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ENVIRONMENTAL SCOPING ASSESSMENT REPORT FOR THE:

PROPOSED PROSPECTING AND EXPLORATION ACTIVITIES ON EXCLUSIVE PROSPECTING LICENSE (EPL) 7233 NEAR OMATJETE IN THE ERONGO REGION

MEFT Application No.: APP-003204

Document Version: Final

First Release: 01 November 2021

Final Release: 26 April 2022

Proponent: Otombawe Mining CC

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April 2022

DOCUMENT INFORMATION

Title: Environmental Scoping Assessment for the Proposed Prospecting and Exploration Activities on Exclusive Prospecting License (EPL) 7233 near Omatjete in the Erongo Region

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EXECUTIVE SUMMARY

Otombawe Mining CC (hereinafter referred The Proponent) has been granted an Exclusive Prospecting Licence (EPL) No. 7233 by the Ministry of Mines and Energy (MME) on the 14th of May 2019 and expires on the 13th of May 2022. The Proponent intends to prospect and explore on the 15,158-hectare (ha) EPL. The EPL of interest is located about 25km northwest of Omatjete Village in the Erongo and covers a part of (within) the Otjohorongo Reserve.

The EPL has potential for commodities such as Base & Rare Metals, Dimension Stone, Industrial Minerals, and Precious Metals, but the commodity of interest for the planned prospecting and exploration activities is Dimension Stone only.

Prospecting, and exploration related activities are among listed activities that may not be undertaken without an Environmental Clearance Certificate (ECC) under the Environmental Management Act (EMA) (2007) and its 2012 Environmental Impact Assessment (EIA) Regulations. Subsequently, to ensure that the proposed activity is compliant with the national environmental legislation, the project Proponent, in this case Otombawe Mining CC appointed an independent environmental consultant, Loudima Resources (Pty) Ltd to undertake the required Environmental Assessment (EA) process and apply for the ECC on their behalf.

The application for the ECC was compiled and submitted to the Competent Authority (Ministry of Mines and Energy (MME)) in October 2021. The date stamped copy of the ECC by MME was also uploaded on the online ECC Portal for the Ministry of Environment, Forestry and Tourism (MEFT) as the environmental custodian for project registration purposes. Upon submission of an Environmental Scoping Assessment Report (ESAR) and Draft Environmental Management Plan (EMP), an ECC for the proposed project will be considered by the Environmental Commissioner at the MEFT's Department of Environmental Affairs and Forestry (DEAF).

Public Consultation

Public Consultation Activities

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

- Registration of pre-identified stakeholders and interested & affected parties (I&APs) and updating the list throughout the ESA process.
- Compilation and circulation of the background information document (BID) to pre-identified stakeholders and I&APs and to new I&APs (upon registration request).

- Placement of newspaper adverts in the Namibia Media Holdings' Market Watch newspapers (*Die Republikein*, *Namibian Sun* and *Allgemeine Zeitung*) dated 11 and 18 October 2021.
- Announcement of the public consultation meeting by the Senior Traditional Councillor of the Zeraeua Traditional Authority.
- Placement of A3 notices for the public notification in Omatjete (at the Zeraeua Traditional Authority office and Omatjete Clinic notice boards).
- Holding and facilitation of the public consultation meeting in Omatjete and recording of meeting minutes. Another community meeting was held with the local communities near the EPL, in the Omutiuanduko Village on the 10th of February 2022. The issues raised in the meeting were the same with the ones raised in the first meeting (on 28 October 2021). Therefore, these have been incorporated into the October 2021 Minutes and aided in the compilation of the Report and EMP.
- The issues/questions raised, and responses provided, respectively during the consultation meeting and via emails during the consultation period as presented under the Public Consultation Chapter (Chapter 6).

Public Feedback on Consultation

The public was afforded nineteen (19) days from the date of the first newspaper advert to register as I&APs and submit comments and or concerns. During this period, but after the public meeting, a one-page letter was submitted to Loudima as a collective comments' document by the Otjohorongo Community. The rest of the concerns were only raised during the public meeting and were addressed and recorded in the Meeting Minutes and incorporated into this document (Report).

The main (significant) issues raised during the Public Consultation Meeting and letter from the Otjohorongo Community (received via emails) are summarized in Table 4 below and presented in the Issue & Response Trail Document.

In addition to the author's experience and research, the issues and concerns raised by the interested and affected members of the public formed a basis for the compilation of the ESA Report and Draft EMP.

Potential Impacts identified

The following impacts were identified both by the Environmental Consultant and with the public (I&APs) input, especially on the negative impacts:

Anticipated positive impacts:

- Socio-economic development through temporary employment creation, skills transfer. Thus, boosting the local economic growth and development.
- Community benefits through practical implementation of corporate social responsibility (CSR)

- Investment opportunities and infrastructure-related development.

The following potential negative impacts are anticipated:

- Potential disturbance of existing pastoral systems,
- Archaeological and heritage impact,
- Physical land / soil disturbance,
- Impact on local biodiversity (fauna and flora) and habitat disturbance,
- Potential impact on water resources and soils,
- Air quality (compromise the surrounding air quality),
- Visual impacts due to land scars from exploration (stripping for demonstration blocks),
- Potential occupational health and safety risks,
- Vibrations and noise associated with dimension stone test quarrying,
- Vehicular traffic safety & impact on services infrastructure (e.g., local roads),
- Environmental pollution (waste generation), and
- Potential social nuisance and conflicts due to land use.

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

RECOMMENDATIONS AND CONCLUSIONS

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

The public was consulted as required by the EMA and its 2012 EIA Regulations (Section 21 to 24). This was done via the three newspapers used for this environmental assessment; site/public notices placed in Omatjete Village (at the Zeraeua Traditional Authority office and Omatjete Clinic notice boards). An announcement for the public consultation was also done through the Zeraeua Traditional Authority to notify the locals of the planned public consultation meeting in Omatjete. The public (I&APs) raised comments and concerns on the proposed project via the consultation platforms provided (emails and face-to-face session in the form of public consultation meeting).

The issues and concern raised by the registered I&APs formed the basis for this Report and the Draft EMP. The issues were addressed and incorporated into this Report whereby mitigation measures have been

provided thereof to avoid and/or minimize their significance on the environment. Most of the potential impacts were found to be of medium and to slightly high rating significance. With the effective implementation the recommended management and mitigation measures, this will particularly see the reduction in the significance of adverse impacts that cannot be avoided completely (from slightly high to medium and for medium rating to low). Furthermore, to improve and maintain desirable rating, monitoring of the implementation of the measures by the Proponent (an Environmental Control Officer (ECO) or Safety, Health & Environmental Officer) is highly recommended. The monitoring of this implementation will not only be done to maintain the reduce impacts' rating or maintain low rating but to also ensure that all potential impacts identified in this study and other impacts that might arise during implementation are properly identified in time and addressed right away too.

An Archaeological & Heritage Impact Assessment (AHIA) was done by a specialist for this ESA Study. The findings of this AHIA and the Scoping assessment (ESA) were deemed sufficient and conclude that no further detailed assessments are required to the ECC application.

Recommendations

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

It is therefore, recommended that the proposed prospecting and exploration and associated activities be granted an Environmental Clearance Certificate, provided that:

- All respective management measures (mitigations) provided in the Draft EMP be effectively and progressively implemented and backed up by consistent site monitoring of environmental components listed in the Draft EMP to achieve full EMP implementation compliance.
- 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. These include permits and licenses for land use access agreements to explore and ensuring compliance with these specific legal requirements.
- The Proponent and all their project workers or contractors comply with the legal requirements governing their project and its associated activities and ensure that project permits and or approvals required to undertake specific site activities are obtained and renewed as stipulated by the issuing authorities.
- All the necessary environmental and social (occupational health and safety) precautions provided are adhered to.
- Site areas where exploration activities have ceased should be rehabilitated, as far as practicable, to their original state.

- Environmental Compliance monitoring reports should be compiled and submitted to the DEAF Portal as per provision made on the MEFT/DEAF's portal**.**

These recommendations are primarily aimed at improving environmental management, ensuring sustainability and promote harmonious co-existence of the project activities and the host biophysical and social environment.

Conclusions

In conclusion, with that being done, it is crucial for the Proponent and their contractors as well as to effectively implementation of the recommended management and mitigation measures to protect both the biophysical and social environment throughout the project duration. All these would be done with the aim of promoting environmental sustainability while ensuring a smooth and harmonious existence and purpose of the project activities in the community and environment at large.

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APPENDIX B: Environmental Management Plan (EMP) – ***attached separately as required***

APPENDIX C: Environmental Assessment Practitioner (EAP)' CV - ***attached separately as required***

Appendix D: List of registered Stakeholders and Interested & Affected Parties (I&APs) - ***attached separately as required (under the ''Proof of Consultation'' file)***

Appendix E: Newspaper adverts (notification) for the Environmental Assessment Process - ***attached separately as required (under the ''Proof of Consultation'' file)***

Appendix F: Proof of Background Information Document (BID) circulation to pre-identified Stakeholders and I&APs - ***attached separately as required (under the ''Proof of Consultation'' file)***

Appendix G: Public Consultation Meeting Minutes and Attendance Register - ***attached separately as required (under the ''Proof of Consultation'' file)***

Appendix H: Archaeological & Heritage Impact Assessment Report **– *attached hereto***

NOTE: Appendix D to G are attached to the merged file titled ''*Proof of Consultation*'' uploaded separately on the ECC Portal (as required)

LIST OF ABBREVIATIONS

Abbreviation	Meaning
°C	Degree Celsius
AHIA	Archaeological & Heritage Impact Assessment
BID	Background Information Document
CFP	Chance Find Procedure
DEAF	Department of Environmental Affairs and Forestry
DTH	Down-The-Hole drilling
EA	Environmental Assessment
EAP	Environmental Assessment Practitioner
ECC	Environmental Clearance Certificate
EPFIs	Equator Principle Financial Institutions
EIA	Environmental Impact Assessment
EMA	Environmental Management Act
EMP	Environmental Management Plan
EPL	Exclusive Prospecting License
GG / GN	Government Gazette / Government Notice
GPS	Global Positioning System
HIV/AIDS	Human Immunodeficiency Viruses and Acquired Immune Deficiency Syndrome
I&APs	Interested and Affected Parties
IFC	International Finance Cooperation
MEFT	Ministry of Environment, Forestry and Tourism
MME	Ministry of Mines and Energy

Abbreviation	Meaning
m^3/d and m^3/h	Cubic meter per day and cubic meter per hour
NHC	The National Heritage Council (NHC) of Namibia
PPE	Personal Protective Equipment
Reg	Regulation
S	Section
SPCC	Spill Prevention, Control, and Countermeasure
UNCCD	The United Nations Convention to Combat Desertification
ZTA	Zeraeua Traditional Authority

1 INTRODUCTION

1.1 Background and Project Location

Otombawe Mining CC (hereinafter referred *The Proponent*) has been granted an Exclusive Prospecting Licence (EPL) No. 7233 by the Ministry of Mines and Energy (MME) on the 14th of May 2019 and expires on the 13th of May 2022. The Proponent intends to prospect and explore on the 15,158-hectare (ha) EPL. The EPL of interest is located about 25km northwest of Omatjete Village in the Erongo (**Figure 1)** and covers a part of (within) the Otjohorongo Reserve - **Figure 2**. The approximate corner coordinates of the EPL are presented in **Table 1** below.

The EPL has potential for commodities such as Base & Rare Metals, Dimension Stone, Industrial Minerals, and Precious Metals, but the commodity of interest for the planned prospecting and exploration activities is Dimension Stone only.

Table 1: Approximate GPS coordinates of EPL 7233

Point Number	GPS Coordinates
1	20°47'32" S 15°23'19" E
2	20°47'31" S 15°31'48" E
3	20°50'35" S 15°31'51" E
4	20°51'54" S 15°31'17" E
5	20°52'01" S 15°26'53" E
6	20°54'41" S 15°27'34" E
7	20°54'46" S 15°24'35" E
8	20°53'29" S 15°23'19" E

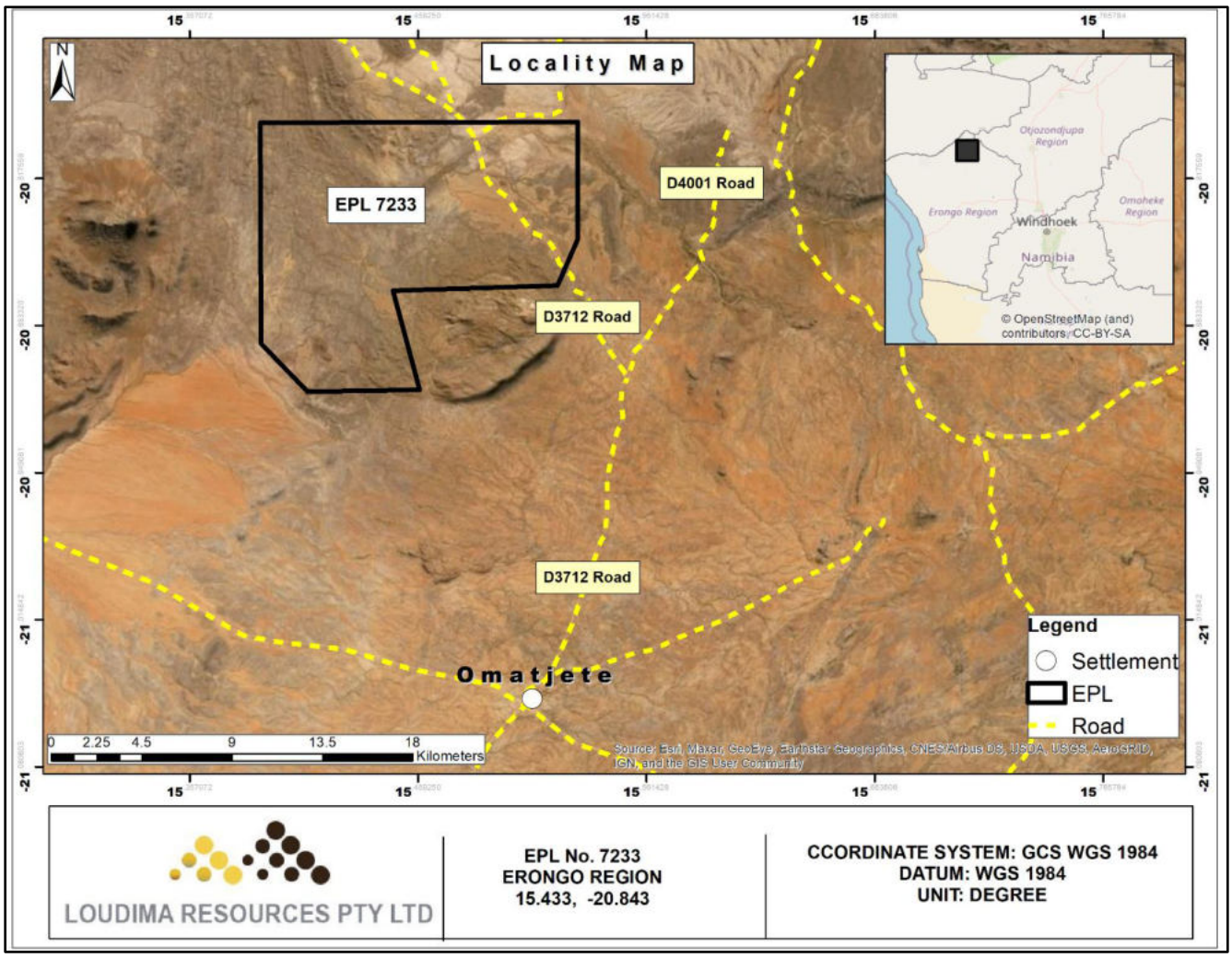

Figure 1: **Locality map of EPL 7233 near Omatjete in the Erongo Region**

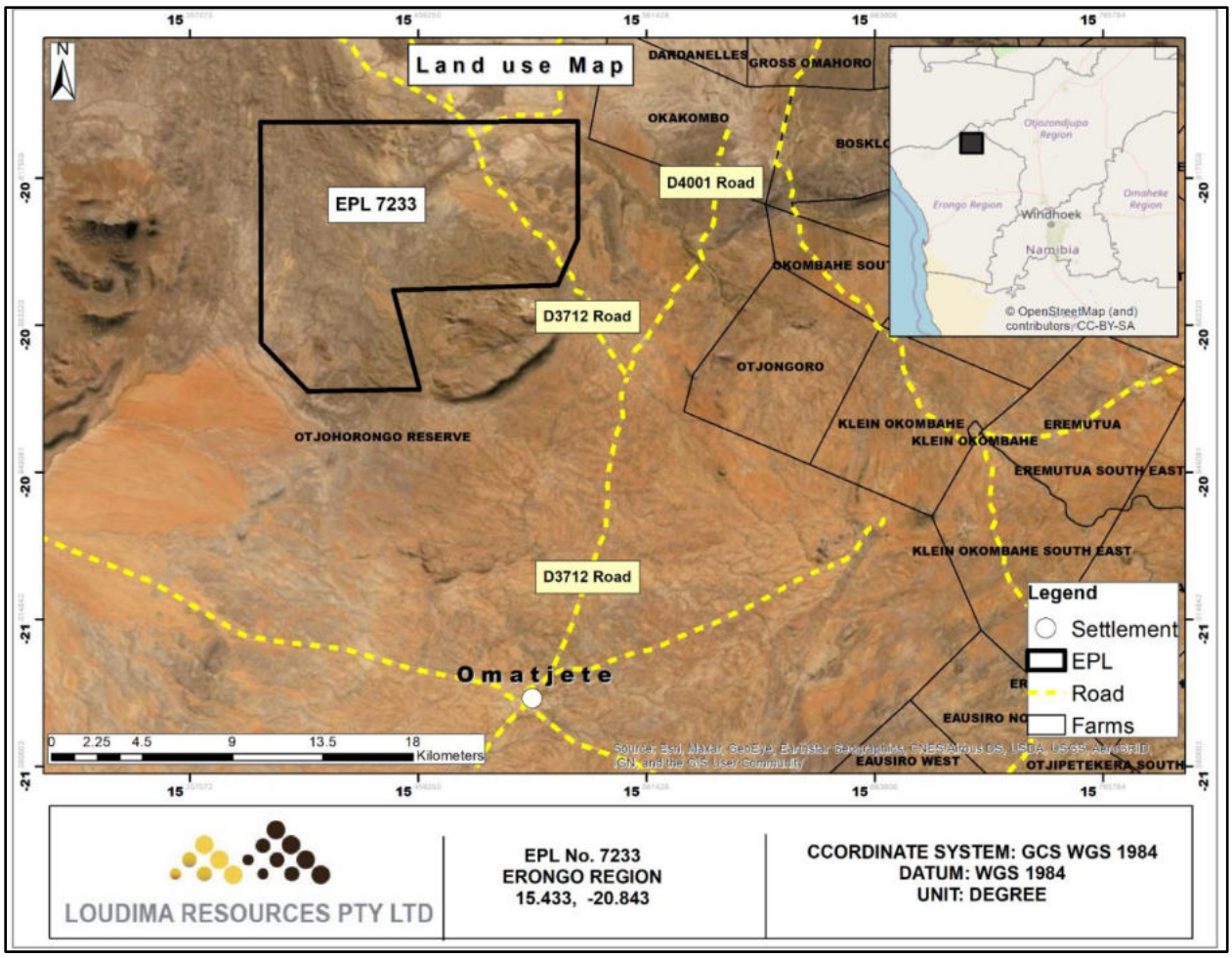

Figure 2: Significant Land Uses around EPL 7233

1.2 Scope of Work and Report Contents

This Environmental Scoping Assessment (ESA) Study has been conducted according to the Environmental Management Act (EMA) No. 7 of 2007, and its 2012 Environmental Impact Assessment (EIA) Regulations, whereby the prospecting, and exploration related activities are among listed activities that may not be undertaken without an Environmental Clearance Certificate (ECC) under the Environmental Management Act (EMA) (2007) and its 2012 Environmental Impact Assessment (EIA) Regulations. The relevant listed activities as per EIA regulations. The listed activities that are relevant to proposed project are as follows:

- ***Listed Activity 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).*
- ***Listed Activity 3.2*** *other forms of mining or extraction of any natural resources whether regulated by law or not.*
- ***Listed Activity 3.3*** *Resource extraction, manipulation, conservation, and related activities.*

Subsequently, an application for Environmental Clearance Certificate (ECC) accompanied by the Background Information Document (BID) and was hand delivered on the 21st of October 2021 to the Ministry of Mines and Energy (MME), the *Competent Authority* in Windhoek - **Appendix A**.

Furthermore, an EA process was undertaken, completed, and an ESA Report and draft EMP compiled and submitted to the Department of Environmental Affairs and Forestry (DEAF) of the Ministry of Environment, Forestry and Tourism (MEFT) for evaluation and consideration of ECC issuance.

The purpose of the ESA and subsequent issuance of the ECC is to ensure that the proposed project activities are undertaken in an environmental & social friendly and sustainably manner, through effective implementation of recommended environmental management and mitigation measures to minimize the adverse identified impacts while maximizing the positive impacts.

This Report has been compiled as a required output of an environmental assessment process after the ECC application has been submitted to the Competent Authority. The ESA Report, together with the EMP and all associated appendices will be submitted to the DEAF of the MEFT for evaluation.

Apart from the introductory chapter, this Report covers the following chapters:

- The need and desirability of the proposed project (**section 1.3**).
- The responsible Environmental Consultant (Environmental Assessment Practitioner) – **section 1.4.**
- The description of the proposed project activities and associated/required resources - **Chapter 2**.
- Project alternatives considered (that were found to be environmentally friendly and technically feasible) - **Chapter 3**.
- The legal requirements governing the proposed project and its related activities, i.e., the legislations that the proposed project activities will need to comply with (**Chapter 4**).
- The relevant pre-project environmental conditions (environmental and social baseline) of the project area as presented under **Chapter 5**.
- The Public Consultation Process undertaken to inform, invite and engage the public (stakeholders and interested & affected parties) on the proposed project- **Chapter 6**.
- The presentation and assessment of potential identified impacts associated with the proposed project (**Chapter 7**) - This chapter presents both the positive and negative (adverse) as well as cumulative impacts, assessment methodology and the assessment of the negative impacts. The mitigation measures in the form of management action plans, with timeframe and implementation responsibilities are given in Draft Environmental Management Plan (EMP) under **Appendix B**.
- The recommendations and conclusions to the environmental assessment are presented under **Chapter 8**.

- The data sources (literature) consulted for the assessment are listed under **Chapter 9**.

1.3 Project Need and Desirability

The consumption for dimension stone 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 stone in the construction and real estate sectors in China, India, and Eastern Europe. It is partly on these grounds that the Proponent decided to pursue the exploration the dimension stone on their EPL. To ensure that the industry remains sustainable for the benefit of shareholders, employees, and organs of state such as the Ministry of Mines and Energy and tax collecting agency, there is need to carry out further exploration geared towards finding good quality rock masses for dimension stone for the future. In other words, the evaluation of exploration findings (for economic feasibility) will then determine the possibility of advancing to mining in the future when the target market is favourable (OMAVI Geotechnical & Geo-Environmental Consultants, 2020).

It should be noted that the future mining phase referred to under the preceding sentence is out of the scope of this ESA as this environmental assessment is solely for prospecting and exploration.

1.4 The Appointed Environmental Consultant

To fulfil the requirements of the EMA, the Proponent appointed Loudima Resources Pty Ltd (hereinafter referred to as the Environmental Consultant) to undertake the required EIA / ESA process and submit the ECC application to the Competent Authority (MME).

Further tasks of the Environmental Consultant include public participation, compilation of all the required documents (including ESA Report and draft EMP). These documents are to be submitted to the Environmental Commissioner at the Department of Environmental Affairs and Forestry (DEAF) of the Ministry of Environment, Forestry and Tourism (MEFT) for evaluation and consideration of an ECC issuance.

The entire EIA Study (ECC application, public consultation process and reporting) was done by Ms. Fredrika Shagama on behalf of the Environmental Consultant. Ms. Shagama is a qualified and experienced hydrogeologist with 5 years of experience in water and environmental consulting and a member of the International Association of Hydrogeologists. She is also an experienced and registered Environmental Assessment Practitioner (EAP) with the Environmental Assessment Professionals of Namibia (EAPAN). The Curriculum Vitae (CV) of Ms. Shagama is presented under **Appendix C**.

The description of the proposed project activities is presented under the next chapter.

2 PROJECT DESCRIPTION: PROPOSED ACTIVITIES & RESOURCES

This chapter presents the activities to be undertaken and services infrastructure required for the realization of the proposed project. The project description is presented in terms of activities to be undertaken in the main project phases, namely, the prospecting, detailed exploration as well as maintenance of the project site upon issuance of the required environmental clearance certificate.

The proposed prospecting and exploration activities are anticipated to last between two and four months.

2.1 Proposed Prospecting and Exploration Methods

The Proponent intends to adopt a systematic prospecting approach as presented under the following subsections:

2.1.1 Desktop (Non-invasive method)

This will entail geological mapping, reviewing of existing geological maps and historical drilling data and / or exploration data for the area (literature review).

2.1.2 Field Evaluation and Detailed Exploration (Stripping)

In addition to the literature review (desktop study) above, fieldwork (lithological (soil/rock) mapping and sampling) will be conducted to verify desktop work. At this stage, there will be no physical soil/land disturbance yet. Field evaluation is then carried out by simple collection of sample blocks on target areas. The blocks will then be exported and showcased in target markets.

Feasibility Study / Detailed Exploration and Quarrying: (A) Stripping & Drilling Equipment. The first process of opening a test quarry (in this case a 2 to 3m sample block) is to remove the material between the surface and the minerals or materials that is needed for extraction. This is done by surface stripping. Surface stripping is done with crawler tractors, which are large-scale bulldozers. Wheel Loaders (machines equipped with a hydraulic arm and bucket) are then used to load dirt that is moved by crawler tractors or blasting technicians.

(B) Trucks (Off-road) will be used to remove material left behind by the stripping process to reach the required material (they are also used to carry the block/s).

Where exploration drilling yields positive results, test quarrying by means of butterfly cutting will be conducted. This will be done to fully evaluate the recovery of saleable blocks, and better optimize the extraction methods, production rates and operational costs in future. The exploration test quarrying will only be carried out on select targeted areas of the EPL and shall be performed on as small areas as possible to minimize environmental impacts that are associated with larger scale test quarrying. The outcomes / results of the test quarrying will be recorded and archived by the Proponent for future use (if mining is considered).

Please note that the test quarrying referred hereto is solely for exploration purposes. Therefore, it will 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 and demonstration blocks only.

2.2 Resources and Services Infrastructure

2.2.1 Human Resources and Accommodation

The prospecting and exploration crew will consist of about seven (7) people, comprising 1 skilled, 2 semi-skilled, 4 casual workers. However, this number may vary depending on the actual workload and requirement onsite. The workforce requirement will entail the geologist(s), driller, sampling team, supervisor, casual workers to clear the sites and perform other required jobs onsite, excavator / bulldozer operators for test quarrying, cleaner(s), truck, and light vehicle drivers, etc.

2.2.2 Accommodation of the Project Workers (Crew) and Workstation

Exploration workers will be housed in prefabricated accommodation units (tented camps) during the exploration stage (within the EPL boundaries). These units can be easily set up and easily removed after operations. However, prior to setting up the accommodation units, an agreement and a consent will need to be reached and signed between the Proponent and the respective landowner or custodian (authority).

Working Space (Administration and Control): Movable shaded facility near the working spots and prefabricated temporary offices will be erected on site (subject to approval of landowner/custodian or authority).

2.2.3 Equipment, Machinery and Vehicles

The following will be required in terms of equipment, machinery, and vehicles to carry out the prospecting and exploration works:

- About two 4X4 pickup trucks,
- Butterfly cutter,
- One or two long distance haulage and dump trucks,
- Diamond wire-saw cutter and coring equipment,
- Excavator / front-end loader to scoop up sandy overburden,
- Dozers (to clear vegetation along planned drilling site access roads,
- Down-The-Hole (DTH) Drilling rig, drilling fluids stored in manufacturers approved containers,
- Air compressor,
- Diesel generator for power supply, and two-way radios for constant communication on site

2.2.4 Water supply

For exploration, about 10,000 litre of water will be required every 2 days. The water will be supplied through carting from the nearest water supply area (Omaruru). Therefore, no exploration related water abstraction will be done onsite or within the site area to prevent unnecessary pressure on the local resources. The water will be stored in two 10,000-litre industry standard water storage tanks onsite, and these will be refilled as and when necessary. The required water will be used for cooling down and washing of equipment, exploration related activities, and ablution.

Similarly, potable water will also be made available for the exploration crew (workers) on site. Based on the comments made in the public consultation meeting in October 2021, some community members suggested that if the project cannot get all its water needs from the surrounding boreholes, then they should consider buying some water from the community, even for drinking to also ensure that the community benefits from the project activities through water provision purchasing agreements.

2.2.5 Fuel supply: (for personnel use to cook)

The Proponent will provide firewood or fuel to be used for food preparation by the site workers. No firewood will be collected on the farms or neighbouring land, without the owners or authority's permission.

2.2.6 Fuel Supply (machinery and equipment)

Diesel will be used for machinery and equipment and fuel generator. A trailer mounted and bunded 10,000-litre fuel tank will be onsite to ensure an interrupted fuel supply.

2.2.7 EPL Accessibility (roads)

The EPL is accessible from the district road, D3712 from Omatjete to the north or D2344 from the south and then via local access (gravel) roads. Therefore, the exploration vehicles will be using these existing roads to access the project site. It is also anticipated that, if necessary, onsite new tracks to the different targeted site areas within the EPL will be created. The Proponent may need to do some upgrade on the site access road to ensure that it is fit to accommodate project related vehicles, such as heavy trucks.

2.2.8 Waste management

The different waste will be handled as follows:

- **Sewage:** A minimum of two portable ablution facilities with septic tanks will be provided on site and emptied according to manufacturers' instructions. The wastewater will then be transported offsite to the nearest wastewater treatment facility such as Omaruru.
- **General and domestic (solid) waste:** enough waste bins (containers) will be made available at both exploration sites and campsite for waste storage. The bins will be emptied into the main onsite container for disposal at the nearest landfill site, such as Omaruru, upon reaching an agreement with the Omaruru Municipality.

- **Hazardous waste:** All vehicles, machinery and fuel consuming equipment will be provided with drip trays to capture potential fuel spills and waste oils. The waste fuel/oils will be carefully stored in a standardized container until such a time that it can be disposed of at the nearest approved hazardous waste management facility.

2.2.9 Health, Safety and Security

- **Occupational personal health and safety**: all project workers, including contractors will be supplied with appropriate and adequate personal protective equipment (PPE) while carrying project activities onsite.

- **First aid kits**: At least two first aid kits will be made available on site; one at the working sites and the second one at the site campsite. One or two of the exploration crew members will be equipped with basic first aid kit administrating skills to attend to other during site injuries and call for necessary further medical attention.

- **Management of accidental fire outbreaks:** A minimum of basic firefighting equipment, i.e., two fire extinguishers will be readily available in vehicles, at the working sites and campsite (accommodation units).

- **Site fencing:** The whole EPL area will not be fenced off, but only certain explored site areas that will be considered risky and hazardous (such as exploration boreholes, open trenches, or small test quarries) to the surrounding communities, these will be demarcated and fenced off with temporary mesh wires accompanied by clear and visible warning / ‘’danger’’ signs in both English and the local language (Otjiherero). The mesh will prevent unauthorized public access and protect the vulnerable community members such as unsuspecting children as well as preventing local animals from falling into hazardous bodies such as exploration trenches/pits or boreholes.

2.3 Decommissioning Activities

Decommissioning referred to herein is the cessation of exploration activities and decommissioning of structures and services onsite, upon completion of the project activities.

The decommissioning will particularly entail the following:

- Dismantling and removal of all infrastructures and structures such as camping sites, storage tanks, onsite temporary offices, ablution facilities and other supporting structures erected for exploration. These will be transported to designated storage facilities offsite.

- Removal of all project related vehicles, machinery, and equipment from site to designated parking and storage sites off site, respectively.

- Carrying away the waste storage containers and disposal of waste to designated and approved waste management sites.
- Closure of all access roads that may have been created for the exploration works and no longer required even by the local communities.
- Levelling of stockpiled topsoil, backfilling of all excavated pits and trenches and closing & capping of exploration boreholes.
- The returning of overburden waste rocks to exploration spots where demonstration blocks were taken from, as much as possible.

The better way to ensure an improved success of rehabilitating explored sites within the EPL will be doing it progressively. This is to say that towards the end of each exploration activity on explored sites of the EPL, the Proponent backfilling, levelling, and capping of trenches, topsoil, and boreholes, respectively. In other words, as soon as the work is completed at a certain site area, rehabilitation is done immediately and not wait until the 3 or 4 months of completion of all works. The aim is to ensure that the disturbed sites are left close to their pre-exploration state as much as possible.

The proposed project and its associated activities have been weighed in terms of possible available alternatives as per the EMA of 2007 and its 2012 EIA Regulations (Chapter 3).

3 PROJECT ALTERNATIVES AND ANALYSIS

According to the Environmental Management Act No. 7 of (2007) and its 2012 EIA Regulations, alternatives are defined as: “different means of meeting the general purpose and requirements of the activity”. This chapter will highlight the different ways in which the project can be undertaken and to identify the alternative that will be the most practical but least damaging to the environment.

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

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

The alternatives considered for the proposed activities are discussed in the following subsections.

3.1 Project Alternatives

3.1.1 The "No-go" Alternative

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

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

- Loss of foreign direct investment in the mining sector from a local perspective.
- About 7 temporary job opportunities for some of the community members will not be realized.
- No realization of local businesses supports through the provision of water, procurement of consumable items such as Personal Protective Equipment (PPE), machinery spare parts, lubricants, etc.
- Loss of potential income to local and national government through land lease fees, license lease fees and other tax structures.
- Socio-economic benefits such as skills acquisition to some local community members would be not realized.

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

3.1.2 Exploration Location

The prospecting/exploration location is dependent on the geological setting (regional and local), the economic geology, and the exploration and mining history of the EPL area. Therefore, finding an alternative location for the planned exploration activities is not possible. This means that the mineralization of the target commodities (Dimension Stone) is area-specific, which means exploration targets are primarily determined by the geology (host rocks) and the tectonic environment of the site (an ore-forming mechanism). The tenement has sufficient surface area for future related facilities should an economic mineral deposit be defined.

Furthermore, the national mineral resources’ potential locations are also mapped and categorised by the Ministry of Mines and Energy in exclusive prospecting licenses, mining licenses and claims, mineral deposit retention licenses, reconnaissance licenses and exclusive reconnaissance licenses. Available information on EPL 7233 and other licenses are available on the Namibia Mining Cadastral Map here https://portals.landfolio.com/namibia/ **- Figure 3**.

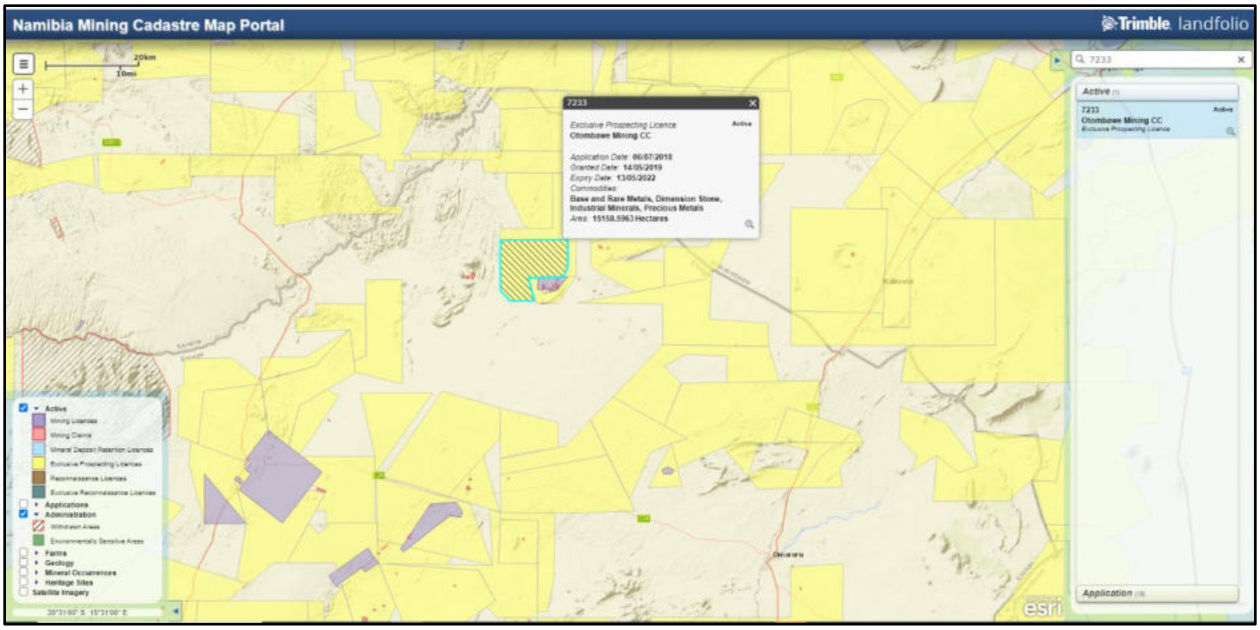

Figure 3: The EPL 7233 on the Namibia Mining Cadastre Map

3.1.3 Exploration Methods (Techniques)

The non-invasive (desktop study) and invasive (trenching, stripping and exploration test quarrying & drilling) exploration activities are anticipated on selected target site areas within the EPL. The above-provided methods or techniques will be employed for the proposed project based on existing local and international practices on projects of the same nature (commodity types).

3.1.4 Supporting Services Infrastructure

Certain alternatives were considered for the different supporting infrastructures envisaged to ensure that the most feasible options were selected. These were weighed in terms of technological, economic, and environmental limitations in selecting the most feasible option. The alternative considered in this regard are presented in **Table 2** below.

Table 2: Service infrastructure and structures (technical resources) alternatives considered for the project works on EPL 7233 (the selected option/alternative is indicated in blue fonts)

Category of Infrastructure	Alternatives Considered	Justification for selected option
Ablution facilities	-Install fixed facility with septic tank -Portable facilities with septic tank	-To avoid long-term visual impacts, minimize rehabilitation costs and reduce structure dismantling / removal time.
Shade Structure for working areas	-Shade structure made from temporary blue or red corrugated sheets	-Shade structure made from corrugated sheets deemed most suitable due to robustness, &

Category of Infrastructure	Alternatives Considered	Justification for selected option
	-Shade structure made with shade net	resistance to wind destruction and hot sun in this part of Namibia.
Water supply (for exploration drilling)	-Carting water from elsewhere (Omaruru) -Water abstracted from surrounding local boreholes through purchasing agreements	-Water will be brought from elsewhere (buying from Omaruru Municipality upon reaching an agreement) if the local sources will not be able to meet the project water demands, thus preventing depletion of local water resources.
Water supply (for domestic/drinking purposes at the campsites)	-Water abstracted from surrounding local boreholes through purchasing agreements -Water carted from elsewhere	-Drinking and washing water (domestic) will be supplied from the local boreholes by entering purchasing agreements with the locals. This will bring some income to the local water suppliers too.
Diesel storage	-Trailer mounted diesel tank -Fixed diesel tank onsite	-A trailer mounted diesel tank for fuel storage has great mobility requirements during exploration.
Power supply	-Diesel generator set -Powerline or solar panels	-Most practical & economically viable for exploration, even in case that the exploration does not yield positive for further work in the EPL.
Field workstation (Offices), and accommodation	Erect dismantlable prefabricated units Fixed or temporary buildings for offices and accommodation units (structures) on site	Ease of installation, (b) Low installation costs and (c) Ease of dismantling & moving

4 LEGAL FRAMEWORK: PROJECT PERMITTING AND LICENSING

The project's activities will be undertaken in a unique biophysical and social environment. These activities or some of them may even at minimum impact some of these environmental components. It is therefore necessary to consider the legislations and legal requirements governing the project and associated activities.

The main legal framework presented herein is that of Namibia and international for the relevant project components under the scope of this document – detailed legislation that are applicable to the project are given below**.**

4.1 Environmental Management Act No. 7 of 2007

The Environmental Management Act (EMA) No.7 of 2007 and its 2012 EIA Regulations (GG No. 4878 GN No. 30) aim to promote sustainable management of the environment and use of natural resources. Furthermore, the EMA also aims to ensure that the potential impacts of the proposed project activities on both the biophysical and social environment are considered carefully and in good time identified; that all interested and affected parties have an opportunity to participate in the environmental assessment processes. This also to ensure that the findings of the environmental assessment are fully considered before any decisions are made about activities which might affect the environment.

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

- *Listed Activity 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).*
- *Listed Activity 3.2 other forms of mining or extraction of any natural resources whether regulated by law or not.*
- *Listed Activity 3.3 Resource extraction, manipulation, conservation, and related activities*.
- The Environmental Impact Assessment (EIA) Regulations GN 28-30 (GG 4878) detail requirements for public consultation within a given environmental assessment process (GN 30 S21). The EIA regulations also outline the required details of a Scoping Report (GN 30 S8) and an Assessment Report (GN 30 S15**).**

4.2 The Minerals (Prospecting and Mining) Act No. 33 of 1992

The applicable Section(S)s of the Act stipulate under the following:

- S52 of the Act requires mineral license holders to enter into a written agreement with affected landowners before exercising rights conferred upon the license holder.
- S52(1) mineral licence holder may not exercise his/her rights in any town or village, on or in a proclaimed road, land utilised for cultivation, within 100m of any water resource (borehole, dam, spring, drinking trough etc.) and boreholes, or no operations in municipal areas, etc.), which should individually be checked to ensure compliance.
- S54 requires written notice to be submitted to the Mining Commissioner if the holder of a mineral license intends to abandon the mineral license area.
- S68 stipulates that an application for an exclusive prospecting license (EPL) shall contain the particulars of the condition of, and any existing damage to, the environment in the area to which the application relates and an estimate of the effect which the proposed prospecting operations may have on the environment and the proposed steps to be taken to prevent or minimize any such effect.
- S91 requires that rehabilitation measures should be included in an application for a mineral license.

Implication for the proposed project:

This Act and its Regulations that are relevant to the proposed project activities herein, requires that the Proponent:

- Enter into a written agreement with affected landowners or custodians of the land before carrying out exploration on their land,
- Carries out an assessment of the impact on the receiving environment,
- Includes as part of their application for the EPL, measures by which they will rehabilitate the areas where they intend to carry out mineral exploration activities, and
- May not carry out exploration activities within the areas limited by Section 52 (1) of this Act.

4.3 Other Applicable National and International Legal Obligations

Other national and international legal obligations that are relevant to the proposed activities on EPL No. 7233 and related activities are presented in **Table 3**.

Table 3: The list of applicable national and international legislations governing the proposed project and related activities

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
The Constitution of the Republic of Namibia, 1990 as amended	The Constitution of the Republic of Namibia (1990 as amended) addresses matters relating to environmental protection and sustainable development. Article 91(c) defines the functions of the Ombudsman to include: *"…the duty to investigate complaints concerning the over-utilisation of living natural resources, the irrational exploitation of non-renewable resources, the degradation and destruction of ecosystems and failure to protect the beauty and character of Namibia…"* *Article 95(l) commits the state to actively promoting and maintaining the welfare of the people by adopting policies aimed at the:* *"…Natural resources situated in the soil and on the subsoil, the internal waters, in the sea, in the continental shelf, and in the exclusive economic zone are property of the State."*	By implementing the environmental management plan, the establishment will be in conformant to the constitution in terms of environmental management and sustainability. Ecological sustainability will be main priority for the proposed development.
The Regional Councils Act (No. 22 of 1992)	This Act sets out the conditions under which Regional Councils must be elected and administer each delineated region. From a land use and project planning point of view, their duties include, as described in section 28 "to undertake the planning of the development of the region for which it has been established with a view to physical, social, and economic characteristics, urbanisation patterns, natural resources, economic development potential, infrastructure, land utilisation pattern and sensitivity of the natural environment. The main objective of this Act is to initiate, supervise, manage, and evaluate development.	The relevant Regional Councils are Interested &Affected Parties and must be consulted during the Environmental Assessment (EA) process. The project site area falls under the Erongo Regional Council; therefore, they should be consulted.

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
Nature Conservation Amendment Act, No. 3 of 2017	National Parks are established and gazetted in accordance with the Nature Conservation Ordinance, 1975 (4 of 1975), as amended. The Ordinance provides a legal framework with regards to the permission of entering a state protected area, as well as requirements for individuals damaging objects (geological, ethnological, archaeological, and historical) within a protected area. Though the Ordinance does not specifically refer to mining as an activity within a protected area (PA) or recreational area (RA), it does restrict access to PA's and prohibits certain acts therein as well as the purposes for which permission to enter game parks and nature reserves may be granted.	The Proponent will be required to enhance the conservation of biodiversity and the maintenance of the ecological integrity of protected areas and other State land
The Parks and Wildlife Management Bill of 2008	Aims to provide a regulatory framework for the protection, conservation, and rehabilitation of species and ecosystems, the sustainable use and sustainable management of indigenous biological resources, and the management of protected areas, to conserve biodiversity and to contribute to national development.	
Traditional Authority Act (Act No. 25 of 2000)	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 EPL is under the which are communal farms under the Zeraeua Traditional Authority. As such this TA is a key I&AP and will therefore be provided with the opportunity to comment on the proposed project and issue a consent letter.

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
	The Act also stipulates that TAs should ensure that natural resources are used on a sustainable 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.	
Forestry Act No. 12 of 2001	The Act provides for the management and use of forests and related products / resources. It offers protection to any living tree, bush or shrub growing within 100 metres of a river, stream or watercourse on land that is not a surveyed erven of a local authority area. In such instances, a licence would be required to cut and remove any such vegetation. These provisions are only guidelines.	Should there be trees within the actual footprint of the site that need to be removed; the Proponent should notify the Traditional Authority. The number and/or type of trees to be removed to allow exploration works should also be submitted to the TA Office. Should these trees be of a protected species, the permit to remove them should be applied from the nearest Division of Forestry office.
Petroleum Products and Energy Act (No. 13 of 1990) Regulations (2001)	Regulation 3(2)(b) states that "No person shall possess or store any fuel except under authority of a licence or a certificate, excluding a person who possesses or stores such fuel in a quantity of 600 litres or less in any container kept at a place outside a local authority area.	The Proponent should obtain the necessary authorization from the MME for the storage of fuel on-site.
Water Act 54 of 1956	The Water Resources Management Act 11 of 2013 is presently without regulations; therefore, the Water Act No 54 of 1956 is still in force: Prohibits the pollution of water and implements the principle that a person disposing of effluent or waste has a duly of care to prevent pollution (S3 (k)). Provides for control and protection of groundwater (S66 (1), (d (ii)).	The protection (both quality and quantity/abstraction) of water resources should be a priority.

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
	Liability of clean-up costs after closure/abandonment of an activity (S3 (l)). (l)).	
Water Resources Management Act (No 11 of 2013)	The Act provides for the management, protection, development, use and conservation of water resources; and provides for the regulation and monitoring of water services and to provide for incidental matters. The objects of this Act are to: Ensure that the water resources of Namibia are managed, developed, used, conserved and protected in a manner consistent with, or conducive to, the fundamental principles set out in Section 66 - protection of aquifers, Subsection 1 (d) (iii) provide for preventing the contamination of the aquifer and water pollution control (Section 68).	
Soil Conservation Act (No 76 of 1969)	The Act makes provision for the prevention and control of soil erosion and the protection, improvement and conservation of soil, vegetation and water supply sources and resources, through directives declared by the Minister.	Duty of care must be applied to soil conservation and management measures must be included in the EMP.
National Heritage Act No. 27 of 2004	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.	The Proponent should ensure compliance with this Acts' requirements. The necessary management measures and related permitting requirements must be taken. This done by consulting with the National Heritage Council (NHC) of Namibia. An Archaeological & Heritage Impact Assessment (AHIA) should be done for the EPL, and a Report submitted to the NHC for evaluation and issuance of a consent letter/permit.

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
The National Monuments Act (No. 28 of 1969)	The Act enables the proclamation of national monuments and protects archaeological sites.	
Public Health Act (No. 36 of 1919)	Section 119 states that "no person shall cause a nuisance or shall suffer to exist on any land or premises owned or occupied by him or of which he is in charge any nuisance or other condition liable to be injurious or dangerous to health."	The Proponent and all its employees or contractors should ensure compliance with the provisions of these legal instruments.
Health and Safety Regulations GN 156/1997 (GG 1617)	Details various requirements regarding health and safety of labourers.	
Public and Environmental Health Act No. 1 of 2015	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 safe, or not injurious or dangerous to public health and that the noise and dust emissions which could be considered a nuisance remain at acceptable levels. The Proponent should ensure that the public as well as the environmental health is preserved and remain uncompromised.
Atmospheric Pollution Prevention Ordinance (No.11 of 1976)	This ordinance provides for the prevention of air pollution.	Measures should be instituted to ensure that dust emanating from invasive exploration activities such as drilling is kept at acceptable levels.

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

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

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
	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 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 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.
The United Nations Convention to Combat Desertification (UNCCD) 1992	Addresses land degradation in arid regions with the purpose to contribute to the conservation and sustainable use of biodiversity and the mitigation of climate change. The convention objective is to forge a global partnership to reverse and prevent desertification/land degradation and to mitigate the effects of drought in affected areas to support poverty reduction and environmental sustainability.	The project activities should not be such that they contribute to desertification.

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
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 surroundings.	Removal of vegetation cover and destruction of natural habitats should be avoided and where not possible minimised
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 environmental baseline (receiving environment) of the project area is presented under Chapter 5 as per the information and observations obtained and made on site and project area by the Environmental Assessment Practitioner, respectively. The site information has also been complemented by review of existing different and relevant data sources

5 THE RECEIVING BIOPHYSICAL AND SOCIAL ENVIRONMENT

The baseline (pre-project site conditions) information of a project area is crucial to understand the state of the environment before the implementation of the proposed project. This aids in undertaking a concise assessment and make informed conclusions on the potential impacts stemming from the project activities on sensitive environmental and social components and thus, enabling the recommendation of practical and realistic management and mitigation measures thereon.

The data source used to compile this chapter ranges from the review of existing and relevant published academic papers, old project reports and books containing the information on the project area. The information sourced from online (soft copies) and physical source research has been complemented by raw data collected during the site visits, assessments and public engagement meetings undertaken on the 28th of October 2021 in Omatjete.

5.1 Climate

The climatic conditions of the Omatjete and project site area are presented as follows.

5.1.1 Temperatures

The project area experiences average high temperatures of 32°C in April, May and July and low average temperature 10°C in November and December (**Figure 4**).

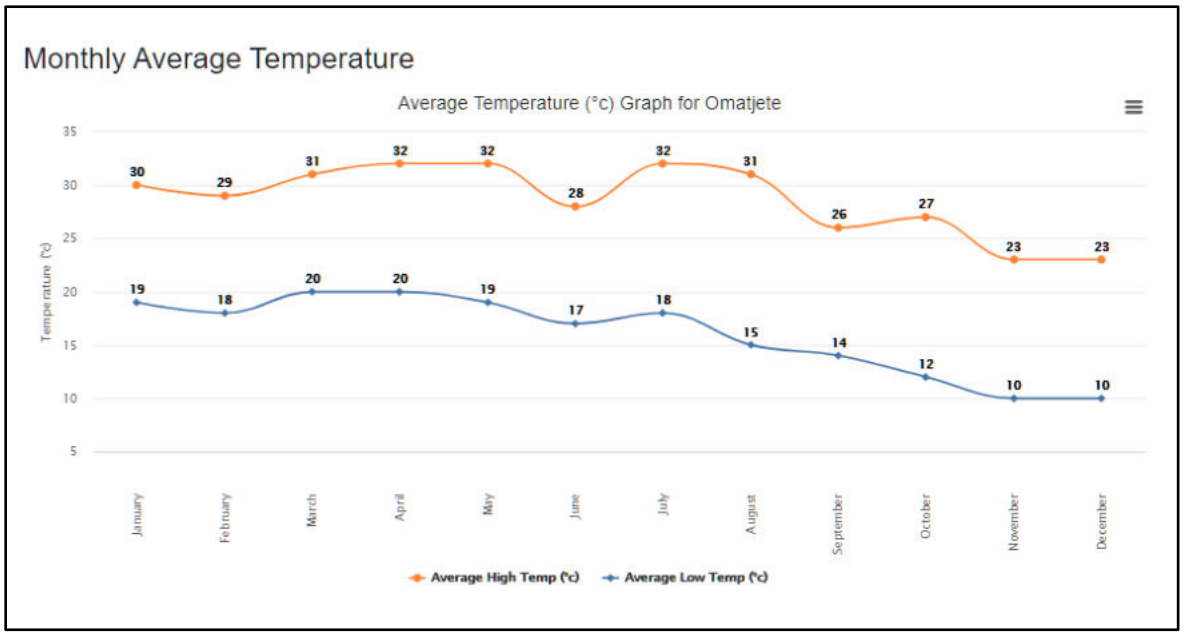

Figure 4: **The monthly average temperatures for Omatjete (World Weather Online, 2021)**

The Omatjete and surrounding areas including EPL 7233 have average maximum temperatures ranging between 21°C in June and 33°C in October. The average minimum temperatures are between 8°C in June and 21°C in January. **Figure 5** below shows minimum and maximum temperatures for a 12 year-period, i.e., 2009 to 2021. The average annual temperature is 25°C.

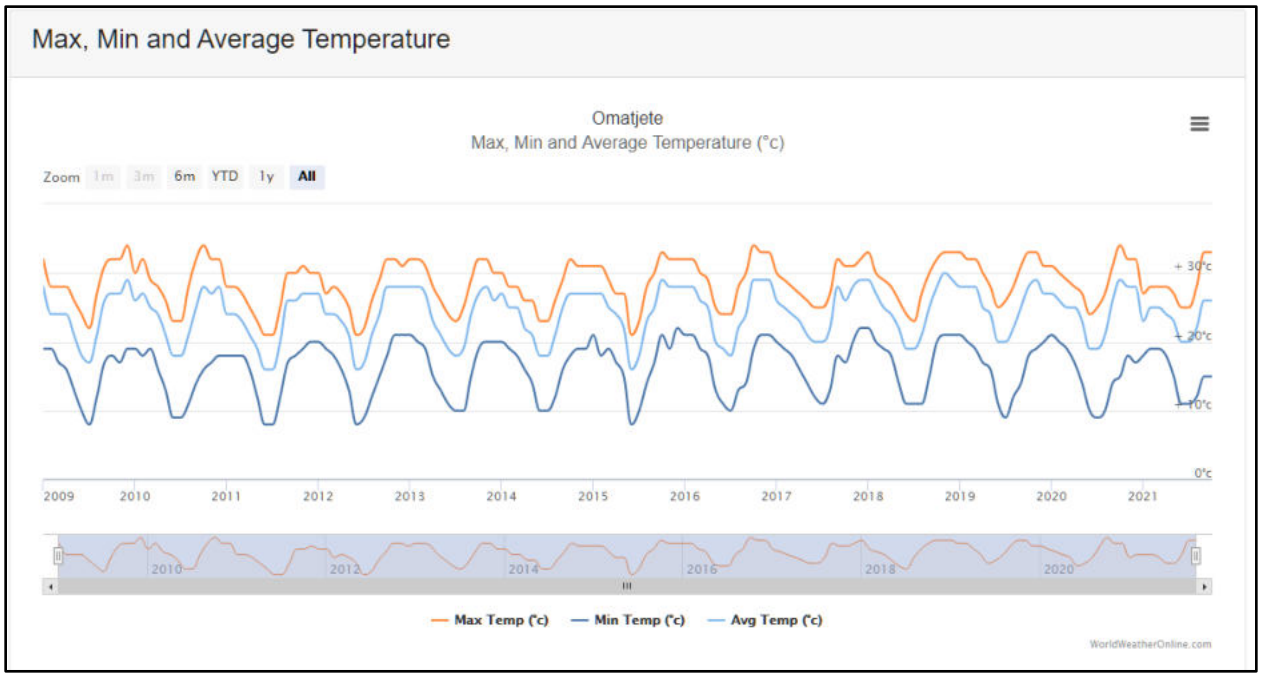

Figure 5: Maximum, minimum, and average temperatures for Omatjete (World Weather Online, 2021)

5.1.2 Rainfall

The average rainfall for Omatjete over a period of twelve (12) years, i.e., from 2009 to 2021 are shown in **Figure 6** below. The lowest rainfall recorded over this period was less than 8.1 mm in September 2014 with the highest recorded in February 2012 at 557 mm.

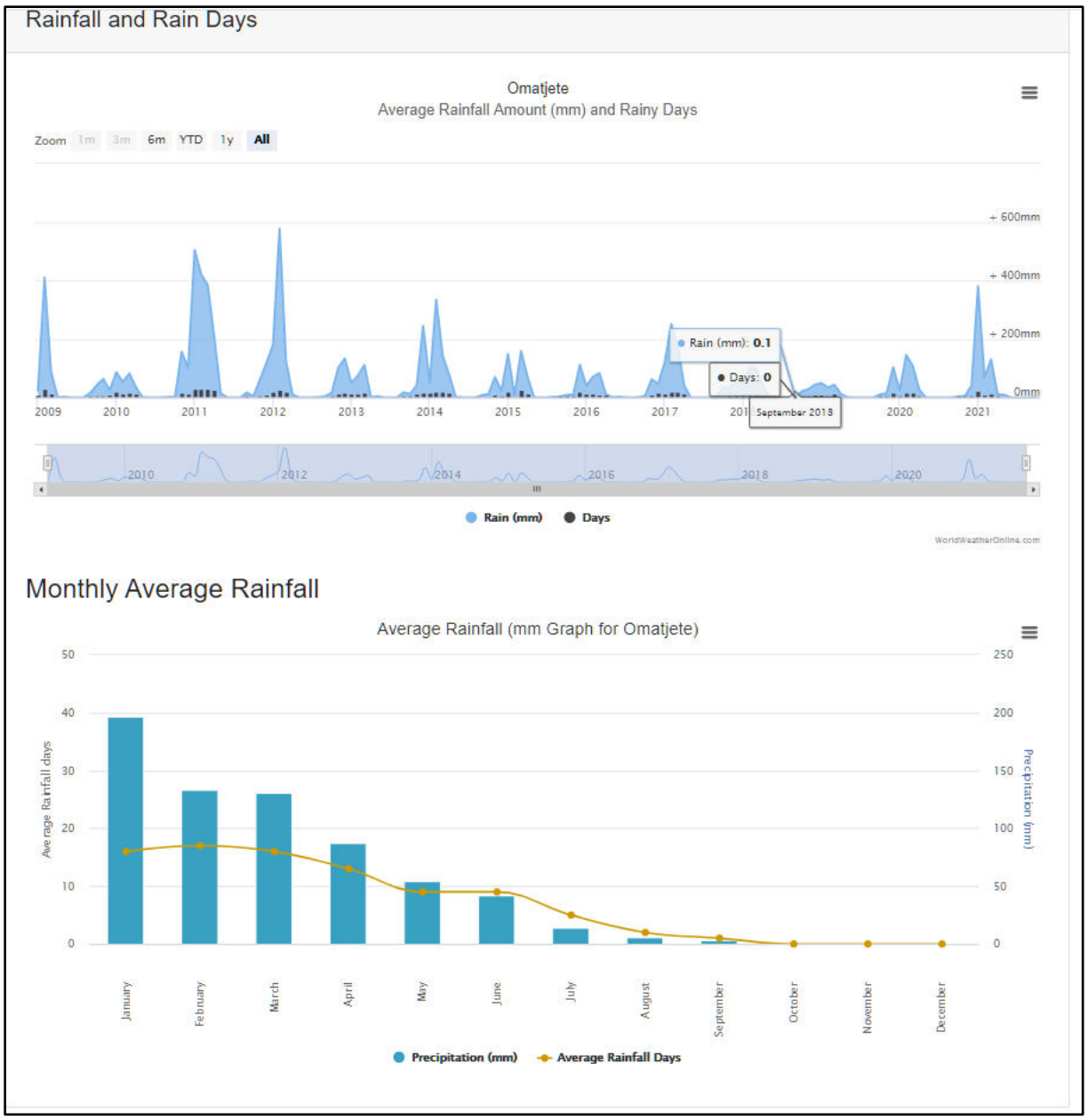

Figure 6: The rainfall & rainy days and monthly average rainfall of the Omatjete area (World Weather Online, 2021)

5.1.3 Air and Wind

Air: The current known sources of air pollution in the area are dust emissions from unpaved district and access roads within the area, and emissions from heavy vehicles on the local roads including the D3712, particularly in dry and windy months.

5.2 Topography

The EPL site is located within the Central- Western Plain. According to Mendelson (2003), the plains were largely formed by erosion cutting eastwards into the higher ground, thereby forming the catchment area of several major ephemeral rivers such as the Khan, Omaruru, Swakop and Ugab, which water would all reach the sea when in full flood during good rainy seasons (Erongo Regional Council, 2021). Much of the area lies between 500 and 1000 m above sea level and consists of metamorphic rocks that were forced up out of the sea during the formation of the Gondwana continent some 550 million years ago.

Much of the area within the EPL is flat with low hills with one high mountain northwest of the EPL and covering a small portion of high rocky outcrops to its south-western side **– Figure 7**.

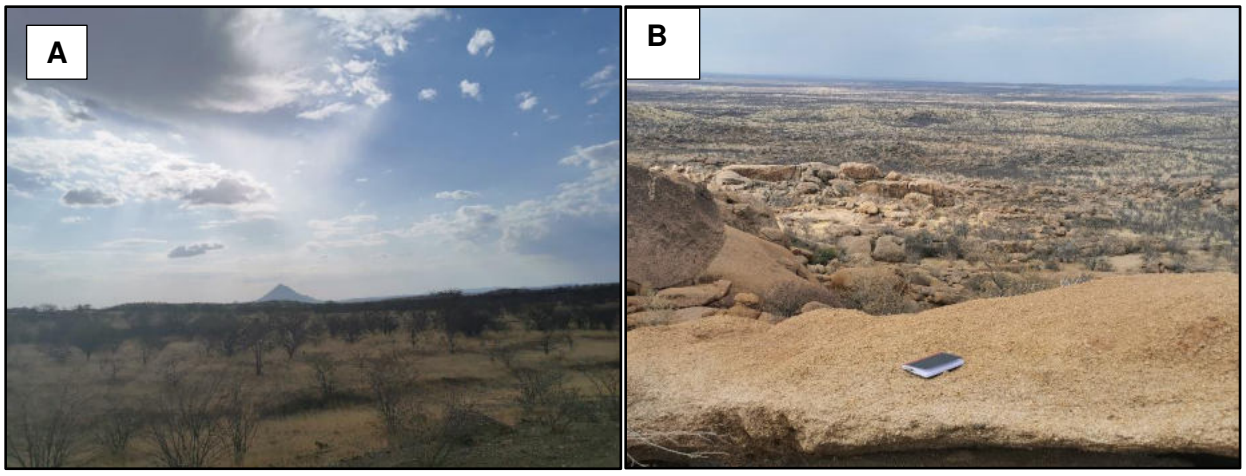

Figure 7: The topography of the EPL area (A – view to the northwest from the central eastern side of the EPL and B – view to the northern side of the EPL from the southern boundary of the EPL)

5.3 Geology and Soils

According to Miller, 1992 as cited by Excel Dynamic Solutions (2021b), EPL 7233 (project site) falls within the metasedimentary rocks of the Damara which is represented by the Kuiseb and Karibib Formations as well as sounding Damara Granites. Schists and quartzite, together with iron ore lenses form the lower units of the stratigraphy. It was deposited during successive phases of rifting, spreading, subduction and continental collision. Much of the basal succession (Nosib Group), laid down in marginal to intracontinental rifts, consists of quartzite, arkose, conglomerate, phyllite, calc-silicate and subordinate limestone and evaporitic rocks. Local alkaline ignimbrite with associated subvolcanic intrusions ranges from 840 to 720 million years in age.

The site geology is mainly characterized by mica & granitic schists, quartzites, marbles and slight granite on the small portion at the south-eastern boundary of the EPL (as shown on the geology map in **Figure 8**). The foot of the mountain bordering the EPL to the southeast is overlain by very big boulders of granite (**Figure 10**). The southwestern boundary side of the EPL is covered by rock units such as red mudstone, siltstone, sandstone, and conglomerate and some of these common rock units and outcrops encountered during site visit are shown in **Figure 9.**

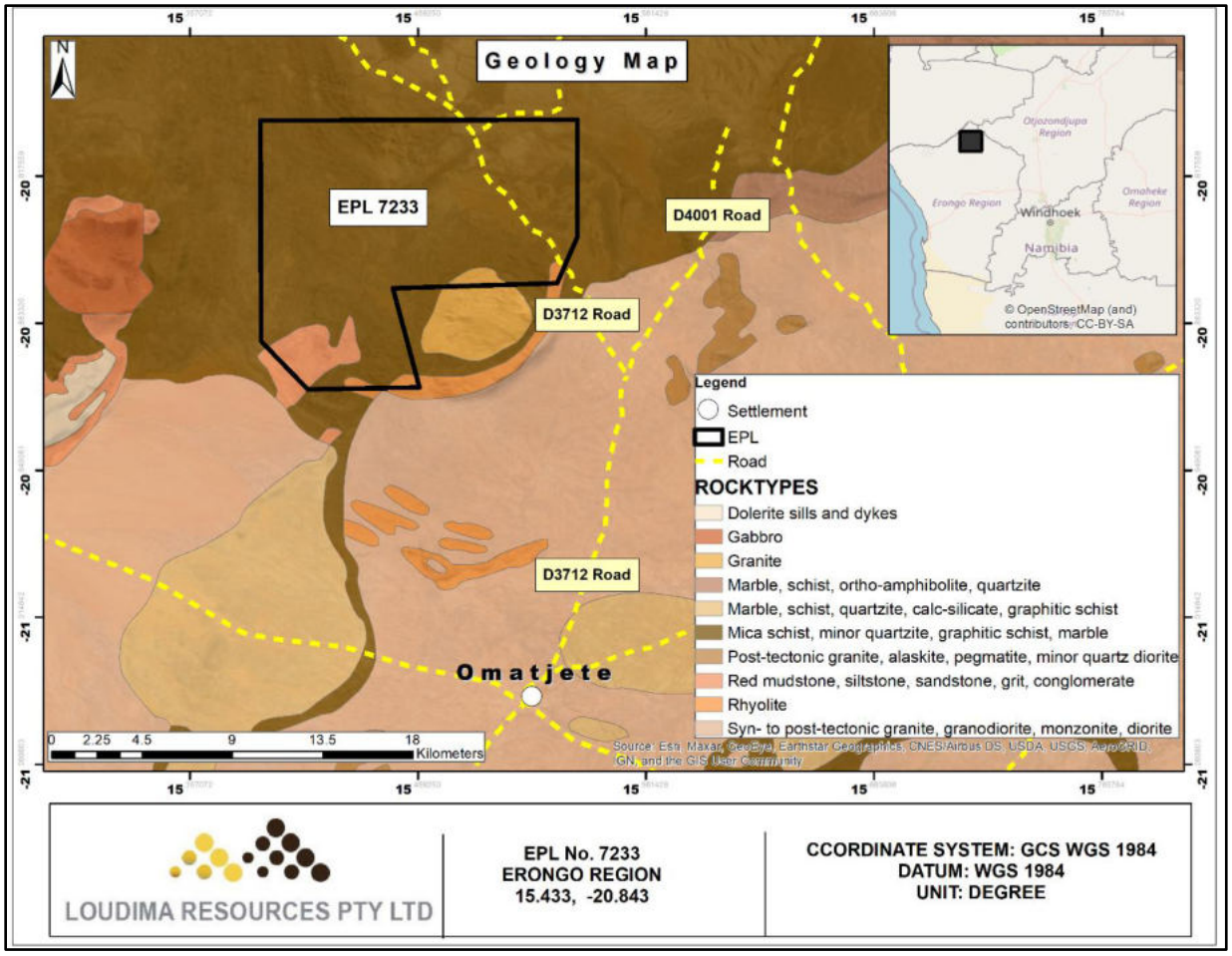

Figure 8: **The geology map of the EPL area**

Figure 9: The typical rock outcrop (schists and quartzite) on central eastern part of the EPL

Figure 10: The typical rock outcrop (granite boulders) at the south-eastern boundary of the EPL

In terms of soil, the project site is overlain by Eutric Regosols. The Eutric Regosols are medium or fined textured soils of actively eroding landscape, the thin layers lying directly above the rock surfaces from which they formed. The central regions of the country are dominated by Regosols, which are especially susceptible to erosion where there is any degree of slope. Vegetation cover on these thin soils is generally sparse because they cannot provide most plants with sufficient water or nutrients. Areas with Eutric Regosols can support low-density stock farming or wildlife (Mendelsohn, 2003).

The site soils are influenced by the geology with visible outcrops of shale. The soils in and surrounding the project site have poor structure and little to no distinct layering, and soil texture is fine and sandy, with very low moisture content. The soils of the project site are light brown to grey loamy sandy soils and in some site areas loamy sand soil with gravel pebbles that may be site activities influenced such as the DR3712 to the eastern boundary of the EPL

5.4 Hydrology and Hydrogeology

Hydrology: in terms of local rivers (surface water/hydrology), the Okasoko ephemeral River crosses the EPL from its northern side towards its upper eastern corner. Other three small surface water channels can be seen crossing through the EPL with Okomize River also flowing further south of the EPL boundary (**Figure 11**).

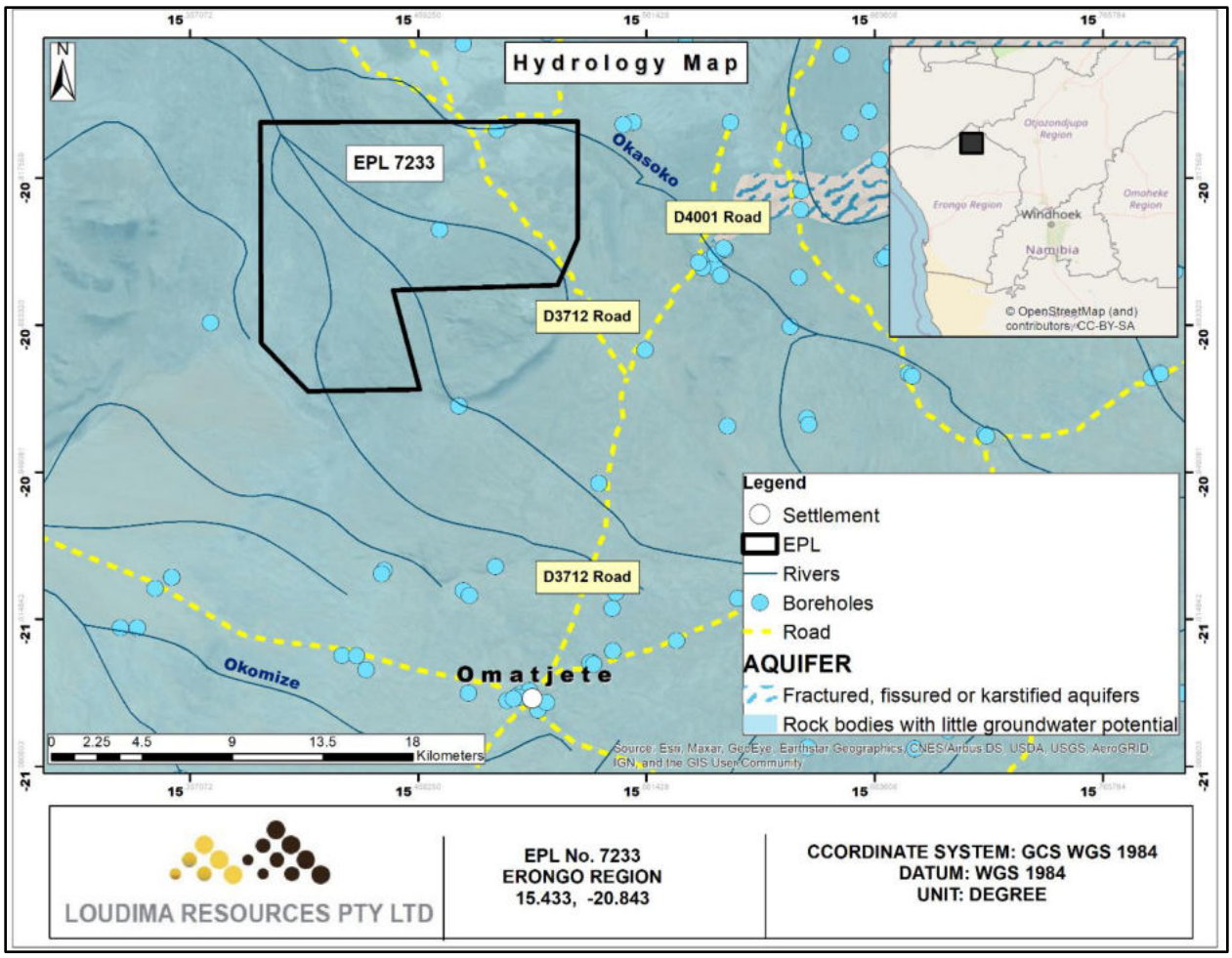

Figure 11: The hydrology and groundwater map of the EPL area

Hydrogeology: the EPL site and surrounding areas falls within the Brandberg, Erongo and Waterberg groundwater area (basin) which includes the Waterberg in the north-east and stretches down to the Atlantic coast in the south-west. It covers most of the western part of the Otjozondjupa Region and the northern Erongo Region. This area generally has only moderate to poor groundwater potential. The groundwater potential of fractured aquifers in the Swakop Group of the Damara Sequence is generally low. However, the carbonates (marbles and limestones) are of moderate potential and at properly selected targets like fracture zones and karstified contact zones, even high yields can be found. This depends on the amount of rainfall and associated weathering and recharge Christelis and Struckmeier, 2011).

As typical of the basin rock units, the EPL is mainly covered by the rock bodies with little groundwater potential (as shown in the map above – **Figure 11**) and limited potential aquifer. At some areas the aquifers' potential is locally moderate which probably explains the good water supply for the nearby villages such as Otjohorongo (as indicated by some public meeting attendees). The low groundwater potential in some areas around the EPL is attributed to the type of rock units underlying the EPL and their non-fractured/faulted nature limiting the storage, transmission, and easy flow of groundwater.

5.5 Fauna and Flora

5.5.1 Fauna

Domestic animals: The project site and broader area is communal therefore houses livestock such as cattle, sheep, goats, horses, donkeys, and chickens

Wildlife: The EPL is found within Otjohorongo Community Reserve, therefore several wild animals are likely to be housed within the EPL as well as wider areas. Some of the wildlife known based on the information provide by locals include Ostriches, Guinea Fowls, Jackals.

The site visit was undertaken in the afternoon and there was no wildlife spotted on the visited parts of the EPL. This can be explained by the hot sun and the wildlife within the project site may be hiding from the sun and possible human presence at the time.

5.5.2 Flora

The project site is covered by medium to high density grass cover with shrubs and young trees of the following species:

- Blackthorn (*Acacia mellifera*)
- Mopane/butterfly (*Colophospermum mopane*)
- Purple pod terminalia (*Terminalia prunioides*).

The common vegetation observed on the project site are shown in **Figure 12.**

Figure 12: Common vegetation within the project site (shrubs of purple-pod terminalia, blackthorn and mopane)

5.6 Surrounding Land Uses

Apart from the fact that the EPL is found within Otjohorongo Reserve, the EPL is also neighbouring some power distribution line along the DR3712 road supplying the existing Ekungungu mining operations. The powerline is from Okongwe to Otjohorongo. On the mining operations, there are visible white worked dimension stone blocks ass seen on **Figure 13.**

Figure 13: The Ekungungu Trading mining operations on the immediate southern boundary of the EPL

To the immediate east is the D3712 district. There are two villages (Okamajere and Omutiuanduko) found within the western side of the EPL.

5.7 Services Infrastructure

The project site is in a rural set up, but it has the basic services for the people. The Omatjete Village is found in the Erongo Region that is connected to the rest of the country by the B1 tarred road as well as some good-graded gravel road links, health centres, educational institutions, shops (in towns and settlements) and hospitality facilities, etc. Some of these services are well-placed around the project site area and nearby areas.

The following services infrastructure have been observed near the site and for the general project area and Region:

- **Water Supply:** The Omatjete Village itself is said to be experiencing water shortages although the villages close to EPL 7233 have some boreholes with good supplies.
- **Electricity:** There is a powerline just on the immediate southern border of the EPL - **Figure 14**. The powerline is supplying electricity to the active mining licence of Ekungungu. The main powerline runs from Okongwe Village to Otjohorongo supplying these village and surrounding areas.

Figure 14: Powerline connecting the existing mining operations to the Okongwe-Otjohorongo line

- **Roads:** The EPL is accessible from the district road, D3712 (**Figure 15**) from Omatjete to the north or D2344 from the south and then via local access (gravel) roads. Therefore, the exploration vehicles will be using these existing roads to access the project site. It is also anticipated that, if necessary, onsite new tracks to the different targeted site areas within the EPL will be created. The Proponent may need to do some upgrade on the site access road to ensure that it is fit to accommodate project related vehicles, such as heavy trucks.

Figure 15: Single track access road from the northern side of the EPL to the south (Omatjete)

- **Telecommunication Services**: Like the rest of the regions, the Erongo Region and the project site area are well connected to the rest of the country and world via local network service providers such as the Mobile Telecommunications Company (MTC Namibia).and in some instance, Telecom Namibia as well landlines in urban areas and in some rural residences, including surrounding villages.
- **Waste management:** The proposed project site is in a rural set up but with waste managed at an urban level for commercial developments or projects. For non-commercial projects or rural everyday life, small informal waste management facilities (landfill sites) are utilized to store waste.

5.8 Social Demographics

5.8.1 Regional Population Density

The Erongo Region has a population of 150 809 people, accounting to a 7.1% of the country's total population. The average population density of 2.4 persons/km². Out of the total population, 79 823 were men and 70 986 were women (Namibia Statistics Agency, 2011).

5.8.2 Constituency Population Density

The Erongo Region has seven constituencies comprising Arandis, Daures, Karibib, Swakopmund, Omaruru, Walvis Bay Rural, and Walvis Bay Urban. The project area falls under the Daures Constituency and according to the 2011 National Housing and Population Census, the population of the Constituency was recorded at 11 350 out of which 5 309 were men and 6 041 were women (Namibia Statistics Agency, 2011).

5.9 Economic Development

According to Bender (1999), the Coastal Zone of the Erongo Region is predominantly urban, because of the unique character of the landscape, which precludes agriculture. The population is thus concentrated in the urban areas of Walvis Bay, Swakopmund, Arandis and Henties Bay and a few small settlements such as Langstrand and Wlotzkasbaken. The rural population in the coastal area includes a group of Topnaars (approximately 500 persons) residing along the Kuiseb River.

According to the Erongo Regional Council (2015), the economy of the Erongo Region mainly depends on mining, fishing, agriculture, and tourism.

The fishing industry is the third largest economic sector contributed about 6.6 percent cent to the Gross Domestic Product (GDP). The Region's whole eastern part and certain western parts are characterized by livestock farming on commercial farms in the districts of Karibib, Usakos and Omaruru, and in the communal areas (Erongo Regional Council, 2015).

According to the Namibia Statistics Agency (2011), the main source of income in households in the Erongo Region comes from farming (3%), wages and salaries (73%), cash remittance (5%), business and non-farming (9%) and pension (8%).

5.9.1 Farming

From the 2000 statistics, the Erongo Region accommodated more than 110 000 goats, nearly 36 000 heard of cattle, and about 50 000 sheep. Cattle from commercial and communal farmers can be marketed to the national abattoir and processing facility (MEATCO) (Erongo Regional Council, 2021).

Furthermore, commercial crop farming is practised in isolated areas such as on the banks of ephemeral rivers, namely the Omaruru River.

The common farming activity within and around the EPL is communal by small-scale farming (livestock farming) with goats, cattle, sheep and horses and donkeys. These, especially cattle, sheep and goats provide the main source of both food and through sales, income for the communities. The livestock farming depends heavily on the rainy season; hence, most farmers usually suffer losses of herd of cattle during prolonged drought periods.

5.9.2 Fishing

According to the Erongo Regional Council (2021), the fishing industry is the third largest economic sector contributed about 6.6% to the Gross Domestic Product (GDP). The value of fishing, onshore and offshore processing accounted for N$3,410 million in 2008. It is also the largest employer at the coast. The industry at Walvis Bay, and Lüderitz in the Karas Region, employs about 14,000 workers, of which about 43% work on vessels at sea while 57% are involved in onshore processing. Namibia's fishing industry is the country's second biggest export earner of foreign currency after mining. In total of 90% of the national output is exported.

5.9.3 Conservancies and Tourism

The Erongo Region is home to two national parks, a seal reserve, four communal conservancies and several private game reserves or farms. Namibia is well known for its strong position on the conservation of its environment, the actual proclamation of various areas as reserves and the necessary acts, rules, regulations, and procedures to safeguard its rich and unique biodiversity. More than 42% of land in Namibia is under some form of conservation management. There are community-based organisations local people manage and utilise the wildlife and tourism resources in their areas, thereby deriving direct and indirect mutual benefits. These conservancies together with the about 54 other similar conservancies in the country enjoy employment creation, revenue, in-kind benefits, capacity building and other benefits.

With regards to tourism, the Erongo Region offers some of the most spectacular and popular tourist destinations as well as a variety eco-, wildlife, cultural and adventure tourism opportunities.

The common tourism activities especially in the project area include game seeing in the community reserves such as the Otjohorongo Community Reserve.

Some commercial farms in the Erongo Region and farms further to the east of EPL 7233 serve as hunting and guest establishments, while some have been converted into game farms or reserves for regional and international tourist. Due to these activities, these commercial farms provide employment to a substantial number of people in the areas (Erongo Regional Council, 2021).

5.9.4 Mining Activities

The mineral exploration and mining operations are moderately held activities in the Erongo Region. Exploration activities are common in the Erongo Region and provides livelihood to many of the Region's residents. Mining is practiced at both small-scale (on mining claims owned by communities), medium and large-scale level, depending on the commodities of interest as well as available technical and financial resources. There are already existing active mineral licenses (both EPLs and mining licenses) around the vicinity of the EPL.

The mining Sector in the Region has been characterized by the establishment and expansion of several Uranium mines over the past decade due to an increased demand for this energy source. The Erongo Region also accommodates the mining of commodities such as gold, marble, granite, salt, and semi-precious stones (Erongo Regional Council, 2015)

5.10 Archaeology and Cultural Resources

Given the sensitivity of the project site area, a Desktop Archaeological and Heritage Impact Assessment (AHIA) for the EPL was carried out by an Archaeologist on the 28th of October 2021 in a form of a site walkover survey and upon face-to-face interview with a local conservationist. An AHIA Report was compiled thereto (please refer to **Appendix** attached hereto for further reading). The archaeological & heritage information presented under the next two subsections have been sourced from Mushi (2021).

5.10.1 Regional Context

The archaeology of the Erongo Region has been well documented, available archaeological records indicate that early humans in Central Namibia, Erongo Region dates back from the Early Stone Age period, more than one million years ago as evidenced by hominin fossils from (Kinahan, 2017). Stone Age archaeology is prevalent in the larger geographical area. The geospatial data on the distribution of archaeological sites shows that sites are concentrated mainly in the central highlands (**Figure 16**).

Furthermore, studies on the Holocene Later Stone Age (LSA) in Namibia predominantly rely on the archaeological evidence found in rock shelters, despite a wealth of open-air surface assemblages. A total of 73 stratified rock-shelter sites in Namibia provide chronological information. The majority are located on the western margins of the Great Escarpment, closely corresponding to the distribution of Namibian rock art sites (Scherz, 1986; Kinahan, 2011). Studies of stratified sites in coastal or more inland settings are very rare.

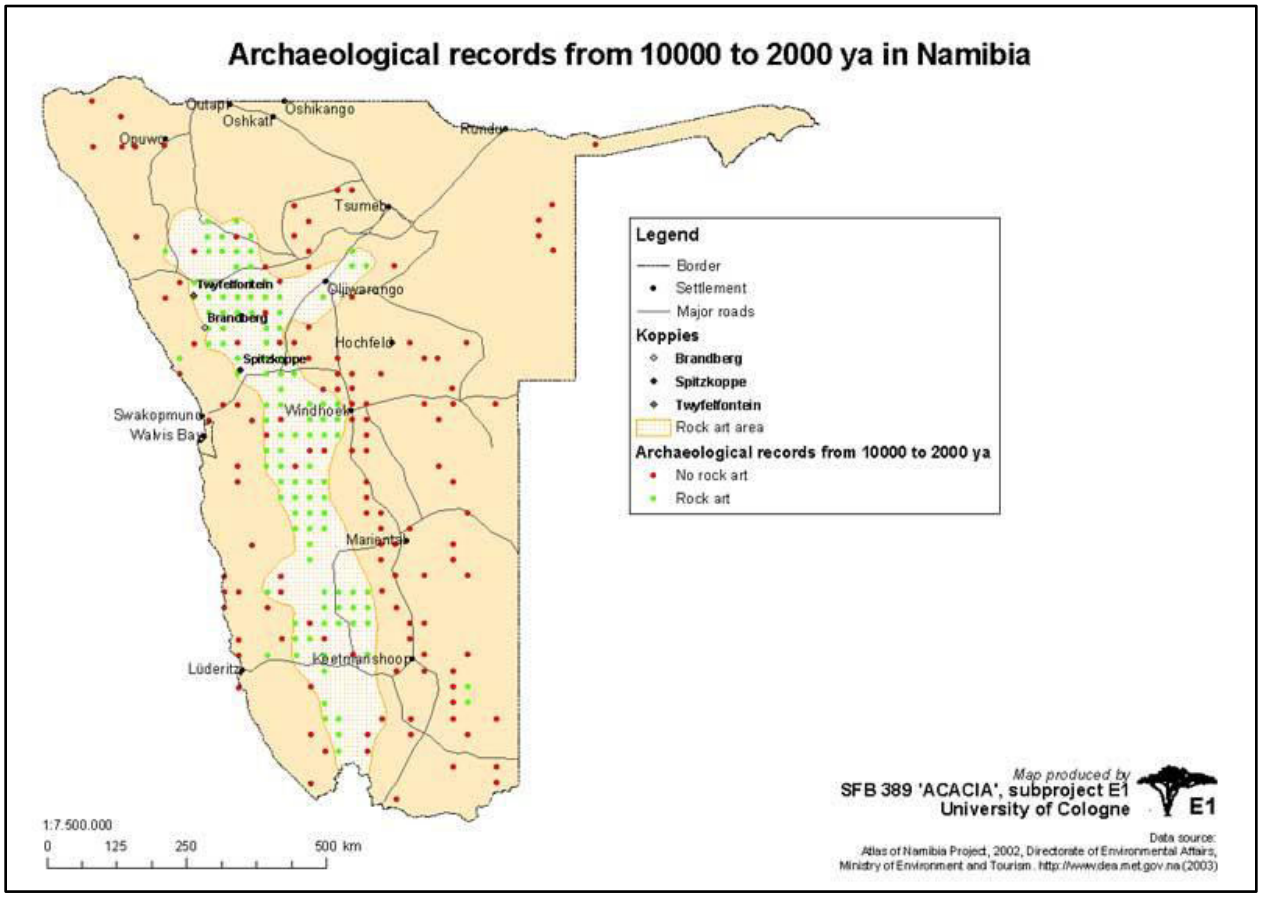

Figure 16: The Archaeological records from 10,000 to 2,000 years old in Namibia Landscape (Mushi, 2021)

There about 150 sites are recorded in the Erongo Region, and the Region is also endowed with Iron Age artefacts and contemporary heritage resources. According to the National Heritage Council of Namibia (Declared Sites/Lists of National Heritage), Erongo Region has about 37 heritage sites which are listed as national monuments.

5.10.1 Local (EPL Site) Context

The areas surrounding Omatjete and nearby villages especially those close to or within the Otjohorongo Reserve have been the focus of several archaeological surveys and assessments for some time now. These surveys and studies have helped to determine the local heritage and archaeological sites. The surveys also helped to establish the relationship between archaeological sites and the types of terrain that characterize the area, including the granite outcrops, boulders of various size and shapes, hills and the pegmatite across the landscape. The presence of rock paintings here in the vicinity is astounding even though not as popular as those in other parts of Erongo Region, here the paintings occur in the rock caves/shelters that are formed with different shape and sizes.

To ensure that the public also add their input to the proposed project, a consultation process was carried out for the EIA Study. The public consultation process was conducted as presented under the next chapter.

6 PUBLIC CONSULTATION ACTIVITIES

Public consultation is an important aspect of an Environmental Assessment (EA) process. This process entails the sharing of information through the recommended means by the EMA as well as other means that are considered efficient to get the notifications to the public. The consultation provides potential Interested and Affected Parties (I&APs) with an opportunity to comment on and raise any issues relevant to the project for consideration as part of the assessment process.

The consultation process has been undertaken in accordance with the Environmental Management Act No. 7 of 2007 and its 2012 Environmental Impact Assessment (EIA) Regulations: Section 21-24 (Public Consultation).

The public consultation process assisted the Environmental Consultant in identifying all potential impacts and aided in the process of identifying possible mitigation measures. Potential impacts that may stem from the proposed project were pre-identified prior to the consultation process and additional impacts were identified upon public feedback (through comments and concerns). Public Consultation with Interested and Affected Parties (I&APs) allows for a transparent decision-making with regards to the environmental clearance certificate (ECC).

6.1 Public Consultation Activities

The following listed activities (and as described under the subsequent sections) were undertaken to ensure that the public is notified and afforded an opportunity to comment on the proposed project:

- Registration of pre-identified stakeholders and interested & affected parties (I&APs)
- Placement of newspaper adverts in the widely read newspapers in the project area/region.
- Compilation and circulation of the background information document (BID) to pre-identified stakeholders and I&APs and to new I&APs (upon registration request).
- Placement of notices for public attention in Omatjete.
- Holding and facilitation of the public consultation meeting in Omatjete and recording of meeting minutes.

6.1.1 Registration of Stakeholders and Interested & Affected Parties (I&APs)

The relevant and applicable stakeholders from the national, regional, and local authorities were pre-identified and registered. The representatives from these authorities made up the initial list of stakeholders at the beginning of the environmental assessment process. Upon seeing the newspaper adverts, some members of the public requested to be registered as Interested & Affected Parties (I&APs) and were added to the Stakeholders and I&APs list, which was continuously updated. The summary of registered groups of I&APs or their representative bodies is as follows:

- Central or national government: Ministry of Environment, Forestry & Tourism, Ministry of Mines & Energy, Ministry of Agriculture & Land Reform, Ministry of Works & Transport, Ministry of Urban & Rural Development, etc.
- National Heritage Council (NHC) of Namibia,
- Regional government: Erongo Regional Council and Daures Constituency,
- Local / Traditional Authority: Zeraeua Traditional Authority,
- Members of the public in and around Omatjete as well as other registered I&APs.

A complete list of the registered stakeholders and I&APs identified and registered is attached under **Appendix D**.

The communication/consultation and interaction with the I&APs were done through the following means and in this order.

5.1.2 Background Information Document (BID)

A Background Information Document (BID) was drafted at the beginning of the ESA process. The BID provided details on the public consultation process with contact details for further information. This document was advertised for availability through newspaper placements. The BID was initially sent to pre-identified I&APs and stakeholders via email on the 18th of October 2021 (proof of email communication/BID circulation is attached under **Appendix F**). Upon request by additional I&APs, the BID was shared with them as well. Some printed copies of the BID were distributed to the meeting attendees during the public consultation meeting on the 28th of October 2021 in Omatjete.

6.1.2 Step 1: Public Notification (Newspaper Adverts)

The newspaper adverts notifying the public about the commencement of the ESA processes were circulated in three newspapers, namely *Die Republikein*, *Namibian Sun* and *Allgemeine Zeitung's Market Watch* of the Namibia Media Holdings (**Appendix E**). The adverts were placed for two weeks on the Mondays of the 11th and 18th of October 2021.

6.1.3 Step 2: Public Notification (Project Site Notices))

The notices of the ongoing EIA process in A3 size were placed at the Zeraeua Traditional Authority office notice board - **Figure 17,** and Omatjete Clinic entrance (notice board) – **Figure 18**. The notice provided information about the project and related ESA contact details of the Consultant for public communication purposes.

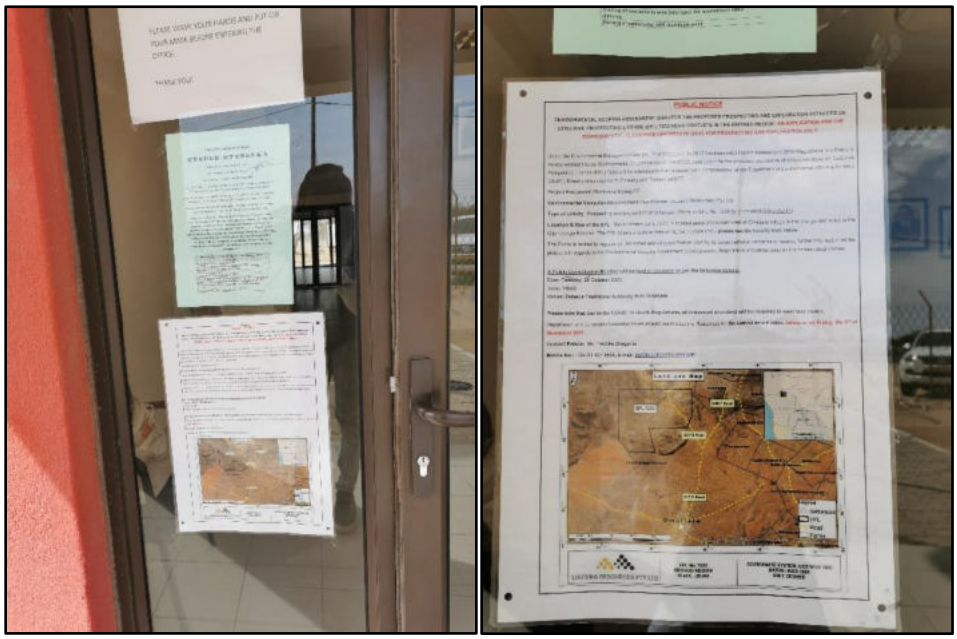

Figure 17: Project notice at the Zeraeua Traditional Authority notice board

Figure 18: Project notice at the Omatjete Clinic notice board

6.1.4 Public Consultation Meeting Invitation and Facilitation

A public consultation meeting is one of the most important components of public consultation process as it brings together the consultant and affected and interested members of the public. The meeting is usually done in an interactive session form so that the community members or members of the public can express their opinions, give their concerns, and make suggestions to the proposed project while it is still in the early stages (planning).

A face-to-face public meeting was arranged for 28 October 2021. The meeting invitation request was communicated to the Zeraeua Traditional Authority for local community dissemination and communication sent to registered stakeholders and I&APs.

The consultation meeting was held at the Zeraeua Traditional Authority Conference Hall on Thursday, 28 October 2021 and attended by twenty-three (23) community members including some traditional councillors (and three representative Consultants from Loudima) – **Figure 19**. Due to the COVID-19 Regulations on gatherings, the meeting seats were set up in such a way that social distance was adhered to, and every attendee had a face mask on.

Figure 19: A consultation meeting photo taken from one side of the Zeraeua Traditional Authority Conference Hall in Omatjete

The Environmental Assessment Practitioner from Loudima presented the EIA/ESA process, how the community members can be involved and why their involvement is vital. Since some of the meeting attendees were elders from Omatjete and surrounding areas who only spoke Otjiherero Language and to ensure transparency and effective communication in the meeting, Mr. A. Karongee from the nearby villages volunteered to translate for the elders (from English to Otjiherero) throughout the meeting. To ensure that the comments and issues raised during the meeting are well communicated to the Consultants and recorded in the minutes for consideration in the ESA Report, Mr. Karongee also provided translation to Ms. Shagama (from Otjiherero to English).

Another community meeting was held with the local communities near the EPL, in the Omutiuanduko Village on the 10th of February 2022. The issues raised in the meeting were the same with the ones raised in the first meeting (on 28 October 2021). Therefore, these have been incorporated into the October 2021 Minutes and aided in the compilation of the Report and EMP.

The audience were encouraged to give their comments, concerns, and additions to the proposed project regarding their community. The issues and concerns raised in the meeting were recorded and translated into Public Consultation Meeting Minutes - **Appendix G**.

6.2 Public Feedback on Consultation

The public was afforded nineteen (19) days from the date of the first newspaper advert to register as I&APs and submit comments and or concerns. During this period, but after the public meeting, a one-page letter was submitted to Loudima as a collective comments' document by the Otjohorongo Community. The rest of the concerns were only raised during the public meeting and were addressed and recorded in the Meeting Minutes and incorporated into this document (Report).

The main (significant) issues raised during the Public Consultation Meeting and letter from the Otjohorongo Community (received via emails) are summarized in **Table 4** below and presented in the **Issue & Response Trail Document – Appendix H.**

In addition to the author's experience and research, the issues and concerns raised by the interested and affected members of the public formed a basis for the compilation of the ESA Report and Draft EMP.

Table 4: Significant issues and concerns raised during the consultation meeting and received via email

No.	Issue	Brief description of the issue
Public Consultation Meeting issues		
1.	Poor compensation of workers	There is currently an issue of workers being underpaid on some of the existing dimension stone operations in the area. This needs to be improved.
2.	Health and safety	The workers' health and safety are neglected at some of the existing similar operations.
3.	Rehabilitation of sites	The explored and even mined sites are not properly rehabilitated, thus, causing a lot of safety risk especially to livestock. The Proponents should consider creating a Trust Fund meant for rehabilitation after completion of works to at least rehabilitate the disturbed area close to its pre-activities state as possible instead of just leaving the areas as they are.
4.	The no-public consultation prior to granting EPLs	The lack of provision for communities to contribute to the granting of EPLs but only during the EIA process when it seems too late to object anything.
5.	Archaeological and heritage impact	The ongoing issue of damaged archaeological and heritage sites by some mining operators north of Omatjete.
6.	Lack of visible Corporate Social Responsibility (CSR) being implemented in communities	The locals have been suffering without benefiting from the resources being exploited from the communities and there is no CSR. Therefore, there should be a partnership in shareholding between the EPL holders and community or investing in youth development at a local level.
Issues from the Otjohorongo Community Letter (via Email)		
8.	Disturbance to pastoral land (grazing areas)	The Otjohorongo Communal area is already small, and drought stricken. The high mountain areas serve as reserves for grazing during very dry seasons.

No.	Issue	Brief description of the issue
9.	Lack of rehabilitation of disturbed sites	Rehabilitation of the areas are not happening which leaves the areas very dangerous for both human and livestock that frequents the area. Sharp accents and descents pose a fatal threat for falls.
10.	Damaging of local services infrastructure (roads)	The road between Otjohorongo and Omatjete have been in dire state, while the locals are witnessing trucks running everyday carrying their resources without caring about the road their making undrivable for the locals.
11.	The destruction of rock paintings (archaeological & heritage resources)	Destroying of Historical markings, showing total disregard for the protection of historical Rock Paintings in the area.
12,	The concern on the exclusion of public consultation prior to granting EPLs	Proper lengthy consultations that are inclusive should be encouraged so that the communities that are directly affected be at the forefront of the decision to allow or reject mining in some areas that are sensitive to any activities
13.	Inclusive consultation	Proper consultations and following correct procedures to facilitate mining activities to be done without harm and to benefit all stakeholders.

In addition to the author's experience and research, the issues and concerns raised by the interested and affected members of the public formed a basis for the compilation of the ESA Report and Draft EMP.

7 IDENTIFICATION OF POTENTIAL IMPACTS AND ASSESSMENT

This chapter presents the potential impacts that are anticipated to be associated with the project activities, their description and assessment. The mitigation measures to avoid and or reduce the significance of these impacts, particularly the adverse (negative) impacts are also presented under this chapter and in the form management action plans in the Draft EMP (Appendix B).

7.1 The Identified Potential Environmental Impacts

The prospecting and exploration activities are usually associated with some impacts, both positive and negative. The potential impacts that have been identified so far are as follows:

Anticipated positive impacts:

- Socio-economic development through temporary employment creation, skills transfer. Thus, boosting the local economic growth and development.
- Community benefits through practical implementation of corporate social responsibility (CSR)
- Investment opportunities and infrastructure-related development.

The following potential negative impacts are anticipated:

- Potential disturbance of existing pastoral systems,
- Archaeological and heritage impact,
- Physical land / soil disturbance,
- Impact on local biodiversity (fauna and flora) and habitat disturbance,
- Potential impact on water resources and soils,
- Air quality (compromise the surrounding air quality),
- Visual impacts due to land scars from exploration (stripping for demonstration blocks),
- Potential occupational health and safety risks,
- Vibrations and noise associated with dimension stone test quarrying,
- Vehicular traffic safety & impact on services infrastructure (e.g., local roads),
- Environmental pollution (waste generation), and
- Potential social nuisance and conflicts due to land use.

7.2 Impact Assessment Methodology

7.2.1.1 Impact Assessment Criteria

The methodology employed for this assessment is presented below.

The proposed exploration and associated 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 5**. 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 5: Impact Assessment Criteria employed to assess the potential 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 impact is expected to occur, measured in relation to the lifetime of the project.	**Low (1):** Immediate mitigating measures, 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.

Nature	Description	Rating
		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.

7.2.1.2 Impact Significance

After the impact has been assessed, its significance is then determined. The impact significance is determined through a synthesis of the above impact characteristics (in **Table 5** above). The significance of the impact "without mitigation" is the main determinant of the nature and degree of mitigation required.

Once the above factors (**Table 5**) 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**).

Table 6: 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 7.1 above are described and assessed under the subsequent sections.

7.3 Assessment of the Significant Potential Positive Impacts

7.3.1 Socio-Economic development: Temporary Employment Creation

The prospecting and 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 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 for exploration only
- **Probability**: Probable
- **Significance (no mitigation):** Low, Significance (post-mitigation): medium
- **Mitigation measures:** Preference of local people for employment for jobs should be implemented, i.e., permanent residents from the local areas (in and around villages such as Okamajere and Omutiuanduko) 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.
- -Opportunities such as small tenders for instance should be awarded through the established committee.

7.3.2 Socio-economic development: Corporate Social Responsibility (CSR)

The Proponent like any other developers or in this case, businesspeople in the mining sector are obliged to at least invest in the communities where they operate in. This will help the locals to although indirectly, benefit from the natural resources in their communities, and not only left with potentially irreversible damages left behind by exploration and mining activities. The prospecting and exploration activities will potentially, even minimal create opportunities such as youth development through skills transfer when trained for the project. This can also be done by assisting local communities with some of the minimum basic needs that they may currently be struggling with.

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 to high

•**Mitigation measures:**

- The Proponent should consider providing and or donating services such as water supply boreholes to the community they are operating in through the identification of people in need. This can be done by if they drill a borehole for the project's water supply, they can then donate it to the communities upon completion of works.
- Infrastructure such as campsite/accommodation unit and field workstation structures should be donated to the community through the Traditional Authority post-exploration for distribution/allocation to the needy communities.
- The Proponent should consider collaborating with other operators in the area to help in maintaining and improving the public roads they are using so that they community (especially those with small vehicles) can also continue utilize the roads with ease during and after exploration and mining vehicles are no longer operating in the area.
- The project owner (Proponent) should fulfil their promises of CSR, upon proper consultation with the local development committees to establish what the community really needs and then provide for them accordingly however, they can afford to.

7.4 Assessment of the Significant Potential Negative Impacts

The potential negative impacts associated with any kind of project can occur if its planning is not properly done in the early stages. At times, the planning is properly done, that when the environmental management and mitigation measures effectively implemented, the potential impacts can be confidently avoided and/or minimized. However, if the recommended measures are not effectively implemented on site, these potential adverse (negative) impacts would be inevitable resulting in environmental and social catastrophe.

The potential adverse impacts describe and assessed under the following sections of this chapter are these that are anticipated for the prospecting and exploration works on the EPL.

7.4.1 Physical Site Soils and Pastoral Land Disturbance

The prospecting and invasive exploration activities such as excavating, trenching, drilling, stripping as well as land clearing to set up project structures and equipment may potentially result in soil disturbance. This could potentially leave the site soils exposed to erosion. This impact would be probable at site areas with no to little vegetation cover that would hold the soils in place with their roots. However, most parts of the EPL are covered by thick grass, and young shrubs. Therefore, the vulnerability to erosion impact is minimal.

With regards to the potential disturbance or loss of pastoral land (grazing areas), as an aspect of local culture, pastoral farming is vital, as it serves as livelihood for local communities who greatly depend on livestock farming for subsistence and commercial purposes. These societies are, to a large extent, built around a pastoral economic specialization. Therefore, the effect of invasive exploration activities on the land may hinder animal husbandry in the area and its surrounding. Exploration works may pose a risk (disturbance) to grazing pastures for local livestock, and if exploration occur over a wider spatial extent, the project area might experience loss of its pastoral system over time. Losing grazing pastures for livestock minimizes the amounts of livestock and overall farming activity in the area, leading to loss of livelihoods and household level income (Excel Dynamic Solutions, 2021a).

The potential 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 7**.

Table 7: Impact assessment of project activities on the site soils

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

Management and mitigation measures for physical site soils

- 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, especially for Dimension Stone test quarrying exploration.
- 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.

Mitigation measures for pastoral (grazing) areas

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

7.4.2 Soil and Water Resources Pollution

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

The spills (depending on volumes spilled on the soils) from 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. However, it should be noted that the scale and extent/footprint of the activities where potential sources of pollution will be handled is relatively small. Therefore, the impact will be moderately low.

Without any mitigation measures this impact can be rated slightly high to medium. However, with the effective implementation of mitigation measures and monitoring, the impact significance will be reduced to low. The impact is assessed in **Table 8**.

Table 8: Impact assessment of project activities on site soils and water resources quality (pollution)

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

Management and 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 on the site.
  - ✓ 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.
  - ✓ All project employees should be made aware of 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 in each phase of the project.
- 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.

- 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.
- 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 eventually runoff to water resources, especially during rainy seasons.
- Toilet water should be treated using by discharging into chemical toilets and periodically emptied out before reaching capacity and transported to a wastewater treatment facility.

7.4.3 Archaeological Resources

During site clearing and earthworks activities, historical resources may be impacted through inadvertent destruction or damage. This may include the excavation of subsurface graves or other archaeological objects and damaging of heritage sites.

The desktop archaeological assessment, and field survey which was conducted on the 28th of October 2021 indicates that sections and immediate outside boundaries of the proposed project site area is highly sensitive in terms of heritage resources that characterizes the need of a detailed investigation of any other existing archaeological cultural materials in the areas. As it was noted during the Stakeholders consultation that there is a pending court case order with respect to the mining and exploration activities in the area which led to the destruction of the environment and heritage sites. Furthermore, according to one of the attendees of public consultation meeting (contributor), the recommendations made by the National Heritage Council was that the sensitive mountain should be under protection as heritage site, and a 3 km radius should apply, i.e., no mining or exploration activity is allowed within the 3 km radius from where the archaeological or heritage site is located. However, it should be noted that, the observed and recorded archaeological and heritage sites in this report occur in the same landscape but different in localities. Most of the rock paintings and rock shelters shown or reported in the project's Archaeology & Heritage Report are outside the boundaries of the proposed project site. The EPL 7233 is located northern side of the mountain where existing mining activities are taking place, and it extends west ward cutting across the D3712 Road which serves as the access road to the nearby villages as well. In the same vein, the images depicted in the AHIA Report specifically figures 9, 10, 11, 12, 13, 14 & 15 **are merely for showing what is available in terms of archaeological and heritage resources outside the vicinity where the EPL falls**. This will help in bringing more understanding and conscious informed decision when it comes to preservation and protection of heritage sites in mining areas or exploration activities such as this one reported by the Archaeologist. The archaeological findings from the surveys done for EPL 7233 are presented in **Table 9** below.

Table 9: Findings at the site of Interest (EPL 7233), Mushi (2021)

Archaeological and Heritage Resources	Findings
Buildings, structures, places of cultural significance	There are on-going mining activities close to EPL 7233 (under Ekungungu Trading (Pty) Ltd Mining License 184 currently mining dimension stone), presence of infrastructures and rock paintings outside the boundaries of the Proposed Project site (EPL)
Areas to which or are associated with cultural heritage.	Rock paintings (outside the boundaries of EPL) at -20.871636 15.503557
Archaeological or heritage site.	Surface scatter of lithic is prevalent in the receiving environment
Paleontological site	None
Graves and burial grounds,	None

Archaeological and Heritage Resources	Findings
Movable objects	None
Overall comment	Apart from the surface scatter observed, the surveyed area of the receiving environment has no significant archaeological remains on the surface, but sub-surface chance finds are still possible). Therefore, the Proponent should ensure that the buried and hidden cultural materials are protected at all costs and the activities should cease immediately when buried materials are unearthed or found (*see Chance Finds Procedure in Appendix 1 of the AHIA Report and Appendix A of the EMP*)

Table 10 below is the presentation of artifacts observed in the receiving environment of EPL 7233

Table 10: Presence of Stone Artifacts in the Receiving Environment (EPL 7233), Mushi (2021)

Activity*:* During the prospecting and exploration phase activities resulting in disturbance of surfaces and/or sub-surfaces may destroy, damage, alter, or remove from its original position archaeological, historical, cultural and paleontological material or objects.		
	With Mitigation	**Without Mitigation**
Extent	Local	Local
Duration	Short-term	Short-term
Magnitude	Low	Low
Significance	Low	Low
Status (Positive or Negative)	Negative	Negative
Reversibility	Not reversible	Not reversible
Irreplaceable loss of resources?	Yes	Yes (Unless the site is left undisturbed)
Can impacts be mitigated?	Yes – limited mitigation required	
Mitigation:	No pre-prospecting and exploration mitigation needed. The stone artefacts within the study area are scattered and too sparsely to be of any significance apart from noting their presence, which has been done in this report.	
Cumulative impacts:	Archaeological sites are non-renewable and impact on any archaeological context or material will be permanent and destructive.	

Activity*:* During the prospecting and exploration phase activities resulting in disturbance of surfaces and/or sub-surfaces may destroy, damage, alter, or remove from its original position archaeological, historical, cultural and paleontological material or objects.		
	With Mitigation	**Without Mitigation**
Residual Impacts:	Depletion of archaeological record of the area**.**	

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 11** below.

Table 11: Archaeological and heritage resources 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

General Mitigation measures

- The Proponent or the project ECO / SHE Officer should familiarise themselves with the National Heritage Council's Chance Find 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 CFP is attached to the EMP.

Management and Mitigation measures as recommended by the Archaeologist (Roland Mushi)

- The Proponent and Contractors should adhere to the provisions of Section 55 of the National Heritage Act in event significant heritage and culture features are discovered while prospecting and exploring.
- A "No-Go-Area" should be put in place where there is evidence of archaeological site, historical, rock paintings, cave/rock shelter or past human dwellings. It can be a demarcation by fencing off or avoid the site completely by not working closely or near the known site.
- On-site personnel (s) and contractor crews must be sensitized to exercise and recognize "chance finds heritage" in the course of their work.
- During the prospecting and exploration works, it is important to take note and recognize any significant material being unearthed and making the correct judgment on which actions should be taken (refer to CFP).
- The footprint impact of the proposed prospecting and exploration activities should be kept to minimal to limit the possibility of encountering chance finds within the EPL boundaries. The Proponent should keep a buffer of 50 meters on all the archaeological/cultural sites observed within the project site and broader area throughout their stay (duration of their presence) in the area.
- A landscape approach of the site management must consider culture and heritage features in the overall planning of exploration infrastructures within and beyond the license boundaries.
- Subject to the recommendations herein made and the implementation of the mitigation measures and adoption of the project AMP/EMP should be complied.
- An archaeologist or Heritage specialist should be onsite to monitor all significant earth moving activities that may be implemented as part of the proposed project activities.

- When the removal of topsoil and subsoil on the site for exploration purposes, the site should be monitored for subsurface archaeological materials by a qualified Archaeologist.
- Show overall commitment and compliance by adapting “minimalistic or zero damage approach”.
- In addition to these recommendations above, there should be a controlled movement of the contractor, exploration crews, equipment, setting up of camps and everyone else involved in the prospecting and exploration activities to limit the proliferation of informal pathways, gully erosion and disturbance to surface and sub-surface artifacts such as stone tools and other buried materials etc.

7.4.4 Biodiversity - Fauna (Vegetation) and Flora (Animals: livestock and wildlife)

The potential impact on both fauna and flora is anticipated from the proposed project activities. This impact is described as follows per component of biodiversity.

A. Fauna

The earthworks, drilling activities, and test quarrying done to uncover the mineral bearing rock units could result in land degradation, leading to habitat loss for a diversity of flora and fauna ranging from microorganisms to large animals and vegetation.

Another potential impact of the project activities is the faunal habitat loss of reptiles and small mammals that live under the targeted rock units on the EPL. Although this impact may not be entirely avoidable, the project crew will be educated on the importance of conserving faunal biodiversity by not killing any of the small mammals or reptiles encountered at site. These animals may be trying to migrate from the targeted and disturbed rocks to seek shelter and habitat elsewhere, therefore, they would not be harmed in any way.

The presence and movement of the exploration workforce and operation of project equipment and heavy vehicles would disturb not only the domestic animals (livestock) grazing at the explored sites of the EPL, but also the wildlife present in the nearby Otjohorongo Community Reserve part of the EPL. The disturbance to wildlife will not only be from human presence and vehicle movements, but also potential illegal hunting (poaching) of local wildlife by project related workers. This could lead to loss or number reduction of specific faunal species which also impacts tourism in the community (for tourists who are interested in wildlife seeing in the area).

Another potential activity that will impact the faunal community is the unrehabilitated and or unfenced boreholes, trenches and pits used for exploration (once they are no longer in use). If these holes and pits/trenches are not fenced off or closed off by rehabilitating them, they could pose a high risk of site domestic and wild animals falling into these holes and pits, causing injuries and potentially mortalities, resulting in faunal loss in the area.

B. Flora

The direct impacts on flora and vegetation communities will mainly occur through clearing for the exploration access roads and associated infrastructure. The dust emissions from drilling and possibly test quarrying may affect surrounding vegetation through the fall of dust. Some loss of vegetation is an inevitable consequence of the project (Kanime and Kamwi, 2021). However, given the abundance of the shrubs and site-specific areas of exploration on the EPL, the impact will be localized, therefore manageable.

Under the status, the impact can be of a medium significance rating. With the implementation of appropriate mitigation measures, the rating will be reduced to a low significance rating. The impact is assessed in **Table 12** below.

Table 12: Faunal and floral (biodiversity) 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/M: -4	L/M: 2	L: -16

Management and Mitigation measures

- The unnecessary removal of vegetation should be avoided to promote a balance between biodiversity and project activities.
- Vegetation found within the EPL, but not in the targeted exploration site areas should not be removed but left to preserve biodiversity on the site.
- Shrubs or trees found near selected sampling or quarrying spots should not be unnecessarily removed.
- The movement of vehicle and machinery should be restricted to existing roads and tracks to prevent unnecessary damage to the vegetation.
- No onsite vegetation should be cut or used for firewood related to the project activities. The Proponent should provide firewood for his onsite camping workers from authorized firewood producer or seller.
- Design access roads appropriately in a manner that disturbs minimal land areas as possible.
- Make use of the existing road network as much as possible and avoid off-road driving.
- Vegetation clearing to be kept to a minimum. The vegetation of the site is largely low and open and therefore whole-sale vegetation clearing should only be applied where necessary and within the development footprint.
- Formulate and implement suitable and appropriate operational management guidelines for the cleared areas. Incorporated in the guidelines are the progressive rehabilitation measures. These should consider:
    - Post closure land-use measures and/or establishment of self-sustaining indigenous vegetation.
- Vegetate the top surface of the cleared areas as soon as it is practicably possible.
- Cleared areas should be revegetated with seed or plants of locally occurring species.
- No muddy and dirty equipment should be brought onto site as this is likely to carry seed of alien species.
- Poaching (illegal hunting) of wildlife from the area is strictly prohibited.
- Environmental awareness on the importance of biodiversity preservation should be provided to the workers.

7.4.5 Water Resources Use

Exploration and mining related projects are one of the water demanding activities. However, the water demand is also depended on the type and level of operation

The villages close to the EPL rely on drilled boreholes for water supply. Based on the groundwater potential map of Namibia, the area is found in a low to moderate groundwater potential areas. The abstraction of more water than it can be replenished by recharge can negatively affect the local communities (people and livestock and or wildlife) that depend on the same low potential groundwater resource (aquifer).

The impact of the project activities on the resources would be dependent on the water volumes required by each project activity. 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 required water for exploration is about 10,000 litres per month amounting to an average of 645 litres per day. This water will be used for drilling purposes such cooling and washing drilling & test quarrying equipment, drinking and other domestic purposes. Given the low to medium groundwater potential of some project site areas, the Proponent is considering carting some of the water volumes from outside the area (Omaruru) and store in industry standard water reservoirs/tanks on site. Although exploration may be requiring this much water, this would also be dependent on the duration of the exploration works and number of exploration boreholes and test quarries required to make reliable interpretation on the commodities explored for. The exploration period is limited timewise, therefore, the impact will only last for the duration of the exploration activities and ceases upon their completion.

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

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

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

Management and mitigation measures

- Water abstracted from boreholes or supplied from other local water sources such as schemes (boreholes) as well as carting should be used efficiently, and recycling and re-using of water on certain site activities should be encouraged, where necessary and possible.
- The Proponent should consider carting water from elsewhere outside the site area to relieve pressure of the available resources. Agreements of water supply should be made between the willing water supplier and the Proponent, particularly for domestic purposes (drinking, cooking and washing).
- 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.

7.4.6 Visual Impact

Intense invasive and land disturbing exploration activities typical of dimension stone usually leave scars on the local landscape. The disturbance to the landscape, especially if visible and located close to or along roads or frequented areas, these scars in many cases contrasts the surrounding landscape and thus may potentially become a visual nuisance, especially in tourist-prone areas. The eastern boundary of the EPL is located close to the D3712 road. The sight of the explored areas close to the road may be an eyesore to people, both locals and travellers given that the EPL is within a Reserve (Otjohorongo).

In terms of visual impact and assessment, Chetty (2021) stated that the visual receptors are grouped according to the similarities in views, and these are:

- **Residents**: static views from buildings that have visual exposure tend to have a relatively wide cone of vision as the viewer tends to scan back and forth across the landscape. Residents and tourists staying within the affected zone of influence are therefore classified as visual receptors of high sensitivity owing to their sustained visual exposure to the proposed development as well as their attentive interest towards their living environment
- **Tourists:** tourists would be travelling as motorists and have therefore been included in the motorist receptor categorisation. Tourists are regarded as visual receptors of exceptionally high sensitivity. Their attention is focused on the landscape which they essentially utilise for enjoyment purposes and appreciation of the quality of the landscape. While there may not be any tourist attractions in proximity to the project area, tourists may use the D3712 and nearby unregistered access roads to travel to tourist destinations within the broader area.
- **Motorists:** they are generally classified as visual receptors of low sensitivity due to their momentary views and experience of the proposed development. Under normal conditions, views from a moving vehicle are dynamic as the visual relationship between the activity is constantly changing as well as the visual relationship between the activity and the landscape in which they are seen. The view cone for motorists, particularly drivers, is generally narrower than for static viewers. Motorists will therefore show low levels of sensitivity as their attention is focused on the road and their exposure to roadside objects is brief.

The short-term impact on the local sight would also be the presence of drilling rigs, trucks, campsites, ablution facilities, etc. that may be visible to locals, travelers and or tourists in the area. Therefore, contrasting the local landscape and causing a visual nuisance. Currently or without implementing any mitigation measures, the visual impact can be rated as medium and can be reduced to low significance upon effectively implementing the measures.

Table 14: Assessment of the impacts of prospecting and exploration on visual and tourism

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

Management and mitigation measures

- The Proponent should consider the implementation of continuous rehabilitation programme, by using overburden waste rocks from exploration works, particularly test quarrying.
- 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 site areas especially where demonstration blocks are taken from.
- Drilling/cutting for Dimension Stone exploration should be done away from the crests of the mountain and outcrops as possible particularly for the EPL areas where demonstration blocks will be taken.
- Consider setting up the campsite and associated facilities further from the road parts of the EPL to reduce the structure sight from road users.
- The temporary exploration structures such as campsites and field offices should be set up further from the roads and should in a colour that is not too distinctive from the surrounding environment (to maintain the natural appearance of the area).

7.4.7 Environmental Pollution (Solid Waste Management and Sanitation)

During the prospecting and exploration phase, domestic and general waste is produced on site. If the generated waste is not disposed of in a responsible way, land pollution may occur on the EPL or around the sites. The EPL is in an area of moderate sensitivity to pollution. Improper handling, storage and disposal of hydrocarbon products and hazardous materials at the site may lead to soil and groundwater contamination, in case of spills and leakages. Therefore, the exploration programme needs to have appropriate waste management for the site. To prevent these issues, biodegradable and non-biodegradable wastes must be stored in separate containers and collected regularly for disposal at a recognized landfill/dump site. Any hazardous waste that may have an impact on the animals, vegetation, water resources and the general environment should be handled cautiously.

Without any measures for implementation, the impact significance is medium but upon the effective implementation of these, the significance will be reduced to low (**Table 15).**

Table 15: Assessment of environmental pollution from the project activities

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M/H - 4	M - 3	M - 6	M - 3	M – 39
Post mitigation	L - 1	L - 1	L - 2	L/M - 2	L - 8
Management and 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.
- The exploration site should be equipped with separate waste bins for hazardous and general/domestic waste.
- 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.
- 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.
- A penalty system for irresponsible disposal of waste on site and anywhere in the area should be implemented.
- With regards to sanitation, the site should be equipped with enough portable toilets that should be emptied in accordance with their manufacturers' instruction.

7.4.8 Air Pollution (Dust and Emissions)

Dust emanating from site access roads when transporting exploration equipment and supply to and from site (time-to-time) may compromise the air quality in the area. Vehicular movements create dust even though it is not always so severe. Not only dust but also the possible emissions of gases from heavy vehicles and machinery. These sources of dust and emissions may lead to air pollution, thus decreasing the air quality in the areas of operations. The hot and dry environment, loose and in some places, sandy nature of the substrate and low vegetation cover causes ambient fugitive dust levels. Majority of the dust would be generated during the detailed exploration stage, i.e., at the drilling sites, and this could contribute to short-term decrease in air quality around the working site areas of the EPL.

The dust generated and fumes emissions do not only impact people (health and visual) and fauna but also flora. Mainly for nearby flora, the fallout dust could affect the rates of photosynthesis and transpiration in a long-terms due to the duration of exploration activities. The settled dust on plant (vegetation) leaves may not only affect the vegetation's functionality but also livestock that feed on the vegetation (i.e., browsing).

Since prospecting and exploration will only be carried out for a short period of time, i.e., two to four months, the impact of dust generation by project related vehicles is therefore minimal. Pre-implementation of any mitigation measure, the impact significance is medium. The medium significance of this impact can be reduced to a low significance rating by properly implementing mitigation measures as provided in **Table 16** below.

Table 16: Impact on air quality

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

Management and mitigation measures

- Exploration vehicles travelling on access roads should not be driven at a speed more than 40 km/h to avoid dust generation around and within the site area, which will in turn minimise air quality concerns to any potential receptors, particularly the residents south of the site.
- The Proponent should ensure that the exploration schedule is limited to the given number of days of the week, and not every day. This will keep the vehicle-related dust level minimal in the area.
- Dust control measures such as reasonable amount of water spray should be used on gravel roads and near exploration sites to suppress the dust that may be emanating from certain exploration areas on the EPL such as drilling sites and movement of heavy trucks.
- Dust masks, eye protective glasses and other respiratory personal protective equipment (PPE) such as face masks should be provided to the workers on site drilling areas, where they are exposed to dust.
- Drilling and excavating equipment should be regularly maintained to ensure drilling and excavation efficiency and so to reduce dust generation and harmful gaseous emissions
- Project vehicles and heavy machines should not be left idling when not in use, such that they emit air polluting gases.

7.4.9 Noise and vibrations

Prospecting and exploration activities (especially drilling and test quarrying) may be a nuisance to surrounding communities who are in proximity of the active exploration sites due to the noise produced by the activity. Excessive noise and vibrations can be a health risk to workers on site. The exploration equipment used for drilling on site is of medium size and the noise level is bound to be limited to the site only, therefore, the impact likelihood is minimal. Without any mitigation, the impact is rated as of medium significance.

However, without any implementation of mitigation measures, the impact can be rated as slightly high to medium significant, but upon implementation, the impact will be of slightly medium of low significance - **Table 17**.

Table 17: Noise and vibration 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	M - 3	L - 2	L/M - 3	L - 21

Management and Mitigation measures

- Noise from project vehicles and equipment on the working sites of the EPL should be at acceptable levels.
- Exploration hours should be restricted to between 08h00 and 17h00 to avoid noise and vibrations generated by exploration equipment and the movement of vehicles before or after hours, thus disturbing the tranquillity in the area during the night or early morning hours.
- When operating the drilling machinery onsite, workers should be equipped with personal protective equipment (PPE) such as earplugs to reduce exposure to excessive noise.

- The transportation of exploration materials, equipment and machinery should be limited to once or twice a week only, but not every day.
- Target exploration sites that may be found to be within less than 1 km from the residences (village homes) should be avoided at all costs. This is done to preserve tranquillity of the residents.

7.4.10 Health, and Safety

Certain exploration activities may pose health and safety risks to project personnel (workers). 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 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.

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 villages, where children reside. This is true because, the local children may try to access the active site areas and play with dangerous materials and equipment.

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 - **Table 18**.

Table 18: Assessment of health and safety impact

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

Management and mitigation measures

- 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 people or even their animals.
- Heavy vehicle, equipment and fuel storage site should be properly secured, and appropriate warning signage placed where visible.
- 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.
- All onsite project employees and authorized site visitors (including inspectors) should be properly equipped with adequate personal protective equipment (PPE) such as coveralls, gloves, safety boots, earplugs, dust masks, safety glasses, etc.
- 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.

- Explored site areas that will be considered risky and hazardous (such as exploration boreholes, open trenches, or small test quarries) to the surrounding communities, should be demarcated and fenced off with temporary mesh wires accompanied by clear and visible warning / ''danger'' signs in both English and the local language (Otjiherero).
- With regards to accidental fire outbreaks, the following should be implemented:
    - Portable fire extinguishers should be provided on sites (per vehicle and working sites).
    - No open fires should be created by project personnel.
    - Potential flammable areas and structures such as fuel storage tanks should be marked as such with clearly visible signage.

7.4.11 Vehicular Traffic Safety

The site district road D3712 is the main transportation route for all vehicular movement in the area and provide access to the EPL and connect the project area to Omatjete and then other roads connecting to the nearby urban set ups. Therefore, traffic volume will increase on the district road during exploration as the project would need a delivery of supplies and services on site. These service and supplies will include but not limited to water carting, waste removal, procurement of exploration machinery, equipment, as well as transportation of demonstration blocks from the EPL.

Depending on the project needs, trucks, medium and small vehicles will be frequenting the area to and from exploration sites on the EPL. This would potentially increase slow moving heavy vehicular traffic along these roads. The impact would not only be felt by the district road users but also the local road users such as farms and villages. 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 during exploration. Therefore, the risk is anticipated to be short-term and therefore of medium significance and with the implementation of mitigation measures, the significance will be low. The impact is assessed in **Table 19** below and mitigation measures are provided below.

Table 19: Impact Assessment of the project activities on vehicular traffic

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

Management and mitigation measures

- The transportation of exploration materials, equipment and machinery should be limited to once or twice a week only, but not every day to reduce the pressure on local roads.
- The heavy truck loads should comply with the maximum allowed speed limit for respective vehicles while transporting materials and equipment/machinery on the public and access roads (40km/h).
- The potential carted water to the site (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 water-carting trucks on the road daily.

- Drivers of all project phases' vehicles should be in possession of valid and appropriate driving licenses and adhere to the road safety rules.
- Drivers should drive slowly (40km/hour or less) and be on the lookout for livestock and wildlife as well as locals.
- The Proponent should ensure that the site access roads are well equipped with temporary road signs conditions 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 owing to mechanical faults.
- Vehicle drivers should only make use of designated site access roads provided and as agreed.
- Vehicle's drivers should not be allowed to operate vehicles while under the influence of alcohol.
- 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.

7.5 Cumulative Impacts

The cumulative impacts anticipated from the prospecting and exploration on EPL 7233 will include:

- **Vehicular traffic safety** – the increased number of vehicles in the area may lead to high traffic flow around the EPL area, as this road has been used by light and heavy trucks owned by the existing dimension stone miners near EPL 7233 that are transporting mined blocks from the mines to the destinations outside Omatjete (mine site) area. Not only does the road used by miners but also locals who are currently complaining about the bad road conditions caused by heavy trucks. In terms of infrastructure and facilities, the project size is small, short-term and the equipment and vehicles required for exploration on EPL 7233 will not be that many at the same time on site within these 2 to 4 months of actual prospecting and exploration works.
- **Archaeological and heritage resources impact** – There is currently an ongoing issue of existing damages done to the archaeological sites within the project area by another mining operator although not on EPL 7233 directly. Due to this existing issue, the Omatjete and surrounding residents have grown sensitive whenever they hear of anything related to mining or exploration in the area. Thus, if no improvement is made nor effective implementation of archaeological & heritage management and mitigation measures to reduce this already ongoing matter, the impact will likely continue even on EPL 7233.

Subsequently, the above-mentioned cumulative impacts can be mitigated if the proposed activities are correctly planned, and measures recommended to the respective potential impact are effectively implemented to manage the potential and cumulative impacts stemming from the proposed project activities.

7.6 Rehabilitation

To ensure that they do their best to rehabilitate the disturbed or explored site areas, the Proponent intends to:

- Utilize waste rubble to rock blind exposed rock faces and stockpiled topsoil to partially back fill.
- Make financial provision that will be used for post-exploration rehabilitation program.

Some of the post-exploration solutions provided by Lintukangus et al., 2011 and that are also recommended for implementation by the Proponent to rehabilitate the disturbed area include:

7.6.1 Post-Exploration

Since exploration of sites will lead to the narrowing down of target sites that yield favourable outcomes for future mining and development of the quarry, it may not be possible to implement progressive rehabilitation on all explored sites. The only possible progressive rehabilitation work to be carried out done are as follows:

- Backfilling of all exploration pits, test quarries, and boreholes that will no longer be required for mining purposes (if found to be worthy of mining consideration).
- Fencing of hazardous areas that cannot be completely and successfully rehabilitated.
- Levelling of topsoil that was stockpiled for exploration purposes.
- Removal or re-location of project structures, vehicles and equipment from the site to designated offsite storage facilities. The areas on which these structures were set up will also be rehabilitated to pre-exploration state.

8 RECOMMENDATIONS AND CONCLUSIONS

Upon assessing the potential impacts, the following recommendations and conclusions have been made with regards to the proposed prospecting and exploration activities on EPL 7233.

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

The public was consulted as required by the EMA and its 2012 EIA Regulations (Section 21 to 24). This was done via the three newspapers used for this environmental assessment; site/public notices placed in Omatjete Village (at the Zeraeua Traditional Authority office and Omatjete Clinic notice boards). An announcement for the public consultation was also done through the Zeraeua Traditional Authority to notify the locals of the planned public consultation meeting in Omatjete. The public (I&APs) raised comments and concerns on the proposed project via the consultation platforms provided (emails and face-to-face session in the form of public consultation meeting).

The issues and concern raised by the registered I&APs formed the basis for this Report and the Draft EMP. The issues were addressed and incorporated into this Report whereby mitigation measures have been provided thereof to avoid and/or minimize their significance on the environment. Most of the potential impacts were found to be of medium and to slightly high rating significance. With the effective implementation the recommended management and mitigation measures, this will particularly see the reduction in the significance of adverse impacts that cannot be avoided completely (from slightly high to medium and for medium rating to low). Furthermore, to improve and maintain desirable rating, monitoring of the implementation of the measures by the Proponent (an Environmental Control Officer or Safety, Health & Environmental Officer) is highly recommended. The monitoring of this implementation will not only be done to maintain the reduce impacts' rating or maintain low rating but to also ensure that all potential impacts identified in this study and other impacts that might arise during implementation are properly identified in time and addressed right away too.

An Archaeological & Heritage Impact Assessment (AHIA) was done by a specialist for this ESA Study. The findings of this AHIA and the Scoping assessment (ESA) were deemed sufficient and conclude that no further detailed assessments are required to the ECC application.

8.1 Recommendations

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

It is therefore, recommended that the proposed prospecting and exploration and associated activities be granted an Environmental Clearance Certificate, provided that:

- All respective management measures (mitigations) provided in the Draft EMP be effectively and progressively implemented and backed up by consistent site monitoring of environmental components listed in the Draft EMP to achieve full EMP implementation compliance.
- 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. These include permits and licenses for land use access agreements to explore and ensuring compliance with these specific legal requirements.
- The Proponent and all their project workers or contractors comply with the legal requirements governing their project and its associated activities and ensure that project permits and or approvals required to undertake specific site activities are obtained and renewed as stipulated by the issuing authorities.
- All the necessary environmental and social (occupational health and safety) precautions provided are adhered to.

- Site areas where exploration activities have ceased should be rehabilitated, as far as practicable, to their original state.
- Environmental Compliance monitoring reports should be compiled and submitted to the DEAF Portal as per provision made on the MEFT/DEAF's portal**.**

These recommendations are primarily aimed at improving environmental management, ensuring sustainability and promote harmonious co-existence of the project activities and the host biophysical and social environment.

8.2 Conclusions

In conclusion, with that being done, it is crucial for the Proponent and their contractors as well as to effectively implementation of the recommended management and mitigation measures to protect both the biophysical and social environment throughout the project duration. All these would be done with the aim of promoting environmental sustainability while ensuring a smooth and harmonious existence and purpose of the project activities in the community and environment at large.

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APPENDIX A: COPY OF THE ENVIRONMENTAL CLEARANCE CERTIFICATE APPLICATION

Revenue Stamps

NAMIBIA REVENUE N$200

NAMIBIA REVENUE N$100

ANNEXURE 1

FORMS

Form 1

REPUBLIC OF NAMIBIA

ENVIRONMENTAL MANAGEMENT ACT (No. 7 of 2007)

(Section 32)

MINISTRY OF MINES AND ENERGY
OFFICE OF THE EXECUTIVE DIRECTOR
2021 -10- 21
RECEIVED

APPLICATION FOR ENVIRONMENTAL CLEARANCE CERTIFICATE (APPLICATION NO. 003101)

The App number got lost in the 003204 other ECC Portal profile that displays an error upon logging in
TN Shiyamo
03/11/2021

PART A: DETAILS OF APPLICATION

1.	Name:	Otombawe Mining CC
2.	Business Registration:	CC2018/04934
3.	Correspondence Address:	PO Box 2329 Swakopmund, Namibia
4.	Name of Contact Person:	Loudima Resources (Environmental Consultant)
5.	Position of Contact Person:	Environmental Assessment Practitioner
6.	Telephone No.:	+264 (0) 81 205 6559
7.	Fax No:	N/A
8.	E-mail Address:	info@loudimaresources.com

PART B: SCOPE OF THE ENVIRONMENTAL CLEARANCE CERTIFICATE

1. THE ENVIRONMENTAL CLEARANCE CERTIFICATE IS FOR:

The 'listed activities' that might be affected are listed below:

MINING AND QUARRYING ACTIVITIES

3.1 The construction of facilities for any process pr 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 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.

2. DETAILS OF THE ACTIVITY(S) COVERED BY THE ENVIRONMENTAL CLEARANCE CERTIFICATE:

Revenue Stamps

ANNEXURE 1

FORMS

Form 1

REPUBLIC OF NAMIBIA

ENVIRONMENTAL MANAGEMENT ACT (No. 7 of 2007)

(Section 32)

APPLICATION FOR ENVIRONMENTAL CLEARANCE CERTIFICATE (APPLICATION NO. ~~003101~~ 003204)

The APP number got lost in the other ECC portal profile that displays an error upon logging in

TN 03/11/2021

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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.

2. DETAILS OF THE ACTIVITY(S) COVERED BY THE ENVIRONMENTAL CLEARANCE CERTIFICATE:

APPENDIX H: ARCHAEOLOGY & HERITAGE IMPACT ASSESSMENT REPORT

ARCHAEOLOGICAL AND HERITAGE IMPACT ASSESSMENT REPORT

FOR THE PROPOSED PROSPECTING AND EXPLORATION ACTIVITIES (OF DIMENSION STONE) ON EXCLUSIVE PROSPECTIVE LICENCE (EPL) NO. 7233 LOCATED NEAR OMATJETE IN ERONGO REGION,NAMIBIA.

Compiled by:

Roland Mushi (Archaeologist)

Prepared for:

Otombawe Mining CC

Project Details

Item	Description
Report Title	Archaeological Impact Assessment Report for the EPL 7233 Located near Omatjete in Erongo Region, in Namibia**.**
Project Location	EPL 7233 Located about 25km Northwest of Omatjete Village in the Erongo Region, Namibia**.**
Coordinates	20^0 51' 19.3" S 015^0 31' 12.8" E
Purpose of the assessment	The focus of study is to identify and record areas of the archaeological and cultural heritage significance, this include sites, artifacts, graves, features, paleontological, structures, buildings, landscape etc. that might be impacted by the existing mining projects.
Project Proponent	Otombawe Mining CC Contact person: Mr. Ndiili Malima (Environmental Consultant for the Project) Telephone: +264 (0) 81 205 6559 Email: eia@loudimaresources.com
Size of application area (EPL 7233)	15,158-hectare (ha)
Field-work and reporting	Roland Mushi (Archaeologist)
Report Date	01-11-2021
Project #	001

Copyright & Disclaimer

Authorship: This Archaeological and Heritage Impact Assessment Report has been prepared by Mr. Roland Mushi (Archaeologist). This report is for the review of the National Heritage Council of Namibia in accordance with the National Heritage Act No. 27 of 2004.

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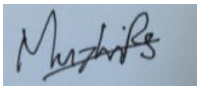
Disclaimer: The Author(s) is/are not responsible for omissions and inconsistencies that may result from information that may not be available at the time this report was prepared. This report may contain information of a specialized and/or highly technical nature and the client is advised to seek clarification on any elements which may be indistinct. Information and recommendations in this document should only be relied upon in the context of this document; any documents referenced explicitly herein should only be used within the context of the appointment.

The Archaeological and Heritage Impact Assessment 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 authorization of exploration prospective licence by Otombawe Mining Cc.

Signed by:



Roland Mushi
ASAPA - Member of the Association of Southern African Professional Archaeologist (#480)

Executive summary

The archaeological assessment was undertaken through field-based survey and desktop study. The sources included reports from previous archaeological and heritage studies, GIS spatial data, and relevant information from the stakeholders in the area. These were used as a basis of inference regarding the archaeological and heritage significance of the project site, and their likely sensitivity to disturbance and destruction in the course of exploration activities. The area where the proposed project will take place is highly archaeologically sensitive and deemed to be a cultural landscape as there are evidences of Pre-historic rock art (Pictographs/paintings) immediately outside the boundaries of the EPL 7233. Furthermore, no significant archaeological sites, cultural or heritage was located in the specific area of Interest apart from sparsely surface scatter mostly covered by the thick grasses, and few isolated small rock/granite boulders. However hidden or buried archaeological materials might be encountered during exploration activities. Attention is drawn to the National Heritage Act, 2004 (Act No. 27 of 2004) especially Section 55 (4) which requires that operations that expose archaeological or historical remains as well as graves or fossil material should cease immediately, pending evaluation by the heritage agency. It is further recommended that the Project Proponent adopt the attached *'Chance Finds Procedure*' throughout the mineral exploration activities and implementing of the AMP as a guiding document toward protecting and preservation of the archaeological and heritage sites.

Table of Contents

Glossary list used in this report

Abbreviation	Description
AHIA	Archaeological and Heritage Impact Assessment
AMP	Archaeological Management Plan

Abbreviation	Description
AD	Anno Domini
ASAPA	Association of Southern African Professional Archaeologist
CFP	Chance Find Procedure
ECC	Environmental Clearance Certificate
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment*
EIA	Early Iron Age*
EPL	Exclusive Prospecting Licence
ESA	Early Stone Age
GIS	Geographical Information System
NHC	National Heritage Council
MIA	Middle Iron Age
MSA	Middle Stone Age
LIA	Late Iron Age
LSA	Late Stone Age
PM	Project Manager
SM/I	Site Manager/Inspector

**Although EIA refers to both Environmental Impact Assessment and the Early Iron Age both are internationally accepted abbreviations and must be read and interpreted in the context it is used.*

Definitions of Key Terms used in this report

Archaeological: in relation to a place or an object, means (a) any remains of human habitation or occupation that are 50 or more years old found on or beneath the surface on land or in the sea; (b) rock art, being any form of painting, engraving or other representation on a fixed rock surface or loose rock or stone which is 50 or more years old;

Archaeological site (means an area in which archaeological objects are situated)

An artifact or artefact: is a general term for an item made or given shape by human culture, such as a tool or a work of art, especially an object of archaeological interest.

Monuments: Architectural works, works of monumental sculpture and paintings, elements or structures of an archaeological nature, inscriptions, cave dwellings and combinations of features, which are of outstanding universal value from the point of view of history, art or science;

Heritage significance: means aesthetic, archaeological, architectural, cultural, historical, scientific or social significance;

Historic building (refers to structure or building which is over 50 years or more)

Rock painting: a painting on rock (as a cave wall, cliff, or boulder) made by pre-historic peoples/societies.

Chance Finds: means Archaeological artefacts, features, structures or historical cultural remains such as human burials that are found accidentally in context previously not identified during cultural heritage scoping, screening and assessment studies. Such finds are usually found during earth moving activities.

Early Stone Age (~ 2.6 million to 250 000 years ago)

Middle Stone Age (~ 250 000 to 40-25 000 years ago)

Later Stone Age (~ 40-25 000 to AD 200 (up to historic times in certain areas)

The Iron Age (~ AD 400 to 1840)

Historic (~ AD 1840 to 1950)

1. INTRODUCTION

1.1. Background Information

Loudima Resources (Pty) Ltd on behalf of Otombawe Mining Cc (*herein referred to as the Project Proponent*) appointed Roland Mushi (*herein referred to as an Archaeologist*) to conduct an Archaeological Impact Assessment for the proposed project activities within the Exclusive Prospecting License (EPL) 7233 located near Omatjete Village in Erongo Region (*Figure 1*). The EPL has potential for commodities such as Base & Rare Metals, Dimension Stone, Industrial Minerals, and Precious Metals. However, the Proponent's commodity of interest for the planned prospecting and exploration activities is Dimension Stone only.

The aim of the study is to identify archaeological, cultural and heritage sites, document, and assess their importance within local, regional and national context. It serves to assess the impact of the proposed project on non-renewable heritage resources, and to submit appropriate recommendations with regard to the responsible cultural resources management measures that might be required to assist the Project proponent in managing the discovered heritage (*if there is any*) resources in a responsible manner. It is also conducted to protect, preserve, and develop such resources within the framework provided by the National Heritage Act of 2004 (Act No. 27 of 2004).

The report outlines the approach and methodology utilised before and during the survey, which includes: Phase 1, a desktop study that includes collection from various sources of previous reports, Phase 2, Stakeholder consultations and the physical surveying of the proposed project footprint on foot and by vehicle; Phase 3, reporting the outcome of the study. During the survey several heritage significant sites were identified outside the vicinity the EPL. General site conditions and features on site were recorded by means of photographs, GPS locations. Possible impacts were identified and mitigation measures are proposed herein.

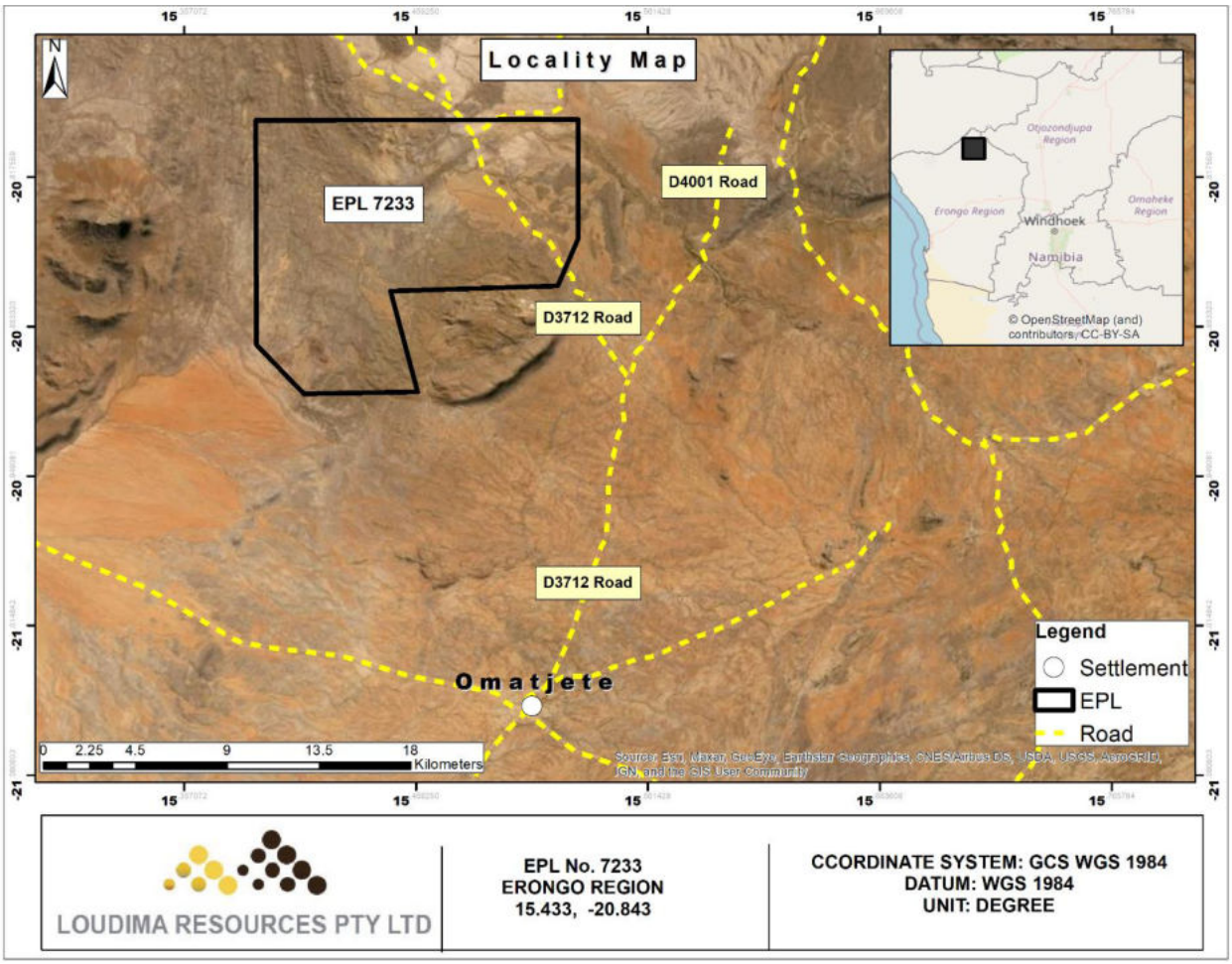


Figure 1: A map showing locality of EPL 7233 near Omatjete in Erongo Region.

This document (report) has therefore been compiled to complement the Environmental Scoping Assessment (ESA) Report and to be submitted to the National Heritage Council of Namibia as requirement and condition of the issuance of a Consent Letter. The Consent Letter will need to be submitted to the Environmental Commissioner to make an informed decision on the issuance of the Environmental Clearance Certificate (ECC) for the project.

2. PROJECT AREA: BRIEF ARCHAEOLOGICAL & HISTORICAL BACKGROUND

The project area is located about 25km northwest of Omatjete Village in the Erongo Region. The EPL 7233 also covers part of, and found within the Otjohorongo reserve which is in Omaruru District. The Omatjete village is situated on the road D2344 from

Omaruru to Khorixas. The village name was originally Omatjete (*Otjiherero: meaning tasty water*), referring to a fountain that today is on the western edge of the Settlement. However, The proposed project area is occurring in a land which is deemed to be the cultural landscape as far as Erongo Region that boosts a rich in archaeological and heritage sites is concerned.

Archaeological and heritages studies in the Region indicate that the area is of high pre-historic and heritage significance. It is in fact a cultural landscape where Stone Age, Iron Age sites, Rock art paintings and Historical period sites contribute the bulk of the cultural heritage of the Region.

Based on previous research works in Erongo region, available information on the characteristics of the recorded assemblage, it appears that human groups over tens of thousands of years in the Namib employed local stone with subtle shifts in procurement and exploitation patterns between the MSA and LSA (Mark, P. 2015). Occurrence of artifacts and Stone Age sites especially during LSA in the region are also associated with rock art painting sites, and nearly all known rock art sites occur predominantly in rock shelters and open air context, also rock art exists on the landscape (Tilman, 2004).

3. SCOPE OF THE STUDY

The aim of the study is to identify possible archaeological and cultural heritage sites/materials, and finds that may occur in the proposed project area, and subsequently the Archaeological & Heritage Impact Assessment (AHIA) will inform the EIA in the development of a comprehensive EMP to assist the project applicant/Proponent in responsibly managing the identified heritage resources in order to protect, preserve, and develop them within the framework provided by the National Heritage Council Act (Act No 27 of 2004).

4. TERMS OF REFERENCE

Roland Mushi (*Archaeologist*) was contracted by Loudima Resources (Pty) Ltd on behalf of Otombawe Mining CC (*The Proponent*) to undertake AHIA for the proposed project.

This AHIA aims at assisting the Proponent in managing archaeological and heritage resources (*if found*) in the proposed project area in order to protect, preserve and develop them within the relevant legislative frameworks. In the essence this assessment aims at;

(a) identify and document the heritage, cultural and archaeological resources occurring in the proposed project area.
(b) assess the potential impacts on archaeological/heritage resources of the exploration activities.
(c) suggest appropriate management and mitigation measures for the archaeological and cultural heritage resources that might occur in the area proposed for exploration works which can be potentially destroyed in the course of prospecting and detailed exploration.

5. ASSUMPTIONS AND LIMITATIONS

The archaeological and heritage impact assessment reported herein relies on the indicative value of surface finds and desktop study. Hence, it is necessary to realise that the archaeological and heritage resources located during the desktop research and fieldwork do not necessarily represent all the possible heritage resources present within the area. Based on this assumption, it is possible to predict the likely occurrence of further archaeological or heritage sites, and to present a general statement of the local archaeological site distribution. Therefore, it is necessary to caution the Proponent that hidden, or buried archaeological and cultural materials might be exposed during the prospecting and exploration activities. Thus, precaution and best practice are strictly recommended to be followed by the Proponent, should any archaeological materials be found. The chance find procedure (*See Appendix 1 below for Chance Finds Procedure (CFP) in accordance with the National Heritage Council*) are outlined by the National Heritage Council. In addition to that, the Author of this report has prepared an Archaeological Management Plan (AMP) (*Appendix 2*) that will be the guiding document and should be implemented along with the general EMP of the proposed project. Failure

to follow and implement such procedure will result in appropriate action be taken against the Proponent as per the Heritage Act, No. 27 of 2004.

6. APPROACH AND METHODOLOGY

This Archaeological and Heritage Impact Assessment followed a two-based process of evaluation: desktop and field based assessments.These are recognized by the International Council on Monuments and Sites (ICOMOS), as well as those formulated by the Quaternary Research Services (QRS) in Namibia by Kinahan (2012).The methodologies were adopted in line with the standards for environmental assessment and the protocol developed for archaeological heritage assessment in Namibia that reflect Namibian conditions and are accepted as a basis of evaluation by the National Heritage Council.

In order to establish the heritage significance of the resources, and their vulnerability to possible disturbance in the course of prospecting and exploration (now and in the future), the assessment criteria below developed by QRS (Kinahan, 2012) established parallel 0-5 scales, summarized in (*Table 1 below*).

Table 1: Archaeological Significance and Vulnerability Rankings (Kinahan, 2012)

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

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

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

Table 3: Reversibility Ratings Criteria

Reversibility Ratings	Criteria
Irreversible	The activity will lead to an impact that is permanent.
Reversible	The impact is reversible, within a period of 10 years

7. LEGISLATIVE CONTEXT

This AHIA report is a component of a broader Environmental Impact Assessment (EIA) / Scoping Assessment (ESA) Study and addresses the requirements of the NHA Act 27 of 2004 and National Heritage Regulations (Government Notice 106 of 2005, in line with EIA Terms of Reference in relation to the assessment of impacts of the proposed development on the archaeological, cultural and heritage resources associated with the receiving environment.

In Namibia, the principal instrument of legal protection for heritage resources is the National Heritage Act (No. 27 of 2004). The List of activities that may not be undertaken

without an ECC: Environmental Management Act, 2007 (Government Notice 29 of 2012), and the EIA Regulations: Environmental Management Act, 2007 (Government Notice 30 of 2012) both apply to the management of impacts on heritage and archaeological sites and remains whether these are considered in detail by the environmental assessment or not. In its application, the National Heritage Act (27 of 2004) defines heritage resources as those of paleontological; archeological; ethnographic objects; historical objects/sites (military objects; wartime weapon, historic graves, cemeteries or sacred sites), underwater heritage; rare geological objects including meteorites; built heritage such as industrial and mining sites as well as possible objects of scientific interests.

8. DESCRIPTION OF THE STUDY AREA

Topographical and Geological settings

The EPL 7233 is geographically located about 25 km northwest of Omatjete Village in the Erongo Region (as shown in Figure 1 above and in the geology map in Figure 2) and covers a part of (within) the Otjohorongo Reserve. The climate is considered to have a desert type climate and virtually little to no rainfall during the year on average. This location is classified as BWh by Köppen and Geiger which translate into Hot desert climate type[1]. Topographically, the land rises steadily from sea level to about 1,000 m across the breadth of the Namib. The Namib land surface is mostly flat to undulating gravel plains, punctuated with occasional ridges and isolated 'inselberg' hills and mountains.

Geology of the Project area

Geologically, the EPL falls within the metasedimentary rocks of the Damara which is represented by the Kuiseb and Karibib Formations as well as sounding Damara Granites. The large part of the EPL boundaries are within Mica Schists, quartzite, together with graphitic schist and marble. While red mudstone, conglomerate, sandstone occupy some lower part of the EPL with granitic rock on the other side. The geological map of the project site area and surrounding is shown in Figure 2 below.

1

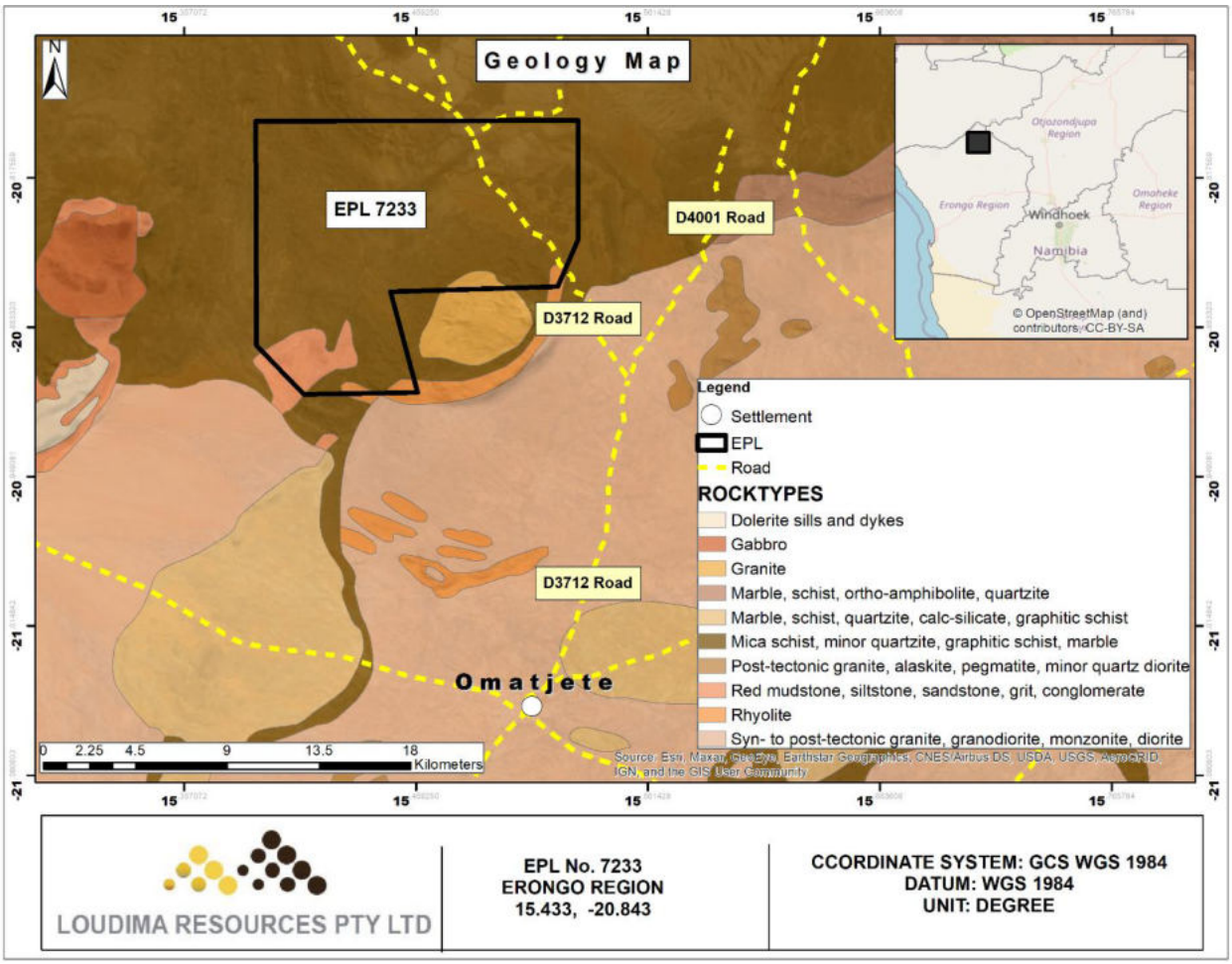


Figure 2: A Geological map of the location of EPL 7233

9. DESKTOP STUDY

9.1 Regional Archaeological and Heritage Context

The archaeology of the Erongo Region have been well documented, available archaeological records indicate that early humans in Central Namibia, Erongo Region dates back from the Early Stone Age period, more than one million years ago as evidenced by hominin fossils from (Kinahan, 2017). Stone Age archaeology is prevalent in the larger geographical area. The geospatial data on the distribution of archaeological sites shows that sites are concentrated mainly in the central highlands (*Figure 3, 4 & 5*).

[1] [1] Present and future Köppen-Geiger climate classification maps at 1-km resolution.

Furthermore, studies on the Holocene Later Stone Age (LSA) in Namibia predominantly rely on the archaeological evidence found in rockshelters, despite a wealth of open-air surface assemblages. A total of 73 stratified rock-shelter sites in Namibia provide chronological information. The majority are located on the western margins of the Great Escarpment, closely corresponding to the distribution of Namibian rock art sites (Scherz, 1986; Kinahan, 2011). Studies of stratified sites in coastal or more inland settings are very rare.

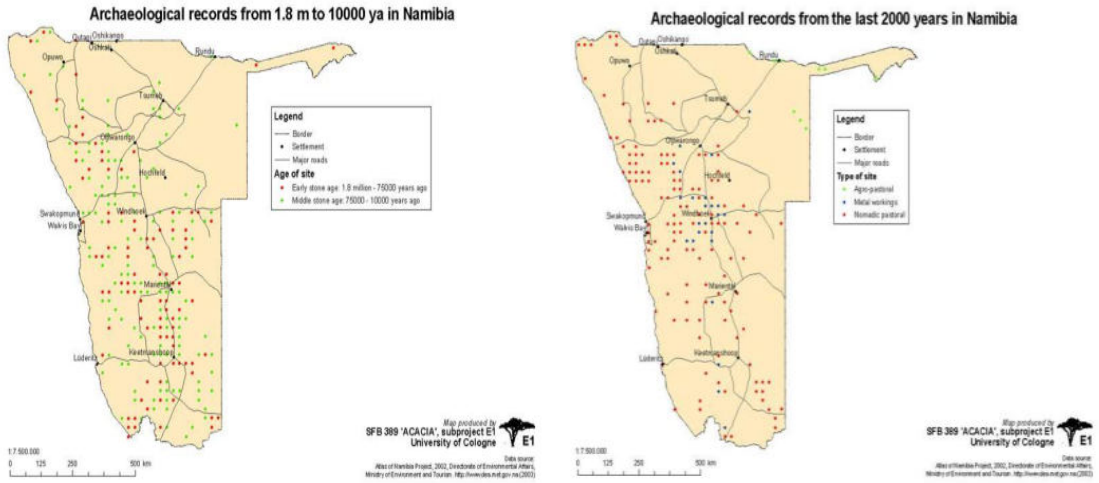


Figure 3 & 4: Archaeological Sites distribution of ESA and MSA in Namibia. (Credit: Digital Atlas of Namibia)

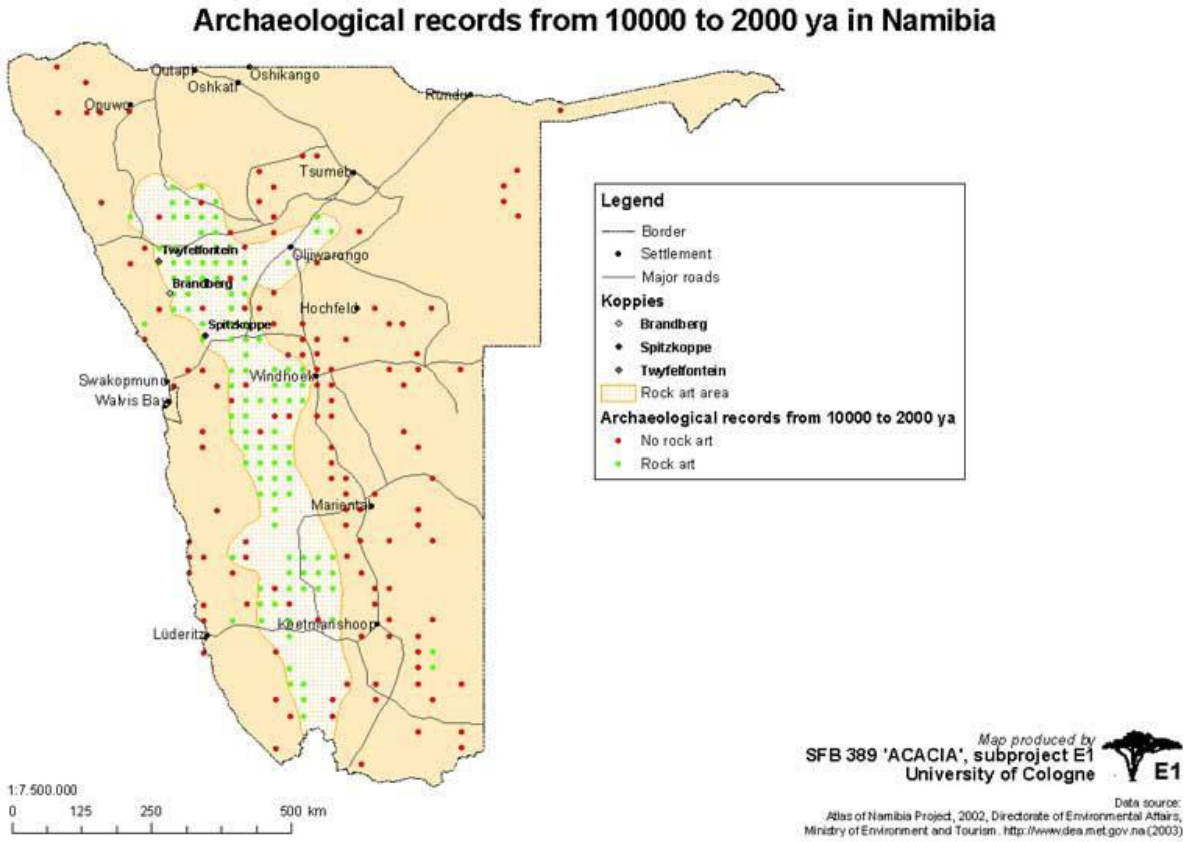


Figure 5: Archaeological records from 10,000 to 2,000 years old in Namibia Landscape

There about 150 sites are recorded in the Erongo Region, and the Region is also endowed with Iron Age artefacts and contemporary heritage resources. According to the National Heritage Council of Namibia (Declared Sites/Lists of National Heritage), Erongo Region has about 37 heritage sites which are listed as national monuments. The map (*Figure 6*) below show the distribution of archaeological sites in Namibia.

General overview of distribution of Archaeological Sites in Namibia

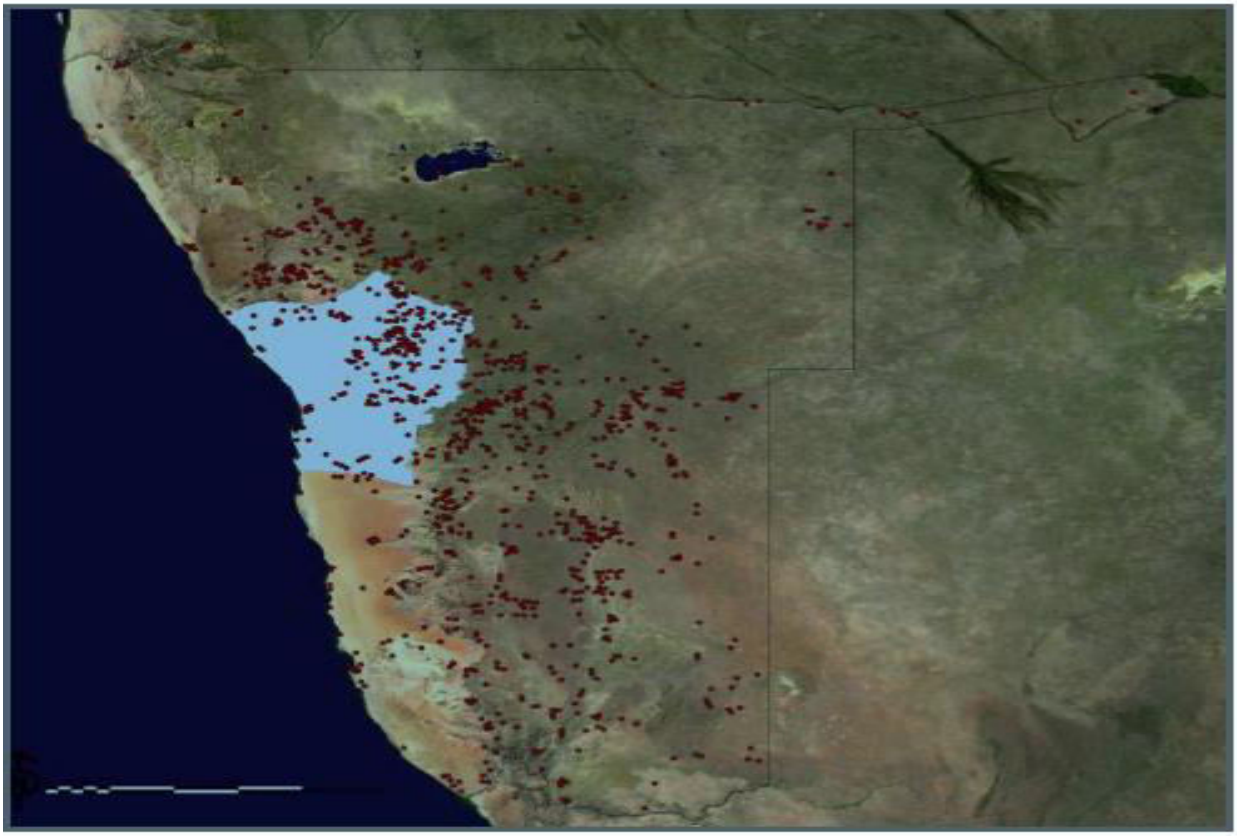


Figure 6: Distribution of the archaeological sites in Namibia with focus on Erongo Region. Source: (Kinahan, J. 2012).

9.2 Archaeological Sequence in Namibia and Southern Africa in General

In order to put Namibian heritage and archaeological contexts into perspective, the following information is crucial to the general understanding of the occurrence and the associated period in different time-frames that would represent the known human occupation sequence in Namibia and Southern Africa in general (*Table 4*). This helps in building knowledge about past adaptations and cultural dynamics. According to Nankela (2017), the archaeological sequences of Namibia can be summarized as follow (*Table 4*):

Table 4: Archaeological sequences in Namibia

Period	Year	Area/Location	Evidence	Description
Pleistocene	400 000- 100 000	Namib Plains, Namib Desert & Lower Kuiseb	Bone fragments of extinct elephant and stone tools	
Holocene	10 000- 1 000	Around Namibia	Scattered artefacts, rock art	Sites are fragile, inaccessible and

Period	Year	Area/Location	Evidence	Description
			sites, potsherds, beads, grave cairns, hut circles, human remains, axes, pointed flakes, cleavers and blades.	due to inadequate archaeological investigations in some sites.
Historic Period	500	Around Namibia	Cemeteries, old mine workings, waste rock walling, architectural heritage and WWI military engagements.	Namibia has an indication of intensive settlements between indigenous people and Europeans.

The General Archaeological Environment Sequences of the Southern Africa.

The Southern African archaeological environment is divided into the Stone Age, the Iron Age and the Historical Period. The (*Table 5*) below summaries different period in relation to the technological advancement and cognitive evolution.

Table 5: The Archaeological context: Sequence and definitions

Period	Approximate Dates
Early Stone Age	> 2 600 000 years ago – 250 000/200 000 years ago
Middle Stone Age	250 000/200 000 years ago – 40/25 000 years ago
Later Stone Age	25 000 years ago – AD 200 (up to historic times in certain areas)
Early Iron Age	AD 200 – AD 900/1000
Middle Iron Age	AD 900/1000 – AD 1300
Late Iron Age	AD 1300 – AD 1850

Source: (Sampson, 1974).

10. ARCHAEOLOGICAL CONTEXT AND INVESTIGATION OF THE AREA

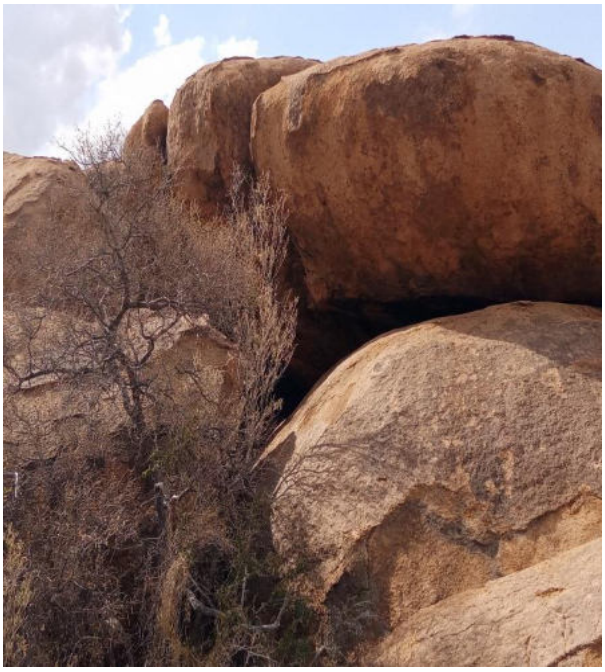
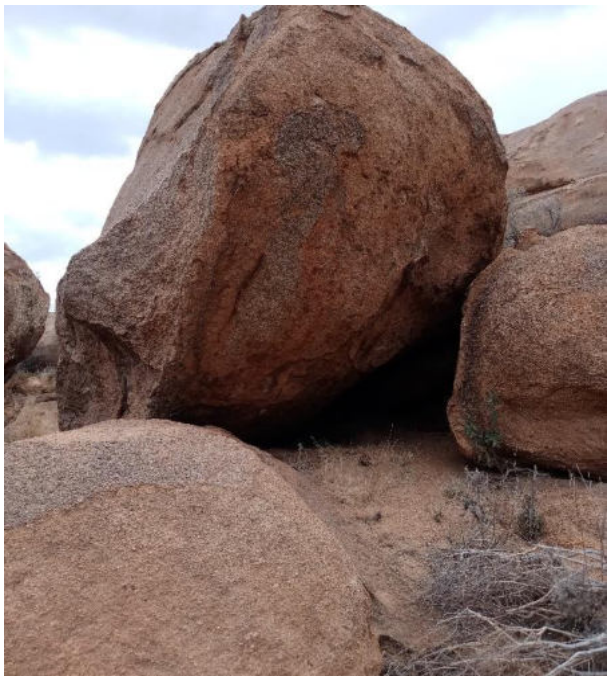
The areas surrounding Omatjete and nearby villages especially those close to or within the Otjohorongo Reserve have been the focus of several archaeological surveys and assessments for some time now. These surveys and studies have helped to determine the local heritage and archaeological sites.The surveys also helped to establish the relationship between archaeological sites and the particular types of terrain that characterize the area, including the granite outcrops, boulders of various size and shapes,

hills and the pegmattite across the landscape. The presence of rock paintings here in the vicinity is astounding even though not as popular as those in other parts of Erongo Region, here the paintings occur in the rock caves/shelters that are formed with different shape and sizes (*Figure 8, 9,10 13 & 14*).

Figure 7: The General view of the Proposed project area, occurring in a low laying north of the mountain.

Figure 8: A rock cave as is seen here located on the southern side of the boundary of EPL 7233.

Figure 9 & 10: Rock paintings on the cave that is located on the southern side outside the boundaries of the EPL

Figures 11 & 12: Rock shelters made up of big granite boulders are ubiquitous in the area outside the EPL's boundaries.


Figure 13 & 14: Rock paintings depicting animal figures outside the boundaries of EPL 7233 (Source: Mr Karongee)

Figure 15: Rock paintings depicting different kind of animals and human figures outside the boundaries of EPL (Source: Mr. Karongee)

11. IMPACT ASSESSMENT ON ARCHAEOLOGICAL AND HERITAGE RESOURCES

Table 6: Archaeological Findings

Site Type	Description	Latitude	Longitude	Elevation	GPS Accuracy
Rock Art	Rock Paintings	22^0 34' 11.6" S	017^0 07' 00.8 E		±3 Meters
MSA/LSA	Rock Shelters	22^0 52' 16.2" S	015^0 30' 12.5 E	1215 Meters	±3 Meters
MSA/LSA	Rock Shelters	22^0 52' 15.6" S	015^0 30' 12.9 E	1192 Meters	±3 Meters
MSA/LSA	Stone Artifacts	20^0 51' 19.3" S	015^0 31' 12.8 E	1097 Meters	±3 Meters

The desktop archaeological assessment, and field survey which was conducted on the 28th of November, 2021 indicates that sections and immediate outside boundaries of the proposed project site area is highly sensitive in terms of heritage resources that characterizes the need of a detailed investigation of any other existing archaeological cultural materials in the areas (*Table 6*). As it was noted during the Stakeholders consultation that there is a pending court case order with respect to the mining and exploration activities in the area which led to the destruction of the environment and

heritage sites. Furthermore,, according to one of the attendees of public consultation meeting (contributor) , the recommendations made by the National Heritage Council was that the sensitive mountain should be under protection as heritage site, and a 3 km radius should apply, i.e. no mining or exploration activity is allowed within the 3 km radius from where the archaeological or heritage site is located. However, it should be noted that, the observed and recorded archaeological and heritage sites in this report occur in the same landscape but different in localities. Most of the rock paintings and rock shelters shown or reported herein are outside the boundaries of the proposed project site (*Table 6 & 7*). The EPL 7233 is located northern side of the mountain where mining activities are taking place, and it extends west ward cutting across the D 3712 Road which serves as the access road to the nearby villages as well. In the same vein, the images depicted herein this report (*specifically figures 9, 10, 11, 12, 13, 14 & 15*) are merely for showing what is available in terms of archaeological and heritage resources outside the vicinity where the EPL falls. This will help in bringing more understanding and conscious informed decision when it comes to preservation and protection of heritage sites in mining areas or exploration activities such as this one being reported here.

Table 7: Findings at the site of Interest (EPL 7233)

Archaeological and Heritage Resources	**Findings**
Buildings, structures, places of cultural significance	There are on-going mining activities close to EPL 7233 (under Ekungungu Trading (Pty) Ltd Mining License 184 currenly mining dimension stone), presence of infrastructures and rock paintings outside the boundaries of the Proposed Project site (EPL)
Areas to which or are associated with cultural heritage.	Rock paintings (outside the boundaries of EPL) at -20.871636 15.503557
Archaeological or heritage site.	Surface scatter of lithic is prevalent in the receiving environment
Palaeontological site	None
Graves and burial grounds,	None
Movable objects	None
Overall comment	Apart from the surface scatter observed, the surveyed area of the receiving environment has no significant archaeological remains on the surface but sub-surface chance finds are still possible). Therefore, the Proponent should ensure that the buried and hidden cultural materials are protected at all cost and the activities should cease immediately when buried materials are unearthed

	or found (*see Chance Finds Procedure in Appendix 1*)

Figure 16: The dominant vegetation within the EPL 7233 and surrounding area is *Colophospermum mopane* and *Stipagrostis spp*.

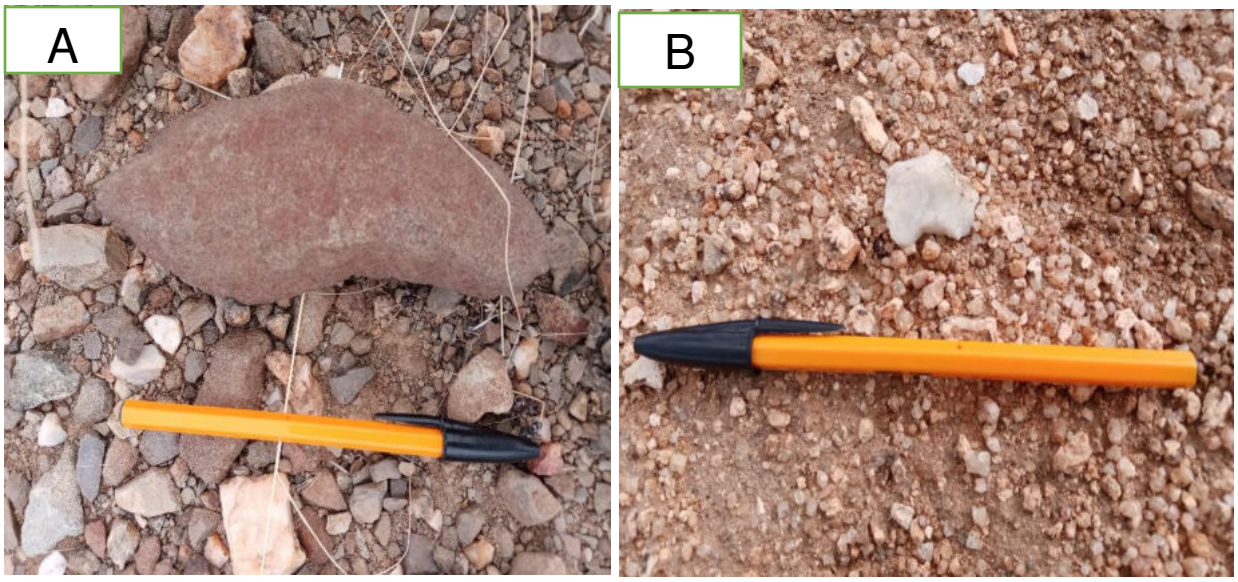


Figure 17 & 18: Picture A: Lithic artifact *ex situ* occur within the EPL. Picture B: A Stone flake *ex situ*.

Table 8: Presence of Stone Artifacts in the Receiving Environment (EPL 7233)

Activity*:* During the prospecting and exploration phase activities resulting in disturbance of surfaces and/or sub-surfaces may destroy, damage, alter, or remove from its original position archaeological, historical, cultural and paleontological material or objects.		
	With Mitigation	**Without Mitigation**
Extent	Local	Local
Duration	Short-term	Short-term
Magnitude	Low	Low
Significance	Low	Low
Status (Positive or Negative)	Negative	Negative
Reversibility	Not reversible	Not reversible
Irreplaceable loss of resources?	Yes	Yes (Unless the site is left undisturbed)
Can impacts be mitigated?	Yes – limited mitigation required	
Mitigation:	No pre-prospecting and exploration mitigation needed. The stone artefacts within the study area are scattered and too sparsely to be of any significance apart from noting their presence, which has been done in this report.	

Activity*:* During the prospecting and exploration phase activities resulting in disturbance of surfaces and/or sub-surfaces may destroy, damage, alter, or remove from its original position archaeological, historical, cultural and paleontological material or objects.		
	With Mitigation	**Without Mitigation**
Cumulative impacts:	Archaeological sites are non-renewable and impact on any archaeological context or material will be permanent and destructive.	
Residual Impacts:	Depletion of archaeological record of the area**.**	

Note: This *table 8* above is only referring to the surface findings only (stone scatter) as an isolated finds in the surveyed area of the EPL 7233, however it can still be applicable to the archaeological and heritage sites that are outside or close to the boundaries of the EPL.

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Figure 19: Scatter of stone artefacts in the receiving environment covered by *Stipagrostis spp* and *Mopane trees.*

12. MANAGEMENT PLAN AND RECOMMENDATION

The field survey and subsequent impact assessment confirmed that the proposed project area is situated within a contemporary cultural landscape dotted with rock arts (paintings) occurring in the granite rock and caves. Even though these rock paintings and rock shelters are occurring on the southern part of the proposed project which is outside the boundaries of the EPL , this still confirms that the site of Interest is part of a wider cultural landscape. This report concludes that the proposed exploration project may be approved by National Heritage Authority but strictly subject to conditional inclusion of heritage monitoring measures and Chance Finds Procedures that will be incorporated into Project EMP for the prospecting and exploration phases. (*also see Appendices*)

The Author tenders the following recommendations;

- A “No-Go-Area” should be put in place where there is evidence of archaeological site, historical, rock paintings, cave/rock shelter or past human dwellings. It can be a demarcation by fencing off or avoid the site completely by not working closely or near the known site.
- On-site personnel (s) and contractor crews must be sensitized to exercise and recognize “chance finds heritage” in the course of their work.
- During the prospecting and exploration works, it is important to take note and recognize any significant material being unearthed, and making the correct judgment on which actions should be taken (*refer to CFP Appendix 1 below*).
- The footprint impact of the proposed prospecting and exploration activities should be kept to minimal to limit the possibility of encountering chance finds within the EPL boundaries. The Proponent should keep a buffer of 50 meters on all the archaeological/cultural sites observed within the project site and broader area throughout their stay (duration of their presence) in the area.
- A landscape approach of the site management must consider culture and heritage features in the overall planning of exploration infrastructures within and beyond the license boundaries;

- The Proponent and Contractors should adhere to the provisions of Section 55 of the National Heritage Act in event significant heritage and culture features are discovered in the course of mining operation.
- Subject to the recommendations herein made and the implementation of the mitigation measures and adoption of the project AMP/EMP should be complied.
- An archaeologist or Heritage specialist should be onsite to monitor all significant earth moving activities that may be implemented as part of the proposed project activities.
- When the removal of topsoil and subsoil on the site for exploration purposes, the site should be monitored for subsurface archaeological materials by a qualified Archaeologist.
- Show overall commitment and compliance by adapting “minimalistic or zero damage approach”.
- In addition to these recommendations above, there should be a controlled movement of the contractor, exploration crews, equipments, setting up of camps and everyone else involved in the prospecting and exploration activities so as to limit the proliferation of informal pathways, gully erosion and disturbance to surface and sub-surface artifacts such as stone tools and other buried materials etc.

13. CONCLUSION

The findings by archaeological and heritage specialist attest to the fact that the proposed project area may have been located within a cultural landscape as far as Otjohorongo Reserve landscape is concerned. As such there is potential for encountering subsurface archaeological materials and heritage resources most probably of a Middle and Late Stone Age periods. In addition to that, during the field survey the general surface visibility was compromised by thick grass cover, shrubs and *mopane* trees. However, the absence of confirmable and significant archaeological cultural heritage sites in the specific area is not evidence in itself that such sites did not exist within the proposed prospecting and exploration site. It should be noted that the significance of the site of Interest (Prospecting

and Exploration application site or EPL 7233) is not limited to presence or absence of physical archaeological sites.

Therefore, as discussed above for archaeological and heritage purposes, it is recommended that the Project Proponent should adopt the 'Chance Finds Procedure' throughout the project life as set out in Appendix 1. This is to ensure that in the event that buried archaeological remains which are not visible to surface survey may be handled in accordance with the provisions of Part V Section 46 of the National Heritage Act (27 of 2004).

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Appendix 1: Archaeological "Chance Finds" Procedure

This survey is based on surface indications alone, and it is therefore possible that sites or items of significance will be found by chance in the course of development work. Therefore, the intent of this Chance Find Procedure is to provide the construction and exploration crews with general guidelines for the appropriate response to the discovery of known, unknown or suspected archaeological materials, including human remains, during Project activities. While Chance Find Procedures are valuable, they are not a substitute for prior assessment and evaluation of archaeological resources. The objectives of these guidelines are to promote the preservation and proper management of heritage resources that are unexpectedly encountered during Project activities and to minimize disruption to construction activities and scheduling.

A step-by-step Chance Find Procedure is provided below for archaeological sites and accidental findings. Contacts information are as well provided in *Appendix 1* and the general Archaeological Management Plan is found in *Appendix 2*.

Scope:

The "chance finds" procedure covers the actions to be taken from the discovery of an archaeological site or item, to its investigation and assessment by a trained archaeologist or other appropriately qualified person. This procedure 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 object must as soon as practicable report the discovery to the Council"*. The procedure of reporting set out below must be observed so that archaeological remains reported to the NHC are correctly identified in the field.

Project Manager or Site Manager/Supervisor must report the finding to the following competent authorities:

- **National Heritage Council of Namibia (061 244 375)**
- **National Museum (+264 61 276800),**
- **National Forensic Laboratory (+264 61 240461).**

Archaeological and Heritage Monitoring Measures

Area/Site	Archaeological/Heritage Aspect	Potential Impact	Mitigation Measures	Responsible Party	Method Statement required
Chance Find (Chance Archaeological and Heritage sites (Accidental discoveries)	General area where the proposed project is taking place (i.e. exploration or construction etc.) which may yield archaeological, cultural materials or human remains. This means that there are possibilities of encountering unknown archaeological sites during subsurface construction work which may disturb previously unidentified chance finds.	Possible damage to previously unidentified Archaeological and heritage sites during exploration/construction phase. Unanticipated impacts on archaeological sites where project actions inadvertently uncovered significant Archaeological sites. Loss of historic cultural landscape;	In situations where unpredicted impacts occur exploration/construction activities must be stopped and the heritage authority should be notified immediately. Where remedial action is warranted, minimize disruption in exploration or construction scheduling while recovering archaeological data. Where necessary, Implement emergency measures to mitigate.	Project Proponent-Contractor/ Exploration crews, Project Manager (PM) / Environmental Control Officer (ECO) or Site Manager, On-site / standby Archaeologist	Monitoring measures should be issued as instruction within the Project EMP. PM / ECO / Site Manager / Archaeologist Should monitor exploration work on sites where such development projects commences within the project site.

Area/Site	Archaeological/Heritage Aspect	Potential Impact	Mitigation Measures	Responsible Party	Method Statement required
		Destruction of burial sites and associated graves (if any) Loss of aesthetic value due to construction work Loss of sense of place Loss of intangible heritage value due to change inland use.	Where burial sites are accidentally disturbed during construction, the affected area should be demarcated as 'no-go zone' by use of fencing during construction, and access there to by the construction team must be denied. Accidentally discovered burials in development context should be salvaged and rescued to safe sites as may be directed by relevant heritage authority. The heritage officer responsible should secure relevant		

Area/Site	Archaeological/Heritage Aspect	Potential Impact	Mitigation Measures	Responsible Party	Method Statement required
			heritage and health authorities permits for possible relocation of affected graves accidentally encountered during construction work.		
Compliance Review	A review of archaeological and cultural heritage incidents, their impacts, mitigation used and success of mitigation should be conducted at a certain stage of the project. The review should be looking at mitigation measures in place, and ways of improvement if needed. This exercise can be done after every 6 months or whenever the Project Proponent see fit. The overall objective is to ensure a full compliance with relevant legislation especially Under Section 5 (4) of the National Heritage Act No. 27 of 2004, Chance Find Procedure, and the recommendations made by the Heritage Specialist.				

Appendix 2: Archaeological Management Plan (AMP)

To ensure compliance with relevant legislation especially Under Section 5 (4) of the National Heritage Act No. 27 of 2004, and the recommendations made by the Heritage Specialist; the following table below highlights the mitigation measures including what to do, who is responsible and who is to report to that sums up the Archaeological and Heritage Management Plan for the Proposed Project that corresponding well with the CFP table above. Particular emphasis is placed on prospecting and exploration/construction phases as this is the phase where most of ground disturbing activities associated with the Proposed Project are conducted. In general, this AMP provides guideline for the appropriate management of the archaeological materials/artefacts, cultural objects, historical and heritage sites wherever they occur in the proposed project areas, and it is to be implemented parallel with EMP throughout the project life.

Archaeological and Heritage Management Plan for Exploration Phase of EPL 7233 and later Development stages of the Proposed Project.

Archaeological Management Plan (AMP)								
Area and Site	**Mitigation Measures**	**Phase**	**Timeframe**	**Responsible party for implementation**	**Monitoring party (Frequency)**	**Accountable Party**	**Monitoring System (Performance Indicators)**	**Target**
Specific to the known and yet to be discovered areas within the project boundaries.	Ensure all known sites *(if there is any*) of cultural, palaeontological, archaeological and historical significance are demarcated on the site layout plan, and marked as 'No-Go Areas'.	Pre-development phase	Before/during and after the exploration phase i.e. throughout the project life.	Project Proponent, Contractor (Exploration crews or any person(s) employed by the Project Proponent)	Environmental Control Officer (ECO), On-Site Manager/Inspector. (Monthly/when required or necessary)	Foreman/Site Manager/Inspector (SM/I)	ECO/SM/SI Weekly or Monthly Checklist/Report. (On-site manager or Inspector should work closely with the Environmental Project Officer on reporting any	ECO/SM should make sure 'No-Go-Area' is not accessed by team members during off-duty hours. Only to be accessed for Heritage Audit or inspection by the National Heritage

Archaeological Management Plan (AMP)								
Area and Site	**Mitigation Measures**	**Phase**	**Timeframe**	**Responsible party for implementation**	**Monitoring party (Frequency)**	**Accountable Party**	**Monitoring System (Performance Indicators)**	**Target**
							issue related to accidental discoveries & other finds in the project area.	Council, or legitimate research
General Project area/Project Site	Should any archaeological materials or cultural heritage resources be exposed during excavation for the purpose of exploration activities the finding must be stopped until heritage authority has cleared the development to continue.	Exploration Phase	Throughout the project	Project Proponent, Contractor (Exploration crews or any person(s) employed by the Project Proponent)	Environmental Officer (ECO), Site Manager/Inspector	Foreman/Site Manager/Inspector (SM/I)	ECO/SM/SI Weekly or Monthly Checklist/Report	Ensure Compliance of legislation and CFP recommendations.
Accidental discoveries	Should any archaeological,cultural heritage resources be exposed during excavation or be found on exploration site, a registered heritage specialist or NHC official		When a find occurs and throughout the project life	Project Proponent and Contractor (Exploration crews)	Environmental Project Officer (ECO), Site Manager/Inspector	Foreman/Site Manager/Inspector (SM/I)	ECO/SM/SI Weekly or Monthly Checklist/Report	Ensure Compliance of legislation and CFP recommendations.

Archaeological Management Plan (AMP)								
Area and Site	**Mitigation Measures**	**Phase**	**Timeframe**	**Responsible party for implementation**	**Monitoring party (Frequency)**	**Accountable Party**	**Monitoring System (Performance Indicators)**	**Target**
	must be called to the site for inspection.							
	Under no circumstances may any archaeological, historical or any physical cultural property heritage material be destroyed or removed form site;		Throughout the project life		Environmental Project Officer (ECO), Site Manager/Inspector	Foreman/Site Manager/Inspector (SM/I)	ECO/SM/SI Weekly or Monthly Checklist/Report	Ensure Compliance of legislation and CFP recommendations
Accidental discoveries	Should remain and/or artefacts be discovered on the development site during earthworks, all work will cease in the area affected and the Contractor will immediately inform the ECO/Site Manager who in turn will inform NHC		When a find occurs and throughout the project life		Environmental Control Officer (ECO), Site Manager/Inspector	Foreman/Site Manager/Inspector (SM/I)	ECO/SM/SI Weekly or Monthly Checklist/Report	Ensure compliance of legislation and recommendations.
	Should any remains be found on site or subsurface that	During detailed exploration and	When a find occurs and throughout	Project Proponent and Contractor	Environmental Project Officer (ECO), Site	Foreman/Site Manager/Inspector (SM/I)	ECO/SM/SI Weekly or Monthly	Ensure compliance i.e. NHA of 2004, Burial

Archaeological Management Plan (AMP)								
Area and Site	**Mitigation Measures**	**Phase**	**Timeframe**	**Responsible party for implementation**	**Monitoring party (Frequency)**	**Accountable Party**	**Monitoring System (Performance Indicators)**	**Target**
	is potentially human remains, the NHC and Namibia Police Service should be contacted.	Operational phases	the project life	(Operational crews or any person(s) employed by the Project Proponent)	Manager/Inspector		Checklist/Report	Place Ordinance 27 of 1966
The Procedures to be followed during the Operation, Decommissioning and Rehabilitation Phases are the same as they were during the exploration phase.								