance rating of these sites is referred to in Table 1 and ranges from 1 (disturbed or secondary occurrences) to 4 and 5 (multi-component and major sites). They are considered of high archaeological significance both regionally and nationally as heritage resources of note. In terms of their vulnerability rating, most of the sites are rated 1 (not threatened), however, a 1-kilometre buffer zone is proposed especially with highly sensitive archaeological resources such as rock paintings that can be impacted by seemingly mild matters such as dust (Nankela 2020) either during exploration, construction or use of access roads by tippers earth movers equipment etc. A one-kilometer radius should be effected, should the heritage council see it befitting to issue the proponent with consent against this report.

8.1 Management recommendations

a) Establish a one-kilometer radius buffer zone from each of the three sites identified to prevent indirect and direct heritage site disturbance by exploration activities, see Figure 3. These site locations must be incorporated within the project`s EMP.

b) Access roads that fall within the proposed buffer zones need to be closed and redirected elsewhere to prevent disturbance to heritage resources outlined in this report.

c) Regular site inspection by the heritage council in respect of the buffer zone outlined this report (Figure 3) to ensure the proponent abides by the conditions as set in this report or as determined by the heritage council.

d) Chance Finds Procedure (CFP) management guidelines should be implemented in case of chance finds should the proponent be issued with consent. These are outlined in detail below:

EPL 7241 is an important mining infrastructure development area subject to heritage and archaeological assessment at the planning stage. These assessments were desktop-based, and field surveys were carried out therefore; significant subsurface heritage resources might be discovered. Onsite personnel and contractors must be sensitized to recognize "chance finds heritage" in the course of their work. The procedure set out here covers the reporting and management of such finds. The CFP covers the actions to be taken from the discovery of a heritage site or object to its investigation and assessment by a trained archaeologist. The CFP is intended to ensure compliance with the relevant provisions of the National Heritage Act (27 of 2004), especially Section 55 (4): "a person who discovers any archaeological objects must as soon as possible report the discovery to the council". The procedure of reporting set out below must be observed so that heritage materials are reported to the authorities.

A. Responsibilities:

Operator to exercise due caution if archaeological remains are found
Foreman to secure site and advise management timeously
Superintendent to determine safe working boundary and request inspection
Archaeologist to inspect, identify, advice management, and recovers remain

B. Procedure:

Action by the person (operator) identifying archaeological or heritage material

- If operating machinery or equipment: **stop work**
- Identify the site with flag tape
- Determine GPS position if possible
- Report findings to foreman

C. Action by foreman:

- Report findings, site location and actions are taken to the superintendent
- Cease any works in the immediate vicinity

D. Action by superintendent

- Visit the site and determine whether work can proceed without damage to findings;
- Determine and mark the exclusion boundary
- Site location and details to be added to the Archaeological Heritage database system

E. Action by archaeologist

- Inspect site and confirm the addition to AH database system;
- Advise National Heritage Council and request a permit to remove findings;
- Recovery, packaging and labeling of findings for transfer to National Museum

F. In the event of discovering human remains

- Actions as above;
- Field inspection by archaeologist to confirm that remains are human;
- Advise and liaise with NHC Guidelines; and
- Recovery of remains and removal to National Museum or National Forensic Laboratory, or as directed.

8.2 Conclusions

According to the field survey and desktop findings presented in this report, EPL 7241 has in proximity to its borders highly sensitive archaeological resources. The proponent is urged to steer clear and respect the buffer zones highlighted under recommendations in this report should consent to be issued, moreover, the heritage council should thus decide in light of the proponent`s target areas if it is feasible to grant consent.

References

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National Heritage Council of Namibia

Technical Department

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Tel: (061) 244375 • Fax: (061) 246 872 • Email: info@nhc-nam.org

OFFICE OF THE DIRECTOR

APPLICATION FOR CONSENT

(Sections 53(7) and 55(8) of the National Heritage Act, 2004 (Act No.27 of 2004))

CONDITIONS AND INSTRUCTIONS

1. The receipt issued serves as a reference when making enquiries.

2. Works and activities applied for under section C, of this application, is subject to an environmental impact assessment at the applicant's expense.

3. Instructions for completion:

Applicants must complete the relevant parts of this application.

A. APPLICANT'S DETAILS

1. Name and address of applicant

Michael Cai
P.O Box 81549
Windhoek, Namibia

2. Full name and designation of the person in charge of undertaking the works or activities:

Michael Cai
Partner & Project undertaker

3. Full name and personal details of researcher, contractor or person in charge of the proposed works or activities:

Michael Cai

4. Academic qualifications, skills, occupation and competencies of the person in charge mentioned under A2 above.

5. Previous permits issued in Namibia:
No Heritage related permit issued for this license

6. Period for which permit is required: From /
to

7. Date by which permit is required: 2022

B: WORKS OR ACTIVITIES

15. Geographic location and address (farm, village, settlement, town, region, magisterial district, constituency, Global Positioning System coordinates) of the site, protected place or protected object where works or activities are proposed:

Karibib, Erongo region

20 Government Gazette 1 September 2005 No. 3490

16. Detailed description of the nature of works or activities for which the permit is applied for: (e.g. excavation, construction, filming etc) (*Attach additional and supporting information if the space on the form is insufficient.)*
Mining exploration activities on EPL 7241

C: UNDERTAKING BY APPLICANT

17. I Michael Cai (the person in charge of undertaking the works or activities) and (where applicable) being head of the Project undertaker institute, hereby undertake to strictly observe the terms and conditions under which the National Heritage Council may issue the permit.

Signature PP: TMR dated 27/05/2022

Consent No.....
(Consecutive number & year of issue)

CONSENT

National Heritage Council of Namibia

52 Robert Mugabe Avenue • P/Bag 12043 • Ausspannplatz • Windhoek • Namibia
Tel: (061) 244 375 • Fax: (061) 246 872 • E-mail: johanna@nhc-nam.org

NO HIA DOC # 7241

Secretariat

Receipt No. 5814

CASH RECEIPT

Customer

Date 27/05/2022

Name MICHAEL CAI

Address BOX 81549

City WINDHOEK

Phone 0816650633

Quantity	Description	Unit Price	TOTAL
1X	APPLICATION FEES FOR THE		N$ 150-00
	HIA CONSENT LETTER OF		
	EPL NO: 7241, AT KARIBIB.		
			N$ 150-00

Amount in Words: ONE FIVE ZERO N$ ONLY

Receipt Issued by:

studio print 22253