

**ENVIRONMENTAL IMPACT ASSESSMENT**  
**SCOPING REPORT**  
**FOR THE ESTABLISHMENT AND MINING OF DIMENSION STONES ON MINING**  
**CLAIM 72121 AT**  
**KARIBIB, ERONGO REGION**



**APP-003326**



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<b>Title</b>	ENVIRONMENTAL IMPACT ASSESSMENT (EIA) FOR THE ESTABLISHMENT AND MINING OF DIMENSION STONES ON MINING CLAIM; 72121, KARIBIB, ERONGO REGION.		
<b>Application Number</b>	APP-003326		
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<b>Report date</b>	March 2022		
	<b>Name</b>	<b>Signature</b>	<b>Date</b>
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## EXECUTIVE SUMMARY

Ms. Laina Silvanus intends to establish and mine dimension stones on mining claims 72121 at Karibib District, Erongo Region.

Ms. Laina Silvanus has utilised the available historical data, surface investigation and existing dimension stones mining operation in the vicinity to confirm and verify the presence of descent resources for mining on the applied mining claim 72121 at Karibib. The planned mining program will consider using a substantial budget and a technically low risk mining operation. The mining of dimension stones will employ the standard dimension stone mining approach currently used at the existing quarries within the vicinity of Karibib. The operation will include cutting of dimension stones using jack hammers and automated diamond wire cutting machines. The dimension stone will be cut as per the magnitude that has been pre-loaded in the machine and thereafter these stones will be loaded on a flatbed truck with a heavy-duty front-end forklift for transportation to Walvis Bay port for shipping to the international markets for further processing. As a response to the call by the government for mining operations for dimension stones in Karibib and elsewhere around the country to add value to mined resources and scale-down the exportation of jobs outside the country. The proponent with her financial and technical partners are exploring opportunities of acquiring land in the Karibib townlands to set up a processing facility where the dimension stones will be cut into slab and ultimately finished products such as; tiles, kitchen tops and other stoneware products targeting both local and international market.

The general area is entirely a semi-arid environment and mining is the main economic driver in the area. Most of the negative impacts emanating from mining of dimension stones at mining claim 72121 have a medium to low significance and the likely negative impacts have medium significance which can be mitigated to negligibly low with the application of the mitigation measures as per the recommendations outlined by the Environmental Consultant to the proponent in the Environmental Management Plan (EMP) & Section 13 of this scoping report.

The high significance of the impacts as a result of the proposed mining of dimension stones is high on the social impact which is positive. The positive significance in the social impact has been attributed to potential economic intervention associated with the project such as direct and indirect employment opportunities and the prospect of the project to contribute significantly to the national economy through royalties, taxes and foreign currency earnings.

## **ABBREVIATION**

<b>AIDS</b>	Acquired Immune Deficiency Syndrome
<b>CC</b>	Close Corporation
<b>Covid19</b>	Coronavirus disease
<b>DEA</b>	Directorate of Environmental Affairs
<b>DESR</b>	Draft Environmental Scoping Report
<b>EA</b>	Environmental Assessment
<b>EAP</b>	Environmental Assessment Practitioner
<b>ECC</b>	Environmental Clearance Certificate
<b>ECO</b>	Environmental Compliance Officer
<b>EIA</b>	Environmental Impact Assessment
<b>EMA</b>	Environmental Management Act
<b>EMP</b>	Environmental Management Plan
<b>EPL</b>	Exclusive Prospecting Licence
<b>GPS</b>	Global Positioning System
<b>GTZ</b>	Deutsche Gesellschaft für Internationale Zusammenarbeit
<b>Ha</b>	Hectare
<b>HIV</b>	Human Immune Virus
<b>I&amp;APs</b>	Interested and Affected Parties
<b>IT</b>	Information Technology
<b>KM</b>	Kilometres
<b>MAWLR</b>	Ministry of Agriculture, Water and Land Reform
<b>MEFT</b>	Ministry of Environment, Forestry and Tourism
<b>MM</b>	Millimetres
<b>MME</b>	Ministry of Mine and Energy
<b>NHC</b>	National Heritage Council
<b>PPEs</b>	Personal Protective Equipment's

**SME** Small Medium Enterprise

**USAID** United States Agency for International Development

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## 1. PROJECT BACKGROUND

### 1.1 INTRODUCTION

**Ms. Laina Silvanus**, hereafter referred to as the proponent intends to undertake mining activities for dimension stones on the mining claim 72121. The proponent is a holder of an application for the mining claim 72121 which was lodged on the 11/09/2020 with the Ministry of Mine and Energy (MME) after following all the necessary procedures to satisfy the relevant Authorities enabling her to mine the dimension stones from the allocated portion. The proponent has secured both financial and technical partners to carry out the proposed small-scale dimension stones mining activities. Since the mining claim is overlaying EPL 3275, which belongs QKR Namibia Navachab Gold Mine, the proponent has been granted a consent to prospect and mine dimension stones in the area (see Annexure A). The proposed project is a listed activity as per the Environmental Management Act 2007 (Act No. 7 of 2007) (EMA) and an Environmental Clearance Certificate (ECC) is therefore required to commission such a project. Healthy Earth Environmental Consultants (HEEC) has been appointed by **Ms. Laina Silvanus** to carry out an Environmental Impact Assessment (EIA) and develop an Environmental Management Plan (EMP) for the proposed project.

### 1.2 PROJECT LOCATION

The mining claim 72121 is situated approximately 8 Km South of Karibib townland when using the D1953 which branches out from the C32 road South of Karibib in Erongo Region as shown in **Figure 1**. The mining claim covers an area of 10.032 Ha and there are active existing dimension stone mining operations taking place in the adjacent area.

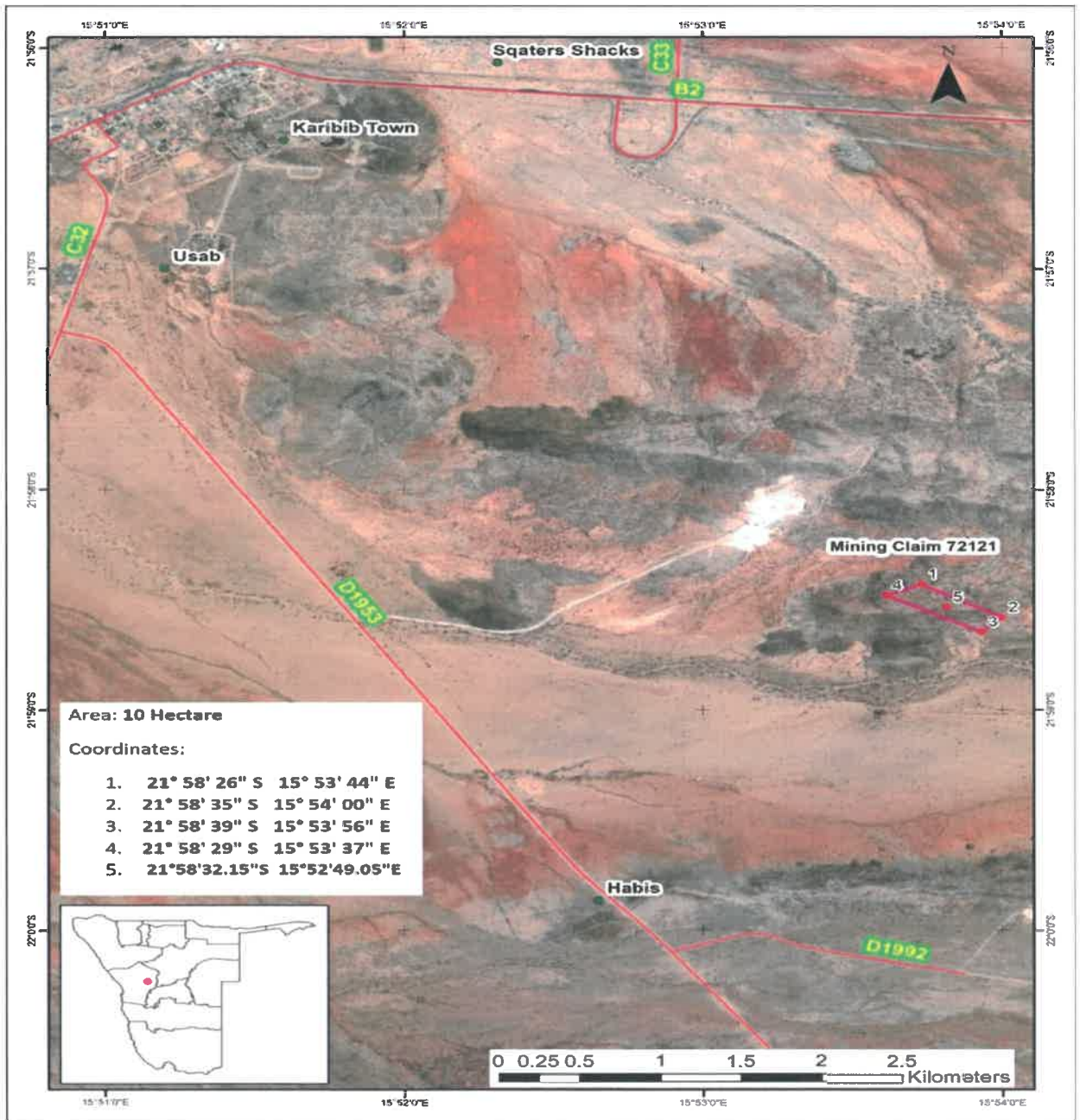


Figure 1: The mining claim proposed for dimension stones mining activities (Shown above by the purple quadrant Mining Claim 72121). (Google Earth, 2022).

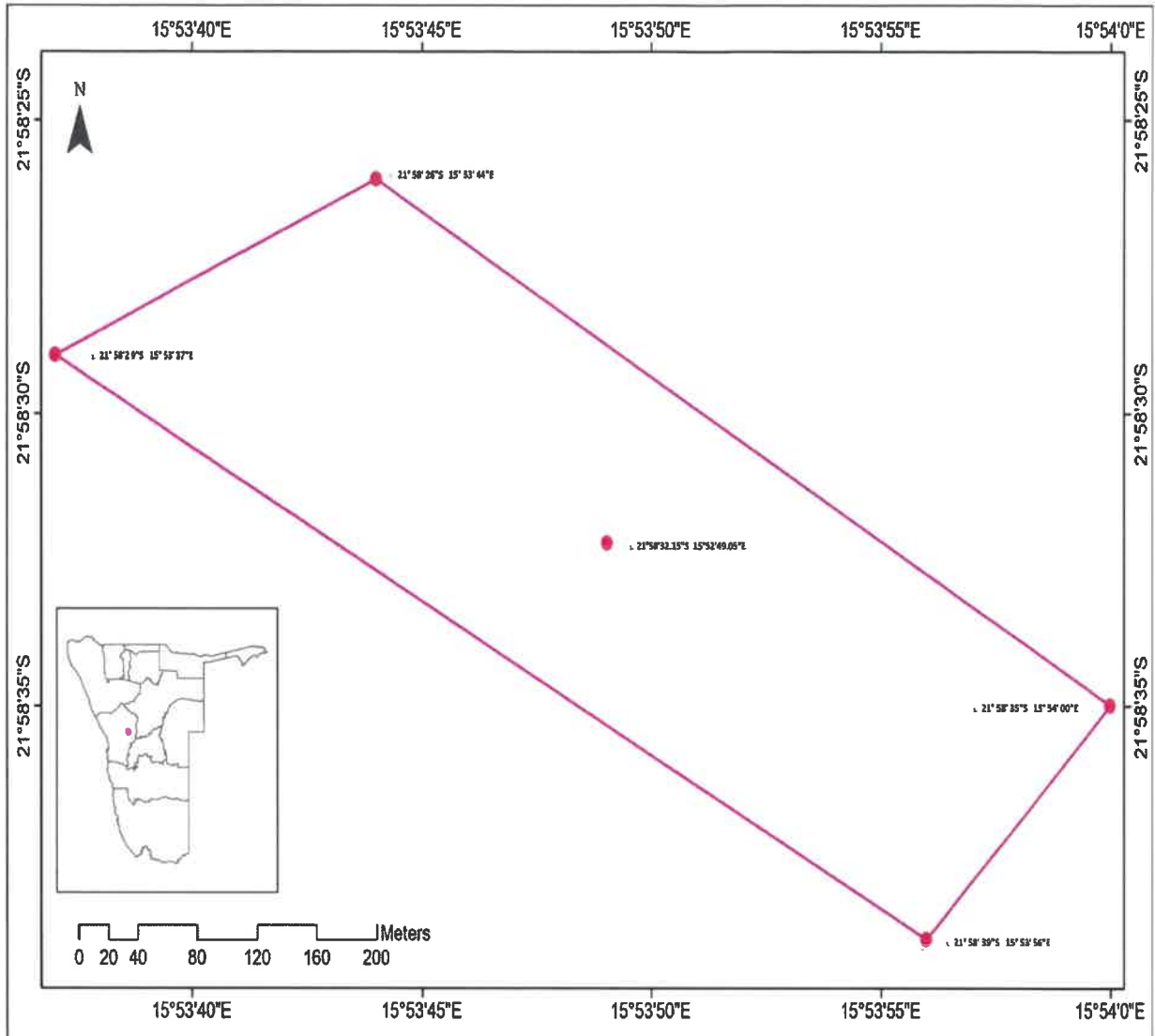


Figure 2: The orientation of mining claim 72121 (delineated in purple) with geo-reference points.

### 1.3 TERMS OF REFERENCES

The Environmental Impact Assessment (EIA) was carried out in accordance with Namibia Environmental Management Legislations (Environmental Management Act, No 7 of 2007) and its Regulation (Government Notice No. 30 of 2012). The purpose of the EIA is to provide significant information to the Office of the Environmental Commissioner in order to make an informed decision about whether or not an Environmental Clearance Certificate (ECC) should be issued. The process as defined by the Environmental Regulation (2012) entails the following steps, which are pronounced in this document as follows;

- ✓ Provide a detail description of the proposed activity;

- ✓ Identifying all legislation and guidelines that have reference to the proposed activity;
- ✓ Identify existing environmental (physical, biological and social) conditions of the area in order to determine their environmental sensitivity;
- ✓ Inform Interested and Affected Parties (I&APs) and relevant authorities of the details of the proposed activity and provide them with a reasonable opportunity to participate during the process;
- ✓ Consider the potential environmental and social impacts of the proposed activity and assess the significance of the identified impacts and;
- ✓ Outline management and mitigation measures in an Environmental Management Plan (EMP) to minimise and/or mitigate potentially negative impacts and assist in formulating a decommissioning plan for the proposed mining activity.

#### 1.4 ENVIRONMENTAL IMPACT ASSESSMENT REQUIREMENTS

The Environmental Impact Assessment Regulations (Government Notice No. 30 of 2012) stipulate that no mining or exploration activities should be undertaken without a valid Environmental Clearance Certificate (ECC). Therefore, an ECC shall be applied for in accordance with regulation 6 of the 2012 environmental regulations. It is imperious that the proponent must carry out a public consultation process in accordance with regulation 21 of the 2012 environmental procedure and prepare and submit an environmental scoping report and an environmental management plan for the planned mining activity.

#### 1.5 THE PURPOSE OF THE SCOPING REPORT

This report is prepared for the purposes of the Environmental Impact Assessment for the proposed mining activities of dimension stones on mining claim 72121. The scoping process identifies the likely impacts allied with the proposed project throughout the EIA and disregard issues which are of diminutive concern. The purpose of this report is thus to;

- Identify any critical environmental impacts to be considered prior to the commencement of the proposed mining development.
- Identify information required for decision making purpose
- Inform the public about the proposed mining activities
- Identify the key stakeholders, their comments and concerns

- Define reasonable and practical alternative to the proposed project
- Establish the terms of references for the envisaged EIA.

In terms of the Environmental Management Act (No. 7 of 2007) and Environmental Impact Assessment Regulations (Government Notice No. 30 of 2012), the proposed development is listed activities, hence an Environmental Impact Assessment should be undertaken.

Table 1: List of triggered activities identified in the EIA Regulations which apply to the proposed project

<b>Activity description and No(s):</b>	<b>Description of relevant Activity</b>	<b>The portion of the development as per the project description that relates to the applicable listed activity</b>
<b>Activity 3.1 (Mining and Quarrying Activities)</b>	The construction of facilities for any process or activities which requires a licence, right or other forms of authorisation, and the renewal of a licence, right or other form of authorisation, in terms of the Minerals (Prospecting and Mining Act), 1992.	The proposed project includes the mining for dimension stones for commercial purposes.
<b>Activity 3.2 (Mining and Quarrying Activities)</b>	Other forms of mining or extraction of any natural resources whether regulated by law or not.	The proposed project includes the mining for dimension stones for commercial purposes.
<b>Activity 3.3 (Mining and Quarrying Activities)</b>	Resource extraction, manipulation, conservation and related activities.	The proposed project includes the mining for dimension stones for commercial purposes.

## 2. PROJECT ALTERNATIVES

### 2.1 Alternatives

Distinct mining claims in the areas were primarily considered by the proponent, resulting in considering the area with descent resources for mining, accessible, feasible and economic viable.

## 2.2 No - Go Alternatives

The no-go alternative is principally the baseline against which all alternatives are elucidated. The no-go alternative would basically include maintaining the existing status quo, whereby the mining of dimension stones will not commence at all. Moreover, the mining activity of dimension stones will not take place which would have a negative social and economic impacts to the inhabitants of Karibib and losing out on prospecting economic opportunities emanating from this project. Furthermore, if the project does not start the people in the nearby town will not be able to secure employment opportunities which can potentially be generated by this project. The project will significantly uplift the livelihood of the surrounding communities. The planned project has the potential to contribute immensely to the economy of the country through royalties, taxes and foreign currency exchange.



### 3. SUMMARY OF LEGAL AND POLICY FRAMEWORK APPLICABLE TO THE PROJECT

All mineral rights related to mining activities are regulated by the Ministry of Mines and Energy (MME), whereas the environmental regulations are regulated by the Ministry of Environment, Forestry and Tourism (MEFT). The envisaged project shall be established and operated under the provision of the existing and relevant statutory framework of Namibian and international laws of which Namibia is signatory.

Table 2. Legal requirements relevant for the proposed project

<b>Legislation</b>	<b>Summary</b>	<b>Applicability</b>
<b>The Namibian Constitution</b>	The Namibian constitution is the supreme law of the country which is committed to sustainable development. Article 95(1) of the Constitution of Namibia states that: - “The State shall actively promote and maintain the welfare of the people by adopting policies aimed at ... The maintenance of ecosystems, essential ecological processes and biological diversity of Namibia and utilization of living natural resources on a sustainable basis for the benefit of all Namibians, both present and future”.	To undertake the EIA in order to maintain the ecological process and diversity of ecosystem.
<b>The Environmental Management Act</b>	The Environmental Management Act No 7 of 2007 aims to promote the sustainable management of the environment and the use of natural resources and to provides for a process of assessment and control of activities which may have significant effects on the environment; and to provide for incidental matters. The acts provide a list of activities that may not be undertake without an environmental clearance certificate.	Legal requirement to undertake an EIA

Legislation	Summary	Applicability
	<p>Further, the Act ensures that;</p> <p>(a) Potential threats are considered timeously</p> <p>(b) A comprehensive stakeholder’s consultation is conducted, and all Interested and affected parties are given an opportunity to comment on the project</p> <p>(c) Decision are robust by considering the above-mentioned activities</p>	
<b>Atmospheric Pollution Prevention Ordinance Act No.11 of 1976)</b>	<p>This Ordinance serves to control air pollution from point sources, but it does not consider ambient air quality. This ordinance is being repealed by the proposed Pollution Control and Waste Management Bill. Any person carrying out a ‘scheduled process’ which are processes resulting in noxious or offensive gases typically pertaining to point source emissions have to obtain a registration certificate from the Department of Health.</p>	<p>Generation of Greenhouse Gases by the fuel</p>
<b>Draft Pollution Control and Waste Management Bill</b>	<p>This Bill serves to regulate and prevent the discharge of pollutants to air and water as well as providing for general waste management. The Bill will repeal the Atmospheric Pollution Prevention Ordinance (11 of 1976) when it comes into force. The Bill also provides for noise, dust or odour control that may be considered a nuisance. Further, the Bill advocates for duty of care with respect to waste management affecting humans and the environment and</p>	<p>Possible Fuel Spill and Leakages may pollute underground and surface water.</p>

Legislation	Summary	Applicability
<p><b>Environmental Policy framework (1995)</b></p>	<p>calls for a waste management licence for any activity relating to waste or hazardous waste management.</p> <p>This policy subjects all developments and project to environmental assessment and provides guideline for the Environmental Assessment. Its provision mandate that Environmental Assessment take due consideration of all possible impacts and incorporate them in the development or planning stages.</p>	<p>Provision of the EIA and guidelines</p>
<p><b>The Occupational Safety and Health Act No. 11 of 2007;</b></p>	<p><b>Safety:</b> A safety risk is a statistical concept representing the potential of an accident occurring, owing to unsafe operation and/or environment. In the working context "SAFETY" is regarded as "free from danger" to the health injury and to properties.</p> <p><b>Health:</b> Occupational Health is aimed at the promotion and maintenance of the highest degree of physical, mental and social wellbeing of workers in all occupations. This is done by ensuring that all work-related hazards are prevented and where they occur, managed.</p>	<p>Operating mining equipment has the potential risk of injuries.</p> <p>Provision of clean ablution facility, routine health check-ups for employees, Covid19, HIV/AIDS awareness etc.</p>

Legislation	Summary	Applicability
<b>Public Health Act No. 36 of 1919</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/her or of which he/she is in charge of any nuisance or other condition liable to be injurious or dangerous to health.	Ensure public safety from noise, dusts, and air pollution.
<b>Water Resources Management Act (2004)</b>	This Act provides a framework for managing water resources based on the principles of integrated water resources management. It provides for the management, development, protection, conservation, and use of water resources. Furthermore, any watercourse on/or in close proximity to the site and associated ecosystems should be protected in alignment with the listed principles.	Ensure that the underground water and ephemeral river systems are not polluted and implement pollution control mechanism to avoid water pollution
<b>Water Act No, 54 of 1956</b>	This act states that, all water resources belong to the State. It prevents pollution and promotes the sustainable utilization of the resource. To protect these resources, this act requires that permits are obtained when activities involve the following; <ul style="list-style-type: none"> <li>• Discharge of contaminated into water sources such as pipe, sewer, canal, sea outfall and</li> <li>• Disposal of water in a manner that may cause detrimental impact on the water resources</li> </ul>	Contaminated water, such as sewage sludge must not be seep into the ephemeral rivers and water sources.

Legislation	Summary	Applicability
<b>Petroleum Product and Energy Act No, 13 of 1990</b>	This Act provides a framework for handling and distribution of petroleum products which may include purchase, sale, supply, acquisition, possession, disposal, storage or transportation thereof.	Safe handling of the petroleum products such as fuel and lubricants.
<b>Labour Act No. 11 of 2007</b>	This Act aims to regulate labour in general and includes the protection of the health, safety and welfare of employees. The 1997 regulations relating to the Health and Safety of employees at work sets out the duties of the employer, welfare and facilities at the workplace, safety of machinery, hazardous substances, physical hazards, medical provisions, construction safety and electrical safety.	Follow legal labour requirements such as safety, remuneration etc.
<b>Regional Council Act, 1992 (Act No. 22 of 1992)</b>	The Regional Councils Act legislates the establishment of Regional Councils that are responsible for the planning and coordination of regional policies and development. The main objective of this Act is to initiate, supervise, manage and evaluate development at regional level.	Observe the regional by laws
<b>Soil Conservation Act No. 76 of 1969</b>	This act promotes the conservation of soil, prevention of soil erosion.	Coordinate movement of mining equipment & activities to prevent soil erosion. Ensure conservation of topsoil.
<b>Hazardous Substances Ordinance No. 14 of 1974</b>	This ordinance gives provision to control the handling of hazardous substance in all circumstances, such as manufacturing, imports and exporting of these to ensure human and environmental safety.	Handling of fuel, fire and explosion risks

Legislation	Summary	Applicability
<p><b>National Heritage Act No. 27 of 2004</b></p>	<p>The Act makes provision for the protection and conservation of places and objects of heritage significance and the registration of such places and objects. Part V Section 46 of the Act prohibits removal, damage, alteration or excavation of heritage sites or remains, while Section 48 sets out the procedure for application and granting of permits such as</p>	<p>Mining activities such as excavation and, trenching may unearth archaeological material.</p>
<p><b>Word's Best Practises</b></p>	<p><b><i>Precautionary Approach Principle</i></b></p> <p>This principle is worldwide accepted when there is a lack of sufficient knowledge and information about the possible threats to the environment. Hence if the anticipated impacts are greater, then precautionary approach is applied. In this project, there are no eminent uncertainty however in cases when they arise, this approach should be applied.</p> <p><b><i>Polluter Pays Principle</i></b></p> <p>This principle ensures that proponents takes responsibility of their actions. Hence in cases of pollution, the proponent bears the full responsibility to clean up the environment.</p>	<p>Dimension stone mining particularly in the area with washes and ephemeral rivers can be detrimental to the underground water. Therefore, precaution must be taken to avoid the contamination of underground water.</p> <p>In the event of any soil contamination pollution, the proponent must be responsible to clean up the environment.</p>

## 4. DESCRIPTION OF THE PROPOSED MINING ACTIVITY

### 4.1 Introduction

The town of Karibib and its surrounding area is renowned to harbour descent marble resources of high economic value. The town holds a flagship of being one of the towns with the oldest existing gold mine in the country, namely; Navachab gold mine, which is located approximately 5Km south-west of the townlands. The marble from Karibib are known to be of the best quality and hard enough, which made them one of the best dimension stones product in the international market. The marble from Karibib and its surrounding have been used to provide the best appealing buildings in the country and beyond. This includes various government offices locally, the parliament building in Cape Town and construction of Frankfurt International Airport in Germany. Currently the marble from Karibib is among the dimension stones dominating some of the major international markets around the globe such as in China and USA. In Namibia, mining is a major sector which is contributing immensely to the GDP of the country through export revenues, royalties and taxes.

According to the Draft Minerals Policy of Namibia, the Government of Namibia acknowledges that the exploration and development of its mineral wealth could best be undertaken by the private sector. Therefore, the government focuses on creating an enabling environment through appropriate competitive policy and regulatory frameworks for the promotion of private sector investment coupled with the provision of national geo-scientific data bases essential for attracting competitive exploration and mining.

Mining of dimension stones in Karibib and the Erongo region as a whole has been complementing government efforts in addressing unemployment and improving the livelihoods of many people in the region and the entire country at large.

### 4.2 Mining Methods

The targeted mineral resource is mainly dimension stones of which the principal rock type is white marble as indicated in **Figure 4** below. The dimension stones mining activities entail the cutting of dimension stones by making use of jack hammers and automated diamond saw blade cutting machines. The dimension stones will be cut as per the magnitudes that have



been preloaded into the machine and thereafter these stones are loaded with a heavy-duty front-end forklift into a flatbed truck which will transport the dimension stones to Walvis Bay port for export to the international markets for further processing. Recently the Ministry of Mines and Energy (MME) has been advocating for marble mining companies within Karibib and elsewhere in the country to commence with ensuring that there is value addition on the mined product such as dimension stones. Hence the proponent together with her technical and financial partners will engage the Karibib Town Council to sub-lease or buy an industrial erf where they will establish and operate a processing facility to cut marble blocks into slabs before exporting and also manufacturing tiles, kitchen tops and stoneware products for the domestic market. **Figure 3** below depicts the targeted mining claim and existing active mining operation in the area.



Figure 3: The satellite map of mining claim 72121 delineated in a skewed blue quadrant.





Figure 4: The targeted white marble occurring within mining claim 72121 (HEEC 2022).

### 4.3 Labour Requirements

The proposed project will have a significant positive economic impact to the town of Karibib and surrounding settlements; about 15 people will be employed by the project. The number of employees will ultimately escalate due to other cumulative jobs associated with the project such as the planned marble processing facility which will only come into force once authorisation for mining has been granted and all the necessary procedures and mandatory permits and authorisation have been applied for. Further, more jobs will also be generated by the local Small and Medium Enterprises (SMEs) through rendering essential services on contract basis. All employees will undergo through an extensive safety induction and first aid training courses and environmental awareness program. The Labour Act of 2007 will always be adhered to. The duration of the of the proposed dimension stones mining project is forecasted to last for a period of 25 years and all the required reports will be submitted to the relevant authorities.

## 5. SERVICES

### 5.1 Energy requirements

Electricity at the site will be sourced from the existing infrastructure such as the national grid via the regional distributor ErongoRED. The use of diesel generator will be considered if it is deemed feasible as a back-power source. This will ensure constant power supply in the event of power outage. The proponent will in future explore the potential of establishing a renewable source of energy in the form of solar power to ensure uninterrupted power supply and cut down on carbon footprint as an effort to reduce climate change and transition towards the green economy.

### 5.2 Water supply

Water will mostly be required for domestic uses and cleaning of equipment. However, since the project will take place in the arid area and water will be recycled and where possible used sparingly. Water for the intended mining activities including domestic and human consumption will be sourced from the borehole yet to be drilled with another alternative of connecting to the existing NamWater pipeline supplying water to the town of Karibib and

Otjimbingwe settlement. A pipeline will be laid from the borehole or the existing NamWater pipeline and feed water storage tank which will be erected at the site. A water abstraction permit will be applied for from the Ministry of Agriculture, Water and Land Reform (MAWLR).

### 5.3 Waste management

All domestic waste materials that will be generated during mining operation will be disposed of at Karibib landfill. There is a possibility of contracting a reputable local SME to handle the removal of all solid waste fraction from the site. The sewage is to be removed from the site mobile toilets by means of sewer removal truck of the Karibib Town Council at regular intervals and disposed at the Karibib sewerage ponds. Due to the sensitivity of the area, sewerage must be disposed in a manner that does not pollute the environment. The proponent will ensure that there is adequate supply of temporary sanitary containerized facilities which will be maintained and kept in a hygienic condition. The proponent will work closely with the suppliers of consumables such as grease and lubricants to ensure that upon used they are collected and disposed off in an environmentally friendly manner.

## 6. INFRASTRUCTURE SERVICES

### 6.1 Housing and Offices

Due to the proximity of the proposed project with the town of Karibib, the proponent intends to rent staff houses within the townlands of Karibib and the main office will also be situated in town. Options will be explored if the proponent will rent or construct the main office in Karibib. The employees will be transported to the site with a bus on daily basis each morning from Monday to Friday and dropped off when they knock off at 17h00. Existing designated municipal boarding and drop off zones in Karibib will be optimised. An area at the site will be identified to erect the guards' house and a small onsite operational office.

### 6.2 Security

A reputable local company will be contracted to render security services on daily basis at the site. There will be strict access control to the site since accessing the site and all vehicles entering and leaving the site will be registered.

### 6.3 Storage of fuel, lubricant and consumables

All lubricants and consumable materials will be stored in containers at a designated area at the site. These substances will only be used for mechanical purposes and it is presumed that they are non-hazardous. All the light vehicles will be filled up at the available filling stations in Karibib. If need arises a customised 1000-gallon fuel trailer with an easy to fuel pipe will be used to transport fuel such as diesel needed to operate different equipment required for mining at the site.

### 6.4 Telecommunication and IT System

The proposed area has good network coverage for all telecommunications service providers in the country, hence there will be access to telecommunication networks to enable effective communication. However, due to the use of mining equipment which some may pose danger to employees, the use of cell-phones during working hours will be restricted to ensure that the safety of the workers is not compromised.

### 6.5 Roads

The access to the mining claim will be gained from the B2 road at Karibib and turn to the south using the C32 road for about 1.3 Km and turn to the left using the D1953 which stretches from Karibib to Otjimbingwe for about 6 Km. The mining claim 72121 is accessible via the D1992 road going toward the east for about 3 Km and the mining claim is situated on the intrusion on left about 900 meters from D1992 road. A new road from the D1992 road to the site will be established to allow easy movement of the trucks and light vehicles to access the mining area. The areas which are less ecologically sensitive will be considered for the establishment of the access road.

## 7. DESCRIPTION OF THE BIO-PHYSICAL ENVIRONMENT

### 7.1 Climate

The climate of Karibib area where the mining of dimension stones at **Mining Claim 72121** will take place is located within the semi-arid savannah. The area has an average annual rainfall of 200 mm – 250 mm. The highest average maximum temperature in the area is more than

32°C to 34°C, while the average minimum temperatures are 4°C - 6°C (Mendelsohn, 2003).

The following graphs illustrates the climatic variation in the area.

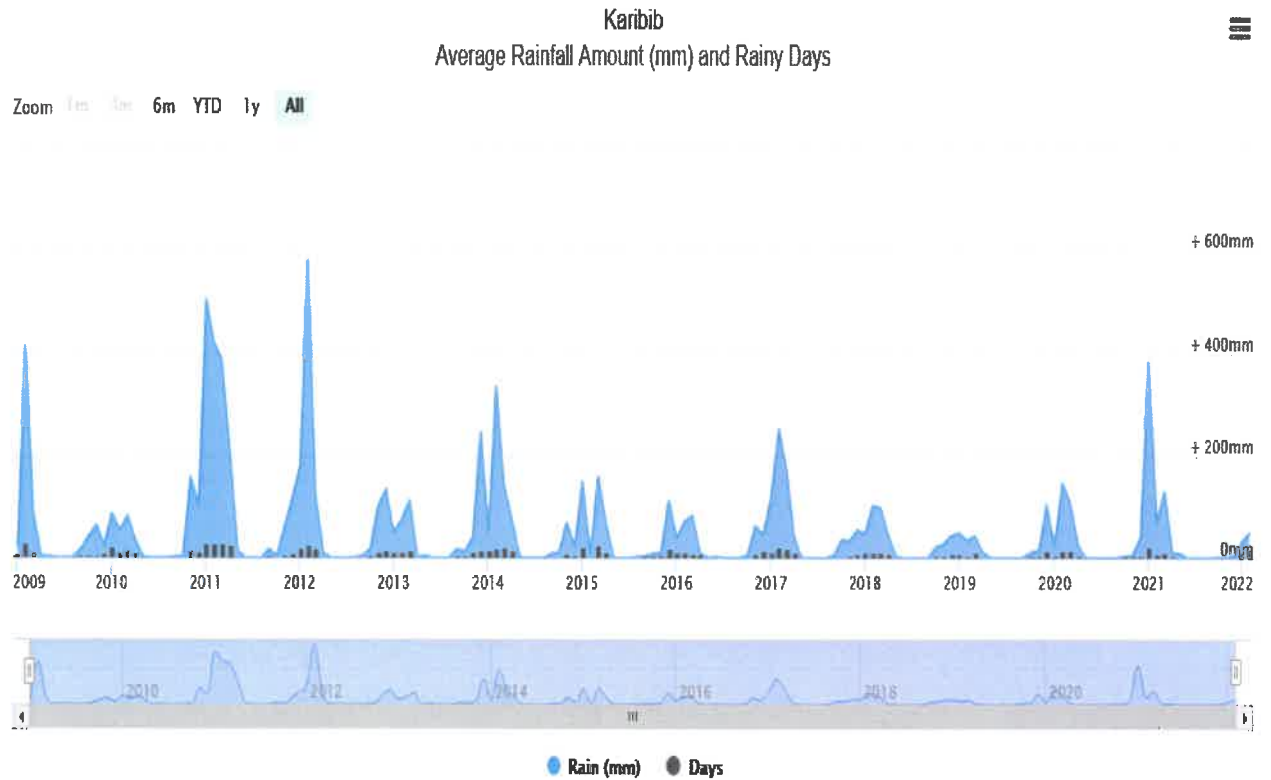


Figure 5: Average rainfall graph for Karibib (Worldweatheronline, 2022).

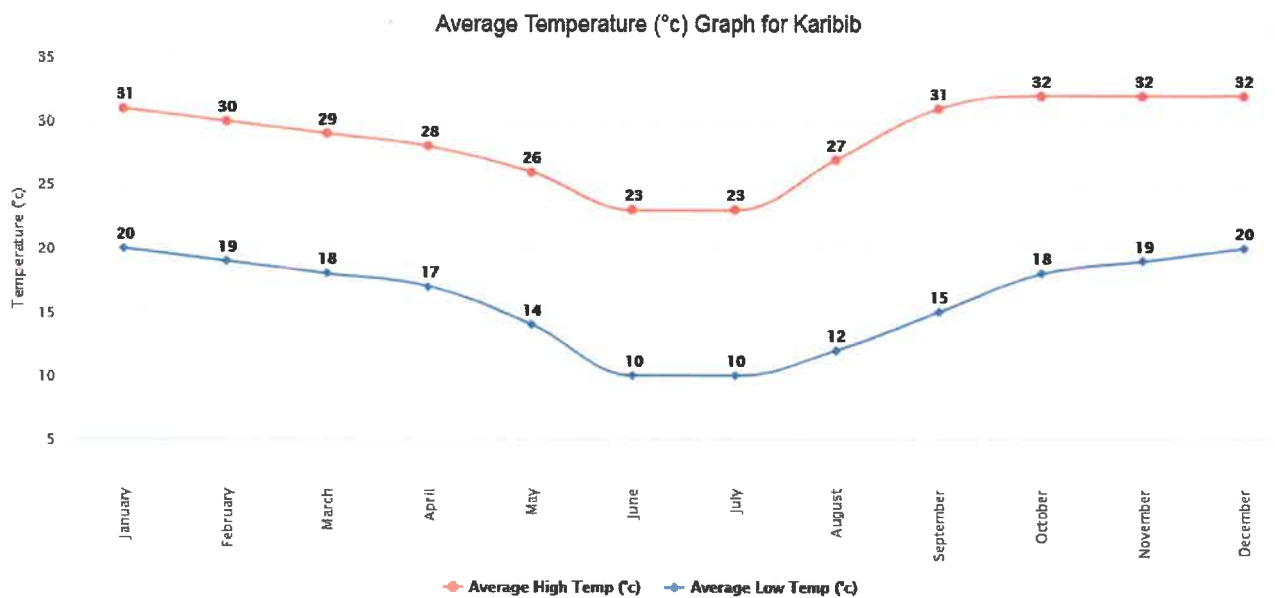


Figure 6: Average monthly temperature graph for Karibib (Worldweatheronline, 2022).

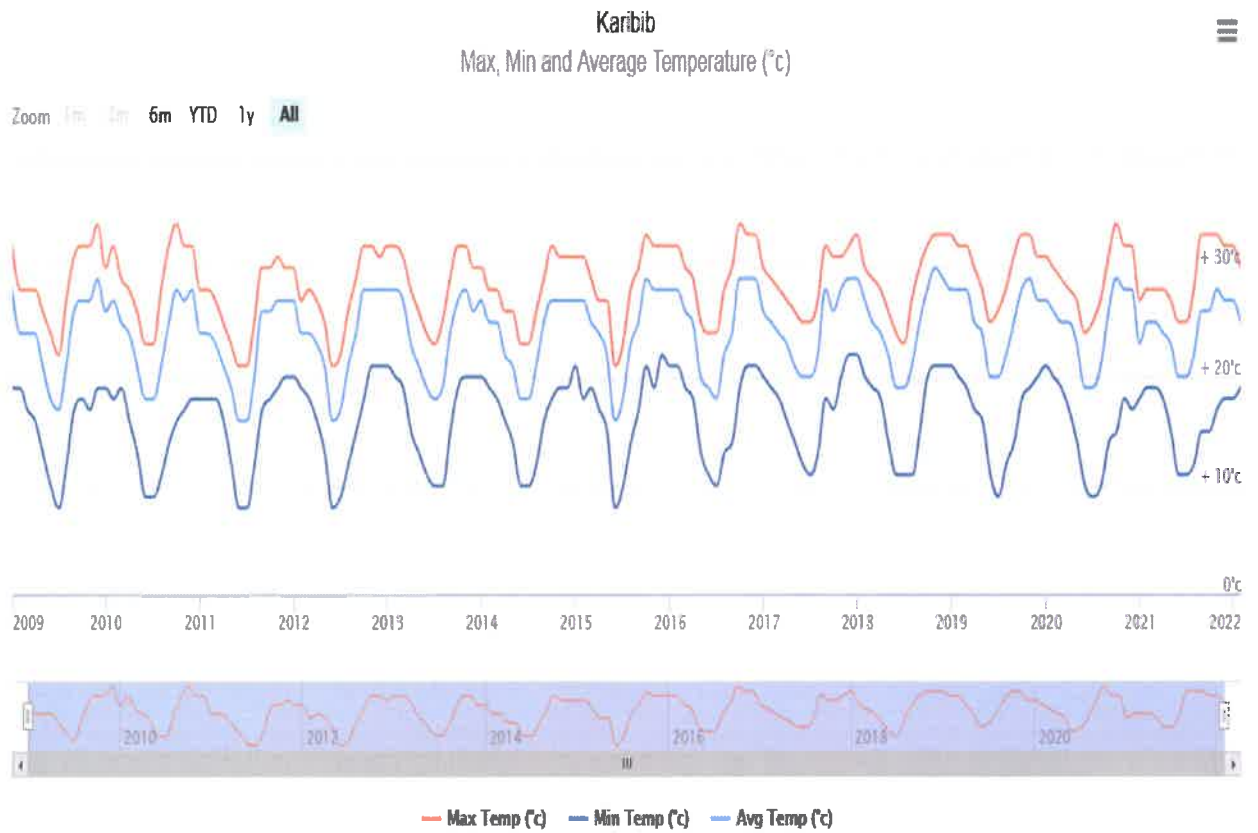


Figure 7: The maximum, minimum and average temperature graph for Karibib (Worldweatheronline, 2022).

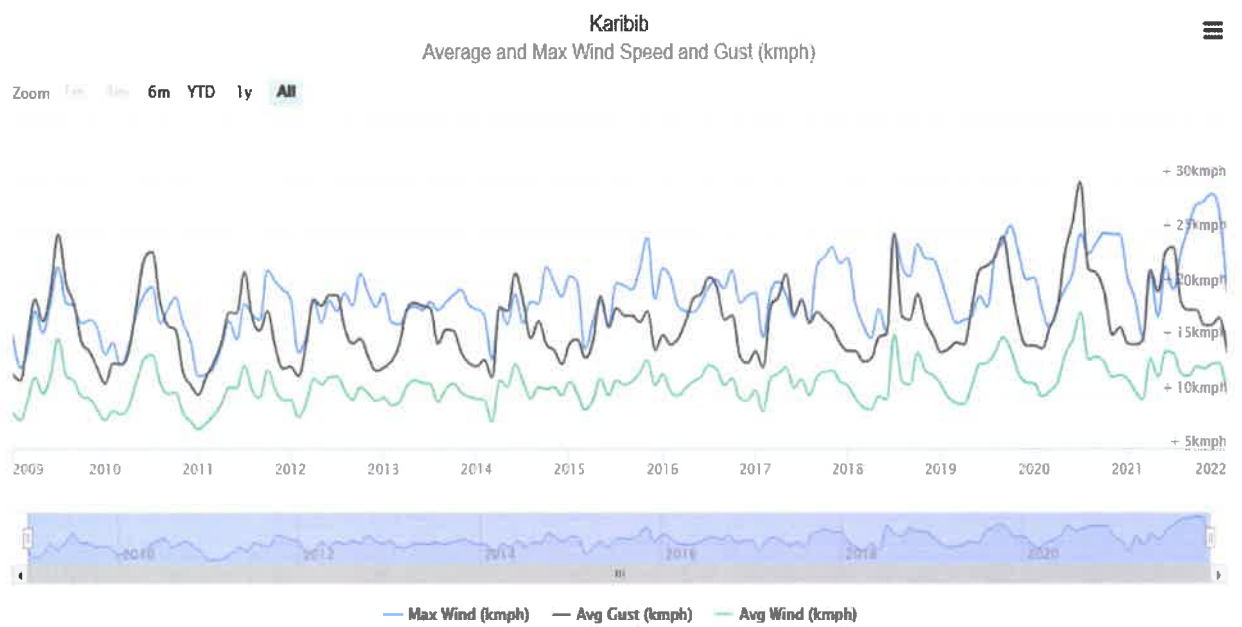


Figure 8: Average and maximum wind speed graph for Karibib (Worldweatheronline, 2022).

The climatic conditions may present some challenging hazards to safe mining operations. Adverse climatic conditions may disrupt the operation of the mine, hence effective planning is required to reduce and mitigate the risks. A perspective on the climatic pattern of the area is therefore imperious particularly rainfall, temperature and wind speed. Understanding these variables may assist in planning and execution of mining activities in an effective manner by reducing risks associated with some of the activities through risk assessment. The area may be subjected to high rainfall, extreme heat and/or high wind speed which in term of this project is a concern. The average annual rainfall pattern of Karibib is often fluctuating over the years with the highest record in 2012 as illustrated in **Figure 5** above. The average monthly high temperature is higher in January and December while average monthly low temperature is extremely lower in June and July as depicted in **Figure 6**. The maximum, minimum and average temperature for the area is entirely undulating over the years as indicated in **Figure 7** and wind speeds have also been unstable over the years as depicted in **Figure 8** respectively.

## 8. DESCRIPTION OF THE GEOLOGY AND GEOHYDROLOGY

### 8.1 Geology

The geology of the area is characterised by amphibolite-facies metasedimentary rocks of the Damara Sequence, a Neoproterozoic marble and schist dominated continental shelf type succession (Kister, 2005). This is part of the southern Central Zone of the Pan-African Damara Belt the late Neoproterozoic which is the collisional suture between the Congo and Kalahari Cratons. The Damara orogen in central Namibia formed part of the larger Pan African collisional belt which cut through the African continent and also surround it. The orogeny formed during the unification of the Gondwana super continental during the late Proterozoic and primary Phanerozoic. The collision of Congo and Kalahari Cratons manifested into the formation of the Damara belt which is sometime referred as the intracratonic or inland branch of the Damara orogeny (Slabbert 2013). The collision of the belt also resulted in different tectonostratigraphic zones which is caused by the variation in metamorphic grade, stratigraphy, aeromagnetic cyphers, magmatism, geochronology and each zone has visible distinct deformation as depicted in **Figure 9** and **Figure 10** below.



The mining claim 72121 lies within the magmatic arc of the south-Central Zone (sCZ) and the zones is characterised by regional scale NE-SW trending doubly plunging anticlines with undulating formation and post tectonic granites intruding the terrain.

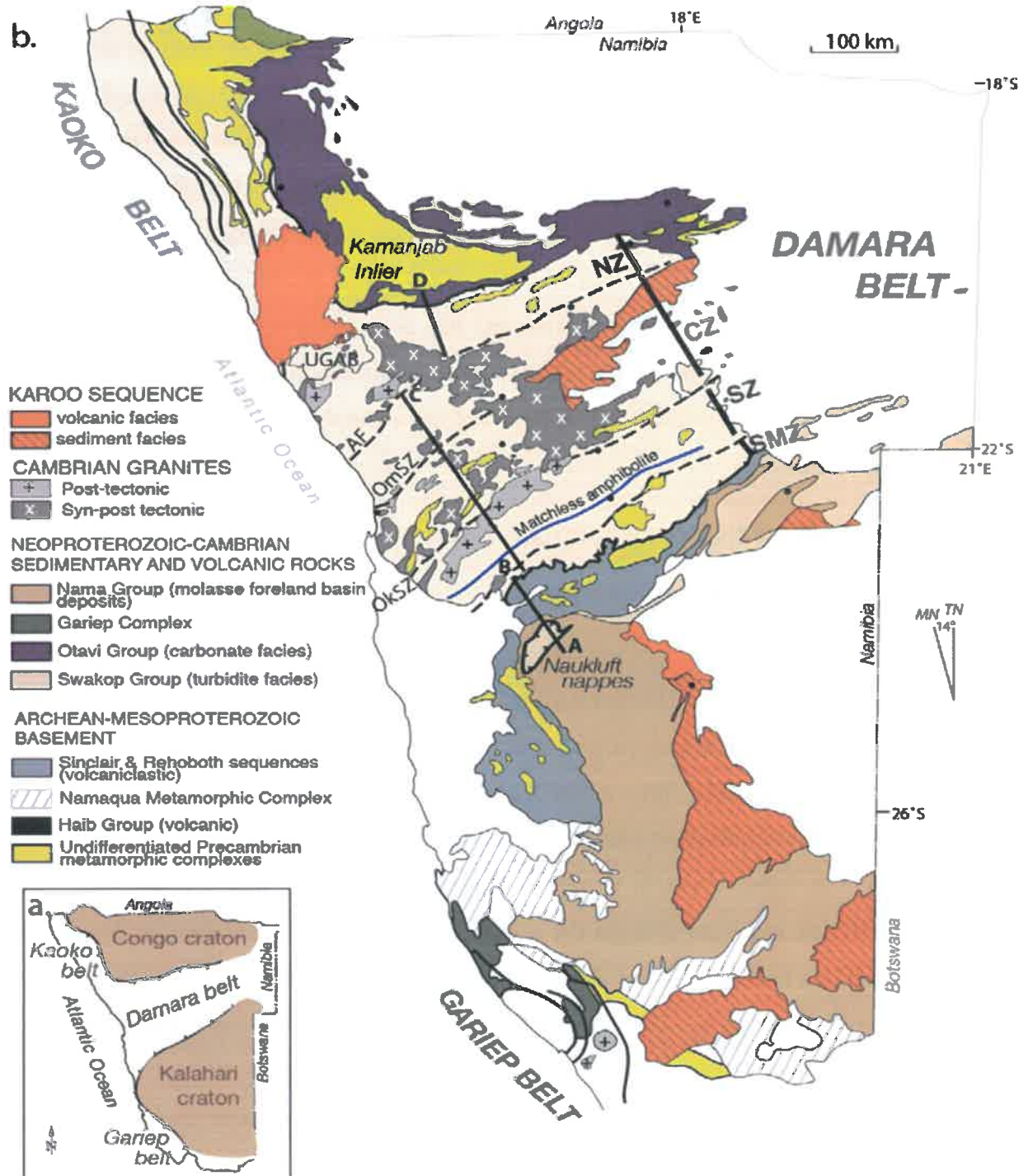


Figure 9: Geological map of Namibia illustrating the Damara Belt separating the Congo and Kalahari Cratons.



# SIMPLIFIED TECTONOSTRATIGRAPHIC MAP OF NAMIBIA

(modified after Miller, 1983 and 2008)

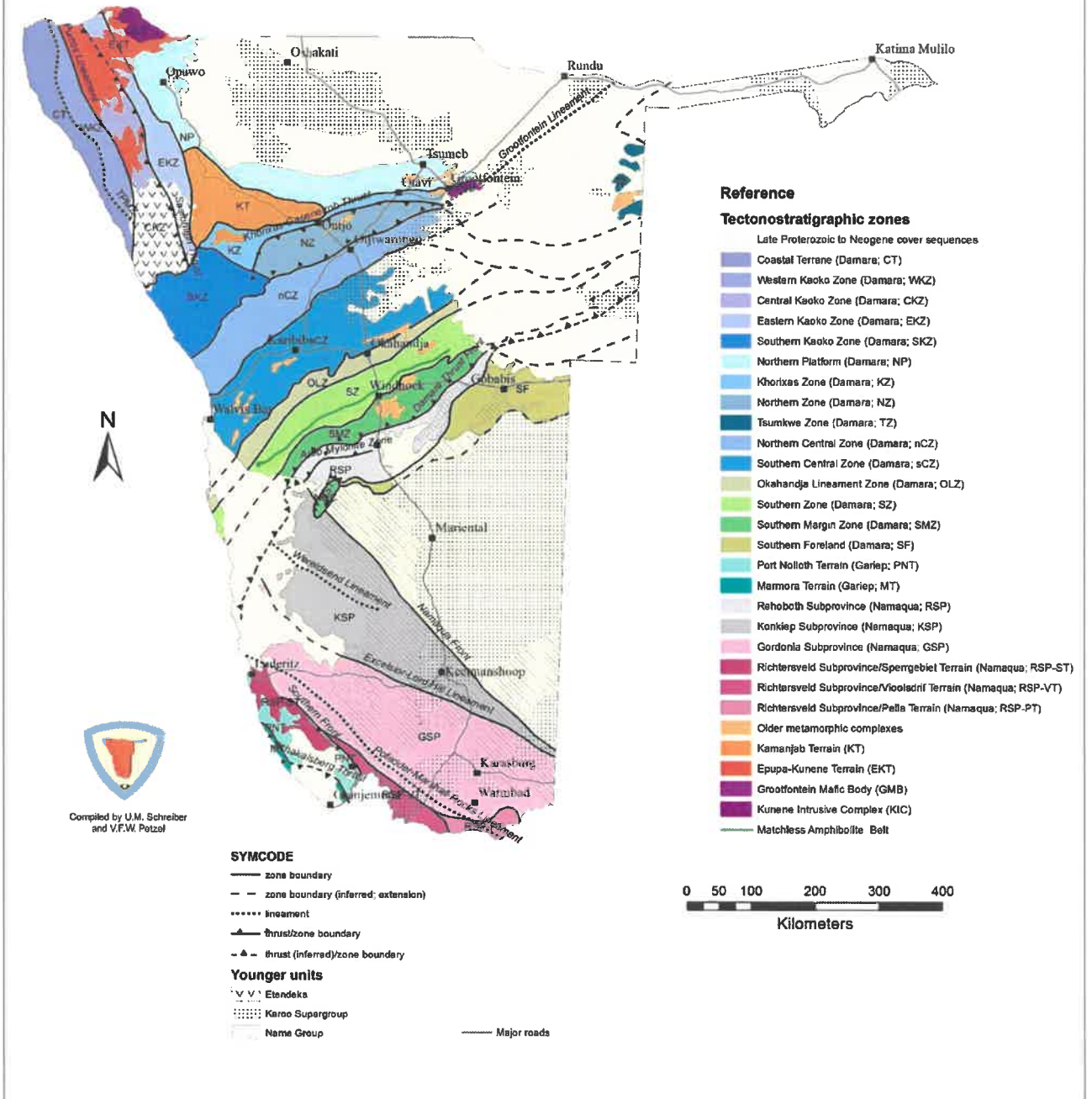


Figure 10: Regional stratigraphic and structural elements of Namibia (MME, 2022).

## 8.2 Geohydrology

There are no known underground water flow veins in the area. However, the mining claim is underlain by moderately productive yet variable aquifer. There is a wash on the southern part of the mining claim but there are no major water channels or riverbed in area.

## 9. DESCRIPTION OF THE ARCHAEOLOGICAL AND HERITAGE RESOURCES

### 9.1 Archaeology and Heritage

There are no declared heritage sites by the National Heritage Council of Namibia (NHC) in the area. This specialist report was conducted by a reputable archaeologist, Dr Elliot Mowa from ESM Cultural Heritage Consultants CC who was contracted to undertake the archaeological assessment and his investigation yielded that there are no heritage resources within the area (see Annexure E) the archaeological assessment report which had been submitted to the NHC. Although there are no heritage resources in the area, an accidental find procedure at the subject area may be required.

## 10. DESCRIPTION OF THE BIODIVERSITY

### 10.1 Flora Diversity

The establishment and mining of dimension stones on mining claims 72121 will take place on an intrusion situated approximately 8 Km South of Karibib, in Erongo Region. The proposed area falls within the semi-desert and savanna transition (escarpment) and is dominated by trees and shrubs. Some of the plant species will be cleared to allow the mining operations to prevail. The area proposed for this project is well vegetated and it is characterised by tree and shrubs species, predominated by *Catophractes alexandrii*, *Acacia hebeclada*, and *Croton grastissimus*, while species such as *Commiphora grandulosa*, *Moringa ovalifolia*, *Boscia albitrunca*, *Parksonia africana*, *Terminalia prunioides*, *Zizphus mucronata*, *Myrothamnus flambellifolius*, *Asparagus spp*, *Acacia spp*. and *Ximenia spp*. are conspicuous in the area. The most perceptible shrubs in the proposed area are *Monechma spp*. and *Blepharis spp*. Since the botanical assessment was carried out in December 2021, there was limited rainfall received in the area, hence the veld condition was not in a good state by then, this emanate

in few grass species recorded in the area. The grass species recorded includes; *Stipagrostis uniplumis* and *Eragrostis spp.*



Figure 11: The general area of the mining claim 72121 dominated by *Acacia spp.* (HEEC, 2021)

The overall plant diversity in the area is estimated to be 150 -299 species and plant endemism is projected to be 5-6 species. According to Craven and Vorster (2006) species diversity is higher in areas where there is transition in vegetation type. The average maximum production of plant biomass in the general area is considered to be “medium” and there is limited growth of vegetation in the area due to low rainfall (Mendelsohn *et al.* 2002).

Table 3: Plant species recorded and likely to occur in the vicinity of the Mining Claim 72121.

Species	Occurrences	Protection Status	Conservation Categories
<i>Acacia hebeclada</i>	Abundant	-	-
<i>Acacia erubescens</i>	Occasional	LC	-
<i>Acacia tortilis</i>	Occasional	LC	-

<i>Acacia senegal. var. rostrata</i>	Occasional	LC	-
<i>Acalypha segetalis</i>	Occasional	-	-
<i>Adenolobus garipensis</i>	Occasional	LC	-
<i>Aizoon schellenbergi</i>	Occasional	-	-
<b><i>Boscia albitrunca</i></b>	<b>Common</b>	<b>LC</b>	<b>F</b>
<i>Boscia foetida</i> subsp. <i>foetida</i>	Occasional	LC	-
<i>Barleria lancifolia</i> subsp. <i>lancifolia</i>	Common	-	-
<b><i>Blepharis grossa</i></b>	<b>Common</b>	<b>LC</b>	<b>NE</b>
<b><i>Monechma desertorum</i></b>	<b>Common</b>	<b>LC</b>	<b>E</b>
<i>Caesalpinia rubra</i>	Common	LC	-
<i>Catophractes alexandrii</i>	Abundant	LC	-
<i>Croton grastissimus</i>	Common	-	-
<b><i>Euphorbia chamaesycoide</i></b>	<b>Occasional</b>	<b>I</b>	<b>E</b>
<i>Euphorbia gariepina</i> subsp. <i>balsamea</i>	Occasional	LC	-
<i>Terminalia prunioides</i>	Common	-	-
<i>Zizphus mucronata</i>	Common	-	-
<i>Commiphora granulosa</i>	Common	LC	-
<b><i>Commiphora glaucescens</i></b>	<b>Occasional</b>	<b>LC</b>	<b>NE</b>
<i>Commiphora tenuipetiolata</i>	Occasional	LC	-
<b><i>Commiphora dinteri</i></b>	<b>Occasional</b>	<b>LC</b>	<b>NE</b>
<i>Commiphora pyracanthoides</i>	Occasional	LC	-
<i>Commiphora virgata</i>	Occasional	LC	-
<i>Camptorrhiza strumosa</i>	Occasional	-	-
<i>Cyphostemma congestum</i>	Occasional	LC	-
<b><i>Cyphostemma juttae</i></b>	<b>Occasional</b>	<b>LC</b>	<b>E</b>
<i>Grewia flava</i>	Common	-	-
<i>Grewia tenax</i>	Occasional	-	-
<i>Helinus spartioides</i>	Occasional	-	-

<i>Hibiscus sidiformis</i>	Common	-	-
<i>Hermannia tigrensis</i>	Common	-	-
<i>Heliotropium ciliatum</i>	Occasional	-	-
<i>Jamesbrittenia pallida</i>	Occasional	I	I
<i>Troglodytes lancifolia</i>	Occasional	I	I
<i>Myrothamnus flambellifolius</i>	Common	-	-
<i>Manuleopsis dinteri</i>	Occasional	LC	I
<i>Petalidium lanatum</i>	Common	LC	I
<i>Petalidium variabile</i> var. <i>spectabile</i>	Occasional	I	I
<i>Portulaca hereroensis</i>	Common	-	-
<i>Phyllanthus pentandrus</i>	Common	-	-
<i>Pomaria lactea</i>	Occasional	-	-
<i>Sterculia africana</i> var. <i>africana</i>	Occasional	LC	-
<i>Sarcocaulon marlothii</i>	Occasional	LC	I
<i>Erythrina decora</i>	Occasional	LC	I
<i>Heliotropium tubulosum</i>	Common	-	-
<i>Heliotropium giessii</i>	Occasional	-	-
<i>Cleome angustifolia</i> subsp. <i>diandra</i>	Occasional	-	-
<i>Dicoma capensis</i>	Occasional	-	-
<i>Maerua schinzii</i>	Occasional	LC	-
<i>Monechma cleomoides</i>	Common	LC	-
<i>Moringa ovalifolia</i>	Occasional	P	NE
<i>Cleome angustifolia</i> subsp. <i>diandra</i>	Common	-	-
<i>Cleome elegantissima</i>	Occasional	-	-
<i>Cleome semitetrandra</i>	Occasional	-	-
<i>Cleome suffruticosa</i>	Occasional	I	I
<i>Crotalaria heidmannii</i>	Occasional	-	-
<i>Crotalaria argyrea</i>	Occasional	-	-



<i>Crotalaria sphaerocarpa</i> subsp. <i>polycarpa</i>	Occasional	-	-
<i>Requienia sphaerosperma</i>	Occasional	-	-
<i>Ruellia marlothii</i>	Occasional	-	-
<i>Sesbania pachycarpa</i> subsp. <i>dinterana</i>	Occasional	LC	NE
<i>Sesbania sphaerosperma</i>	Occasional	-	-
<i>Sesamum capense</i>	Occasional	LC	-
<i>Sesamum marlothii</i>	Occasional	LC	E
<i>Tapinanthus oleifolius</i>	Occasional	LC	-
<i>Tephrosia dregeana</i> var. <i>dregeana</i>	Occasional	-	NE
<i>Tribulus zeyheri</i> subsp. <i>zeyheri</i>	Common	-	-
<i>Eragrostis porosa</i>	Common	LC	-
<i>Figurehuthia africana</i>	Common	LC	-
<i>Schmidtia kalahariensis</i>	Common	LC	-
<i>Stipagrostis uniplumis</i>	Abundant	LC	-
<i>Sarcocaulon marlothii</i>	Occasional	LC	E
<i>Sesamum rigidum</i> subsp. <i>rigidium</i>	Occasional	-	-
<i>Marcelliopsis denudata</i>	Common	LC	-
<i>Monsonia umbellata</i>	Common	-	NE
<i>Melinis repens</i>	Common	LC	-
<i>Ornithogalum rautanenii</i>	Occasional	LC	E
<i>Otoptera burchellii</i>	Occasional	-	-
<i>Oncocalyx welwitschii</i>	Occasional	LC	-
<i>Limeum dinteri</i>	Common	LC	-
<i>Lophiocarpus tenuissimus</i>	Occasional	LC	-
<i>Indigastrum parviflorum</i> subsp. <i>parviflorum</i> var. <i>parviflorum</i>	Occasional	-	-
<i>Indigofera heterotricha</i> subsp. <i>pechuelii</i>	Common	LC	-

<i>Indigofera auricoma</i>	Common	-	-
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KEY: LC – Least Concern; E- Endemic; NE- Near - Endemic; P-Protected, F – Forestry protected under Forestry Act (Act 12 of 2001).

The most considerable plant species are the emphasised species in the table above because they are either protected under the Forestry Act (Act 12 of 2001) or they are endemic and/or near-endemic. Therefore, appropriate consideration should be bequeathed to the highlighted species. Furthermore, endemic and near-endemic species occurring in the area should be avoided at all cost, because they have limited geographical distributions. Most of the plant species known and/or occurring in the area, even though they will not be directly affected by the mining project, their ecological purposes remain imperative to the arid environment, hence they should be conserved. Any removal of the protected plant species although it is considered to be least concern; require a permit from the Ministry of Environment, Forestry and Tourism (MEFT). The overall impacts on the plant species is considered to be minimal and localised. Furthermore, most of the plant species occurring in the area are widely distributed in the region and elsewhere in the country.



Figure 12: *Boscia albitrunca* (protected under the Forestry Act (Act 12 of 2001) recorded in area (HEEC, 2021).



Figure 13: *Myrothamnus flambellifolius* common on the rock-outcrop (HEEC, 2021).

## 10.2 Alien Plant Assessment

The alien plants were taken into consideration during the botanical assessment. It was found that there are no alien plants in the proposed area of this project.

## 10.3 Fauna Diversity

Even though there were no wild animals encountered during the site visit, it's assumed that there are some wild animals in the area. This was reflected by the scats of game animals recorded in the area. Possible game animals likely to occur in the area includes; Kudu, Ostriches, Warthogs and Springboks. The presences of wild-animals can results in illegal hunting, therefore, proper measures should be in place to discourage illegal hunting activities.



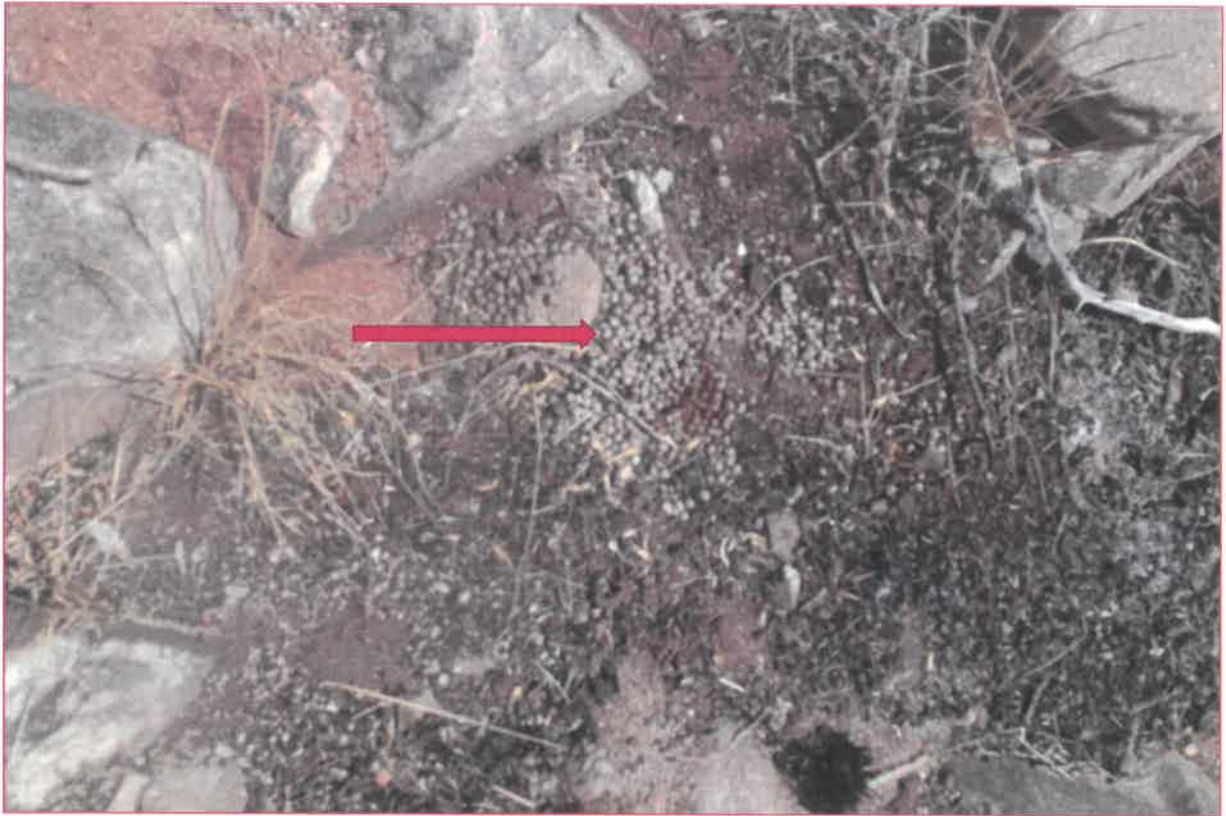


Figure 14: Scats encountered during the site visit signifying the presence of wild animals (HEEC, 2021).

#### 10.4 Reptiles Diversity

About 261 species of reptiles are known to occur in Namibia (Griffin 1998a). The general area of the mining claim has a relatively species diversity of reptiles of which some are endemic to Namibia. The reptile diversity and endemism in the area is estimated to be 41-50 species, respectively (Mendelsohn *et al.* 2002). The availability of different habitats such as crevices within the proposed area can potentially enhance the presence of reptiles. The following table represents the reptiles known and/or likely to occur in the general area.

Table 4: Reptiles known to occur in the vicinity of the proposed area

Scientific name	Common name	Occurrence (✓)	Conservation Status
<b>Snakes</b>			
<i>Rhinotyphlops schlegelii</i>	Schlegel's Beaked Blind Snake	✓	-
<i>Leptotyphlops labialis</i>	Damara Thread Snake	✓	-
<i>Python anchietae</i>	Anchieta's Dwarf Python	✓	-
<i>Python natalensis</i>	Southern African Python	✓	Vulnerable
<i>Atractaspis bibronii</i>	Southern or Bibron's Burrowing Asp	✓	-

<i>Xenocalanus bicolor</i>	Bicoloured Quill-snouted Snake	✓	-
<i>Lamprohis fuliginosus</i>	Brown House Snake	✓	-
<i>Lycophidion capense</i>	Cape Wolf Snake	✓	-
<i>Lycophidion namibianum</i>	Namibian Wolf Snake	✓	Endemic
<i>Mehelya vernayi</i>	Angola File Snake	✓	Near-Endemic
<i>Pseudaspis cana</i>	Mole Snake	✓	-
<i>Prosymna bivittata</i>	Two-striped Shovel-snout	✓	-
<i>Prosymna frontalis</i>	South-western Shovel-snout	✓	-
<i>Hemirhagerrhis viperinus</i>	Viperine Bark Snake	✓	Endemic
<i>Dipsina multimaculata</i>	Dwarf Beaked Snake	✓	-
<i>Psammophylax tritaeniatus</i>	Striped Skaapsteker	✓	-
<i>Psammophis trigrammus</i>	Western Sand Snake	✓	Endemic
<i>Psammophis notostictus</i>	Karoo sand Snake or Whip Snake	✓	-
<i>Psammophis leopardinus</i>	Leopard and Short-snouted Grass Snakes	✓	Endemic
<i>Philothamnus semivariegatus</i>	Spotted Bush snake	✓	-
<i>Dasypeltis scabra</i>	Common or Rhombic Egg Eater	✓	-
<i>Telescopus polystictus</i>	Eastern Tiger Snake	✓	Endemic
<i>Dispholidus typus</i>	Boomslang	✓	-
<i>Aspidelaps lubricus infuscatus</i>	Coral Snake	✓	Endemic
<i>Aspidelaps scutatus</i>	Shield-nose Snake	✓	-
<i>Elapsoidea sunderwallii</i>	Sundevall's Garter Snake	✓	Endemic
<i>Naja annulifera/anchietae</i>	Snouted Cobra	✓	-
<i>Naya nigricincta</i>	Black-necked Spitting Cobra	✓	Endemic
<i>Bitis arietans</i>	Puff Adder	✓	-
<i>Bitis caudalis</i>	Horned Adder	✓	-
<b>Tortoises (Geochelone)</b>			
<i>Geochelone parodalis</i>	Leopard Tortoise	✓	-
<i>Psammobates oculiferus</i>	Serrated or Kalahari Tortoise	✓	-
<b>Lizards</b>			
<i>Zygaspis quadradrifrons</i>	Kalahari Round-headed Worn Lizard	✓	-
<i>Monopeltis infuscata</i>	Dusky Spade-snouted Worm Lizard	✓	-
<i>Heliobolus lugubris</i>	Bushveld Lizards	✓	-
<i>Meroles suborbitalis</i>	Spotted Desert Lizard	✓	-
<i>Nucras intertexta</i>	Spotted Sandveld Lizard	✓	-
<i>Pedioplanis lineoocellata</i>	Spotted Sand Lizard	✓	-
<i>Pedioplanis namaquensis</i>	Namaqua Sand Lizard	✓	-
<i>Pedioplanis undulata</i>	Western Sand Lizard	✓	Endemic
<i>Cordylus subdorsellatus</i>	Dwarf Plated Lizard	✓	-
<i>Gerrhosaurus validus</i>	Giant Plated Lizard	✓	Endemic
<b>Skinks (Scincidae)</b>			
<i>Lygosoma sunderalli</i>	Sundevall's Writhing Skink	✓	-

<i>Trachylepis capensis</i>	Cape Skink	✓	-
<i>Mabuya hoeschi</i>	Hoesch's Skink	✓	Endemic
<i>Mabuya occidentalis</i>	Western Three-striped Skink	✓	-
<i>Mabuya spilogaster</i>	Kalahari Tree Skink	✓	-
<i>Mabuya striata wahlbergii</i>	Striped Skink	✓	-
<i>Mabuya sulcata</i>	Westen Rock Skink	✓	-
<i>Mabuya variegata</i>	Variegated Skink		
<b>Monitors (Varanidae)</b>			
<i>Varanus albigularis</i>	Rock or White-throated monitor	✓	-
<b>Agamas (Agamidae)</b>			
<i>Agama aculeata</i>	Ground Agama	✓	-
<i>Agama anchietae</i>	Anchietae Agama	✓	
<i>Agama planiceps</i>	Namibian Rock Agama	✓	Endemic
<b>Chameleons (Chamaeleonidae)</b>			
<i>Chamaeleo namaquensis</i>	Namaqua Chameleon	✓	-
<b>Geckos (Gekkonidae)</b>			
<i>Lygodactylus bradfieldi</i>	Bradfield's Dwarf Gecko	✓	Endemic
<i>Pachydactylus bicolor</i>	Velvety Thick-toed Gecko	✓	Endemic
<i>Pachydactylus capensis</i>	Cape Thick-toed Gecko	✓	Endemic
<i>Pachydactylus turneri</i>	Turner's Thick-toed Gecko	✓	-
<i>Pachydactylus punctatus</i>	Speckled Thick-toed Gecko	✓	-
<i>Pachydactylus rugosus rugosus</i>	Rough Thick-toed Gecko	✓	Endemic
<i>Pachydactylus weberi weneri</i>	Weber's Thick-toed Gecko	✓	Endemic
<i>Ptenopus garrulus maculatus</i>	Common Barking Gecko	✓	Endemic
<i>Rhoptropus boultoni</i>	Boulton's Namib Day Gecko	✓	Endemic

The proposed area has potential to harbour a higher diversity of reptiles which can be negatively affected by the project. The potential impact on the reptiles includes conceivable vibration caused by the movement of mining equipment's and during excavation process. Some of the species such as *Python natalensis*, known to occur in the general area of the mining claims is vulnerable, whereas 19 species known to occur in the area are endemic to Namibia and only one species is near-endemic. Other reptiles' species occurring in the area have no conservation concern.

## 10.5 Avian-Fauna Diversity

Birdlife is relatively high in the vicinity due to various micro habitats occurring in the area.

Table 5: Birds known and/or likely to occur in the vicinity of Karibib, Erongo Region.

Scientific name	Common name	Namibia Status
<i>Agapornis roseicollis</i>	Rosy-faced Lovebird	Endemic
<i>Apus bradfieldi</i>	Bradfield's Swift	-
<i>Cypsiurus parvus</i>	African Palm Swift	-
<i>Streptopelia senegalensis</i>	Laughing Dove	-
<i>Oena capensis</i>	Namaqua Dove	-
<i>Ardeotis kori</i>	Kori Bustard	Near Threaten
<i>Pterocles namaqua</i>	Namaqua Sandgrouse	-
<i>Falco rupicolus</i>	Rock Kestrel	-
<i>Falco chicquera</i>	Red-necked Falcon	-
<i>Corvus albus</i>	Pied Crow	-
<i>Hirundo albigularis</i>	White-throated Swallow	-
<i>Hirundo dimidiata</i>	Pearl-breasted Swallow	-
<i>Hirundo cucullata</i>	Greater Stiped Swallow	-
<i>Hirundo semirufa</i>	Red-breasted Swallow	-
<i>Pycnonotus nigricans</i>	African Red-eyed Bulbul	-
<i>Eremomela icteropygialis</i>	Yellow-bellied Eremomela	-
<i>Prinia flavicans</i>	Black-chested Prinia	-
<i>Mirafra passerina</i>	Monotonous Lark	-
<i>Mirafra africana</i>	Rufous-naped Lark	-
<i>Mirafra fasciolata</i>	Eastern Clapper Lark	-
<i>Mirafra sabota</i>	Sabota Lark	-
<i>Calendulauda africanoides</i>	Fawn-coloured Lark	-
<i>Ammomanopsis grayi</i>	Gray's Lark	Endemic
<i>Chersomanes albofasciata</i>	Spike-heeled Lark	-
<i>Certhilauda benguelensis</i>	Benguela Long-billed Lark	-
<i>Eremopterix leucotis</i>	Chestnut-backed Sparrowlark	-
<i>Eremopterix verticalis</i>	Grey-backed Sparrowlark	-
<i>Calandrella cinerea</i>	Red-capped Lark	-
<i>Alauda starki</i>	Stark's Lark	-
<i>Bradornis infuscatus</i>	Chat Flycatcher	-
<i>Namibornis herero</i>	Herero Chat	-
<i>Nectarinia fusca</i>	Dusky Sunbird	-

<i>Bualornis niger</i>	Red-billed Buffalo-Weaver	-
<i>Philetairus socius</i>	Sociable Weaver	-
<i>Ploceus rubiginosus</i>	Chestnut Weaver	-
<i>Quelea quelea</i>	Red-billed Quelea	-
<i>Estrilda astrild</i>	Common Waxbill	-
<i>Vidua paradisaea</i>	Long-tailed Paradise - Whydah	-
<i>Vidua regia</i>	Shaft-tailed Whydah	-
<i>Passer domesticus</i>	House Sparrow	-
<i>Passer motitensis</i>	Great Sparrow	-
<i>Passer melanurus</i>	Cape Sparrow	-
<i>Passer griseus</i>	Southern Grey-headed Sparrow	-
<i>Anthus similes</i>	Long-billed Pipit	-
<i>Serinus alario</i>	Black-headed Canary	-
<i>Crithagra atrogularis</i>	Black-throated Canary	-
<i>Serinus flaviventris</i>	Yellow Canary	-
<i>Serinus albogularis</i>	White-throated Canary	-
<i>Emberiza capensis</i>	Cape Bunting	-
<i>Emberiza flaviventris</i>	Golden-breasted Bunting	-

*Agapornis roseicollis* and *Ammomanopsis grayi* are some of endemic bird species known to occur in the area, while *Ardeotis kori* which is also likely to occur in the area is near-endemic. The reminders of the species recorded and/or known to occur in the area have no conservation concerns. Distinct impact on birds as a result of the proposed project will be experienced in the area. The impact may include; the destruction of nests and different habitats during active mining. The breeding and nesting sites are most likely vulnerable to destruction particularly during the clearing of vegetation in the area to allow mining operations to commence. This will negatively impact the breeding potentials of the birds in the area. It is presumed that issues such as noise will be emitted by mining equipment during operation and this have an impact on the daily activities of birds.

#### 10.6 Important Biodiversity Areas

Important areas which harbour biodiversity within the vicinity of the mining claim 72121 are as follows;

### 10.6.1 Vertebrate fauna

#### a) Rocky areas

Rocky areas – mountains, ridges and outcrops – are generally viewed as unique habitats with diverse biodiversity for vertebrate fauna not necessarily associated with the surrounding areas.

#### b) Drainage lines

Drainage lines, albeit ephemeral, are the lifelines in the drier parts of Namibia with a variety of vertebrate fauna attracted and/or associated with such features. Although not as important as perennial rivers, well vegetated drainage lines are still regarded as important habitat for a variety of vertebrate fauna in the area.

### 10.6.2 Flora

#### a) Rocky areas

Rocky areas – mountains, ridges and outcrops – are generally viewed as unique habitats with diverse biodiversity for flora not necessarily associated with the surrounding areas.

#### b) Washes

The bank of the washes is the habitat of many plant species particularly in the arid environment and plays a major role in maintaining the arid ecosystem.

#### c) Alluvial plain area

Sandy plain areas are associated with diverse species of plant, because vegetation can easily establish in harsh conditions and it serves as habitat for many species especially the annual herbs and grasses.

#### d) Protected species

Protected tree and shrub species are considered as the most imperative in the proposed mining area and any unnecessary removal of these species should be avoided.

#### e) Drainage lines

Ephemeral drainage lines are considered as important for flora as most of the larger protected, endemic and near-endemic species are often associated with such areas.

### 11. DESCRIPTION OF THE SOCIO-ECONOMIC

Karibib is situated west of Namibia within the Erongo region and it is the district capital for the Karibib electoral constituency. The town is situated near the Khan River and it is found halfway between Windhoek and Swakopmund along the B2 road. The town is prominent for its aragonite marble quarries and QKR Navachab Gold Mine. Erongo region has a population size of 150 809 while the town of Karibib is estimated to have a population size of approximately 5 132 inhabitants (Namibia 2011 Population and Housing Census Report). The main economic activities in the town is mining and its surrounding area is predominately agricultural farming with a huge focus on agricultural livestock farming. The town features two state schools namely Karibib Junior Secondary School and Ebenhaeser Primary School and one private school; Karibib Private School. The town also has a healthcare facilities; Karibib clinic and a private medical centre. The town is appropriately positioned in terms of logistics because it connected to the railway network and B2 road which passes through the town.

### 11. DESCRIPTION OF THE PUBLIC PARTICIPATION

#### 11.1 Public Participation Requirement

In term of Section 21 of the EIA Regulations a call for open consultation with all I&APs at well-defined phases of the EIA process is mandatory. This entails participatory consultation with members of the public by affording them with an opportunity to comment on the proposed project. The public was afforded a generous time to comment and make suggestions on the proposed mining project and a public participation meeting was scheduled for the 06<sup>th</sup> November 2021 at Karibib to obtain all the comments and suggestions from the public but there was no turn out. Please see **Table 6** below for activity undertaken as part of the public participation process. The public was given time to comment on the project from **22 October**

**2021 to 22 November 2021** (see **Annexure B**). However, no comment or suggestions were received from the public.

Table 6. Public Participation Activities

Activity	Remarks
<b>Placement of Advertisements in the Newspapers</b>	
<b>Confidante Newspaper</b>	<b>See Annexure B</b>
<b>Windhoek Observer</b>	<b>See Annexure B</b>

### 11.2 Environmental Assessment Phase Two

The second phase of the Public Participation Process (PPP) includes lodged of the Draft Environmental Scoping Report (DESR). An Executive Summary of the DESR was prepared and the public was given until the **22<sup>nd</sup> November 2021** to submit their comments, suggestion or opinions towards the proposed mining project.

## 12. ASSESSMENT METHODOLOGY

The purpose of this section is to outline the assessment methodology used in determining the significance, management, location and operational impacts of the mining of dimension stone targeting marble and where feasible the possible alternatives on the bio-physical and socio-economic environment.

Assessment of the forecasted significance of impact of the mining activities that is not operational at this stage by its nature, fundamentally unspecified environmental assessment is consequently an imprecise discipline. In order to deal with such uncertainty a standardised and internationally recognised methodology has been developed. Thus, this study exploits



such methodology to determine the significance of the likely ecological impacts of the proposed project of mining dimension stones as defined in **Table 7** below;

Table 7: Standardised and internationally recognised methodology determine to the significance of the likely ecological impacts.

CRITERIA	CATEGORY
<b>Impact</b>	<b>Description of the potential impact</b>
<b>Nature</b>  Describe type of effect	<b>Positive:</b> The activity will have a social / economical / environmental benefit.  <b>Neutral:</b> The activity will have a no effect.  <b>Negative:</b> The activity will have a social / economical / environmental harmful effect.
<b>Extent</b>  Describe the scale of the impact	<b>Site Specific:</b> Expanding only as far as the activity itself (onsite).  <b>Small:</b> Restricted to the site's immediate environment within 1km of the site (limited).  <b>Medium:</b> Within 5 km of the site (local).  <b>Large:</b> Beyond 5 km of the site (regional).
<b>Duration</b>  Predicts the lifetime of the impact	<b>Temporary:</b> <1 year (not included in the construction).  <b>Short-term:</b> 1-5 years.  <b>Medium:</b> 5-15 years.  <b>Long-term:</b> > 15 years (Impact will stop after the exploration or running life of the of the project, either due to natural course or by human interferences).  <b>Permanent:</b> Impact will be where mitigation or moderation by natural course or by human interference will not occur in a particular time period that the impact can be considered temporary.

<p><b>Intensity</b></p> <p>Describe the magnitude (scale/size) of the impact</p>	<p><b>Zero:</b> Social and/ or natural function and/ or process remain unaltered.</p> <p><b>Very low:</b> Affect the environment in such a way that natural and/ or social functions/ processes are not affected.</p> <p><b>Low:</b> Natural and/ or social functions/ processes are slightly altered.</p> <p><b>Medium:</b> Natural and/ or social functions/ processes are notably altered in a modified way.</p> <p><b>High:</b> Natural and/ or social functions/ processes are severely altered and may temporarily or permanently cease.</p>
<p><b>Probability of occurrence</b></p> <p>Describe the probability of the impact <u>actually</u> occurring</p>	<p><b>Improbable:</b> Not at all likely.</p> <p><b>Probable:</b> Distinctive possibility.</p> <p><b>Highly probable:</b> Most likely to happen</p> <p><b>Definite:</b> Impact will occur regardless of any prevention measures.</p>
<p><b>Degree of Confidence in predictions</b></p> <p>State the degrees of confidence in predictions based on availability of information and specialist knowledge.</p>	<p><b>Unsure/Low:</b> Little confidence regarding information available (&lt;40%).</p> <p><b>Probable/Med:</b> Moderate confidence regarding available (40% - 80%).</p> <p><b>Definite/High:</b> Great confidence regarding available (&gt;80%).</p>
<p><b>Significance Rating</b></p> <p>The impact on each component is determined by a combination of the above criteria.</p>	<p><b>Neutral:</b> A potential concern which was found to have no impact when evaluated.</p> <p><b>Very low:</b> Impacts will be site specific and temporary with no mitigation necessary.</p> <p><b>Low:</b> The impact will have a minor influence on the proposed project and/ or environment. These impacts require some though to adjustment of the project design where achievable or alternative mitigation measures.</p>

	<p><b>Medium:</b> Impacts will be experienced in the local and surrounding areas for the life span of the project and may result in long term changes. The impact can be reduced or improved by amendment in the project design or implementation of effective mitigation measures.</p> <p><b>High:</b> Impacts have high magnitude and will be experienced regionally for at least the life span of the project or will be irreversible. The impacts could have the no -go proposition on portions of the project in spite of any mitigation measures that could be implemented.</p>
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It is important to note that the magnitude of the impact must be correlated to the relevant standards (threshold value specified and source reference). The magnitude of impact is based on specialist knowledge of the specific field.

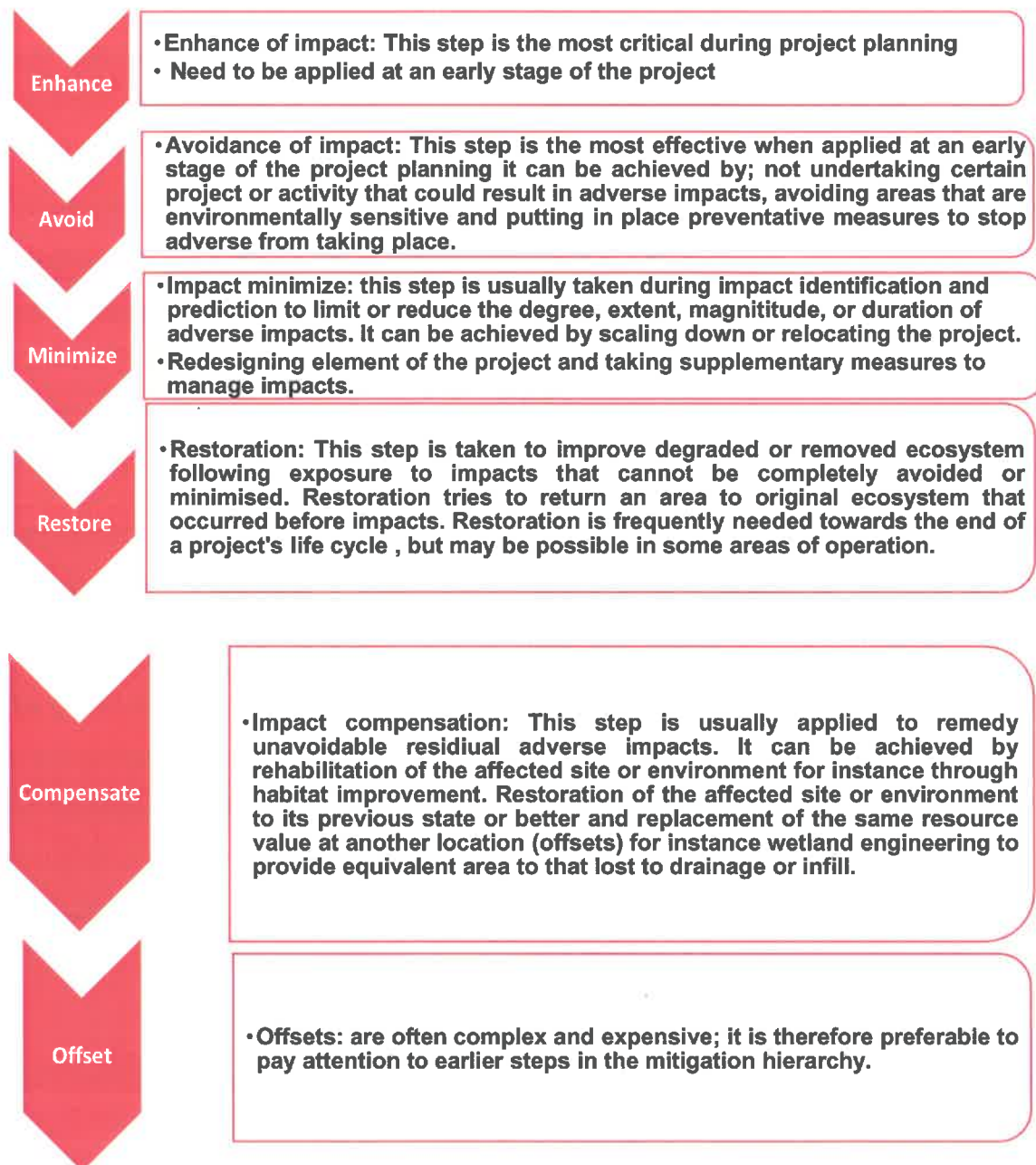
For each impact, the EXTENT (spatial scale), MAGNITUDE (size or degree scale) and DURATION (time scale) are pronounced. These criteria are used to ascertain significance of the impact, commencing with the event where there is no mitigation required and then with the most effective mitigation measures in place. The explanation as to which mitigation measure can be useful lies with the proponent; **Ms. Laina Silvanus** and acceptance and ultimately approval with the relevant environmental authority.

The SIGNIFICANCE of the impact is derived by taking into account the temporal and spatial scales and magnitude. Such significance is also well-versed by the nature of the impact and the receiving environment.

### 13. MITIGATION MEASURES

There is a mitigation hierarchy of action that can be exploited to respond to any proposed project or activity. The mitigation hierarchy includes; avoidance, minimization, restoration and compensation (below). It is probable and required to prioritise positive benefits

associated with the proposed development or activity towards the environment and if negative impacts transpire the hierarchy designates the essential actions.



#### 14. ASSESSMENT OF POTENTIAL IMPACTS AND MITIGATION

This section defines the bio-physical and socio-economic environments, which could possibly occur due to the proposed mining activities for dimension stone described in Section 3. This includes potential long-term impact allied with the project such as mining activities and short terms impacts such as construction of the guard house, site office and new road to access the

targeted mining sites without any difficulty. The assessment of potential impacts associated with the project will aid in informing and provide a clear synopsis to the MEFT: DEA pertaining to the management of the environmental aspects which have been identified during the assessment process. The MEFT: DEA's decision on the environmental acceptance of the mining activity for dimension stones within the mining 72121 and setting of conditions (should the mining of dimension stone authorised) will be informed by this section in addition to the information provided in this environmental assessment report.

The baseline and likely impacts that could take place as a consequence of the mining of dimension stones on mining claim 72121 are defined and appraised with potential mitigation measures recommended. Finally, recommendations have been made on the potential cumulative impacts which may emanate from the proposed mining activities.

#### **14.1 Impacts during the Mining Phase**

Considerable land alteration will take place during the mining of dimension stones at the targeted mining claim. There is a need to prepare for waste rock heaps, dispatching areas for the white marble blocks and onsite logistical support.

##### **14.1.1 Surface and underground water Impacts**

The potential risks of polluting water resources such as the washes and underground aquifer may be probable. The excavation equipment that will be used to remove the overburden during mining may accidentally have leakages and possibly contaminate the washes and ultimately polluting the underground water. To circumvent the contamination of underground water heavy mining equipment should be prudently checked for any leakage and if refuelling is taking place on site it must either be a tank mounted on stilts to prevent any leakage.

##### **14.1.2 Noise Impacts**

The mining equipment and machinery that will be used for excavation and cutting marble blocks will emit noise of more than the recommended 85 dB exposure to employees for an extended period. This will be inevitable particularly during working hours. It is consequently recommended that employees are to be provided with ear-muffs and will be given enough

breaks in order to prevent any impact on their hearing ability. The noise will also be experienced during the testing of mining equipment and block cutting machinery to ensure that they are operating optimally and this may result in the generation of short-term noise.

#### 14.1.3 Dust and Emission Impacts

The air quality in the area is considered to be fairly good, however, dust may result during the operational phases due to mining and cutting of marble blocks into the correct dimension that will be transported to the port or the processing facility. In addition, dust and emissions associated with mining may be generated by the movement of vehicles and trucks that will transport the marble blocks. Hence, the entire mining operation needs to adhere and be guided by the Public Health Act of 2015 and the Atmospheric Pollution Prevention Ordinance (No. 11 of 1976).

#### 14.1.4 Impacts on biodiversity

The mining claim 72121 is situated within the vicinity where there is active mining taking place mainly marble mining. There are mining activities taking place approximately 1 Km north-west of the proposed area. There will be impact on the biodiversity because vegetation will be removed during stripping to access the marble. This will result in habitat disturbances and fragmentation and influence the available micro-habitat in the area. However, since this project is a small-scale project and it will mainly cover an area of 10 hectares the impact will be localised and limited to the targeted area only.

#### 14.1.5 Visual and Sense of Place Impacts

The quarry and heaps of marble offcuts or rocks will be created and produced during mining. This will make the landscape of the area visually unpleasant and compromise the aesthetic values of the area. There will be potential alteration to the visual characteristic of the site due to the fact, that the site will now have a different landscape due to the presence of the quarry and heap of rocks. The extent of this impacts will mainly rely on the aesthetic values attached to the preliminary aesthetic eminence of the area by the interested and affected parties.

#### **14.1.6 Archaeological and Heritage Impacts**

As per the specialist report (**Annexure E**) there are no heritage resources in the area. However, an accidental find procedure may be required.

#### **14.1.7 Social Impacts**

The unemployment rates particularly among the youth is a serious concern within the town of Karibib and the entire country at large. The high number of unemployment has been prompted by numerous external factors which impact the country economy negatively. The proposed mining project will employ a considerable number of people from the town on a permanent and casual basis and further create cumulative jobs. The proposed mining project will also contribute immensely to the national economy through royalties, taxes and foreign currency exchanges.

#### **14.1.8 Traffic Impacts**

The traffic volume is not expected to increase significantly during the operation of the project. However, there will be few flatbed trucks to that will transport marble blocks from the site to Karibib and to Walvis Bay for export purposes. There will be light vehicles and a bus that will be used to transport the employees to and from the site. However, if mining is done as per schedule and vehicles stick to the usage of delineated right of ways, the significance of the impact is expected to be of very low. Soil erosion and compaction impacts may also occur due to trucks and vehicle that will be using the roads for transportation purposes.

#### **14.1.9 Existing Service Infrastructure Impacts**

The project will source power from the existing overhead powerline provided by the national grid via the regional distributor ErongoRED and there will be substantial revenue that will be generated by ErongoRED through electricity levies.

Water will be needed for domestic uses, cleaning of equipment and to some extent to cool down the diamond cutters being used in cutting blocks. Due to the fact that the project will take place in the arid environment, water will need to be used sparingly and water



conservation approaches such recycling should be highly considered. Water will be sourced from the borehole yet to be drilled with another alternative of connecting to the existing NamWater pipeline that supplies water to the town of Karibib and Otjimbingwe settlement. A pipeline will be laid from the borehole or the existing NamWater pipeline and feed water storage tank which will be erected at the site. A water abstraction permit for the borehole will be applied for from the Ministry of Agriculture, Water and Land Reform (MAWLR).

#### **14.1.10 Waste Management Service Impacts**

The proposed mining project will result in further people at the site and such people will require ablution facilities and provision of solid waste management services. The proponent will supply adequate temporary sanitary facilities which will be maintained and kept in a hygienic condition. The proponent will be responsible for emptying the ablution facility on weekly basis and dispose of at the nearest sewerage disposal ponds in Karibib. Tentatively a local company with a reputable track record will be contracted to handle the waste management services. All domestic waste materials that will be generated during the proposed mining activities will be disposed of at Karibib landfill. Assorted wheelie bins and a skip container will be provided at the site.

#### **14.1.11 Storage and Utilisation of Hazardous Substance**

Hazardous substances are considered by the Hazardous Substance Ordinance (No: 14 of 1974) as those substance which may cause injury or ill-health to or death of a human being due to their toxic, corrosive, irritant, strongly sensitizing or flammable nature or the generation of pressure thereby in certain circumstances. It entails manufactures, sales, use, disposal, and dumping as well as import and export. During mining the use, storage and disposal of such hazardous substance such as crack powder is highly possible and can potentially cause some negative impacts on the environment if such substance spill or enter the surface water bodies especially during the rainy season, therefore such substance should be kept safe in a lockable storage container.

#### 14.1.12 Health, Safety and Security Impacts

Projects of this nature may potentially entice more people to the town to search for available temporary workforce. Experience with similar projects in the past, it has been proven that migrant workers may have a chance to intermingle with the local community and a significant risk is created for the development of social conditions and sexual behaviours which attributes to the spread of HIV and AIDS. The MEFT thus, initiated a programme aimed at mainstreaming HIV and gender issues into the environmental impact assessment. MEFT have in recent years had developed a policy on HIV/AIDS. This policy was developed in collaboration with international agency such as USAID, GTZ, and Germany Development Fund, providing a non-discriminatory work-environment and for workplace programs managed by the Ministry committee.

It's against this background that workers should be provided with Personal Protective Equipment's (PPEs). A fully stocked first kit with unexpired medicines must always be on site. Due to the prevailing Covid19 pandemic which is still prevailing elsewhere around the globe employees should adhere to all Covid19 regulations and protocols and should be read together with the condition compiled and outlined in the EMP accompanying this report. The employees should further respond to the call by the government to go for voluntary Covid19 vaccination. This will assist in reducing the risk of getting infection and lower the spread the virus.

#### 15. AN ENVIRONMENTAL MANAGEMNT PLAN

An Environmental Management Plan (EMP) is contained to this report as **Annexure C**. The aims of the EMP is to provide guidance in order to measure and achieve compliance with the safeguard of the environment and mitigation requirements of mining dimension stone decommissioning phase of the project to reduce and avoid the likely negative impacts.

#### 16. SUMMARY OF POTENTIAL IMPACTS

A synopsis of the significance of the latent impacts from the proposed activity is detailed in the environmental impact assessment matrix (see **Table 8** below). The summary of the mitigation measures for the impacts have been suggested. Even though some changes in the

extent of the possible impact may occur as a result of the proposed alternatives such transformation were not measured to be significant for any possible impacts, consequently the matrix table below is pertinent to the proposed project.

Table 8: Environmental impact assessment matrix for dimension stone mining project at mining claim 72121

Description of potential impact	Project alternative	No mitigation / mitigation	Extent	Magnitude	Duration	SIGNIFICANCE	Probability	Confidence	Reversibility	Cumulative impact
<b>IMPACTS DURING EXPLORATION OF PRECIOUS STONES</b>										
<b>Surface and Ground Water Impacts</b>	Mining of dimension stones	No mitigation	Local	Medium-Low	Short term	Medium	Probable	Certain	Reversible	Medium-Low (-ve)
		Mitigation	Local	Low	Short term	Medium-Low	Probable	Certain	Reversible	Low (-ve)
	No go	No mitigation	Local	Neutral	Short term	Neutral	Probable	Certain	Reversible	Neutral
		Mitigation	Local	Neutral	Medium term	Neutral	Probable	Certain	Reversible	Neutral
<b>Noise Impacts</b>	Mining of dimension stones	No mitigation	Local	Medium	Short term	Medium	Probable	Certain	Reversible	Medium (-ve)
		Mitigation	Local	Medium - Low	Medium term	Medium-Low	Probable	Certain	Reversible	Low (-ve)
	No go	No mitigation	Local	Neutral	Short term	Neutral	Probable	Certain	Reversible	Neutral
		Mitigation	Local	Neutral	Short term	Neutral	Probable	Certain	Reversible	Neutral
<b>Dust and Emission Impacts</b>	Mining of dimension stones	No mitigation	Local	Low	long term	Medium	Probable	Certain	Reversible	Low (-ve)
		Mitigation	Local	Very low	Medium term	Medium-Low	Probable	Certain	Reversible	Very low (-ve)
	No go	No mitigation	Local	Neutral	Short term	Neutral	Probable	Certain	Reversible	Neutral
		Mitigation	Local	Neutral	Short term	Neutral	Probable	Certain	Reversible	Neutral

Description of potential impact	Project alternative	No mitigation / mitigation	Extent	Magnitude	Duration	SIGNIFICANCE	Probability	Confidence	Reversibility	Cumulative impact
<b>Impacts on biodiversity</b>		Mitigation	Local	Neutral	Short term	Neutral	Probable	Certain	Reversible	Neutral
	Mining of dimension stones	No mitigation	Local	Medium	Short term	Medium	Probable	Certain	Reversible	Medium (-ve)
		Mitigation	Local	Low	Short term	Low	Probable	Certain	Reversible	Medium - Low (-ve)
		No mitigation	Local	Neutral	Short term	Neutral	Probable	Certain	Reversible	Neutral
	No go	Mitigation	Local	Neutral	Short term	Neutral	Probable	Certain	Reversible	Neutral
<b>Visual and Sense of Place Impacts</b>	Mining of dimension stones	No mitigation	Local	Medium	Short term	Medium	Probable	Certain	Reversible	Medium – low (-ve)
		Mitigation	Local	Low	Short term	Medium-Low	Probable	Certain	Reversible	Low (-ve)
		No mitigation	Local	Neutral	Short term	Neutral	Probable	Certain	Reversible	Neutral
		Mitigation	Local	Neutral	Short term	Neutral	Probable	Certain	Reversible	Neutral
<b>Archaeological and Heritage Impacts</b>	Mining of dimension stones	No mitigation	Local	Very low	Short term	Low	Probable	Certain	Irreversible	Very low(-ve)
		Mitigation	Local	Negligible	Short term	Very Low	Probable	Certain	Irreversible	Negligible (-ve)
		No mitigation	Local	Neutral	Short term	Neutral	Probable	Certain	Reversible	Neutral
		Mitigation	Local	Neutral	Short term	Neutral	Probable	Certain	Reversible	Neutral

Description of potential impact	Project alternative	No mitigation / mitigation	Extent	Magnitude	Duration	SIGNIFICANCE	Probability	Confidence	Reversibility	Cumulative impact
<b>Social Impacts</b>	Mining of dimension stones	No mitigation	Local	Medium-Low	Short term	High++	Probable	Certain	Reversible	Medium-Low (-ve)
		Mitigation	Local	Low	Short term	High++	Probable	Certain	Reversible	Low (-ve)
	No go	No mitigation	Local	Neutral	Short term	Neutral	Probable	Certain	Reversible	Neutral
		Mitigation	Local	Neutral	Short term	Neutral	Probable	Certain	Reversible	Neutral
<b>Traffic Impacts</b>	Mining of dimension stones	No mitigation	Local	Low	Short term	Medium-Low	Probable	Certain	Reversible	Low (-ve)
		Mitigation	Local	Very low	Short term	Low	Probable	Certain	Reversible	Very low
	No go	No mitigation	Local	Neutral	Short term	Neutral	Probable	Certain	Reversible	Neutral
		Mitigation	Local	Neutral	Short term	Neutral	Probable	Certain	Reversible	Neutral
<b>Existing Service Infrastructure Impacts</b>	Mining of dimension stones	No mitigation	Local	Medium	Short term	Medium - Low	Probable	Certain	Reversible	Medium - Low (-ve)
		Mitigation	Local	Low	Short term	Low	Probable	Certain	Reversible	Very low (-ve)
	No go	No mitigation	Local	Neutral	Short term	Neutral	Probable	Certain	Reversible	Neutral
		Mitigation	Local	Neutral	Short term	Neutral	Probable	Certain	Reversible	Neutral
		No mitigation	Local	Medium	Short term	Medium-Low	Probable	Certain	Reversible	Medium - Low (-ve)

Description of potential impact	Project alternative	No mitigation / mitigation	Extent	Magnitude	Duration	SIGNIFICANCE	Probability	Confidence	Reversibility	Cumulative impact	
<b>Waste Management Service Impacts</b>	Mining of dimension stones	Mitigation	Local	Low	Short term	Low	Probable	Certain	Reversible	Low (-ve)	
	No go	No mitigation	Local	Neutral	Short term	Neutral	Probable	Certain	Reversible	Neutral	
		Mitigation	Local	Neutral	Short term	Neutral	Neutral	Probable	Certain	Reversible	Neutral
		Mitigation	Local	Neutral	Medium term	Neutral	Neutral	Probable	Certain	Reversible	Neutral
<b>Storage and Utilisation of Hazardous Substances</b>	Mining of dimension stones	No mitigation	Local	Low	Short term	Medium	Probable	Certain	Reversible	Low (-ve)	
	No go	Mitigation	Local	Very low	Short term	Low	Probable	Certain	Reversible	Very low (-ve)	
		No mitigation	Local	Neutral	Short term	Neutral	Neutral	Probable	Certain	Reversible	Neutral
		Mitigation	Local	Neutral	Short term	Neutral	Neutral	Probable	Certain	Reversible	Neutral
<b>Health, Safety and Security Impacts</b>	stones	No mitigation	Local	Neutral	Short term	Medium	Probable	Certain	Reversible	Medium-Low	
		Mitigation	Local	Neutral	Short term	Low	Probable	Certain	Reversible	Low	
	No go	No mitigation	Local	Neutral	Short term	Neutral	Neutral	Probable	Certain	Reversible	Neutral
		Mitigation	Local	Neutral	Short term	Neutral	Neutral	Probable	Certain	Reversible	Neutral



## 17. CONCLUSION AND RECOMMENDATIONS

The essence of this segment is to provide a brief summary and complete the assessment report with reference to **Table 8** provided above and suggest the appropriate measures which are ecologically acceptable. Most of the negative impacts from the associated with the proposed development for dimension stone mining are considered to have **medium to low** significance, however, some of the negative impacts associated with the project have medium significance which can be mitigated to trivially **low** provided that the proponent optimises the correctly suggested mitigation measures. If the mitigation measures in outlined in **Section 13** together with the EMP contained in this report in **Annexure C** the significance of the negative impacts associated with the proposed dimension stone mining project on mining claim 72121 will be condensed to **low**.

The area has a diversity of species which include both flora and fauna. However, the impacts on biodiversity can be rated low-medium and localized to the mining site only. A number of species recorded in the area are considered to be least concern due to their wide distribution in the area and elsewhere in the country. The main concern with the fauna and flora in the area is the protected and endemic species. The protected species occurring within the project areas should be avoided at all costs. Therefore, the proponent should adopt a policy of compensating for the loss species and at the same time contributes immensely to the reduction of climate change. The proposed mining project, if properly implemented will have minimal negative impacts on biodiversity. The presence of animal scatts may reveal the likelihood of antelope in the vicinity and this may potential entice some of the employees to engage in illicit activities such as illegal hunting/poaching. It is therefore suggested that all unlawful activities such illegal hunting or any suspected activity related to poaching should be reported to the police in Karibib or anti-poaching unit within the line ministry. Rigid punishment should also be imposed to the suspect or culprit in order to discourage the employees from engaging in such activity.

The **high** significance of the impacts as a result of the planned dimension stone mining activities is high in the social impact which is **positive**. The positive significance in the social impact has been attributed to potential direct and indirect jobs linked to the project and the

prospect of the project to contribute to the national economy through royalties, taxes and foreign currency earnings.

Based on the information provided, the confidence in the environmental assessment undertaken is considered to be acceptable and suffices for the decision making predominantly in terms of the environmental impacts associated with the proposed project. Therefore, this project must be approved and issued with an Environmental Clearance Certificate (ECC) by MEFT: DEA. Due to unremitting changes on the environment, regular monitoring is highly recommended and the proponent must appoint an Healthy Earth Environmental Consultants CC to carry out environmental biannual audits for submission to the office of the Environmental Commissioner for the validity period of the Environmental Clearance Certificate.

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