



**ENVIRONMENTAL IMPACT ASSESSMENT (EIA)  
STUDY FOR:**

**THE PROPOSED MINING ACTIVITIES ON MINING LICENCE (ML) NO.  
265 (ML- 265) LOCATED NORTHEAST OF ARANDIS WITHIN THE  
DAURES DISTRICT OF THE ERONGO REGION, NAMIBIA**

**ECC Application No.: APP –005997**

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Copy submitted to the **Ministry of Environment, Forestry and Tourism**

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## EXECUTIVE SUMMARY

Dwyka Investment CC (herein referred to as the Proponent) have applied to the Ministry of Mines and Energy (MME) to be granted the right to mine for **Dimension Stone (Dolerite) and Industrial Minerals (Aggregates)** on Mining License (ML) No. 265. However, the approval of the ML application is subjected to an Environmental Clearance Certificate (ECC). Hence an Environmental Impact Assessment (EIA) study should be conducted. The 278.8159-hectare (ha) ML is located about 28km northeast of Arandis and covers (overlies) Farm Hakskeen, Sukses, and Vergenoeg within the #Gaingu Conservancy. The ML is aimed to mine for Dimension Stone (Dolerite), and Industrial Minerals (Aggregates).

All mining-related activities are among the 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 mining activity is compliant with the national environmental legislation, the Proponent appointed EDS, an independent team of Environmental Consultants, to conduct the required Environmental Impact Assessment (EIA) process and submit the ECC application to the Department of Environmental Affairs and Forestry (DEAF) at the Ministry of Environment, Forestry & Tourism (MEFT).

### Brief Project Description

Planned Activities: Proposed mining Methods

The Proponent intends to adopt a systematic mining approach of the following:

- **Phase 1: Reconnaissance prospecting work-** This entails preliminary examination of the general geological features and characteristics of a region. Systematic investigation in the reconnaissance stage comprises of geological mapping, outcrop sampling, wide-spaced geochemical sampling, and preliminary geophysical survey.

- **Phase 2: Test-quarry-** The aim of test quarrying is to fully evaluate the recovery of saleable blocks within the formation to determine whether full-scale mining is economically viable, as well as to evaluate the implications of extraction methods on the economics of quarrying. Test quarrying is required, as other methods described above can only give an indication of the range of possible recovery, and the actual recovery possible can only be established by actual mining of the formation and recording the resultant production and costs. It also allows for the adjustment of extraction methods to determine the most feasible method to be employed.
- **Phase 3: Development Quarry-** This entails the extraction of dolerite and aggregates determined ~~un~~the test quarry.
- **Phase 4: Production Quarry-** This involves the cutting the marbles stones into blocks for exportation.

## 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 mining activities was done through the following means, in order to ensure that the public is notified and afforded an opportunity to comment on the proposed project:

- A Background Information Document (BID): The document containing a brief information about the proposed facility was compiled and hand delivered to relevant authorities and upon request to all new registered Interested and Affected Parties (IAPs),
- Project Environmental Impact Assessment notices were published in The Namibian on 23 and 30 August 2024, and New Era Newspapers on 19 and 27 August 2024, briefly explaining the proposed mining activities and location of the proposed project and inviting members of the public to register as I&APs to submit their comments/concerns.
- **Consultation Meetings was scheduled with I&APs on the 25<sup>th</sup> of September 2024 at Borehole Hakskeen, but no one showed up, therefore farm to farm consultation was conducted.**

The comments received during the consultation period were noted and used to form the basis for the EIA Report and EMP.

### **Potential Impacts identified**

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

In aiding the Environmental Assessment to properly address the potential key impacts associated with the proposed mining activities, a group of specialists was assembled to commission respective studies to assess the key impacts in detail by undertaking the following studies:

- Air Quality, Noise, Landscape Character and Visual Impact Assessment,
- Archaeological & Heritage Impact Assessment
- Biodiversity (Ecology) Assessments,
- Groundwater (Hydrogeological) Impact Assessment, and
- Socio-Economic Impact Assessment.

## **RECOMMENDATIONS AND CONCLUSIONS**

### **Conclusions**

The potential impacts that are anticipated from the proposed project activities were identified, described, and assessed. For the significant adverse (negative) impacts with medium rating, appropriate management and mitigation measures were recommended for implementation by the Proponent, and the aim is to maximize the positive impacts of the Project.

The interested and affected parties (stakeholders) were consulted as per the EMA and its 2012 EIA Regulations (Section 21 to 24). This was done via the two newspapers used for this environmental assessment, i.e., *New Era* and *The Namibian*. The consultation meeting was scheduled at Borehole Hakskeen and farm to farm consultation was conducted. Some comments and concerns were made and raised on the proposed project activities, respectively. These comments were noted down and incorporated into the Assessment Report and Draft EMP.

The issues and concerns addressed and incorporated into this Assessment Report have been addressed and mitigation measures provided thereto to avoid and/or minimize their significance on the environmental and social components. Most of the potential impacts were found to be of medium rating significance. With the effective implementation the recommended management and mitigation measures, this will particularly reduce the significance of adverse impacts that cannot be avoided completely (i.e., reduce the significance from medium rating to low). To maintain the desirable rating, the implementation of management and mitigation measures, it is highly recommended that the Proponent or their contractors conduct the EMP implementation monitoring. Monitoring will not only be done to avoid impacts or maintain their desired rating, but to also ensure that all potential adverse impacts identified in this study and other impacts that might arise during Project implementation are properly and timely identified and addressed accordingly.

This assessment report is deemed sufficient and conclude that no further detailed assessments are required to the ECC application.

### **Recommendations**

The EDS Consultants are confident that the potential negative impacts associated with the proposed project activities can be managed and mitigated by the effective implementation of the recommended management and mitigation measures. This would also be improved by more effort and commitment towards monitoring the implementation of these measures.

It is therefore, recommended that the proposed mining activities be granted an Environmental Clearance Certificate, on the emphasis that:

- All the management and mitigation measures provided in the Draft EMP are effectively and progressively implemented.
- All required permits, licenses and approvals / consents for the proposed activities should be obtained as required. These include permits and licenses for land use agreements to explore and ensuring compliance with these specific legal requirements.
- The Proponent and all their personnel 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.

The disturbed areas created from the project activities areas are rehabilitated, as far as practicable, to their mining state.

**Disclaimer**

Excel Dynamic Solutions (Pty) Ltd (herein referred to as EDS) warrants that the findings and conclusion contained herein were accomplished in accordance with the methodologies set forth in the Scope of Work and EMA of 2007 with its 2012 EIA Regulations. These methodologies are described as good customary practice for conducting an EIA for the purpose of identifying recognized environmental conditions. There is a possibility that even with the proper application of these methodologies, there may exist on the subject project site conditions that could not be identified within the scope of the assessment, or which were not reasonably identifiable from the available information. The EDS Consultants believe that the information obtained from the record review, specialist reports and during the public consultation processes concerning the proposed mining work is reliable. However, the Consultants cannot and does not warrant or guarantee that the information provided by the other sources is accurate or complete. The conclusions and findings set forth in this Assessment Report are strictly limited in time and scope to the date of the evaluations. No other warranties are implied or expressed.

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

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**Appendix C:** Public Consultation Records

**Appendix D:** Air Quality, Noise, Landscape Character and Visual Impact

**Appendix E:** Archaeological & Heritage Impact Assessment Baseline

**Appendix F:** Biodiversity (Ecology) Impact Assessment

**Appendix G:** Hydrogeological Assessment Study

**Appendix H:** Socio-economic Impact Assessment

**LIST OF ABBREVIATIONS**

<b>Abbreviation</b>	<b>Meaning</b>
BID	Background Information Document
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CV	Curriculum Vitae
DEAF	Department of Environmental Affairs and Forestry
EA	Environmental Assessment
EAP	Environmental Assessment Practitioner
ECC	Environmental Clearance Certificate
EDS	Excel Dynamic Solutions
EIA	Environmental Impact Assessment
EMA	Environmental Management Act
EMP	Environmental Management Plan
EPFIs	Equator Principle Financial Institutions
EIA	Environmental Impact Assessment
GG & GN	Government Gazette & Government Notice
IAPs	Interested and Affected Parties
IFC	International Finance Corporation
MAWLR	Ministry of Agriculture, Water and Land Reform
MEFT	Ministry of Environment, Forestry and Tourism
ML	Mining Licence
MME	Ministry of Mines and Energy
PPE	Personal Protective Equipment
Reg / S	Regulation / Section
TOR	Terms of Reference
UNCCD	The United Nations Convention to Combat Desertification

## KEY TERMS

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

Terms	Definition
<b>Interested and Affected Party (IAP)</b>	In relation to the assessment of a listed activity includes - (a) any person, group of persons or organization interested in or affected by an activity; and (b) any organ of state that may have jurisdiction over any aspect of the activity. Mitigate - practical measures to reduce adverse impacts. Proponent – as defined in the Environmental Management Act, a person who proposes to undertake a listed activity. Significant impact - means an impact that by its magnitude, duration, intensity or probability of occurrence may have a notable effect on one or more aspects of the environment.
<b>Fauna and Flora</b>	All the animals and plants found in an area.
<b>Mitigation</b>	The purposeful implementation of decisions or activities that are designed to reduce the undesirable impacts of a proposed action on the affected environment.
<b>Monitoring</b>	Activity involving repeated observation, according to a pre-determined schedule, of one or more elements of the environment to detect their characteristics (status and trends).
<b>Proponent</b>	Organization (private or public sector) or individual intending to implement a development proposal.
<b>Public Consultation/Involvement</b>	A range of techniques that can be used to inform, consult or interact with stakeholders affected by the proposed activities.
<b>Protected Area</b>	Refers to a protected area that is proclaimed in the Government Gazette according to the Nature Conservation Ordinance number 4 of 1975, as amended.
<b>Assessment</b>	An early and open activity to identify the impacts that are most likely to be significant and require specialized investigation during the EIA work. Can, also be used to identify alternative project designs/sites to be assessed, obtain local knowledge of site and surroundings, and prepare a plan for public involvement. The results of assessment are frequently used to prepare a Terms of Reference for the specialized input into full EIA.
<b>Terms of Reference (ToR)</b>	Written requirements governing full EIA input and implementation, consultations to be held, data to be produced and form/contents of the EIA report. Often produced as an output from assessment.

# 1 INTRODUCTION

## 1.1 Project Background and Locality

Dwyka Investment CC (The Proponent) have applied to the Ministry of Mines and Energy (MME) to be granted the right to mine for Dimension Stone (Dolerite), and Industrial Minerals (Aggregates) on Mining Licence (ML) No. 265. However, prior to granting the approval of the application and subsequent granting of the mining rights, the ML application is subjected to an Environmental Clearance Certificate (ECC), before any proposed mining activities work may occur on the ML. The 278.8159-hectare (ha) ML is located about 28km northeast of Arandis and covers (overlies) on Farm Hakskeen, Sukses, and Vergenoeg, within #Gaingu Conservancy (Figure 2); the targeted commodity for mining is Dimension Stone (Dolerite), and Industrial Minerals (Aggregates)).

Section 27 (1) of the Environmental Management Act (EMA) (No. 7 of 2007) and its 2012 Environmental Impact Assessment (EIA) Regulations, provides a list of activities that may not be carried out without an Environmental Impact Assessment (EIA) undertaken and an Environmental Clearance Certificate (ECC) issued. Mining related activities are among the listed activities that may not occur without an ECC. Therefore, individuals or organizations may not carry out mining related activities among those listed, without an EIA undertaken and an ECC awarded.

### 1.2 Mine Site Layout

An optimal mine site layout is designed primarily in accordance to the topographical features and sensitivity area of the proposed mine, while taking into account the efficiencies required for the anticipated mining operation. Figure 1 shows the proposed mine site layout.

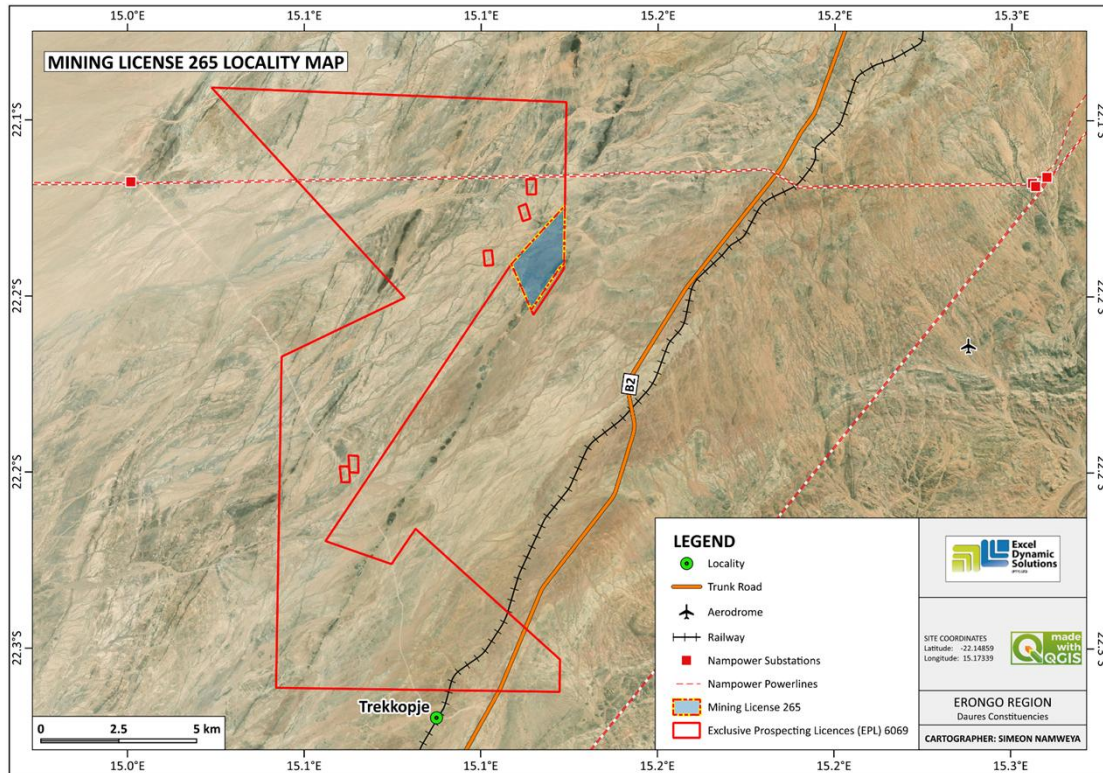


Figure 1: Shows the target area within the EPL 6069 (ML-265)

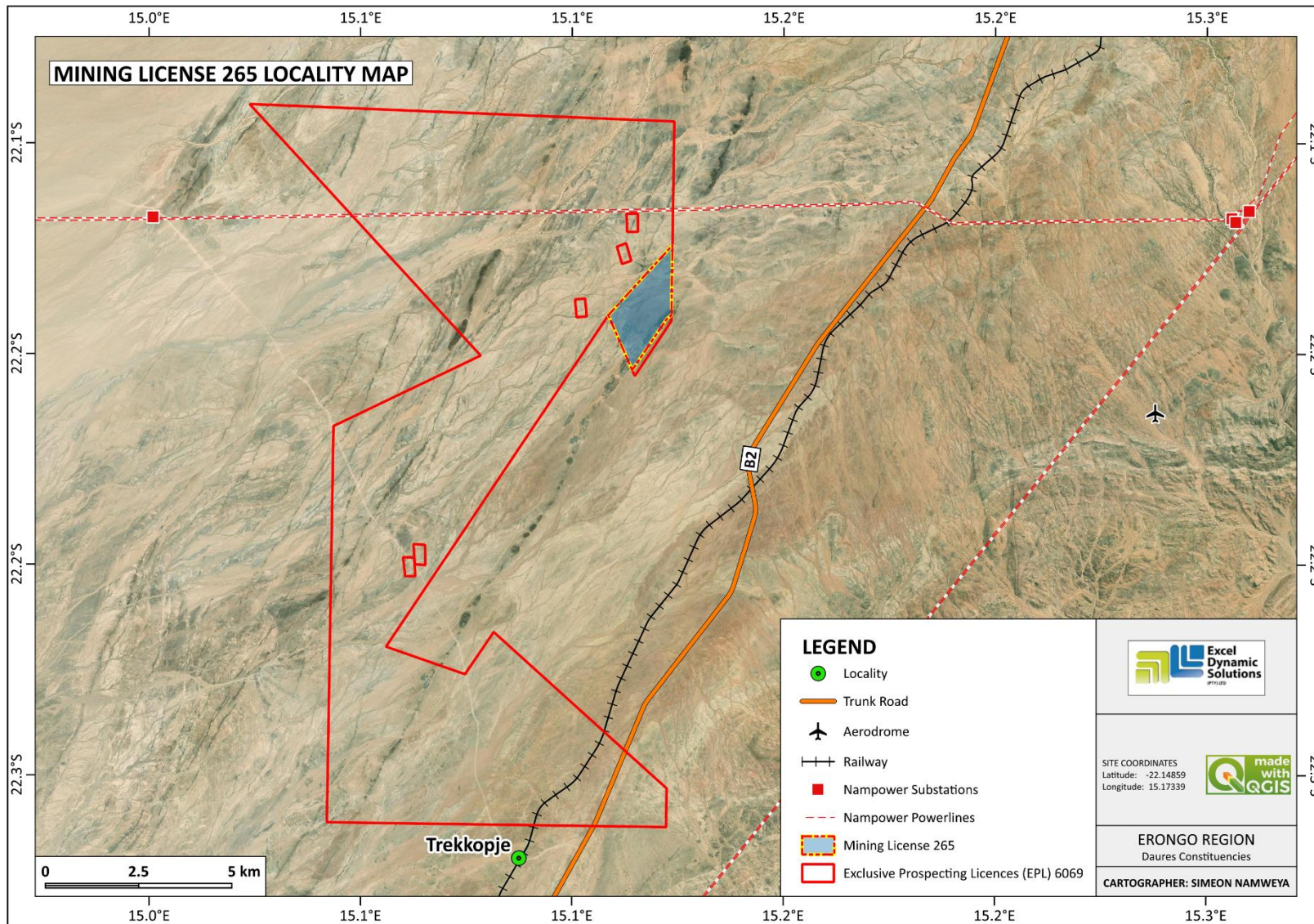


Figure 2: Locality map for ML-265 in the Erongo Region, Namibia

### **1.3 The Need for the Proposed Project Activities**

The mining sector plays a key role in socio-economic development of many resource-rich countries. In Namibia, the sector has been and remains the backbone of the Namibian economy as reflected by its average annual economic growth, contribution to GDP, job creation, income generation, and a key source of government fiscal receipts and foreign exchange earnings. Mining activities contribute to the national and local economies and may have a positive impact on the country's economy. Namibia's economy depends largely on mining activities. Should the ML provide economically viable Dimension Stone (Dolerite), and Industrial Minerals (Aggregates), the Namibian economy can expect benefits from revenues during the construction phase, royalties and taxes during the Life of Mine (LoM), and a positive contribution towards employment.

### **1.4 Appointed Environmental Assessment Practitioner**

To satisfy the requirements of the EMA and its 2012 EIA Regulations, The Proponent appointed a team of independent environmental consultants (Excel Dynamic Solutions (Pty) Ltd (EDS)), to conduct the required Environmental Assessment (EA) process.

The full EIA was conducted by the EDS Consultants' team members and appointed independent specialists as listed below:

- The EIA Study was headed by Mr. Nerson Tjelos, a qualified and experienced Geoscientist and experienced Environmental Assessment Practitioner (EAP) with over 8 years of experience in Natural Resources Consulting and Business Development.
- The EIA consultation process and reporting were done by Mr. Mandume Leonard, respectively. The CV's of the project team are presented under Appendix B.

### **1.5 Terms of Reference and Scope of Works for the Environmental Consultant**

The Terms of Reference (ToR) within this Environmental Impact Assessment Report has been developed from the scoping assessment stages:

- Registration of the EIA Study with the Ministry of Environment, Forestry and Tourism (MEFT),

- Ongoing engagement and consultation with Stakeholders/Interested & Affected Parties (I&APs),
- Potential Impact Assessments from a scoping level to a full EIA, which includes the respective specialists' studies for impacts that cannot be fully understood at a scoping level nor fully addressed by the Environmental Assessment Practitioner.

The application for the ECC was compiled and submitted to the Environmental Custodian, the Ministry of Environment, Forestry and Tourism (MEFT)'s Department of Environmental Affairs and Forestry (DEAF). The Background Information Document (BID) was also uploaded on the online ECC Portal for project registration purposes.

Since as full EIA is primarily based on the specialists' studies, these studies are listed below:

- Air Quality, Noise, Landscape Character and Visual Impact Assessment,
- Archaeological & Heritage Impact Assessment
- Biodiversity (Ecology) Assessments,
- Groundwater (Hydrogeological) Impact Assessment, and
- Socio-Economic Impact Assessment.

The findings of the EIA process and specialists' findings are incorporated into this Environmental Impact Assessment Report and the Draft Environmental Management Plan (EMP) - Appendix A. These documents will be submitted as part of the ECC application to the Environmental Commissioner at the DEAF of the MEFT for consideration of the ECC.

## **1.6 The Need for the EIA Study and Specialists**

Given the nature of the proposed activities (mining stage), and significant comments received from some of the I&APs during the EIA consultation process, it was found that some potential key adverse impacts could not be ascertained and addressed through a mere environmental scoping assessment. Therefore, the Study had to be inclusive and comprehensive by undertaking a full (detailed EA) Study to address the impacts of concerns in detail and by appointed independent specialists. By doing this, the impacts would be assessed in detail for the mining activities, therefore improving the chances of obtaining an ECC for the project activities.

To fulfil the requirements of the detailed EIA Study, five specialists were appointed by EDS Consultants to undertake specific assessment for impacts that were found to be significant and of concerns. The specialist studies undertaken are as follows:

- Air Quality, Noise, Landscape Character and Visual Impact Assessment (external specialists):
  - Air quality and Noise impact assessment - Mr. Markus Vaefeni Hitila (Appendix D)
  - Visual and Landscape Assessment - Professor Benjamin Mapani (Appendix D)
- Archaeological & Heritage Impact Assessment (internal specialist): The impact assessment was done by Mr. Roland Mushi, a qualified and experienced Archaeologist. The assessment report is attached hereto as Appendix E.
- Biodiversity impact assessment (external specialist): the study and report were done and compiled by Mr. Peter Cunningham, a qualified and experienced Ecologist. The assessment report is attached as Appendix F.
- Hydrogeological (Groundwater) Impact Assessment (internal specialist): the water resources, particularly groundwater that is anticipated to be impacted by the actual mining activities (abstraction to supply the project) was undertaken by Ms. Fredrika Shagama, a qualified and experienced Hydrogeologist. The Hydrogeological Assessment report is attached as Appendix G.
- Socio-Economic Impact Assessment (internal specialist): this study and its report were carried out and compiled by Mr. Fillemon V. Shilongo who is a qualified and experienced economist. The specialist report is attached hereto as Appendix H.

The Terms of Reference for the above-listed specialists are detailed in Chapter 2 (the next chapter).

## 2 TERMS OF REFERENCE (TOR) FOR THE SPECIALISTS

The specialist studies for the EIA were decided upon based on the potential impact magnitude and significance and where little to no data on these was available for the Environmental Assessment Practitioner to make an informed conclusion on the impacts. The conditions on the site were evaluated and the findings written into respective specialist reports, detailing sensitive areas that should be avoided, and or recommending effective measures to manage or mitigate the impacts. The Terms of Reference (TOR) for each of the specialists are contained in Table 2-1 below:

**Table 2-1: Terms of Reference for the EIA specialists**

Type of Impact Assessment / Study	Specialist name	Terms of Reference
Air Quality and Noise	Mr. Markus Vaefeni Hitila	<p>The focus of the two-component study will be:</p> <p><u>For Air quality</u></p> <ul style="list-style-type: none"> <li>- Identify all current sources of air pollution in the area (other mines, wild fires, domestic fuel burning, etc.).</li> <li>-Identify all sensitive receptors (including any nearby residential dwellings and proposed receptors (temporary or permanent worker's accommodation site(s)) in the vicinity of the mine).</li> <li>-Prepare atmospheric dispersion simulations of all PM10, PM2.5 and dust fallout, and gaseous pollutants for the operations reflecting highest hourly, daily and annual average concentrations due to routine and upset emissions from the mining, processing and beneficiation operations.</li> <li>-Based on the results of the simulations, assess potential air quality impacts of the proposed project.</li> <li>-Provide guidance for the requirement of any permits or licenses in terms of Namibian legislation.</li> </ul> <p><u>Noise</u></p>

Type of Impact Assessment / Study	Specialist name	Terms of Reference
		<ul style="list-style-type: none"> <li>-Undertake a short-term baseline noise survey at five different locations (30 minutes per sample) and at night (15 min minutes per sample).</li> <li>-Establishment of a source inventory for the proposed project.</li> <li>-Prepare noise propagation simulations.</li> <li>-Based on the results of the propagation simulations, assess potential noise impacts of the proposed project.</li> <li>-Identify practicable mitigation measures to reduce negative impacts on sensitive receptors and indicate how these can be implemented during the various project phases.</li> </ul>
<p>Archaeological &amp; Heritage</p>	<p>Mr. Nkosana Hlabangana</p>	<p>The Archaeological &amp; Heritage focused on:</p> <ul style="list-style-type: none"> <li>-Provide a description of the archaeology of the site, and identify and map any sites of archaeological significance that may be impacted by the proposed project.</li> <li>-Assess the sensitivity and conservation significance of any archaeological sites affected by the proposed project.</li> <li>-Identify and assess the significance of the potential impacts of the proposed project on archaeological heritage.</li> <li>-Identify practicable mitigation measures to reduce negative impacts on archaeological resources and indicate how these can be implemented during the various project phases.</li> <li>-Make recommendations on the protection and maintenance of any significant archaeological sites that may occur.</li> </ul>

Type of Impact Assessment / Study	Specialist name	Terms of Reference
Biodiversity	Mr. Peter L. Cunningham	<p>Focus on the terrestrial biodiversity by considering the following in each sensitive area:</p> <p><u>Fauna</u></p> <ul style="list-style-type: none"> <li>-Provide a broad description of the existing environment in terms of its fauna (including large and small mammals, reptiles and amphibians) based on a field survey and available literature.</li> <li>-Assess the significance of potential impacts of the proposed project on terrestrial fauna (excluding avifauna).</li> <li>-Identify and describe sensitive invertebrate habitats within the study area.</li> <li>-Assess the significance of potential impacts of the proposed project on the invertebrate fauna.</li> <li>-Identify practicable mitigation measures to reduce impacts to the invertebrate fauna and indicate how these could be implemented during the various project phases.</li> <li>-Provide a broad description of the avifauna and associated habitats in the study area based on a field survey and available literature, as well as their sensitivity in terms of the proposed project.</li> </ul> <p><u>Flora</u></p> <ul style="list-style-type: none"> <li>-Review existing relevant information and undertake a field study to identify the plant species that occur or are thought to occur on the study site, with emphasis on those that are protected by legislation.</li> <li>-Divide the area into broad sensitivity zones according to plant species vulnerability, ecological and scientific value.</li> </ul>

Type of Impact Assessment / Study	Specialist name	Terms of Reference
		<p>-Identify particularly sensitive areas or habitats if any, with each of those zones.</p> <p>-Suggest possible mitigation measures to minimize impacts on vegetation and indicate how these could be implemented during the various project phases.</p>
Groundwater	Ms. Fredrika Shagama	<p>-Undertake a desktop-based yield study of the proposed water supply.</p> <p>-Undertake a hydrological study including a site visit</p> <p>-Identify flow path using DEM to delineate the sub-catchment hosting the ML area and calculate a draft water balance of the catchment.</p> <p>-Develop and conceptual storm water management plan in relation to mining infrastructure.</p> <p>-Identify and assess potential impacts of the proposed project on water quantity and quality, including downstream water users.</p> <p>-Identify practicable mitigations measure to reduce impacts to downstream surface water users (including biodiversity) and indicate how these could be implemented during various project phases.</p> <p>-Describe aquifer distribution and aquifer parameters as available.</p> <p>-Identify practicable mitigation measures to reduce impacts on groundwater and third-party users and indicate how these could be implemented during the various project phases</p>
Socio-economic	Mr. Fillemon Shilongo	<p>The socio-economic assessment focused on:</p> <p>-Describing the projects social and economic receiving environment, including Legislative context and National development context</p>

Type of Impact Assessment / Study	Specialist name	Terms of Reference
		<p>-Socio-economic aspects likely to be impacted by the proposed project, e.g. aspect of poverty, demographics, education and health.</p> <p>-The economy of the wider project area and Karibib as the nearest town.</p> <p>-Identifying and assessing the potential positive and negative impacts of the proposed project on the social and economic activities.</p> <p>-Identifying mitigation or optimization measures to reduce the significance of any negative impacts and increase the significance of positive impacts, and indicate how these can be implemented during various project phases</p>
Visual Impact and Landscape	Prof. Benjamin Mapani	<p>Focus on the visual environment by considering the following with regards to the sensitive areas on and around the project site:</p> <p>-Describe and characterize the receiving environment, including the landscape character, landscape quality and sense of place, based on a site visit and aerial photographic interpretation.</p> <p>-Describe the visual resource using the landscape character, landscape quality and sense of place.</p> <p>-Describe and illustrate the visual characteristics of the components of the various project components.</p> <p>-Determine visual intrusion using photomontages to simulate the physical presence and nature of the visual intrusion of the proposed project components from critical viewing areas.</p> <p>-Conduct a view shed analysis to determine the visibility and visual exposure of the proposed project.</p>

Type of Impact Assessment / Study	Specialist name	Terms of Reference
		<ul style="list-style-type: none"> <li>-Assess the potential visual impact based on visual intrusion, visibility and visual exposure criteria, along with criteria that determine the sense of place.</li> <li>-Identify practicable mitigation measures to reduce negative visual impacts and indicate how these can be implemented during the various project phases.</li> <li>-Consider visual impact from the main road (C33) between Karibib and Omaruru.</li> <li>-Identify the most feasible and practical way of mitigating any potential impacts on sensitive receptors.</li> <li>-Provide recommendations to mitigate potential impacts resulting from the proposed activities.</li> </ul>

A description of the proposed project activities is crucial in providing a clear understanding of the project inputs, processes, and outputs and how these processes and activities would really impact the environmental components in the long run. The proposed project description and its related activities are therefore presented under the next chapter.

### 3 PROJECT DESCRIPTION: PROPOSED MINING ACTIVITY

The outline of a typical mining project is presented in Figure 2 below and the actual proposed mining of Dimension Stone is presented under section 3.1.

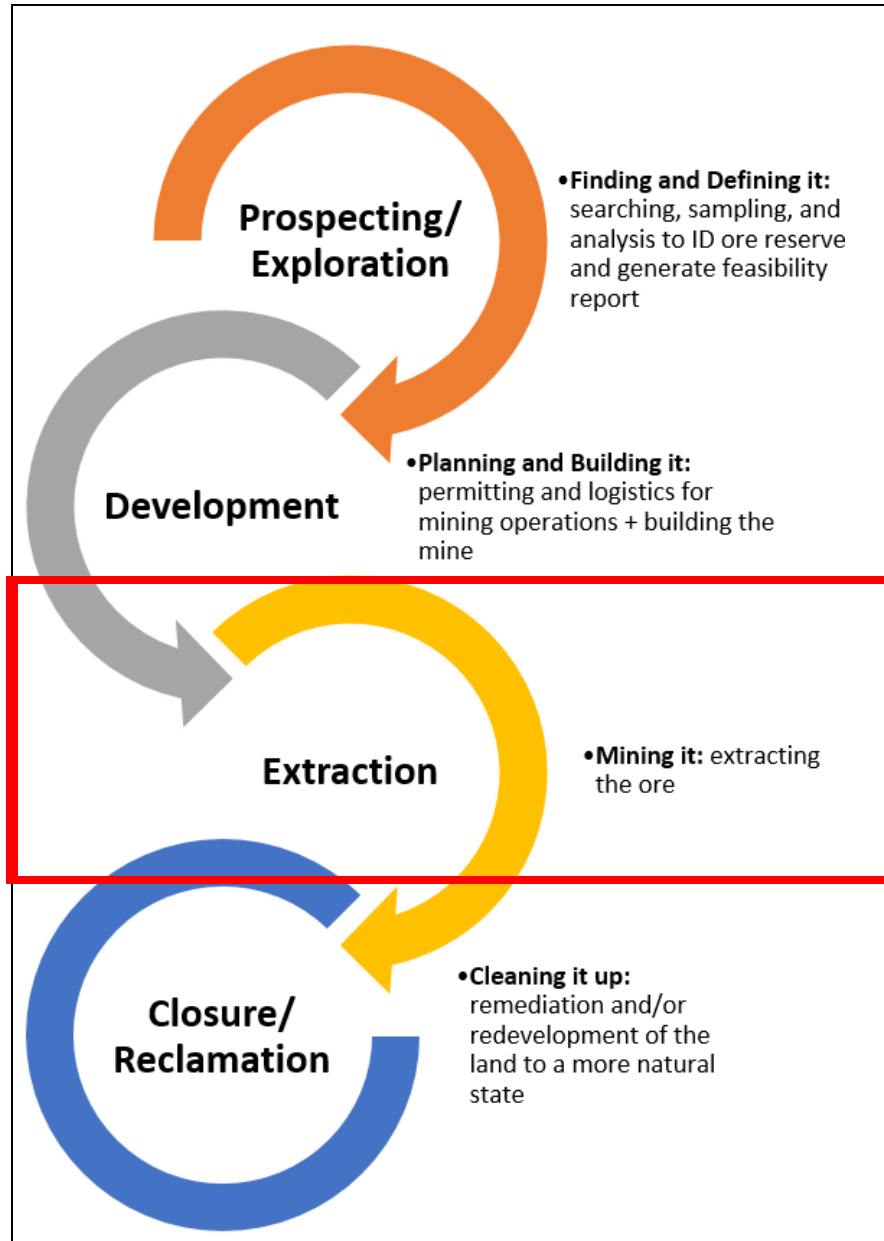


Figure 3: Diagram of the Life Cycle of a Mine (after Superfund Research Project, 2019). The phase covered by this study is highlighted with a red box.

### 3.1 The Proposed Mining Activities (Methods)

The proposed mining activities will include the following:

- Phase 1- Reconnaissance prospecting work: This entails preliminary examination of the general geological features and characteristics of a region. Systematic investigation in the reconnaissance stage comprises of geological mapping, outcrop sampling, wide-spaced geochemical sampling, and preliminary geophysical survey.
- Phase 2- Test-quarry: Following successful reconnaissance prospecting work, minor test-quarrying, test-processing and initial marketing activities are undertaken.
- Phase 3- Development Quarry: Extraction of test-blocks by means of diamond wire cutting, processing tests and notably marketing studies, production of tops, slabs and finished goods.
- Phase 4- Production Quarry: Once positive results are obtained from Phases 2 and 3 and customers place larger orders, then project enters the production phase.

### 3.2 Project Resources

The resources (in terms of human, vehicles, machinery, and equipment), services and infrastructure required for the proposed activities are presented as follows.

#### 3.2.1 Human Resources

The project activities will require 70 to 100 staff consisting of geologists, field assistants, geo-technicians, drilling crew and semi/unskilled personnel.

#### 3.2.2 Project Crew Accommodation

Most of project personnel will be accommodated in the town of Arandis while a few of them will be accommodated on site in few caravans and/or make-shift buildings where provisions of ablution facilities will be made. The predominant type of waste that will be generated during the mining activities, in small volumes, is domestic waste (non-hazardous). An administration, accommodation camp shall be identified and setup within the ML' area. The campsite will be cordoned off and off-limits to those not part of the mining team (personnel).

#### 3.2.3 Materials, Equipment and Vehicles

The input required for the mining program in terms of vehicles, machines and equipment but not limited to the following. These will be kept at a demarcated storage area on site that will be established within the ML. These include:

- 4X4 vehicles
- Truck
- Excavator / front-end loader
- Dozers
- Drill rings
- Air compressor
- Drilling fluids stored in manufacturers approved containers
- Generator for power supply
- Wire Saws
- High pressure water jets'
- Large multi-blade block cutters
- Loaders
- Crushers
- Water Tanks
- Containers

### 3.2.4 Waste Management

Waste management: the different waste will be handled as follows:

- i. **Sewage:** Mobile chemical ablation facilities will be provided on-site. The wastewater will be transported offsite for treatment at a facility. The wastewater will then be transported offsite to the treatment facility either by the Proponent or a designated/appointed external waste management contractor.
- ii. **General and domestic waste:** The predominant type of waste that will be generated during the mining activities, in small volumes, is domestic waste (non-hazardous). Therefore, sufficient waste bins (containers) will be made available at both mining sites and campsite for waste storage. The bins will be emptied into the main onsite container for disposal at the nearest municipal approved solid waste site, when necessary (upon reaching a waste disposal agreement with the relevant local authority, which can be Arandis Town Council).

- iii. **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 or removal by an external hazardous handling & management contractor.

### **3.2.5 Health and Safety**

Health and Safety: Adequate and appropriate Personal Protective Equipment (PPE) will be provided to every project personnel while on and working at site. A minimum of two well-furnished first aid kits will be readily available at mining sites to attend to potential minor injuries, while major injuries will need to be attended to further by transporting the injured to the nearest health center for treatment and needed care in Arandis (a nearby Primary Health Care center within the proximity of the ML, i.e., Arandis).

### **3.2.6 Accidental Fire management**

A minimum of basic firefighting equipment, i.e., ten well serviced and frequently serviced fire extinguishers will be readily available in vehicles, at the working sites on the ML and campsite.

### **3.2.7 Site Security**

The storage areas for mining equipment, material and machines will be erected at selected ML sites. Security will be supplied on a 24-hour basis at the delegated storage sites to ensure that the project vehicles, machinery, and equipment are not stolen or vandalized. This is also to ensure that the community health is not compromised from the presence of potential hazardous mining materials such as fuels and heavy equipment.

## **3.3 Rehabilitation and Closure Phase**

The Proponent needs to commit to the establishment of a rehabilitation plan for the mine closure plan, as part of the EMP requirements. The Proponent will need to contract a specialist to draft down a conceptual mine closure plan for the ML-265.

## 4 PROJECT ALTERNATIVES

### 4.1 Alternatives Considered

Alternative mine designs and processing plant options are all considered and the availability of water sources, potential long term slope stability, safety and climate change will be considered when assessing the economic, technical and environmental suitability of an alternative. For every alternative option there is an impact on another aspect of the project. The detailed baseline environmental studies in the appendices and summarized in the environmental baseline chapter provide further information to the decision-making aspects.

#### 4.1.1 Mining Activity Location

The areas selected for mining activities are dependent on the geological setting (regional and local), the economic geology, and the mining and mining history of the license (ML) and Proponents' preference of an area. This means that the mineralization of the commodities within the ML is area-specific, which means mining 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.

#### 4.1.2 Mining Methods

Dimension stones and aggregates quarrying sector has some differences compared to other mining sectors. As is wellknown in the former sector the extractive methods that are employed (i.e., combined drilling- diamond wire cutting and chain saw cutting with limited use of smooth blasting) to produce squared decorative stone blocks of commercial dimensions and prescribed commercial aesthetical quality at a quarry are different from those used in the metallic and industrial minerals extractive sector

The decision to proceed with the exploitation of dolerite and aggregates is based, as in the case of other mining projects, on many factors like market price and demand of the decorative stone at hand, estimated reserves and Recovery Ratio (RR) of squared blocks, as well as Stripping Ratio (SR), location and topography, environmental and social criteria and regulations (for example on the final slope geometry of the quarry, pit slope accessibility etc.)

## 5 LEGAL FRAMEWORK: LEGISLATION, POLICIES AND GUIDELINES

A review of applicable and relevant Namibian and international legislation, policies, and guidelines to the proposed activity is given in this section. This review serves to inform the project Proponent, Interested and Affected Parties, and the decision-makers at the DEAF of the requirements and expectations, as laid out in terms of these instruments, to be fulfilled to establish the proposed mining activities.

### 5.1 Local and National Legislation, Policies and Guidelines

The local and national legal obligations that are relevant to the proposed project activities and related activities are presented in Table 1.

**Table 1: Applicable local, national and international standards, policies and guidelines governing the proposed mining activities on the ML-265**

Legislation / Policy / Guideline: Custodian	Relevant Provisions	Implications for this project
<p>The Constitution of the Republic of Namibia, 1990 as amended:</p> <p><b>Government of the Republic of Namibia</b></p>	<p>The constitution defines the country's position in relation to sustainable development and environmental management.</p> <p>The constitution refers that the state shall actively promote and maintain the welfare of the people by adopting policies aimed at the following:</p> <p>“Maintenance of ecosystems, essential ecological processes and biodiversity of Namibia, and the utilisation of living, natural resources on a sustainable basis for the benefit of all Namibian, both present and future”</p>	<p>The Proponent is committed to the sustainable use of the environment, and has aligned its corporate mission, vision, and objectives within the ambit of the constitution of the Republic of Namibia (1990).</p>

Legislation / Policy / Guideline: Custodian	Relevant Provisions	Implications for this project
<p>Environmental Management Act (No. 7 of 2007) and its 2012 Environmental Impact Assessment (EIA) Regulations (Government Gazette (GG) No. 4878 Government Notice (GN) No. 30): <b>Ministry of Environment, Forestry and Tourism (MEFT)</b></p>	<p>The act states that an EIA should be undertaken and submitted as part of the environmental clearance certificate prior to the proposed project.</p> <p>The Ministry of Environment, Forestry and Tourism (MEFT) is responsible for the protection and management of Namibia's natural environment. The Department of Environmental Affairs and Forestry under the MEFT is responsible for the administration of the EIA process.</p>	<p>The EIA Study has been conducted in accordance with the EMA and its Regulation.</p> <p>An ECC application has been launched with the MEFT. This Assessment Report and Draft EMP will be submitted to the Environmental Commissioner at DEAF for evaluation and consideration of the ECC.</p>
<p>Minerals (Prospecting and Mining) Act (No. 33 of 1992): <b>Ministry of Mines and Energy (MME)</b></p>	<p>Section 50 (1) requires "An environmental impact Assessment indicating the extent of any pollution of the environment before any mining operations are being carried out, and an estimate of any pollution if any, likely to be caused by such mining operations."</p> <p>Section 54 requires written notice to be submitted to the Mining Commissioner if the holder of a mineral license intends to abandon the mineral license area.</p>	<p>An assessment of the impact on the receiving environment should be carried out.</p> <p>The Proponent should include as part of their application for the ML measures by which they will rehabilitate the areas where they intend to carry out mineral mining activities.</p>

Legislation / Policy / Guideline: Custodian	Relevant Provisions	Implications for this project
	<p>Section 68 stipulates that an application for a Mining Licence (ML) 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 measures to be taken to prevent or minimize any such effect.</p> <p>Section 91 requires that rehabilitation measures should be included in an application for a mineral license.</p>	
<p>Nature Conservation Amendment Act, No. 3 of 2017: <b>Ministry of Environment, Forestry and Tourism (MEFT)</b></p>	<p>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.</p>	<p>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 in the ML Site area.</p>

Legislation / Policy / Guideline: Custodian	Relevant Provisions	Implications for this project
The Parks and Wildlife Management Bill of 2008: <b>Ministry of Environment, Forestry and Tourism (MEFT)</b>	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.	
Mine Health & Safety Regulations, 10th Draft: <b>Ministry of Health and Social Services (MHSS)</b>	Makes provision for the health and safety of persons employed or otherwise present in mineral licenses area. These deal with among other matters; clothing and devices; design, use, operation, supervision and control of machinery; fencing and guards; and safety measures during repairs and maintenance.	The Proponent should comply with all these regulations with respect to their employees.
Petroleum Products and Energy Act (No. 13 of 1990) Regulations (2001): <b>Ministry of Mines and Energy (MME)</b>	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 authorisation from the MME for the storage of fuel on-site.

Legislation / Policy / Guideline: Custodian	Relevant Provisions	Implications for this project
<p>The Regional Councils Act (No. 22 of 1992): <b>Ministry of Urban and Rural Development (MURD)</b></p>	<p>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 perspective, 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.</p>	<p>The relevant Regional Councils are IAPs and must be consulted during the Environmental Assessment (EA) process. The project site falls under the Erongo Regional Council (Daures Constituency Office); therefore, they should be consulted.</p>
<p>Water Act 54 of 1956: <b>Ministry of Agriculture, Water and Land Reform (MAWLR)</b></p>	<p>The Water Resources Management Act 11 of 2013 is presently without regulations; therefore, the Water Act No 54 of 1956 is still in force:</p> <p>Prohibits the pollution of water and implements the principle that a person disposing of effluent or waste has a duty of care to prevent pollution (S3 (k)).</p> <p>Provides for control and protection of groundwater (S66 (1), (d (ii)).</p> <p>Liability of clean-up costs after closure/abandonment of an activity (S3 (l)). (l)).</p>	<p>The protection (both quality and quantity/abstraction) of water resources should be a priority.</p> <p>The permits and license required thereto should be obtained from MAWLR’s relevant Departments (these permits include Borehole Drilling Permits, Groundwater Abstraction &amp; Use Permits, and when required, the Wastewater / Effluent Discharge Permits).</p>

Legislation / Policy / Guideline: Custodian	Relevant Provisions	Implications for this project
Water Resources Management Act (No 11 of 2013): <b>Ministry of Agriculture, Water and Land Reform (MAWLR)</b>	<p>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:</p> <p>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 (S68).</p>	
National Heritage Act No. 27 of 2004: <b>Ministry of Education, Arts and Culture (MEAC)</b>	To provide for the protection and conservation of places and objects of heritage significance and the registration of such places and objects; to establish a National Heritage Council; to establish a National Heritage Register; and to provide for incidental matters.	The Proponent should ensure compliance with 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. The management measures should be incorporated into the Draft EMP.
The National Monuments Act (No. 28 of 1969): <b>Ministry of Education, Arts and Culture (MEAC)</b>	The Act enables the proclamation of national monuments and protects archaeological sites.	
Soil Conservation Act (No 76 of 1969): <b>Ministry of Agriculture, Water and Land Reform (MAWLR)</b>	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.	Land clearing is an unavoidable necessity for the proposed project, as large area will be cleared for mining infrastructure.

Legislation / Policy / Guideline: Custodian	Relevant Provisions	Implications for this project
Forestry Act (Act No. 12 of 2001: <b>Ministry of Environment, Forestry and Tourism (MEFT)</b> )	The Act provides for the management and use of forests and forest products.  Section 22. (1) provides: "Unless otherwise authorised by this Act, or by a licence issued under subsection (3), no person shall on any land which is not part of a surveyed erven of a local authority area as defined in section 1 of the Local Authorities Act, 1992 (Act No. 23 of 1992) cut, destroy or remove - (a) vegetation which is on a sand dune or drifting sand or on a gully unless the cutting, destruction or removal is done for the purpose of stabilising the sand or gully; or (b) any living tree, bush or shrub growing within 100 m of a river, stream or watercourse."	The Proponent will apply for the relevant permit under this Act if it becomes necessary.
Public Health Act (No. 36 of 1919): <b>Ministry of Health and Social Services (MHSS)</b>	Section 119 states that "no person shall cause a nuisance or shall suffer to exist on any land or premises owned or occupied by him or of which he is in charge any nuisance or other condition liable to be injurious or dangerous to health."	The Proponent and all its employees should ensure compliance with the provisions of these legal instruments.
Health and Safety Regulations GN 156/1997 (GG 1617): <b>Ministry of Health and Social Services (MHSS)</b>	Details various requirements regarding health and safety of labourers.	

Legislation / Policy / Guideline: Custodian	Relevant Provisions	Implications for this project
Public and Environmental Health Act No. 1 of 2015: <b>Ministry of Health and Social Services (MHSS)</b>	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 public and environmental health should be preserved and remain uncompromised.
Atmospheric Pollution Prevention Ordinance (1976): <b>Ministry of Health and Social Services (MHSS)</b>	This ordinance provides for the prevention of air pollution and is affected by the Health Act 21 of 1988. Under this ordinance, the entire area of Namibia, apart from East Caprivi, is proclaimed as a controlled area for the purposes of section 4(1) (a) of the ordinance.	The proposed project and related activities should be undertaken in such a way that they do not pollute or compromise the surrounding air quality. Mitigation measures should be put in place and implemented on site.
Hazardous Substance Ordinance, No. 14 of 1974: <b>Ministry of Health and Social Services (MHSS)</b>	The ordinance provides for the control of toxic substances. It covers manufacture, sale, use, disposal and dumping as well as import and export. Although the environmental aspects are not explicitly stated, the ordinance provides for the importing, storage, and handling.	The Proponent should handle and manage the storage and use of hazardous substances on site so that they do not harm or compromise the site environment

Legislation / Policy / Guideline: Custodian	Relevant Provisions	Implications for this project
Road Traffic and Transport Act, No. 22 of 1999: <b>Ministry of Works and Transport (Roads Authority of Namibia)</b>	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.	Mitigation measures should be provided for, if the roads and traffic impact cannot be avoided, the relevant permits must be applied for.
Labour Act (No. 6 of 1992): <b>Ministry of Labour, Industrial Relations and Employment Creation (MLIREC)</b>	Ministry of Labour, Industrial Relations and Employment Creation is aimed at ensuring harmonious labour relations through promoting social justice, occupational health and safety and enhanced labour market services for the benefit of all Namibians. This ministry insures effective implementation of the Labour Act No. 6 of 1992.	The Proponent should ensure that the prospecting and mining activities do not compromise the safety and welfare of workers.

Table 2: Namibian national policies and plans applicable to the proposed project

Policy or Plan	Relevant provisions	Relevance to the project
Vision 2030	Vision 2030 states that the overall goal is to improve the quality of life of the Namibian people aligned with the development world.	The proposed project aims to meet the objectives of vision 2030.
National Development Plan (NDP5)	The NDP5 is the fifth in a series of seven five-year national development plans that outline the objectives and aspiration of Namibia's long-term vision	The proposed project meets the objective of the NDPs by creating employment opportunity.

Policy or Plan	Relevant provisions	Relevance to the project
The Harambee Prosperity Plan – Second Pillar	Ensuring increasing productivity of priority key sectors and the development of employment opportunity.	The proposed project will contribute to the continued advancement of the mining industry and create employment.

## 5.2 The National Legal Requirements in terms of Permitting

The legal requirements for which authorizations (permitting and licensing) are needed for activities prior to or as required are listed in Table 3 below.

**Table 3: Specific permits and license requirements for the proposed project**

Permit/ license	Regulation/Legislation	Related activities requiring permits	Relevant Authority
Environmental Clearance Certificate (ECC)	Environmental Management Act, No. 07 of 2002: 2012 EIA Regulations	Required for all listed activities such as mining and quarrying activities	MEFT: Department of Environmental Affairs & Forestry
Permit for land/site clearing (vegetation)	The Forestry Act No. 12 of 2001	The Act governs the removal of vegetation within 100m of a water course.	MEFT: Forestry Division
Installation certificate for bulk fuel storage	Petroleum Products regulations	Installation certificate is required for bulk fuel storage in a quantity of more than 600 litres and dispensing facilities	MME: Directorate of Petroleum Affairs
Permit for water boreholes	Water Act No. 54 of 1956 The Water Resources Management Act 11 of	The drilling of boreholes and groundwater abstraction & use for industrial and commercial purposes.	MAWLR: Department of Water Affairs (Geohydrology Division)

Permit/ license	Regulation/Legislation	Related activities requiring permits	Relevant Authority
	2013 (presently without regulations)		
Aviation	Civil Aviation Act, No. 6 of 2016; section 90 (3) of the Minerals Act, No. 33 of 1992	This regulation relates to safety and security aspects near aerodromes.	Civil Aviation Authority

### 5.3 International Policies, Principles, Standards, Treaties and Conventions

The international policies, principles, standards, treaties, and conventions that are deemed applicable to the proposed Project and its related activities are listed in Table 4 below.

**Table 4: International Policies, Principles, Standards, Treaties and Convention applicable to the Project**

Statute	Provisions	Project Implications
Equator Principles	<p>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.</p> <p><b>Principle 1:</b> Review and Categorization</p> <p><b>Principle 2:</b> Environmental and Social Assessment</p>	<p>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.’</p>

Statute	Provisions	Project Implications
	<p><b>Principle 3:</b> Applicable Environmental and Social Standards</p> <p><b>Principle 4:</b> Environmental and Social Management System and Equator Principles Action Plan</p> <p><b>Principle 5:</b> Stakeholder Engagement and</p> <p><b>Principle 6:</b> Grievance Mechanism</p> <p><b>Principle 7:</b> Independent Review</p> <p><b>Principle 8:</b> Covenants</p> <p><b>Principle 9:</b> Independent Monitoring and Reporting and <b>Principle 10:</b> Reporting and Transparency</p>	
<p>The International Finance Corporation (IFC) Performance Standards</p>	<p>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.</p>	<p>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</p>

Statute	Provisions	Project Implications
	<p><b>Performance Standard 1:</b> Assessment and Management of Environmental and Social Risks and Impacts</p> <p><b>Performance Standard 2:</b> Labour and Working Conditions</p> <p><b>Performance Standard 3:</b> Resource Efficient and Pollution Prevention and Management</p> <p><b>Performance Standard 4:</b> Community Health and Safety</p> <p><b>Performance Standard 5:</b> Land Acquisition, Restrictions on Land Use, and Involuntary Resettlement</p> <p><b>Performance Standard 6:</b> Biodiversity Conservation and Sustainable Management of Living Natural Resources</p> <p><b>Performance Standard 7:</b> Indigenous Peoples/Sub-Saharan African Historically Undeserved Traditional Local Communities</p> <p><b>Performance Standard 8:</b> Cultural Heritage</p> <p><b>Performance Standard 9:</b> Financial Intermediaries (FIs)</p> <p><b>Performance Standard 10:</b> Stakeholder Engagement and Information</p> <p>A full description of the IFC Standards can be obtained from</p> <p><a href="http://www.worldbank.org/en/projects-operations/environmental-and-social-framework/brief/environmental-and-social-standards?cq_ck=1522164538151#ess1">http://www.worldbank.org/en/projects-operations/environmental-and-social-framework/brief/environmental-and-social-standards?cq_ck=1522164538151#ess1</a></p>	<p>the Performance Standards to manage environmental and social risks and impacts so that development opportunities are enhanced. IFC uses the Sustainability Framework along with other strategies, policies, and initiatives to direct the business activities of the Corporation to achieve its overall development objectives.</p>

Statute	Provisions	Project Implications
<p>The United Nations Convention to Combat Desertification (UNCCD) 1992</p>	<p>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.</p> <p>The 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.</p>	<p>The Project activities should not be such that they contribute to desertification.</p>
<p>Convention on Biological Diversity (1992)</p>	<p>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.</p> <p>Promote the protection of ecosystems, natural habitats, and the maintenance of viable populations of species in natural surroundings</p>	<p>Removal of vegetation cover and destruction of natural habitats should be avoided and where not possible minimised</p>
<p>Stockholm Declaration on the Human Environment, Stockholm (1972)</p>	<p>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.</p>	<p>Protection of natural resources and prevention of any form of pollution.</p>

## 6 ENVIRONMENTAL AND SOCIAL BASELINE

The baseline studies relevant to the proposed project activities were derived from the environmental assessments conducted for EPL-7862 from which the ML-265 application has been converted (converting the EPL into a ML). As part of this assessment, the baseline was studied in detail with inputs from the specialist studies conducted as part of the environmental and social impact assessment process.

This section sets out the biophysical and socio-economic environments in which the project is situated.

### 6.1 Physical Environment Baseline

#### 6.2 Climate

The project area is shaped by its proximity to the Namib Desert and its semi-arid, subtropical setting. This region has a desert climate classified under the Köppen-Geiger system as BWh (hot desert climate), with a high degree of aridity and limited rainfall throughout the year. Temperatures are generally moderate due to the coastal influence from the Atlantic Ocean, with average highs reaching around 26-30°C in the hottest months (January to March) and around 20°C during the cooler months (June to August). Overnight lows can drop significantly in winter, sometimes below 10°C, reflecting the desert's characteristic temperature fluctuations (Weather-Atlas, 2024; World Weather Online, 2023).

Rainfall in this area is scarce and sporadic, averaging less than 15 mm in most months. The primary rainy season occurs between November and March, although rainfall is usually light, rarely exceeding 100 mm annually. This limited rainfall, coupled with intense sunlight and low humidity (averaging below 40% most of the year), contributes to the arid, dry landscape typical of Namibia's gravel plains and desert environments (Weather and Climate, 2023). Wind can also be a factor, particularly in spring and summer, when gusts often exceed 20 km/h, further intensifying the dryness of the region (Weather-Atlas, 2024).

In terms of sunlight, the area enjoys high levels of solar radiation, with over 10 hours of sunshine daily on average, peaking at around 12 hours in the summer months. This abundant sunshine, coupled with minimal cloud cover, makes the Erongo region a bright and sunny environment year-round, ideal for solar energy but challenging for vegetation and water retention (Weather and Climate, 2023).

### 6.3 Landscape and Topography

The ML is part of the Central Western Plains, a landscape that spans a substantial part of central Namibia. This area is characterized by its flat or gently undulating terrain and the prevalence of gravel plains. These plains lie at varying elevations, generally rising from around 500 meters above sea level in the west to about 1,000 meters in the east. One notable feature of this landscape is its mix of open plains interspersed with inselbergs—isolated, rocky hills or mountains—formed by ancient geological processes that uplifted various granitic and metamorphic rock formations (Atlas of Namibia Project, n.d.; Mendelsohn, 2002).

Geologically, the area consists primarily of ancient sedimentary and metamorphic rocks, remnants of the oceanic deposits that predate the formation of the Gondwana supercontinent. Over millions of years, tectonic movements and erosional processes have smoothed the original landscape, resulting in the extensive plains we see today. Occasional remnants of the escarpment, which once stretched across the region, indicate the erosional power that shaped this terrain, creating a blend of rock-strewn plains and broad sandy surfaces. Ephemeral rivers, such as the Swakop and Khan Rivers, traverse this area and contribute to the landscape's intermittent vegetation and erosion patterns, despite the generally arid conditions (Mendelsohn, Jarvis, Roberts, & Robertson, 2002).

Climatically, this region falls within the hyper-arid to semi-arid zone of the Namib Desert. Rainfall is very sparse, occurring mainly in the form of short, intense showers that lead to sporadic greening of the plains. More consistently, however, fog from the Atlantic Ocean provides limited moisture, which supports specially adapted plant species like *Welwitschia mirabilis* and hardy grasses that can survive the dry conditions. This sparse vegetation is crucial for sustaining small populations of wildlife adapted to the desert environment (Botanical Society of Namibia, n.d.).

The Central Western Plains serve as important grazing lands for both livestock and wildlife, especially as the terrain shifts from the coastal areas inland. Economic activities here include livestock farming and tourism, with some areas preserved as wildlife habitats and conservancies.

This region's landscape and ecological characteristics make it a distinctive part of Namibia's broader arid environments (Atlas of Namibia Project, n.d.; Botanical Society of Namibia, n.d.).

The elevation of the project area ranges between 859 m – 1001 m as shown in Figure 3.

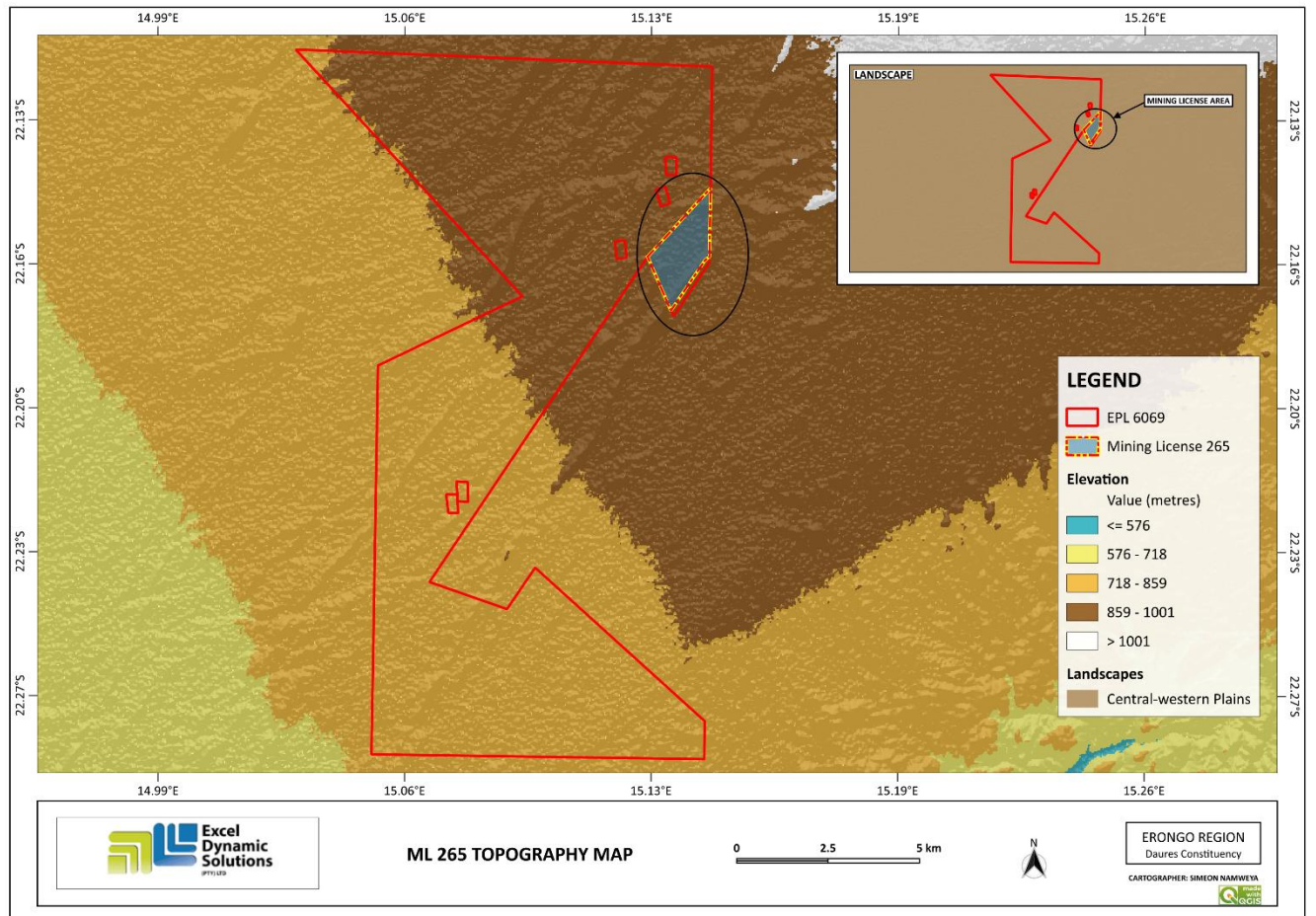


Figure 4: The Landscape within the ML and surroundings

## 6.4 Geology and Soils

The project area is part of a geologically significant area known for its complex and ancient rock formations. This region falls within the Central Zone of the Damara Orogen, a belt formed over 500 million years ago during the Precambrian era. The Damara Orogen is part of the broader Pan-African Orogeny, a tectonic event that resulted from the collision of ancient continental blocks, leading to extensive folding, faulting, and metamorphism of sedimentary and volcanic rocks (Miller, 2008). Regionally, in this area the Damara Super-group is represented by several lithostratigraphic units, i.e. Etusis, Formation, Khan Formation, Rossing Formation, Chuos Formation, Arandis Formation, Karibib Formation and the Kuiseb formation. However, the interest lies within Mesozoic Intrusions which are younger, and represented by Karoo dolerite dykes of Cretaceous age. These transect within the Mining License (ML) area from one end to the other and have a northeast-southwest orientation. It should be noted that these dykes intrude all older meta-sedimentary and intrusive units. Individual dykes are between hundreds and several thousands of metres wide, and often extend for many kilometres along strike. The dykes are resistant to weathering and tend to form prominent dark ridges with extensive scree aprons and are easily recognizable on aerial photographs and satellite images. They are, dark- brown to black, fine-grained with large plagioclase and olivine phenocrysts set in a groundmass of smaller plagioclase and disseminated opaque minerals. Locally, The ML area is mainly covered by Mesozoic Intrusive Rocks mainly Karoo and post-Karoo intrusives which include abundant dolerite and minor felsite dykes. In addition is Quaternary sand cover which interca mostly by rocks belonging to the Damara Super-group. **Figure 4** below shows the general geology of the project area.

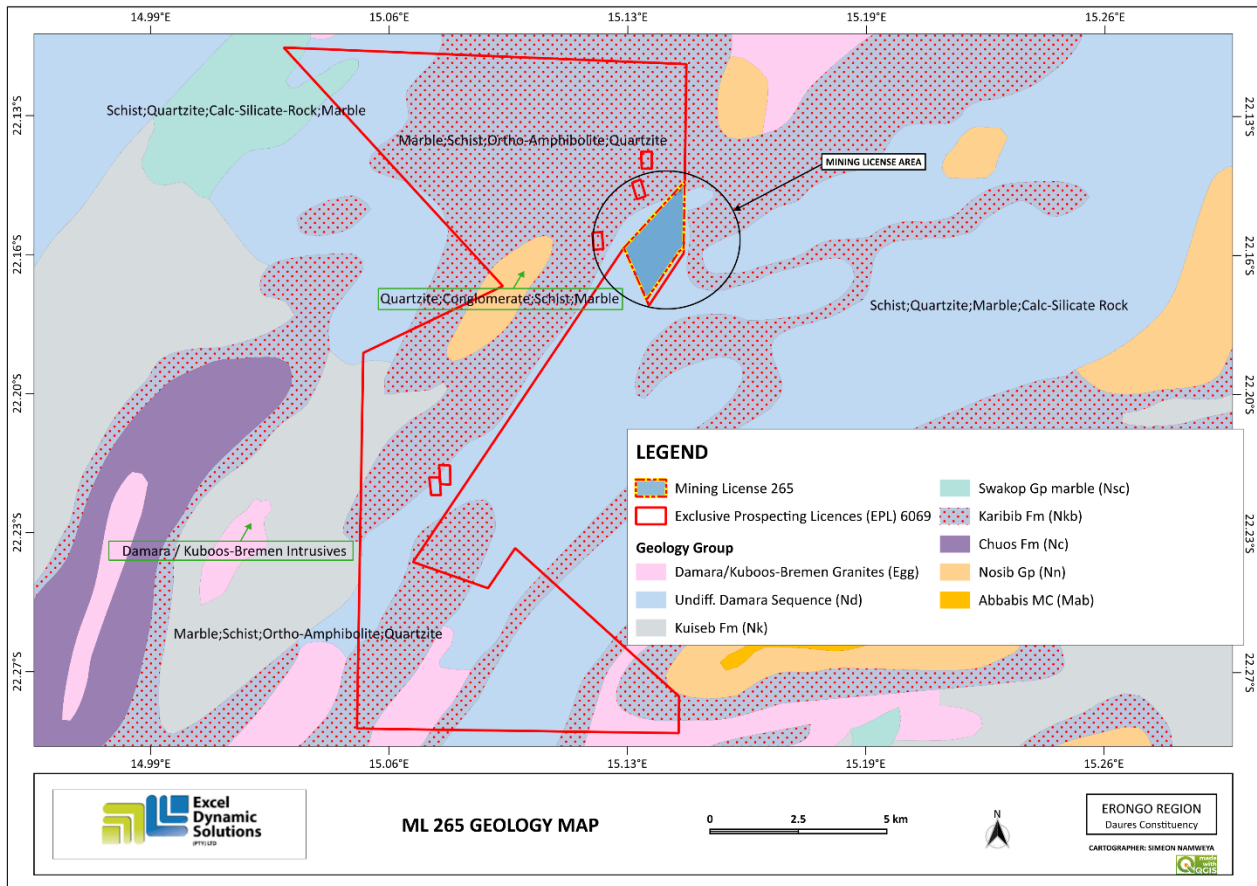


Figure 5: The geology of the ML and surrounding areas

### 6.5 Soils

In terms of soil, the ML area is covered by the Petric Calcisols (Figure 6) as shown on the dominant soil map in Figure 6-8. According to Mendelson *et al* (2002), the first part of the soil name (Petric) means that these are fertile soils with relatively high water holding capacity. The Second part of the soil name (Calcisols) which are characterized by a layer of translocated (migrated) calcium carbonate. This type of soil are soft and powdery or hard and cemented.

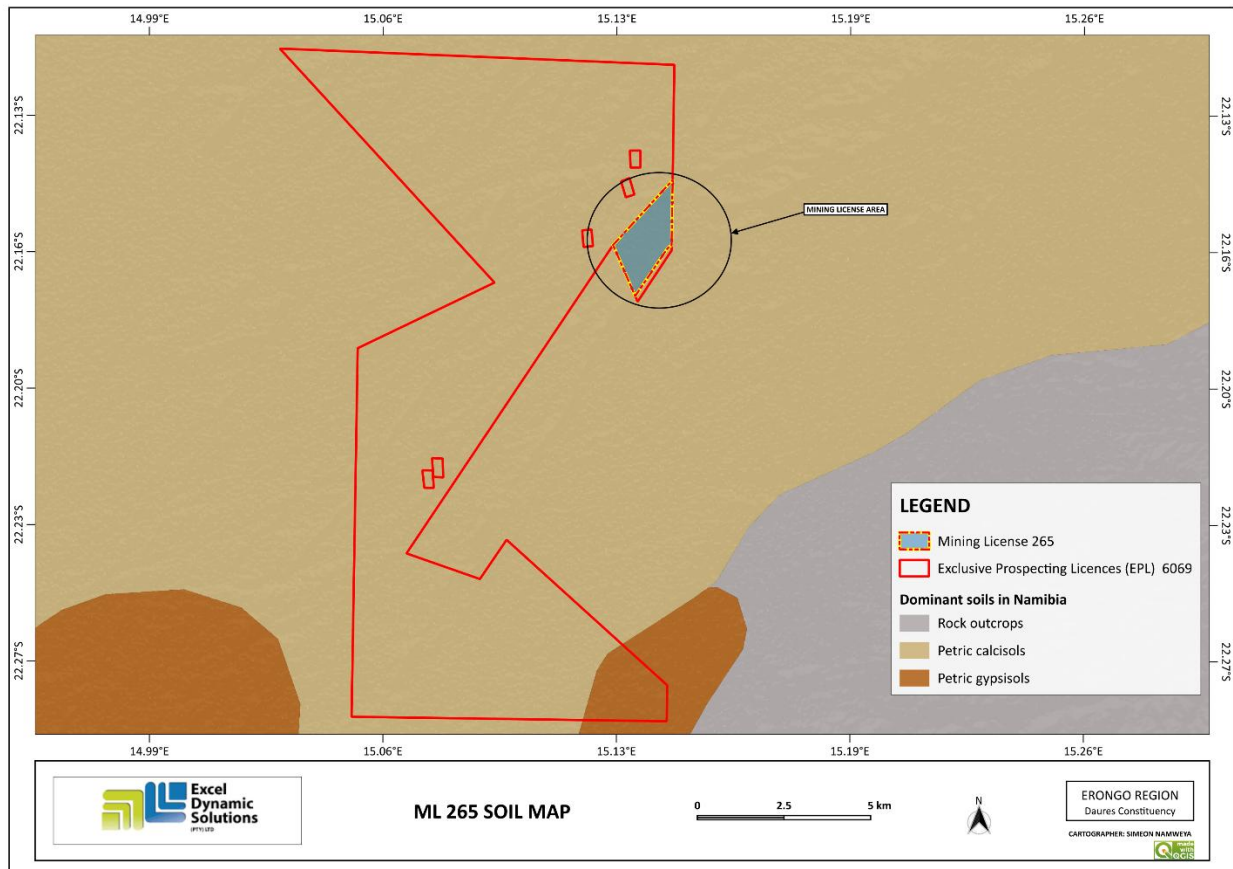


Figure 6: The soil types within the ML-265 and surrounding area

## 6.6 Groundwater and Surface Water

The summary of the water resources conditions of the project area is presented under the following subheadings. The detailed write-up is presented in the Hydrogeological impact assessment report attached hereto as Appendix G.

### 6.7.1 Catchments

There is not much water on the surface in Namibia, as the little rain that falls either evaporates, seeps into the ground or is rapidly drained by ephemeral rivers that dominate natural surface water systems inside the country. The only perennial water systems (rivers) that can hold surfacewater are extremely varied, ranging from great rivers that define the country's borders, to a host of smaller rivers and channels that flow at varying frequencies (Mendelsohn *et al*, 2002). There is no perennial river within the project area nor Erongo Region at large. The project site area and Erongo Region at large dominated by many streams and ephemeral rivers, of which the main rivers include the Khan, Swakop and Omaruru (Shagama, 2022). The Swakop rivers are the closest to the ML area as shown in Figure 6, with the ML falling near the Swakop catchment basin.

a

### 6.7.2 Local Aquifer

The project site (ML-265) is hydrogeological characterized by Rock bodies with little groundwater potential generally low potential moderate potential, and Rock bodies with little groundwater potential very low and limited potential (Figure 6). There are some mapped boreholes from the national groundwater database.

## 6.7 Biological Environment Baseline

The biological (biodiversity) baseline of the site area and surroundings is presented below and the detailed write-up is provided under the Ecological impact assessment Report by Cunningham (2022) – Appendix F.

### 6.8.1 Biodiversity: Fauna

The Arandis area in general is regarded as “moderate” in overall (all terrestrial species) diversity while the overall terrestrial endemism in the area on the other hand is “high” (Mendelsohn *et al.* 2002). The overall diversity and abundance of large herbivorous mammals (big game) is viewed as “moderate” with 3-4 species expected – e.g. gemsbok, kudu, mountain zebra and springbok – while overall diversity and density of large carnivorous mammals (large predators) is viewed as “moderate” with 4 species expected – e.g. leopard, cheetah, spotted and brown hyena (Mendelsohn *et al.* 2002).

#### 6.8.1.1 Reptile Diversity

About 75 species of reptiles are expected to occur in the Daures area with 34 species being endemic – i.e. 45.3% endemic. These consist of at least 30 snakes (1 blind snake, 2 thread snake, 2 Python, 2 burrowing snakes and 23 typical snakes), 11 of which are endemic (33.3%) to Namibia, 2 tortoises, 1 terrapin, 42 lizards (1 worm lizard, 10 skinks, 6 Old World lizards, 2 plated lizards, 1 girdled lizard, 1 monitor lizard, 3 agamas, 1 chameleon and 17 geckos), 23 (54.8%) of which are endemic to Namibia. Skink's (10 species), Old World lizards (6 species) and gecko's (17 species) are the most numerous lizards expected from the general area. Namibia with approximately 129 species of lizards (Lacertilia) has one of the continents richest lizard fauna (Griffin, 1998a). Geckos have the highest occurrence of endemics in the general area with 13 of the 17 species (76.5%) expected and/or known to occur in the area, being endemic to Namibia, (Cunningham, 2022).

However, none of the mammals, especially the important species, are exclusively associated with the ML-265 area.

### 6.8.1.2 Amphibian Diversity

About 7 species of amphibians are expected to occur in suitable habitat in the Daures area. The area is under represented, with 2 toads, and 1 species each for rubber, puddle, bullfrog, sand and platanna known and/or expected (i.e. potentially could be found in the area) to occur in the area.

Of these, 2 species are endemic (*Poyntonophrynus (Bufo) hoeschi* and *Phrynomantis annectens*) (Griffin 1998b) and 1 species is classified as “near threatened” (*Pyxicephalus adspersus*) (Du Preez and Carruthers 2009) – i.e. high level (42.9%) of amphibians of conservation value from the general area, (Cunningham, 2022).

However, none of the mammals, especially the important species, are exclusively associated with the ML-265 area.

### 6.8.1.3 Mammal Diversity

About 87 species of mammals known and/or expected to occur in the general Daures area, 9 species (10.3%) are classified as endemic. Rodents (of which 5 species – 18.5% – are endemic) and bats (of which 1 species is classified as rare) are the groups least studied. Species of greatest concern in the general area are those viewed as rare in Namibia – i.e. Namibian wing-gland bat and Southern African hedgehog – and species classified as vulnerable (cheetah, leopard, Hartmann’s Mountain zebra, giraffe) and near threatened (African straw-coloured fruit bat, Commerson’s roundleaf bat, striped leaf-nosed bat, brown hyena) by the IUCN (2020). Another important and unique species, although not observed, but known to occur in the general area, is the endemic Kaokoland slender or black mongoose, However, none of the mammals, especially the important species, are exclusively associated with the ML-265 area.

## 6.8.2 Biodiversity: Flora

The general Daure area is viewed as an area of importance for local endemic plant species, especially the Erongo Mountains with between 26-35 endemic species (Mendelsohn et al. 2002). The overall plant diversity (all species) in the general Daures area is estimated at between 150-299 species and the Erongo Mountain area between 400-499 species (Mendelsohn et al. 2002). These estimates are limited to “higher” plants as information regarding “lower” plants is sparse. The greatest variants affecting the diversity of plants are habitat and climate with the highest plant diversity generally associated with high rainfall areas. Pockets of high diversity are found throughout Namibia in “unique” habitat – often transition zones – e.g. mountains, inselbergs, etc.

Plant endemism, other than the Erongo Mountains, is viewed as “medium to high” – with between 6-15 endemics expected from the general area (Mendelsohn et al. 2002). Furthermore, Mendelsohn et al. (2002) views the overall plant production as medium to low in the general Daures area and high in the Erongo Mountains, the availability of hardwoods as medium and the grazing and browse as average in the general area. Bush thickening (encroachment) is viewed as problematic between Karibib and Omaruru with *Acacia reficiens* (red-bark Acacia) the dominant problem species (Bester 1996, Cunningham 1998, Mendelsohn et al. 2002).

#### 6.8.2.1 Aloes

Aloes are protected throughout Namibia, the aloes which potentially occur in the general area, and also viewed as important are *Aloe asperifolia*, *A. hereroensis* and *A. zebrina* (Rothmann 2004).

#### 6.8.2.2 Commiphora

Many endemic Commiphora species are found throughout Namibia with Steyn (2003) indicating that *Commiphora crenato-serrata* potentially also occurring in the general area. *Commiphora* species have economic potential (i.e. resin properties used in the perfume industry – e.g. *C. wildii*) making them an important species (Knott and Curtis 2006).

#### 6.8.2.3 Lithops

Lithops species – all protected (See Nature Conservation Ordinance No. 4 of 1975) – are also known to occur in the general area and often difficult to observe, especially during the dry season when their aboveground structures wither. The closest species are currently only known to occur west of Usakos and include *Lithops gracilidelineata* var. *gracilidelineata* and *L. wernerii* (Cole and Cole 2005, Earle and Round n.d.).

#### 6.8.2.4 Ferns

At least 64 species of ferns, of which 13 species being endemic, occur throughout Namibia. Ferns in the general area include at least 15 indigenous species (*Actiniopteris radiata*, *Asplenium cordatum*, *Cheilanthes dinteri*, *C. eckloniana*, *C. marlothii*, *C. parviloba*, *Marselia aegyptiaca*, *M. ephippiocarpa*, *M. farinosa*, *M. macrocarpa*, *M. nubica*, *M. unicornis*, *M. vera*, *Ophioglossum polyphyllum* and *Pellaea calomelanos*) (Crouch et al. 2011). The general area is under collected with more species probably occurring in the general area than presented above.

#### 6.8.2.5 Lichens

The overall diversity of lichens is poorly known from Namibia, especially the coastal areas and statistics on endemism is even sparser (Craven 1998). More than 100 species are expected to occur in the Namib Desert with the majority being uniquely related to the coastal fog belt (Wirth 2010). Lichen diversity is related to air humidity and generally decreases inland from the Namibian coast (Schults and Rambold 2007). Off road driving is the biggest threat to these lichens which

are often rare and unique to Namibia. To indicate how poorly known lichens are from Namibia, the recent publication by Schultz *et al.* (2009) indicating that 37 of the 39 lichen species collected during BIOTA surveys in the early/mid 2000's was new to science (i.e. new species), is a case in point. Lichens are known to occur on rocky terrain in the mountainous terrain in the general area.

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

However, none of the important “other” flora are exclusively associated with the ML-265 area.

#### 6.8.2.6 Floral conditions of the Site

The vegetation in the area are such as *Boscia* species, *Acacia* species, *Dichrostachys Cinerea*; *Senegalia Erioloba*, *Acacia Karroo* on the mountains and hill sides, especially the screezones. The plains are dominated by *Alexandria Cartofructus* that carpets the flat lying areas. Some vegetation around the ML-265 site are shown in Figure 6.



Figure 7: The dominant vegetation species within the ML-265 (hilly and riverine vegetation)

## 6.8 Socio-economic Baseline

The summary of the socio-economic description of the project area is presented below.

### 6.9.1 Demography

According to the Namibia Statistics Agency 2023 Population & Housing Census Preliminary Report, the population of Arandis constituency is 13,542 with a total of 6,961 males and 6,581 females and 1.0 persons per km<sup>2</sup>. A total population of 5,726 resides in the town (urban locality) of Arandis, of which 3,102 are Males while 2,624 are females, representing 186.7 persons per km<sup>2</sup> over an area of 30,6625 km<sup>2</sup>. Arandis has a household population of 12, 852 with 4, 153 households and an average household size of 3.1

According to the Namibia Statistics Agency 2023 Population & Housing Census Preliminary Report, the population of Erongo is 240, 206 with a total of 122, 322 males and 117, 884 females. This population grew from 150,809 in 2011, representing a 59.3% growth between 2023 and 2011.

The population of the Erongo Region has grown by 40% since the 2001 census to reach 150,809 in 2011. The population of the Karibib Constituency increased by 10% since 2001 to 13,320 in 2011, which calculates to a 1% annual growth.

**Table 5: Population by area (national, regional and local level)**

Population	Namibia	Erongo	Karibib	Walvis Bay
<b>2001</b>	1, 830, 330	107, 663	12, 084	27, 941
<b>2011</b>	2, 113, 077	150, 809	13, 320	35, 828
<b>Growth</b>	15.4%	40.1%	10.2%	28%

*Source: Namibia Statistics Agency (NSA) 2011 Census Data*

## 6.9 Economic and Business Activities

### 6.10.1 Tourism

The town and surroundings of Arandis offer many interesting activities and attractions which include; Cave Paintings and Rock Formations, Hiking and Biking, The Dorob National Park, The Grosse Spitzkoppe Nature Reserve, Tsaobis Leopard Nature Park. There are many self-catering units, bed and breakfasts, guest houses and hotels in the Arandis area to choose from.

### 6.10.2 Agriculture and Farming

According to the Namibia Statistics Agency (NSA) 2011 Census data, main agricultural activities in Arandis include Livestock farming (9.0) Crop (7.1), Poultry farming (1.6), Agro-processing (0.1), Horticulture (0.2%), and Others (0.3%).

### **6.10.3 Mining**

Arandis is known for its close relation with the mining industry. Arandis has been called the Uranium Capital of the World as it is located just 15 km outside the world's largest open-pit uranium mine, the Rössing Uranium Mine. Besides Rössing, Arandis also serves the Husab and Trekkopje uranium mines.

## **6.10 Archaeology, Cultural and Heritage Aspects**

There are no nationally or locally recognized archaeological sites recorded within the ML areas. However, there is a possibility that unrecorded or undiscovered archaeological features or artifacts may be discovered during the operational phase. The area surrounding the project sites is archaeologically identified as nomadic pastoral land. In the event of an archaeological during works, the procedures outlined in the National Heritage Act, No. 27 of 2004 are to be followed. Section 55 (4) of the National Heritage Act, No. 27 of 2004, requires that any archaeological or paleontological object or meteorite discovered is reported to the National Heritage Council as soon as practicable. Figure 6-14 shows the archeological map for the project area.

### 6.11 Land Use

The project is located within the Farm Sukses and Farm Vergenoeg within the Gaingu Conservancy and it is situated in a communal (Farm Sukses) and commercial (Vergenoeg) agricultural region and the land use is primarily dominated by livestock. Farming activities on surrounding properties will be able to continue relatively undisturbed by the proposed project. The land use of the project site and surroundings is shown Figure 7.

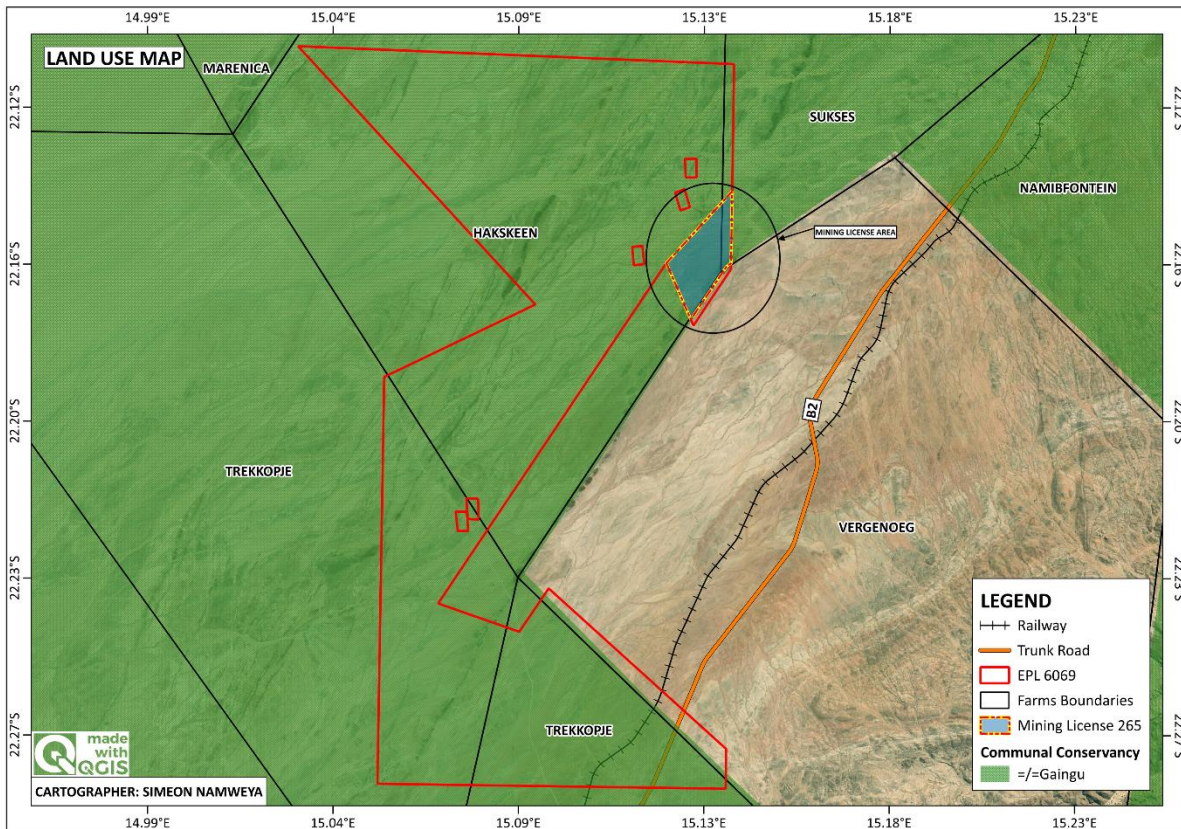


Figure 8: The land use map around the ML-265

### 6.14 Landscape and Visual

The area presents a beautiful mountains landscape with some flat surfaces to the south, and south west. To the north exists plains, there is one major stream flowing through. The general view of the landscape of the area on the ML is shown in Figure 8.



Figure 9: The general view of the landscape of ML-265

## **6.15 Infrastructure and Services**

### **6.15.1 Accessibility**

The project area lies near the B2 road which is known as the Trans-Kalahari Highway which carries large traffic volume between Windhoek and Walvis Bay and it is considered to be the regional (Erongo) form of trade route. The ML application are accessible via B2 road from Usakos to Arandis, which connects to the tack roads, that goes through the EPL.

### **6.15.2 Water Supply**

Water will be required for different mining related activities, and for domestic use. Potable water will be made available for the mining crew (workers) on site in industry water storage tanks.

About 4 500 liters of water will be used per month for mining related activity. This water will be sourced from the boreholes within the Project area. The boreholes will be equipped with 5.5 kW and 7.5 kW pumps. Water will be pumped at a rate of about 5 m<sup>3</sup>/hour. It is believed that the water source will be reliable and enough to supply the planned operation.

At a later stage of the mining activity, The Proponent will need to drill one or two more boreholes in areas that are far from the existing good yield boreholes (to cut the distance required to cart water to mining sites and relive pressure of heavy water tanker trucks travelling to and from the boreholes). Thus, the Proponent will need to apply for a permit must be obtained from the Department of Water Affairs (Ministry of Agriculture, Water and Land Reform (MAWLR)).

### **6.15.3 Power Supply**

Fuel supply (for personnel use to cook): The Proponent will provide fuel to be used for food preparation by the site workers. No firewood will be collected on the farms. The best option would be for the Proponent to provide and emphasize for gas liquid cookers instead of open fires using firewood.

Fuel Supply (machinery and equipment): All the electrical equipment at the mine will be powered by a diesel generator. Diesel will be stored on-site using an above ground storage tank and will be refilled by mobile equipment. Should there be a need to get an electricity connection from the national grid, the necessary procedures will have to be followed.

### **6.15.4 Telecommunication services:**

The area of Arandis near the ML and the communities within the ML are well connected to the rest of the country and world via local network service providers. The main providers of this service in the area are Telecom Namibia (through both landlines and cellular connection) and MTC Namibia.

The next chapter is a presentation of the means used to inform, consult and engage the public as well as stakeholders on the EIA Study. This was done in accordance with the stipulated requirements of public consultation in the 2012 EIA Regulations.

## 7 PUBLIC CONSULTATION AND ENGAGEMENT PROCESS

Public participation and consultation form an important component of an Environmental Impact Assessment (EIA) process, as per section 21 of the Environmental Management Act 7 of 2007. It provides potential Interested and Affected Parties (I&APs) with an opportunity to comment on and raise any issues relevant to the project for consideration as part of the assessment process, thus assisting the Environmental Assessment Practitioner (EAP) in identifying all potential impacts and to what extent further investigations are necessary. The objective of the public participation and consultation process are mainly to:

- Establish a platform for ongoing consultation,
- Listen to the stakeholder's issues and concerns,
- Determine the relevant stakeholders (government, regional and local regulations authorities), and
- Explain the EIA process and the timeframe.

### 7.1 Identified Stakeholders and Registered Interested and Affected Parties (I&APs)

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

- National Ministries and Institutions: Ministry of Mines & Energy, Ministry of Agriculture, Water and Land Reform, Ministry of Works and Transport (Roads Authority of Namibia), Ministry of Urban and Rural Urban, Ministry of Education, Arts and Culture (National Heritage Council of Namibia)
- Regional and local authorities (regional council and constituencies and traditional authorities): Erongo Regional Council – Daures constituency office

- Affected communities (communal farmers) and interested members of the public.

## **7.2 Communication with Stakeholders (Interested and Affected Parties)**

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

### **7.2.1 Stakeholders (Interested and Affected Parties)' Database**

A non-technical summary of the Project activities containing brief information about the proposed activities was compiled and hand delivered to the competent authorities (for ECC application and Project registration) and circulated to all pre-identified stakeholders.

### **7.2.2 Compilation of the Background Information Document (BID)**

A non-technical summary of the Project activities containing brief information about the Proposed activities was compiled and hand delivered to the competent authorities (for ECC application and Project registration) and circulated to all pre-identified and all new registered I&APs (upon request).

### **7.2.3 Newspaper Advertising (Public Notification)**

Project Environmental Assessment notices were published in *The Namibian* and *New Era* Newspapers dated 19 and 27 August 2024 (New era Newspaper) and 23 and 30 August 2024 (The Namibian Newspaper), briefly explaining the activity and its locality, inviting members of the public to register as I&APs and submit their comments/concerns.

### **7.2.4 Consultation Meetings**

A consultation meeting was scheduled with the affected communities on the 25 September 2024 at Borehole Hakskeen. The meeting was scheduled for 10h00, however, no one showed up therefore farm to farm meetings were conducted. Some photos taken from the meeting are shown in Figure 9.



Figure 10: Public Consultation (farm to farm consultation) on the 25 September 2025

### 7.3 Feedback from Interested and Affected Parties

Issues were raised and comments submitted by I&APs from the consultation meeting. These have been recorded and incorporated into the Assessment Report and EMP. The summary these key issues are presented in Table 7-1 below.

**Table 7-1: Summary of main comments received during the consultation meeting**

Aspects	Summary of the Concern / Issue
Groundwater is a scarce resource in area	Groundwater is a scarce resource, and therefore it should be used sustainably manner.
Employment of locals communication	The employment of locals should be prioritized The proponent must always communicate with the farm owners before commencement of any activity on the EPL.
Upgrading of the road	The proponent must prioritize upgrading the existing road.
Rehabilitation	The proponent must prioritize backfilling the trenches and pits that they drilled or dug during exploration.

The potential impact identified from the EIA are presented under the next chapter. The impact description and assessment are also presented therein. The management and mitigation measures recommended by the Environmental Assessment Practitioners and specialists for the EIA Study are presented in the Draft EMP.

## 8 IMPACT IDENTIFICATION, ASSESSMENT AND MITIGATION MEASURES

### 8.1 Identification of Key Impacts

Mining activities are usually associated with different potential positive and/or negative impacts. Therefore, the impacts should be assessed, and mitigation measures provided thereto. This is done to ensure that these impacts are addressed by providing adequate mitigation measures such that an impact's significance is brought under control, while maximizing the positive impacts (benefits). The potential positive and negative impacts that have been identified from the mining activities are listed as follow:

#### **Positive impacts:**

- Socio-economic development: employment creation and skills transfer.
- Investment opportunities/infrastructure-related development benefits,
- Boosting the local economic growth through corporate social responsibility (CSR).
- Increased support for local businesses through the procurement of locally available goods and services.

#### **Negative impacts:**

- Physical land/soil disturbance and prone to erosion
- Impact on fauna and flora (habitat disturbance and poaching).
- Water resources (over-abstraction of water) and soils pollution.
- Air quality issue owing to dust generation
- Occupational and community health and safety risks/hazards
- Vehicular traffic safety and services infrastructure (local roads).
- Vibrations and noise associated with drilling and quarrying activities.
- Visual impact owing to the scars left by Dimension Stone mining.
- Environmental pollution from poor waste management,
- Archaeological or cultural heritage impact

- Potential social nuisance.

## 8.2 Impact Assessment Methodology and Criteria

The Environmental Assessment process primarily ensures that potential impacts that may occur from project activity are identified and addressed with environmentally cautious approaches and legal compliance. The impact assessment method used for this project is in accordance with Namibia's Environmental Management Act (No. 7 of 2007) and its Regulations of 2012, as well as the International Finance Corporation (IFC) Performance Standards.

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

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

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

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

**Table 6: Criteria used for impact assessment (extent, duration, intensity and probability)**

The Criteria used to assess the potential impacts				
<b>Extent or (spatial scale)</b> - extent is an indication of the physical and spatial scale of the impact.				
Low (1)	Low/Medium (2)	Medium (3)	Medium/High (4)	High (5)

<b>The Criteria used to assess the potential impacts</b>				
Impact is localised within the site boundary: Site only	Impact is beyond the site boundary: Local	Impacts felt within adjacent biophysical and social environments: Regional	Impact widespread far beyond site boundary: Regional	Impact extend National or over international boundaries
<b>Duration-</b> Duration refers to the timeframe over which the impact is expected to occur, measured in relation to the lifetime of the project				
<b>Low (1)</b>	<b>Low/Medium (2)</b>	<b>Medium (3)</b>	<b>Medium/High (4)</b>	<b>High (5)</b>
Immediate mitigating measures, immediate progress	Impact is quickly reversible, short-term impacts (0-5 years)	Reversible over time; medium term (5-15 years)	Impact is long-term	Long term; beyond closure; permanent; irreplaceable or irretrievable commitment of resources
<b>Intensity, Magnitude / severity</b> - Intensity refers to the degree or magnitude to which the impact alters the functioning of an element of the environment. This a qualitative type of criteria				
<b>H-(10)</b>	<b>M/H-(8)</b>	<b>M-(6)</b>	<b>M/L-(4)</b>	<b>L-(2)</b>
Very high deterioration, high quantity of deaths, injury of illness / total loss of habitat, total alteration of ecological processes, extinction of rare species	Substantial deterioration, death, illness or injury, loss of habitat / diversity or resource, severe alteration, or disturbance of important processes	Moderate deterioration, discomfort, partial loss of habitat / biodiversity or resource, moderate alteration	Low deterioration, slight noticeable alteration in habitat and biodiversity. Little loss in species numbers	Minor deterioration, nuisance or irritation, minor change in species / habitat / diversity or resource, no or very little quality deterioration.
<b>Probability of occurrence</b> - Probability describes the likelihood of the impacts occurring. This determination is based on previous experience with similar projects and/or based on professional judgment				
<b>Low (1)</b>	<b>Medium/Low (2)</b>	<b>Medium (3)</b>	<b>Medium/High (4)</b>	<b>High (5)</b>

The Criteria used to assess the potential impacts				
Improbable; low likelihood; seldom. No known risk or vulnerability to natural or induced hazards.	Likely to occur from time to time. Low risk or vulnerability to natural or induced hazards	Possible, distinct possibility, frequent. Low to medium risk or vulnerability to natural or induced hazards.	Probable if mitigating measures are not implemented. Medium risk of vulnerability to natural or induced hazards.	Definite (regardless of preventative measures), highly likely, continuous. High risk or vulnerability to natural or induced hazards.

### 8.3 Impact Significance

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

Once the above factors (Table 8-1) have been ranked for each potential impact, the impact significance of each is assessed using the following formula:

$$\text{SIGNIFICANCE POINTS (SP)} = (\text{MAGNITUDE} + \text{DURATION} + \text{SCALE}) \times \text{PROBABILITY}$$

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 7).

**Table 7: Significance of impact rating scale**

Significance	Environmental Significance Points	Colour Code
High (positive)	>60	H
Medium (positive)	30 to 60	M
Low (positive)	1 to 30	L

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

**Positive (+)** – Beneficial impact

**Negative (-)** – Deleterious/ adverse Impact

**Neutral** – Impacts are neither beneficial nor adverse

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

For a potential positive impact with a significance rating of a medium (-ve) or low (-ve), mitigation measures are recommended to enhance the impact to a high (+ve) significance rating.

This assessment is based on the three project phases namely, the prospecting, mining, and decommissioning. The potential impacts stemming from the proposed activities on the ML are described, assessed and mitigation measures provided in the Draft EMP.

The management and mitigation measures in a form of management action plans are provided in the Draft EMP.

#### **8.4 Assessment of Potential Positive Impacts**

The potential positive impacts (benefits) of the proposed project activities are described and assessed as follows.

### 8.4.1 Socio-Economic Development: Employment Opportunities and Skills Transfer

The proposed mining activities throughout its operational phases would both result in spending injections that would lead to increased economic activity best measured in terms of impacts on employment and associated incomes focusing on the local area of Daures and Karibib District and Erongo Region. All expenditures will lead to linked direct, indirect and induced impacts on employment and incomes. In case of employment for instance; impacts would be direct where people are employed directly on the mining project in question (e.g. jobs such as engineers, surveyors).

Indirect impacts would be where the direct expenditure associated with the mine leads to jobs and incomes in other sectors (e.g. purchasing building materials maintains jobs in that sector) and induced impacts where jobs are created due to the expenditure of employees and other consumers that gained from the project.

According to Shilongo (2022), a total of 200 direct jobs are expected to be generated during Reconnaissance Prospecting work and Test-quarry phases. This estimate does not specify the average number of people who will be employed at any given time during the project operations, a figure which will probably vary considerably, with more workers at some times and less at others. Most of the Reconnaissance Prospecting work and Test-quarry phases' jobs will be in the low skilled (150 jobs) and medium skill (40 jobs) categories, with 10 jobs worth of the employment requiring people with a high level of skills. This is due to the highly technical nature of the Reconnaissance Prospecting work and Test-quarry. The impact is assessed in Table 8 below.

**Table 8: Assessment of Employment and Skills Transfer Opportunities**

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre-mitigation	L/M - 2	L/M - 2	L/M - 4	L - 1	L - 8
<b>Measures to maximize the significance of the impact are provided in the EMP</b>					
Post-mitigation	M/H - 4	H - 5	M - 6	H - 5	H - 75

### 8.4.2 Corporate Social Responsibility (CSR)

The project has potential to uplift the local communities with projects through an established Trust Fund. These projects would include the funding some components of the local community projects. Furthermore, the project would potentially contribute indirectly towards the maintenance and rehabilitation of local infrastructures such as roads, etc. The Proponent should also commit to strengthen the unskilled and semi-skilled locals, especially the youth with further skills through trainings. This impact is assessed in Table 9.

Table 9: Assessment of the project activities on procurement of services and goods

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre-mitigation	L/M - 2	L/M - 2	L/M - 4	L - 1	L - 8
Post-mitigation	M/H - 4	H - 5	M - 6	H - 5	H - 75

### 8.4.3 Regional and National Economic Development: Taxes, Levies and Investments

The project has potential to contribute towards broader regional and national developmental goals through the injection of capital investments, land use leasehold fees, and government revenue realised through various forms of taxes such as income tax, and value added tax to the Namibia Revenue Agency and license levies to the Ministry of Mines and Energy etc. More investors may develop interests to invest further in the Namibia's mining and mining sector.

The impact has been assessed in Table 10 below and its significance can be improved by implementing the measures in the Draft EMP.

Table 10: Assessment of the project activities on national economic development and investment opportunities

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre-mitigation	L/M - 2	L/M - 2	L/M - 4	L - 1	L - 8
Post-mitigation	M/H - 4	H - 5	M - 6	H - 5	H - 75

## 8.5 Assessment of Potential Negative (Adverse) Impacts

The significant negative impacts potentially associated with the proposed mining of Dimension Stone on the ML are assessed below. The mitigation measures are provided in the Draft EMP.

### 8.5.1 Loss of Biodiversity (Ecological Impact)

**Fauna:** The trenching, drilling and quarrying activities done for detailed mining would result in land degradation, leading to habitat loss for a diversity of flora and fauna ranging from microorganisms to large animals and vegetation. Endemic species are most severely affected since even the slightest disruption in their habitat can result in extinction or put them at high risk of being wiped out.

The presence and movement of the mining workforce and operation of project equipment and heavy vehicles would disturb not only the domestic animals (livestock) grazing at the explored sites of the ML, but also the wildlife in the vicinity. There is also a potential of illegal hunting (poaching) of local wildlife by project related workers.

The unrehabilitated and or unfenced boreholes, trenches and pits used for mining could pose a high risk of site domestic and wild animals falling into these holes and pits, causing injuries and potentially mortalities.

**Flora:** the direct impacts on flora and vegetation communities would mainly occur through clearing for the mining access roads, establishment of associated infrastructure and quarrying. The dust emissions from drilling may affect surrounding vegetation through the fall of dust, which not only affect the functionality of vegetation (photosynthesis) but also hindering the feeding of animals on the plant leaves. The abundance of the shrubs and site-specific areas of mining on the ML means that the impact will be localized, therefore manageable. The area covered by the ML is a habitat to the protected tree species such as the *Acacia*, *Commiphora glaucescens*, *Commiphora virgata*, *Cyphostemma currorii*, *Euphorbia avasmontana*, *Ficus cordata*, and *Sterculia africana*, etc.

Therefore, the unnecessary and unmanaged removal and destruction of these trees would lead to their demise in the area, resulting in the loss of this floral diversity. If no mitigation measures are in place, the impact significance would be medium, but upon the implementation of the mitigation measures (avoiding unnecessary removal of protected species and adherence to the vegetation permit conditions from the nearest Forestry Office) would reduce the significance to low. The impact is assessed in Table 11.

**Table 11: Assessment of the impacts of mining on biodiversity (fauna and flora)**

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

### 8.5.2 Air Quality (Dust)

Dust emanating from site access roads when transporting mining equipment and supply (water) to and from site (time-to-time) may compromise the air quality in the area. Vehicular movements from heavy vehicles such as trucks would potentially create dust even though it is not always so severe. The Project activities carried out as part of the mining works such as drilling and quarrying would contribute to the dust levels in the air.

Fugitive emission of dust (measured as TSP) during drilling and vehicular movements earthworks and are expected to be the main air pollutants during the pre-operational stage. Fugitive dust will be generated on construction sites during earthworks from construction activities at mining infrastructure and other related activities, uncovered earth material stockpiles on construction sites and temporary spoil storage and disposal areas (and containers), and from vehicles hauling loads, especially if loads are uncovered.

Dust emissions from the sites are predicted to be transported a few hundred meters downwind towards the north-east and north-west and to a lesser extent towards the northern areas in respect of the proposed mine. This is due to the prevailing meteorological conditions in the area.

- The existing dust levels ranged from 2.0 mg/m<sup>3</sup> to 18.3 mg/m<sup>3</sup> and can be concluded as excellent air quality. However, it is predicted that the emissions of suspended particulate matter (SPM) during the mineral excavation phase would exceed the acceptable limit for both daily and annual ambient air quality standards.
- The ambient noise level was found to range from 33.9 to 62.5 dB (A). Clearly, the noise levels obtained for the current noise level at the proposed mine is below the international acceptable limit of 70 dB(A).

The impact is assessed in Table 12.

**Table 12: Assessment of the impacts of mining activities on air quality**

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre-mitigation	M - 3	M - 3	M/L - 4	M/H - 4	M - 40
Post-mitigation	L - 1	L - 1	L - 2	L - 1	L - 4

### 8.5.3 Water Resources Use

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

The abstraction of more water than it can be replenished from low groundwater potential areas would negatively affect the local communities that depend on the same low potential groundwater resource (aquifer).

The impact of the mining activities on the resources would be dependent on the required volumes of water. The required water for mining (14,500 litres/day) will be used for drilling purposes and cooling equipment. Therefore, in terms of water abstraction and use, the project activities will not

use a significant amount of water that would impact the available resources in the area. This is because groundwater abstraction is only required mainly for cooling down mining/quarrying equipment and onsite domestic uses. Therefore, the pressure (or threat) to the local aquifers in terms of water quantity (abstraction) is minimal.

Given the low to medium groundwater potential of most areas of the Project site area, the groundwater resources may be significantly impact if no measures are put in place. The mining period is limited, timewise, therefore, the impact will only last for the duration of the mining activities and ceases upon their completion.

The assessment is 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

#### 8.5.4 Visual and Landscape Impact

Surface mining activities usually leave scars on the local landscape. If the mining sites are 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 project is located close to the B2 road that is used by local travelers, holiday makers, and tourists. The sight of the mined-out areas of the site may be an eyesore to those people.

According to Visual Impact Assessment conducted for the project by Chetty (2021), visual receptors are grouped according to the similarities in views and these include:

1. 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.
2. 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 B2 and nearby access roads to travel to tourist destinations in the Erongo Region.

3. **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 activities 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.

According to Ashmole and Motloun (2008), the correct location and construction of waste dumps can significantly assist in lowering the final reclamation cost for the quarry. Waste dumps that are constructed on flat areas should be built up in layers of 6-10 metres in height, with a terrace of at least 6 metres wide between the crest of one layer and the foot of the succeeding layer. In this way, the outside perimeter of a completed layer can be reclaimed concurrently with the dumping of the next layer.

Further, if the waste dump is planned in such a way that the final perimeter is constructed first, and then filled back towards the quarry, it is possible to reclaim the outside perimeters at a very early stage, thus reducing the visual impact during the operating phase of the quarry (Ashmole and Motloun, 2008).

Without consideration of the preceding findings and implementation of the mitigation measures, the visual and landscape impact' significance will be rated medium to high. However, upon careful and effective implementation of these, the impact significance can be reduced to low as per the assessment in Table 14.

**Table 14: Assessment of the project activities on the visual and landscape**

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre-mitigation	M/H - 4	M/H - 4	H - 5	M/H - 4	M - 52
Post-mitigation	L/M - 2	L/M - 3	L - 2	L/M - 3	L - 21

### 8.5.5 Soil and Water Resources Pollution

The proposed mining 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 mining 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. The impact is assessed in Table 15 below.

**Table 15: Assessment of the project impact on soils and water resources (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

### 8.5.6 Waste Generation

During the mining phase, domestic and general (solid) waste is produced on site. If the generated waste is not disposed of in a responsible way, solid waste would be scattered in the area resulting in environmental pollution (land degradation) on the ML or around the Site. 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. Another impact on the environmental is poor handling and storage of wastewater that may not only pollute the ground surface but also the water resources when infiltration and runoff occur. The assessment of this impact is given in Table 16.

**Table 16: Assessment of waste generation impact**

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre-mitigation	L/M - 2	L/M - 2	M - 6	M - 3	M – 30
Post-mitigation	L - 1	L - 1	L - 2	L/M - 2	L - 8

### 8.5.7 Occupational and Community Health and Safety

Project personnel (workers) involved in the mining activities may be exposed to health and safety risks. These are in terms of accidental injury, owing to either minor (i.e., superficial physical injury) or major (i.e., involving heavy machinery or vehicles) accidents. The heavy vehicle, equipment and fuel storage area should be properly secured to prevent any harm or injury to the Proponent's personnel or local animals. The use of heavy equipment, especially during drilling and the presence of hydrocarbons on sites may result in accidental fire outbreaks. This could pose a safety risk to the project personnel and equipment and vehicles too.

If machinery and equipment are not properly stored and packed, the safety risk may not only be a concern for project workers but residents and animals. The open trenches and holes, if not closed off and backfilled could pose a serious risk of people and animals falling in these leading to injuries and even fatalities. This impact is assessed in Table 17 below.

**Table 17: Assessment of the impacts of mining on health and safety**

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

### 8.5.8 Vehicular Traffic Use and Safety

The B2 road is the main transportation route for all vehicular movement in the area, providing access to the ML and connect the Project area to other areas and towns such as Karibib, Usakos and Arandis. Therefore, traffic volume will increase on these district roads during mining as the Project would need a delivery of supplies and services. These service and supplies will include but not limited to water, waste removal, procurement of mining machinery, equipment, goods, etc.

Depending on the project needs, trucks, medium and small vehicles will be frequenting the area to and from mining sites on the ML. 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. This would add additional pressure on the roads cause road damages by heavy trucks which would makes it difficult for small cars to travel on.

However, only so many times a week or even monthly that the mining related heavy trucks will be transporting materials and equipment from and to site during mining. Therefore, the risk is

anticipated to be occasionally (based on the scheduled deliveries), and therefore of medium significance. The impact is assessed in Table 18 below.

**Table 18: Assessment of the impacts of mining on road use (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

### 8.5.9 Noise and vibrations

Mining activities such as especially drilling create noise which can be a nuisance to surrounding communities. Excessive noise and vibrations can be a health risk to workers on site.

According to Mapani and Hitila (2022), the noise model predicts that there would be a significant increase in localized noise which is expected during mining operation and construction of mining infrastructure. Noise will be from drilling and milling activities including equipment unload and installation and other heavy machinery, as well as noise from goods and material transportation. Though noise levels may be high, the impacts will be temporary and localized, and can be further mitigated. This impact is assessed in Table 19 below.

**Table 19: Assessment of the impacts of noise and vibrations from mining**

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

### 8.5.10 Archaeological and Heritage resources

During the site visit and personal interviews with the locals, there were no archaeological and heritagesites within the ML. The assessment undertaken by the Specialist (Archaeologist) is as follows:

#### 8.5.10.1 Potential Impact on Archaeological sites

There was no archaeological site within the targeted mine sites, however, caution should be taken when mining activities are taking place. This is to avoid any chance of destruction of the previous unknown sites. Therefore, Chance finds procedure should be part of daily activities.

### 8.5.10.2 Potential Impact on Stone Artifacts

The surveyed areas did not record any stone tools this can be reasoned with the prevailing situation in the areas i.e. previous exploration and current mining activities that are taking place hence disturbance of sites which could have kept or kept the artefacts. Therefore, as for mitigation measures, the proper way of handling and protecting is recommended, and this will in turn bring the impact from Moderate to Low and to acceptable levels.

### 8.5.10.3 Potential impacts on Rock shelters and Caves

There were no rock shelters recorded in the targeted mining sites.

### 8.5.10.4 Potential Impact on Historical and Heritage sites

All of the significant historical sites are situated in Karibib Town. With recommended mitigation measures in place, the expected impact will be low to negligible.

### 8.5.10.5 Potential Impact on Built Environment Resources

There were few of the built environments within ML area, these are the farmstead and thehouses for farm workers, therefore, the expected impact should be Low to Zero

### 8.5.10.6 Potential Impact on Graves/Cultural site

There were no visible graves recorded. However, knowing that graves and burial places can occur anywhere and everywhere i.e., on the surface levels and sub-surface, mitigation measures are possible and will entail a pre-construction survey to locate any more visible graves that might still be present within the footprint. The proposed development works should be affected to try to avoid graves if possible but any that cannot be avoided will require exhumation and possibly reburial for this to happen a necessary permit is required from the National Heritage Council of Namibia. Project Proponent is cautioned that 'Chance Find Procedures' is mandatory and should be complied with throughout the operational phase of the project.

The impact is assessed in Table 20.

**Table 20: Assessment of the impacts of mining on archaeological & heritage resources**

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M/H - 4	M - 3	M - 6	M - 3	M - 39
Post mitigation	L/M - 2	L/M - 2	L - 2	L/M - 2	L - 12

### 8.5.11 Impact on Local Roads

These types of projects are usually associated with movements of heavy trucks and equipment or machinery that use locals frequently. The heavy trucks travelling on the local roads and exert more pressure on them. The additional vehicles such as heavy trucks transporting of the Dolerite blocks from the site to the processing facility may worsen the road conditions over time. The assessment of this impact is presented in Table 21.

**Table 21: Assessment of mining on local services (roads and water)**

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	M/L - 4	M/L - 2	L - 12

### 8.5.12 Social Nuisance: Influx of Outsiders into The project Area

The high unemployment in the country would encourage the migration of outsiders into the Arandis and nearby places which results in the following:

- Potential increase in migration into the area in search for mining job opportunities.
- Additional pressure on informal settlement due to migration influx into the area.
- Additional pressure on consumption and utilization of public services and infrastructure (water, electricity, sewage, education, healthcare, etc.)
- Increase in truck traffic via Karibib-Walvis Bay (Walvis Bay Corridor –B2).

The impact is assessed in detail in the Socio-economic Report attached hereto and assessed in Table 22.

**Table 22: Assessment of social impact of community property damage or disturbance**

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M - 3	M - 3	M - 6	M/H - 4	M – 48
Post mitigation	L - 1	L - 1	M/L - 4	M/L -2	L - 12

## 8.6 Cumulative Impacts Associated with Proposed Mining

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

Similarly, to many other mining projects, the cumulative impacts to which the proposed Project and associated activities potentially contribute are as follows:

### 8.6.1 Groundwater use

There are existing activities and around the ML site that rely on the boreholes for water supply. The add-on activities to the existing activities in the area, specifically mining will cumulatively contribute to this impact (over-abstraction). While the contribution of the project activities to the impact will not be significant, mitigation measures to reduce water consumption for activities are essential.

### 8.6.2 Road infrastructure (vehicular traffic)

The proposed mining activities will contribute cumulatively to various activities such as commuting, farming activities, and travelling associated with tourism and existing mining activities in the Erongo Region.

The contribution of the proposed project to this cumulative impact is however not considered being very significant given the scale and extent of the proposed project activities itself. Although most road users on the B2 are travelers (in vehicles of all sizes and types), the significance of the impact on the roads is placed mainly on the heavy trucks that are transporting other Dimension Stone blocks from other mines in the area, various products for different businesses (commercial) and services deliveries within the Region, from and to different destinations in other regions. The past, current, and future use of the road infrastructure by other users and for different operations will be beyond the Proponent's control. Therefore, to ensure that the Proponent do their part to reduce this impact with regards to their project operations (heavy vehicle loads and frequency on the roads), they will implement the provided management (mitigation) measures and comply with the legal obligations and requirements as set out by the Roads Authority. This will be done through consultations as recommended under the Permitting and Licensing Table in the Draft EMP.

**8.6.3 Visual**

There are currently visual concerns of active mining sites on the project site and the abandoned ones in the Erongo Region, including the current mining activities on the Mining Claims within the ML. Therefore, the proposed mining activities will contribute to the impact in the area. Regardless, the Proponent will do their part (not to worsen the visual impact) by implementing the provided mitigation measures as recommended by the specialist under the impact's mitigation measures and in the Draft EMP.

**8.6.4 Soils and Water Pollution**

Further cumulative sources of pollution are wet waste/effluent due to improperly managed sewage facilities, fertilizers, pesticides, and hydrocarbons from other existing anthropogenic activities in the site area. The past, current, and future prolonged duration of no recharge and very little recharge to groundwater aquifers is also a contributing factor to poor water quality. Regardless, mitigation measures to avoid and or reduce the potential soil and water pollution impact owing to the proposed project have been provided for implementation throughout the project's life cycle.

## 9 RECOMMENDATIONS AND CONCLUSIONS

The potential impacts that are anticipated from the proposed project activities were identified, described, and assessed. For the significant adverse (negative) impacts with medium rating, appropriate management and mitigation measures were recommended for implementation by the Proponent, and the aim is to maximize the positive impacts of the proposed mining.

The interested and affected parties (stakeholders) were consulted as per the EMA and its 2012 EIA Regulations (Section 21 to 24). This was done via the two newspapers used for this environmental assessment, i.e., *New Era* and *The Namibian*. The consultation meeting was held and comments and concerns were made and raised on the proposed project activities, respectively. These comments were noted down and incorporated into the Assessment Report and Draft EMP.

The issues and concerns addressed and incorporated into this Assessment Report have been addressed and mitigation measures provided thereto to avoid and/or minimize their significance on the environmental and social components. Most of the potential impacts were found to be of medium rating significance. With the effective implementation the recommended management and mitigation measures, this will particularly reduce the significance of adverse impacts that cannot be avoided completely (i.e., reduce the significance from medium rating to low). To maintain the desirable rating, the implementation of management and mitigation measures, it is highly recommended that the Proponent or their Environmental Control Officer (ECO) conduct the EMP implementation monitoring. Monitoring will not only be done to avoid impacts or maintain their desired rating, but to also ensure that all potential adverse impacts identified in this study and other impacts that might arise during Project implementation are properly and timely identified and addressed accordingly.

The assessment is deemed sufficient and conclude that no further detailed assessments are required to the ECC application.

### 9.1 Recommendations

The EDS Consultants are confident that the potential negative impacts associated with the proposed project activities can be managed and mitigated by the effective implementation of the recommended management and mitigation measures. This would also be improved by more effort and commitment towards monitoring the implementation of these measures.

It is therefore, recommended that the proposed and mining activities be granted an Environmental Clearance Certificate, on the emphasis that:

- All the management and mitigation measures provided herein and Draft EMP are effectively and progressively implemented.
- All required permits, licenses and approvals / consents for the proposed activities should be obtained as required. These include permits and licenses for land use agreements to explore and ensuring compliance with these specific legal requirements.
- The Proponent and all their personnel 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.
- The disturbed areas created from the project activities areas are rehabilitated, as far as practicable, to their pre-mining state.
- Environmental Compliance monitoring reports should be compiled and submitted to the DEAF every 6 months from the date of ECC issuance (as required).

## **9.2 Conclusions**

In conclusion, with that being done, it is crucial for the Proponent and their workers and contractors to effectively implementation of the recommended management and mitigation measures to protect both the biophysical and social environment throughout the project duration. The aim is to promote environmental and social sustainability while ensuring a harmonious existence and operations of the Project in the communities and environment.

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