



**Environmental Scoping Assessment (ESA) Report for the Proposed Establishment of a Small to Medium Scale Quarry for Dimension Stone Production on Mining Claim 72499, 72500, 72501, 72502 and 72503 in the Karibib Constituency, Erongo Region, Namibia**

<b>MEFT APPLICATION NO.:</b>	<b>APP-003007</b>
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<b>DATE SUBMITTED:</b>	January 2022
<b>DOCUMENT VERSION:</b>	<b>FINAL</b>

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**Environmental Scoping Assessment: Quarrying of Dimension Stone on Mining Claims 72499, 72500, 72501, 72502 and 72503**

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**Environmental Scoping Assessment: Quarrying of Dimension Stone on Mining Claims 72499, 72500, 72501, 72502 and 72503**

<b>List of Abbreviations</b>	
<b>ADT</b>	Articulated Dump Truck
<b>DEFA</b>	Department of Environmental and Forestry Affairs
<b>DWA</b>	Department of Water Affairs
<b>EA</b>	Environmental Assessment
<b>ECC</b>	Environmental Clearance Certificate
<b>EIA</b>	Environmental Impact Assessment
<b>ESA</b>	Environmental Scoping Assessment
<b>EMP</b>	Environmental Management Plan
<b>EMA</b>	Environmental Management Act
<b>EPL</b>	Exploration Prospecting License
<b>I&amp;APs</b>	Interested and Affected Parties
<b>IUCN</b>	International Union for Conservation of Nature
<b>MAWLR</b>	Ministry of Agriculture, Water & Land Reform
<b>MEFT</b>	Ministry of Environment, Forestry and Tourism
<b>MLIEC</b>	Ministry of Labour, Industrial Relations and Employment Creation
<b>MME</b>	Ministry of Mines and Energy
<b>MWT</b>	Ministry of Works and Transport
<b>NHC</b>	National Heritage Council
<b>OGGC</b>	OMAVI Geotechnical and Geo-environmental Consultants cc
<b>TA</b>	Traditional Authority

## **1 INTRODUCTION**

Herman Honeb (herein referred to as "The Proponent"), intends to apply for an Environmental Clearance Certificate (ECC) to commercially establish and operate a small to medium scale dimension stone marble quarry on Mining Claims 72499, 72500, 72501, 72502 and 72503. The mining claims are situated 14 km Northwest of Karibib, Erongo Region, Namibia on Farm Onguati No. 52 and No. 53. The Mining claims measure approximately 84 Ha in size and are accessible via numerous dirt roads, which come off the B2 main road.

Namibia's dimension stone industry is renowned for its finest quality marble which is exported to varying parts of Europe, America and Asia. The dimension stone industry in Namibia has been in existence since the early years of this century, however, its potential has not been fully developed.

To support the application for an ECC, an Environmental Scoping Assessment (ESA) study must be conducted, and an environmental assessment study report must be submitted to the competent authority. This ESA report provides relevant baseline information of the project area, anticipated impacts to the social and receiving environment and appropriate mitigation measures necessary for incorporation in the project implementation, as well as an Environmental Management Plan (EMP).

This report together with the EMP will support the Proponent's application for environmental clearance certificate from the Ministry of Environment, Forestry and Tourism (MEFT) and the Ministry of Mines and Energy (MME) to permit the planned quarrying activities.

### **1.1 Information Sources**

The following information sources were drawn upon and made available:

- Environmental Management Act 7 of 2007.
- Environmental Impact Assessment Regulation, 2007 (No. 30 of 2011).
- Minerals Prospecting and Mining Act (Act No. 33, 1992).
- 1:250 000 Geological Map of Namibia.
- Google Earth images.

## 1.2 Project Location

Mining Claims 72499, 72500, 72501, 72502 and 72503 are located about 14 km northwest of Karibib on Farm Onguati No. 52 and 53, and covers an total area of 84 Ha (refer to Figure 1-1). The coordinates of the mining claims are provided in Table 1-1.

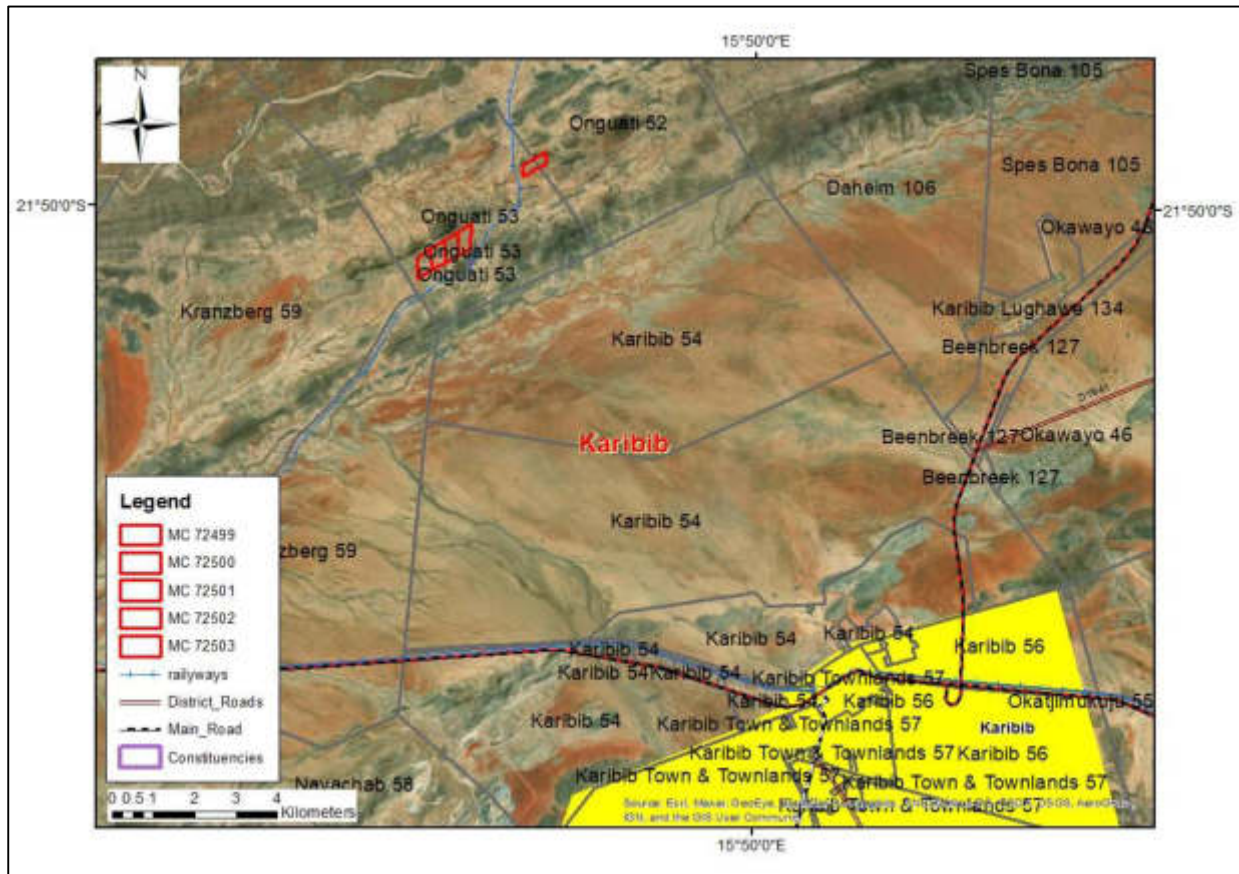


Figure 1-1: Location of mining claims 72499, 72500, 72501, 72502 and 72503 in relation to the Karibib area.



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**Table 1-1: Approximate GPS corner coordinates for MC 72499, 72500, 72501, 72502 and 72503.**

<p><b>Approximate Site coordinates:</b></p>	<b>Mining claim 72499:</b>		
	MC	Latitude	Longitude
	72499	-21.843864°	15.763772°
		-21.838992°	15.763575°
		-21.837500°	15.766389°
		-21.842500°	15.766389°
	<b>Mining claim 72500:</b>		
	72500	-21.845528°	15.760586°
		-21.840578°	15.760561°
		-21.838992°	15.763575°
		-21.843864°	15.763772°
	<b>Mining claim 72501:</b>		
	72501	-21.821389°	15.784167°
		-21.823889°	15.784167°
		-21.826667°	15.778611°
		-21.824167°	15.778611°
	<b>Mining claim 72502:</b>		
	72502	-21.849075°	15.754231°
		-21.844483°	15.754208°
		-21.842619°	15.757219°
-21.847203°		15.757561°	
<b>Mining claim 72503:</b>			
72503	-21.847203°	15.757561°	
	-21.842619°	15.757219°	
	-21.840578°	15.760561°	
	-21.845528°	15.760586°	

### **1.3 The Proponent**

H. Honeb is the sole holder of the five (5) mining claims concerned, namely: 72499, 72500, 72501, 72502 and 72503. The license holder holds several other prospecting and mining rights and is adequately experienced in dimension stone quarrying.

### **1.4 The Environmental Consultant**

OMAVI Geotechnical & Geo-environmental Consultants is a specialist environmental consulting entity, established in 2018. OMAVI has experience and a holistic know-how in biophysical and socio-economic impact assessments, Waste Management Planning, Environmental Management and Rehabilitation Planning, Public Participation Coordination, as well as the management and co-ordination of all aspects of the Environmental Impact Assessment (EIA) process.

OMAVI has been active in the above fields, and in so doing has made a positive contribution towards environmental management and sustainable development in Namibia. OMAVI'S belief is that a balance between socio-economic development and environmental protection can be achieved through strategic planning, as well as transparent engagements between all parties involved in a project.

The Environmental Scoping Assessment (ESA) was conducted by a suitably qualified and experienced environmental practitioner, whose detailed curriculum Vitae (CV's) is provided in **Appendix B** of this document.

### **1.5 Project Justification**

A major application of dimension stone is within the construction sector, which accounts for over 80% of consumption, with the funerary monumental industry accounting for 15%, and various special applications for around 5% (Ashimole and Motloug, 2008). The need for dimension stone production and the proposed quarrying project is substantiated on the following merits:

- The project will have substantial benefits on the socio-economic upliftment of the Karibib Constituency through creation of employment opportunities and possible livelihood improvement, surface lease fees to the landowners and the Karibib Constituency.
- Support to local skills transfer and training of local Namibians in dimension stones quarrying and processing technical know-how.
- The project will contribute positively at a national level through payment of mining levies to the Ministry of Mines and Energy, as well as through payment of export levies when semi-processed or processed blocks of dimension stone are exported overseas

- Possible increase in revenue for the Karibib Constituency through the procurement of local services such as cleaning services, security services, sourcing of food products (meat products) and diesel from nearby towns/ settlements, etc.

## **1.6 The Need for the Environmental Scoping Assessment**

In terms of the Environmental Management Act, 2007 and the Environmental Impact Assessment Regulation, 2007 (No. 30 of 2011) gazetted under the Environmental Management Act, 2007, the proposed activities entail mining of mineral resources; which are listed activities that may not be undertaken without an Environmental Clearance Certificate (ECC). The provision of such listed activities is as follows:

### **MINING AND QUARRYING ACTIVITIES**

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

To support the application for an ECC, an Environmental Scoping Assessment (ESA) study must be conducted, and an environmental assessment study report must be submitted to the competent authority. For this project, the competent authority is the Ministry of Mines and Energy (MME). The proof of submission and a date stamped copy of the ECC application (by MME) has been uploaded onto the Ministry of Environment, Forestry and Tourism (MEFT)'s EIA Portal for project registration purposes. This ESA report together with the draft Environmental Management Plans (EMPs) will be submitted to the Department of Environmental Affairs and Forestry (DEAF) for consideration of the ECC issuance. Upon the commencement of the project, the draft EMP will be kept on site for implementation by the project proponent.

## **1.7 The Environmental Assessment Process**

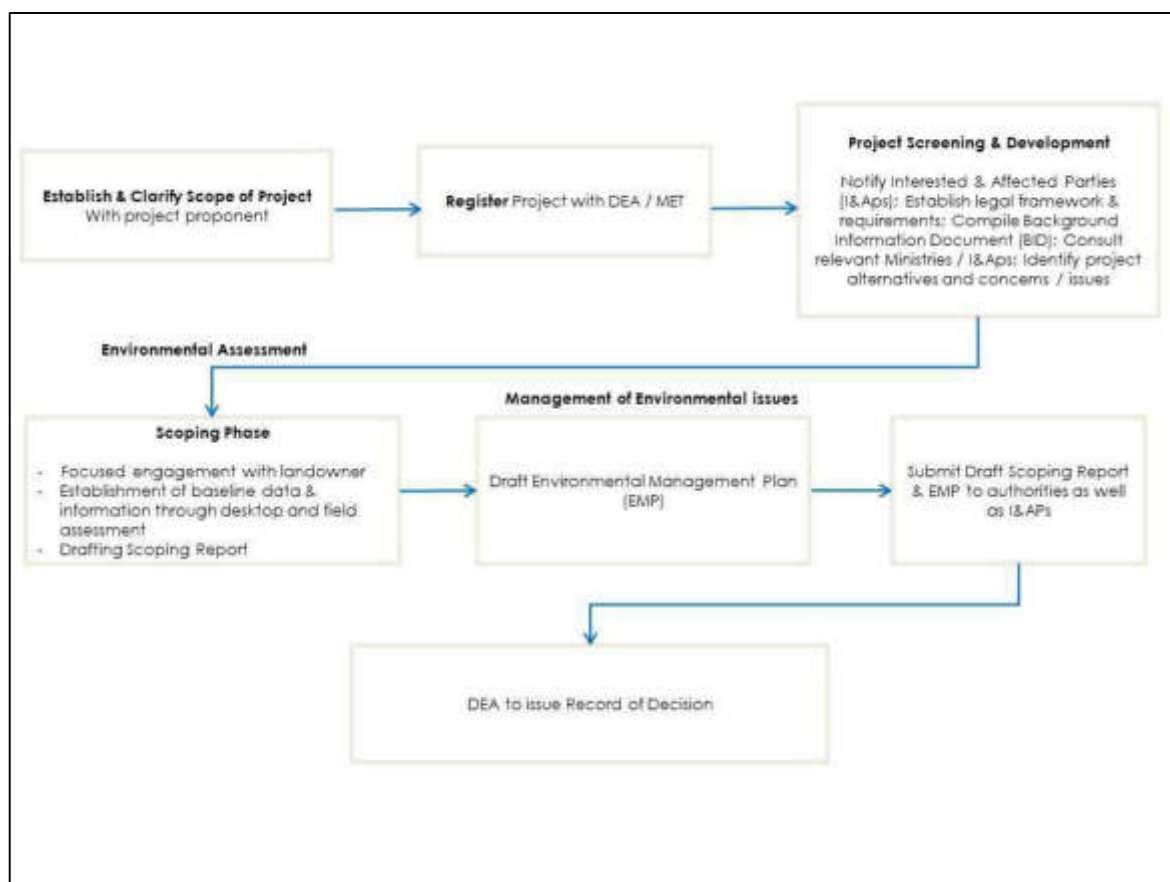
The assessment process followed in undertaking this environmental assessment can be summarized as follows:

1. Project screening process – This entailed preparation of the Background Information Document (BID) and ECC Application and their submission to the Office of the Mining Commissioner in the Ministry of Mines and Energy (MME) (Competent Authorities) for notification and recommendations. The date stamped copy of the ECC Application from the MME was uploaded to the MEFT's EIA online portal for registration (**Application number 003007**) and notification of the commencement of the EA process.

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2. Invitation to stakeholders (I&APs) and the public to participate in the environmental assessment process issued through local newspaper advertisements, telephonic calls to the land owner, as well as via direct emails communications to key stakeholders and authoritative institutions such as Line Ministries, Regional and Local Governments.
3. Compilation of the ESA report (consolidating all findings from I&APs and focused engagement from the farmer owner) and Environmental Management Plan (EMP),  
**Appendix H.**
4. Submission of the ESA report (and EMP including all appendices to the report) to the Department of Environmental Affairs and Forestry in fulfilment of all the requirements of the Environmental Impact Assessment (EIA) Regulations No. 30 of 2012 and the Environmental Management Act, (EMA), 2007, (Act No. 7 of 2007) for application of the Environmental Clearance Certificate (ECC) for the proposed project.
5. Notification of all registered Interested and Affected Parties (I&APs) confirming that the ESA and EMP have been submitted to the MEFT's EIA online portal for public review.

The overall environmental assessment process followed is illustrated schematically in Figure 1-2.



**Figure 1-2: Schematic process flow of the Environmental Assessment Process Followed.**

## **2 PROJECT DESCRIPTION, ACTIVITIES AND PROCESSES**

The proponent intends to undertake small to medium scale quarrying and ongoing exploration for the production of marble dimension stone on mining claims 72499, 72500, 72501, 72502 and 72503 in the Karibib Constituency, Erongo Region, Namibia. The quarrying of dimension stone will predominantly consist of extraction of 5m<sup>3</sup> size marble blocks, sorting, storage and transportation to processing plants in Karibib.

The proposed project broadly entails three (3) stages, namely: mine preconstruction phase, mine construction and operations, and the decommissioning phase. The project application and uses of dimension stone, activities, desired properties, mine preconstruction and mine operations are stated hereunder.

### **2.1 Desired Properties, Application and Uses**

Dimension stone is generally defined as natural rock quarried for the purpose of cutting and (or) shaping to a specific size (Barton, 1968; Dolley, 2004). Marble is one of the oldest and most durable building materials. It is used for its beauty in architecture and sculpture, tabletops, kitchen tops, floor and wall tiles. The main qualities of dimension stone that determine its popularity and use include its color, patterns and texture, its durability and the consistency of supply. Different markets demand different quality characteristics.

### **2.2 Mine Preconstruction**

Mine preconstruction involves the initial planning stages of a quarrying project. This consists of the Proponent working closely with its design and construction team to develop detailed drawings, schedules, budgets and manpower projections before the actual quarrying starts. A thorough and deliberate pre-construction process is extremely important to ensure the quarrying project goes as planned and all potential needs are identified and addressed. The following activities are to be conducted as part of the preconstruction stage for the proposed quarry workings and ongoing exploration on mining claims 72499, 72500, 72501, 72502 and 72503:

- Clearing, stripping, grubbing and topsoil removal of the selected quarry areas, office spaces, waste rock stockpiles and supporting infrastructure.
- Geotechnical Stability Assessment to inform Open pit design.
- Engineering design of support infrastructure including water, storage areas, workshops and containerized administration blocks.
- Creation of access roads and widening of existing tracks.
- Human resources planning, development of community and social programs and environmental and social management programs.

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- Topsoil Management.
- Development of temporary construction camp,
- Installation of containerized offices, workshops, storage facilities.

All solid waste shall be disposed of the the Karibib Muncial waste facility. All liquid waste shall be managed through a French Drain System or chemical toilets approved by the Department of Water Affairs in the Ministry of Agriculture, Water and Land Reform (MAWLR).

### **2.3 Mine Construction and Operations**

#### **2.3.1 Mine Design and Construction**

Open pit quarrying will be adopted using diesel powered equipment, load and haul operation. As part of the quarrying operations the following equipment and resources will be required:

##### **Vehicles, Machinery and Equipment**

- Front end loaders, articulated dump trucks (ADTs), excavators, bull dozers and operators for:
  - creation of access roads,
  - surface clearing at quarrying sites,
  - hauling and loading, and
  - stockpiling of topsoil
- Rotary core/ RC Drill rig for ongoing exploration. The following support resources:
  - drill operators
  - drill assistants
  - 4x4 bakkie
- Blade and diamond saw cutting equipment and operators to cut out blocks.
- Water bowsers and an operator/ driver.
- Diesel engine powered generators to supply power.
- Air compressors to be used for air blowing.
- Two-way radios for communication between various operators.
- ADT's and Long distance haulage trucks for onsite and offsite transportation of waste rock and blocks.

##### **Water Resources**

- Water for quarrying operations will be sourced from boreholes in the area and will then be carted to active quarry sites. The anticipated water requirement during full quarry operations will be approximately 10 000 L per week.

**Power sources**

- Power supply for air compressors and cutting equipment will be by means of a high-capacity mobile diesel engine powered generator.

**Health and Safety**

- All workers will be provided with personal protective equipment (PPE) in the form of ear plugs, safety glasses, hard hats, safety boots, safety harness (where necessary), goggles and protective gloves. First aid kits will be made readily available on site to attend to any minor injuries. Major injuries shall be attended to at the Karibib clinic.

**Fire management**

- Provision of fire extinguishers will be made available in vehicles and at work sites.

**2.3.2 Mine Operations (Extracting the Marble)**

In the quarrying of dimension stone it is necessary to split or cut the stone into successively smaller pieces until the final desired block size is achieved, and saleable blocks are produced. The size of individual block produced depends on a number of factors, including the homogeneity of the rock itself, the ability of the quarry operator to handle the rough stone, and the required end use for the stone once it has been shaped. The mining methods utilised in the extraction of dimension stone range from relatively simple and low technology methods to some quite technologically advanced methods.

Sawing with diamond wire is the main method of primary and secondary cutting as well as block squaring in marble quarries today. This method is the preferred method to be adopted by The Proponent for the proposed small to medium scale marble quarry project.

**2.3.3 Stone Handling and Transportation**

Depending on the pit design and quarry geometry, handling of blocks is either by means of gantry cranes or front-end loaders. For the proposed project and scale of operation front end loaders will be utilized. These machines are commonly fitted with a quick coupler attachment, which allows for fast interchanging of the bucket with a fork or boom attachment, while the bucket is generally used for handling waste material and for cleaning up the quarry. The fork attachment is used for handling of blocks, and the boom for pulling block down from the face.

Hydraulic 30-ton class excavators will be used during the removal of overburden, as well as within the quarry itself to pull or push split blocks off the face. Transport of waste material to the waste dump will be accomplished by means of front-end loaders and articulated dump trucks (ADTs).

## **2.4 Rehabilitation**

It is stated in the National Policy on the Prospecting and Mining of mineral resources that organizations involved in prospecting and mining should take responsibility for performing adequate rehabilitation and restoration, during and upon closure of their activities. Reclamation and rehabilitation shall be implemented progressively during quarrying and ongoing exploration by means of the following measures:

- Cleaning up all sites and spreading topsoil at every exploration drill site, post drilling and quarrying.
- Backfilling all quarry sites where results are not positive.
- Sealing all boreholes where continuous quarrying is unlikely to happen.

## **2.5 Project Alternatives**

This section evaluates a host of alternatives that were reflected upon and captures the alternatives considered of to be the most practical. The viability of the selected alternatives is founded on the alternatives that were considered to be less detrimental to the environment, while maximizing potential benefits from the proposed activities.

The EIA Regulations (2012) defines the term "alternatives", in relation to a proposed activity, as different means of generally meeting the same purpose and requirements of a proposed activity, which may include alternatives to –

- (a) the property on which or location where it is proposed to undertake the activity.
- (b) the type of activity to be undertaken.
- (c) the design or layout of the activity.
- (d) the technology to be used in carrying out the activity; and
- (e) the operational aspects of the activity

The concept of considering alternatives thus ensures that the environmental assessment process is not reduced to the defence of a single project proposal that is to the desire of the proponent, and therefore, provides an opportunity for unbiased considerations of options, to determine the most optimal course of action from an environmental perspective.

Alternatives weighed and considered for this project are with regards to:

- Project location.
- Quarrying (mining) methods and technologies
- Supporting infrastructure during different stages of the project.
- The "No-action" alternative.



### **2.5.1 Limitations to the Project Alternatives**

In evaluating alternatives to each of the above-listed aspects, the following factors were considered in line with best practice procedures as outlined under DEAT (2004):

- **Resource locality** – where alternative locations could be considered for the same resource and such alternatives are justified by economics.
- **Technological limitations** - where high costs or the environmental unfriendliness of a technology may prevent it from being considered as a viable option, or the lack of technological development may preclude certain options from consideration
- **Environmental limitations** – where environmental factors such as climate, geology, hydrology, hydrogeology, potential impacts on the local ecology may prevent or favour consideration for an option.
- **Socio-economic limitations** – where socio-economic factors such as distance to market, availability of infrastructure, current and future land-use, cultural significance, presence of archaeological sites and impacts on livelihoods may hinder or enhance consideration for an option.

### **2.5.2 Project Location Alternative**

The location of the mining claims for the proposed dimension stone quarry is principally dictated by the spatial distribution of the rock type(s) of interest, which in turn is primarily determined by geological and geotechnical conditions. The Proponent chose to quarry the marble host rock found on mining claims 72499, 72500, 72501, 72502 and 72503 because of its massive spatial distribution, volume of the deposit, thickness of productive units, durability, and the proximity of the site to Karibib and the B2 main road.

During the rock mass targeting or geological siting process, an alternative location with similar rock deposits could not be found. Furthermore, the proponent is restricted to only perform quarrying activities on mining claims which they legally own through permission granted by the custodian Ministry of Mines and Energy and the directly affected land owner(s). In reflection of the above, an alternative location for the proposed activities could not be found.

### **2.5.3 Alternatives to quarrying (mining) methods and technologies**

The choice of mining method in a dimension stone quarry is largely affected by the geology of the deposit. Boulder formations will largely be quarried by means of splitting methods, especially by means of the use of blasting gunpowder, while solid formations will require the at least some application of one or more cutting methods in order to loosen large benches from the solid formation. In general, marbles mining will be by non-explosive splitting and cutting techniques,

This is considered to be the most conventional, efficient, economic and most practical methods used globally in the dimension stone prospecting industry. As a result, no other alternatives were considered in regards to quarrying methods and technologies to be used.

#### **2.5.4 Alternatives to support services infrastructure**

Alternatives were considered for the different support infrastructures planned to ensure that the most feasible options were selected. Due consideration was given to technological, economic, and environmental limitations in selecting the most feasible option. The alternatives considered in this regard are presented in Table 2-1 below.

**Table 2-1: Service infrastructure alternatives considered for this project.**

<b>Category of Infrastructure</b>	<b>Alternatives Considered</b>	<b>Justification for selected option</b>
Access roads	Create new access roads from the B2 Main Road	-To minimize project costs, environmental damage and project risk it was decided that prospecting activities should utilize existing exploration access roads as much as possible and only create smaller additional access roads to access sites where no new roads exist.
	Use existing farm access and dirt roads from the B2 main road as much as possible	
Ablution facilities	Install fixed facility with septic tank	-To avoid long-term visual impacts & minimize rehabilitation costs portable container facilities were selected as the best option
	Portable facilities with septic tank	
Water supply	Use existing boreholes if any available on site	-During quarrying, existing boreholes will be rehabilitated and used in conjunction with water that will be carted from Karibib.
	Drill new borehole	
	Bring water from Karibib	

Category of Infrastructure	Alternatives Considered	Justification for selected option
Diesel storage	Install fixed above-ground diesel tank on site	-During the quarrying use of trailer mounted diesel tank as that is more economical than purchasing a large storage tank.
	Trailer mounted diesel tank with a containment bund	
Power supply	Diesel generator	- Most practical and economically option during quarrying is to use diesel generator.
	Install photovoltaic solar panels	
	Connect to nearest 3-Phase grid or substation	
Container site office, storage and worker accommodation	Erect dismantlable prefabricated container	Most preferred option, due to: a) Ease of installation, (b) Low costs, and (c) Ease of dismantling and moving.
	Erect Permanent buildings	Lease favoured and unlikely viable due to high CAPEX and long terms visual impact.
	Offices off-site	Offices need to be at production site to enable ease of responding to quarrying demands.
Extraction of blocks or not	Cut out sample blocks for further beneficiation to fully assess rock mass quality and demonstrate product to potential markets	This is the most favorable option as Clients always want to first see the final product before purchasing.
	No cutting of sample blocks. Rely solely on rock core to evaluate rock mass quality for dimension stone production viability	Option not favoured as it does not allow the Proponent to demonstrate final product to prospective markets.

### 2.5.5 No-Go Alternative

The 'no-go' alternative is sometimes referred to as the 'no-action' alternative (Glasson et al., 1999) and at other times the 'zero-alternative'. It assumes that the activity does not go ahead, implying a continuation of the current situation or the status quo.

Should the proposal to conduct small to medium scale quarry on the mining claims be discontinued, none of the potential impacts (positive and negative) identified would occur. In a situation where negative environmental impacts have high significance, the 'no-go' alternative takes on particular importance, which in not the case in this particular study.

The 'no-go' alternative provides the means to compare the impacts of project alternatives with the scenario of a project not going ahead. In evaluating the 'no-go' alternative it is important to take into account the implications of foregoing the benefits of the proposed project (World Bank, 1995). The key losses that may never be realized if the proposed project does not go ahead include:

- Lost opportunity for foreign direct investment.
- Employment for about 10 to 15 people will not be realized.
- Loss of potential income to local and national government through land lease fees, license lease fees and various tax structures.
- Socio-economic benefits such as skills acquisition to local community members, borehole upgrades, etc would be not realized.
- No business boost for local transport sub-contractors

Considering the above losses, the "no-action/go" alternative was not considered a good option for socio-economic development. Hence, this option was dismissed.

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

### **3 APPLICABLE LEGAL FRAMEWORK, POLICIES AND GUIDELINES**

#### **3.1 National Legislation**

The Minerals Prospecting and Mining Act (Act No. 33) of 1992 is the principal act governing mining of mineral resources in the Republic of Namibia. From an environmental management standpoint, this Act stipulates the undertaking of an Environmental Impact Assessment (EIA) during mining / quarrying operations, in conjunction with the development of implementable environmental management and monitoring plans where any pollution is anticipated. The Ministry of Mines and Energy is the custodian agency for the administration of the Mining Act.

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Contrariwise, MEFT is the overseeing custodian agency for the administration and enforcement of the Environmental Management Act, with the enforcement of the Environmental Impact Assessment Regulations of 2012 entrusted with the Department of Environmental Affairs and Forestry within MEFT. This Act stipulates that possession of an Environmental Clearance Certificate is a pre-requisite for issuing any license or permit by any authority for any activities related to listed activities under the Environmental Impact Assessment Regulations of 2012. The act further sets out under Section 58 and in the Government Notice No. 29 of 2012 a detailed framework and schedule for conducting Environmental Impact Assessments for mining companies or any entity that plans to undertake quarrying or mining at any scale.

The applicable Namibian legislation, policies and guidelines to the proposed development are stated in this chapter (**Error! Reference source not found.** and Table 3-2). The review of the relevant legislation serves to inform the project Proponent, Interested and Affected Parties (I&Aps) and the decision makers at the DEA of the requirements and expectations, as laid out in terms of these instruments, to be fulfilled for them to carry out the proposed activities.

Table 3-1: Applicable legislation, policies and guidelines to the proposed quarrying and activities.

LEGISLATION CONSIDERED	CUSTODIAN ORGAN OF STATE	IMPLICATION ON THIS PROJECT
<b>Relevant Acts</b>		
<p>The Constitution of the Republic of Namibia (1990)</p>	<p>Government of the Republic of Namibia</p>	<p>The Namibian government has adopted several policies that promote sustainable development. Most of these originate in clauses of the Constitution of the Republic of Namibia. In Article 95 (i), the State undertakes to actively promote and maintain the welfare of the people by adopting policies aimed at the utilization of natural resources on a sustainable basis for the benefit of all Namibians. Articles 91(c) and 95(l) are also of relevance to sound environmental management practice. In summary, these refer to:</p> <ul style="list-style-type: none"> <li>• Guarding against over-utilization of biological natural resources.</li> <li>• Pursuing sustainable natural resource use</li> <li>• Limiting over-exploitation of non-renewable resources.</li> <li>• Maintaining biological diversity</li> <li>• Ensuring ecosystem functionality.</li> <li>• Protecting Namibia's sense of place and character.</li> </ul> <p>Through implementation of the mitigation measures set out in this Environmental Scoping Report (ESA) and the accompanying Environmental Management Plan (EMP), the owner of the ECC shall be advocating for sound environmental management as set out in the Constitution.</p>
<p>Environmental Management Act No. 7 of 2007 and its 2012 EIA Regulations Government Notice 28-30</p>	<p>MEFT: DEA</p>	<p>Part 2 of the Act sets out 12 principles of environmental management, summarized as follows:</p> <ul style="list-style-type: none"> <li>• Community involvement in natural resources management must be promoted and facilitated.</li> <li>• The participation of all I&amp;APs must be promoted and decisions must consider the interest, needs and values of I&amp;APs.</li> </ul>

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LEGISLATION CONSIDERED	CUSTODIAN ORGAN OF STATE	IMPLICATION ON THIS PROJECT
<b>Relevant Acts</b>		
<p>(Government Gazette 4878</p>		<ul style="list-style-type: none"> <li>• Equitable access to environmental resources must be promoted and the functional integrity of ecological systems must be considered to ensure sustainable systems.</li> <li>• Assessments must be undertaken for activities which may have significant effects on the environment or the use of natural resources.</li> <li>• Sustainable development must be promoted in all aspects relating to the environment.</li> <li>• Namibia's cultural and natural heritage including, its biological diversity, must be protected and respected.</li> <li>• The option that provides the most benefit or causes the least damage to the environment, at a cost acceptable to society must be adopted to reduce the generation of waste and polluting substances at source.</li> <li>• The reduction, re-use and recycling of waste must be promoted.</li> <li>• A person who causes damage to the environment must pay the costs associated with rehabilitation of damage to the environment and to human health caused by the pollution.</li> <li>• Where there is sufficient evidence which establishes that there are threats of serious or irreversible damage to the environment, lack of full scientific certainty may not be used as a reason for postponing cost-effective measures to prevent environmental degradation; and</li> <li>• Damage to the environment must be prevented and activities which cause such damage must be reduced, limited, or controlled.</li> </ul> <p>The proponent has the responsibility to ensure that the proposed activity, as well as the ESA process, conforms to the principles of this Act. In developing the ESA process, OMAVI has been cognizant of these requirements, and accordingly the ESA process was undertaken in</p>

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LEGISLATION CONSIDERED	CUSTODIAN ORGAN OF STATE	IMPLICATION ON THIS PROJECT
<b>Relevant Acts</b>		
		conformance with this Act and the EIA Regulations (2012). Several listed activities in terms of the Act, are triggered by the proposed activities.
Mineral Prospecting & Mining Act (Act no. 33 of 1992)	MME	<p>Sections 50, 52, 54, 57 and 130 of this Act sets out provisions for environmental management for activities arising from mineral exploration and mining, as follows:</p> <ul style="list-style-type: none"> <li>• That the mineral license holder is required to prepare an ESA or EIA and an EMP and make revision of such EMP from time to time</li> <li>• That the mining license holder is liable to pay compensation where in course of the mining operations; any damage is done to the surface of land, water source, cultivation, building or any other structure</li> <li>• That the holder of a mineral license cannot exercise any rights on a private land until the holder has entered into an agreement with the owner regarding payment of compensation</li> <li>• That the license holder shall take all necessary remedial steps to reasonable satisfaction of the minister for any damage caused by any mining operations on closure of mines.</li> <li>• That the minister is empowered to direct the mineral license holder for carrying out good reconnaissance, mining and prospecting practices for the protection of the environment, and conservation of natural resources payment of liability fees and royalty and remedial steps for any damages and</li> <li>• That the mineral or mining license holder shall report pollution in course of any mining or prospecting operations and make remedial measures for such.</li> </ul> <p>The abovementioned provisions are all relevant to the proposed activities and were thus considered in the ESA process and drafting of the EMP.</p>



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LEGISLATION CONSIDERED	CUSTODIAN ORGAN OF STATE	IMPLICATION ON THIS PROJECT
<b>Relevant Acts</b>		
Charter for Sustainable and Broad-Based Economic and Social Transformation in the Namibian Mining Sector 2014 – 2020 (The Namibian Mining charter)	The Namibian Chamber of Mines of Namibia	This charter aims to facilitate meaningful participation of historically deprived Namibians in the mining industry. It has effectively been developed as an instrument to effect transformation and sets specific targets for mineral license holders active in Namibia
The Minerals Policy of Namibia, 2003	Ministry of Mines and Energy	This policy sets out guiding principles and directions while communicating the values of the Namibian people in pursuit of the development of the mining sector.
Pollution Control & Waste Management Bill	MEFT and others	<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 repeals the Atmospheric Pollution Prevention Ordinance (11 of 1976). In terms of water pollution, it will be illegal to discharge of, or dispose of, pollutants into any watercourse without a Water Pollution License (apart from certain accepted discharges). Similarly, an Air Quality License will be required for any pollution discharged to air above a certain threshold. The Bill also provides for noise, dust or odor control that may be considered a nuisance. The Bill advocates for duty of care with respect to waste management affecting humans and the environment and calls for a waste management license for any activity relating to waste or hazardous waste management.</p> <p>The proposed marble quarrying will not entail the discharge of large quantities of gaseous pollutants into air but might result in increased noise levels and dust generation during mine operations.</p>

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LEGISLATION CONSIDERED	CUSTODIAN ORGAN OF STATE	IMPLICATION ON THIS PROJECT
<b>Relevant Acts</b>		
Water Act (No. 54 of 1956)	MAWLR: Department of Water Affairs : <b>Mr Franciskus Witbooi (Deputy Director: Water Policy and Water Law Administration. Tel: (061) 208 7158</b>	<p>Makes provision for several functions pertaining to the management, control and use of water resources, water supply and the protection of water resources.</p> <p><b>The Proponent should prevent any potential pollution of groundwater and surface water. Water should be used in a sustainable way. A water abstraction permit will be required from the Department of Water Affairs prior to drilling any water borehole and abstracting water from a borehole.</b></p>
Water Resources Management Act (Act No. 11 of 2013)		<p>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. Should the proponent wish to undertake activities involving water abstraction and/or effluent discharge, the relevant permits will have to be applied for. Of utmost importance are Sections of the Water Resources Management Act No. 11 of 2013 that pertain to the protection of groundwater and aquifers. These are Section 63 (Wastage of groundwater), 64 (License to dispose of groundwater abstracted from mine or underground work), 66 (Protection of aquifers) and 68 (Pollution control).</p> <p><b>Provision for a Groundwater abstraction and use permit for commercial use to be applied for and obtained from the Department of Water Affairs (DWA): Directorate of Water Resources Management. When issued, the permit should be renewed as required (as stipulated in therein).</b></p> <p>Furthermore, any watercourse on/or near the site and associated ecosystems should be protected in alignment with the principles above.</p>
Nature Conservation Ordinance (Act No. of 1996)	MEFT	<p>The Nature Conservation Amendment of 1996 (section 73.1) provides for an economically based system of sustainable management and utilization of game in communal areas; to delete references to representative authorities; and to provide for matters incidental hereto.</p>

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LEGISLATION CONSIDERED	CUSTODIAN ORGAN OF STATE	IMPLICATION ON THIS PROJECT
<b>Relevant Acts</b>		
		<p>Although the proposed site for development is not located within protected areas, there is indigenous vegetation on the sites and therefore this Ordinance is relevant. A permit is required should any species onsite, with a protected or endangered status, be damaged or removed. If required, the proponent will apply for such a permit prior to commencing with the proposed activities.</p>
<p>Local Authorities Act No 23 of 1992</p>	<p><b>Contact Person Mr. Lesley Grand Goreseb (The CEO)</b>  <b>Tel: 064 550 016</b>  <i>With all official correspondence addressed to the office of the Chief Executive Officer (P.O . Box 19 Karibib)</i></p>	<p>The Karibib Town Council is the responsible Local Authority of the affected project site area, and therefore they should be consulted in compliance with the Act and its Regulations, as relevant to the proposed project.</p>
<p>Forestry Act (Act No. 12 of 2001)</p>	<p><b>MEFT: Permits are required for the removal of protected plants species.</b>  <b>The Proponent should contact the Environmental Health Department at the Karibib Town Council who will then contact the Forestry Office (Ministry of Agriculture, Water and Land Reform).</b>  <b>Mr Joseph Hailwa (Director: Forestry)</b>  <b>Tel: (061) 208 7663</b>  <b>Or</b>   <b>Mr. R. Ashiyana</b>  <b>Tel: 064 550 016 or 081 398 7777</b></p>	<p>The Act provides for the management and use of forests and forest products.</p> <p>Section 22. (1) provides: "Unless otherwise authorized by this Act, or by a license 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 stabilizing the sand or gully; or (b) any living tree, bush or shrub growing within 100 m of a river, stream or watercourse."</p> <p>The proponent will apply for the relevant permit under this Act if it becomes necessary.</p>

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LEGISLATION CONSIDERED	CUSTODIAN ORGAN OF STATE	IMPLICATION ON THIS PROJECT
<b>Relevant Acts</b>		
Soil Conservation Act (Act No. 76 of 1969)	MAWLR	<p>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.</p> <p>This Act is applicable since clearing, stripping, grubbing and topsoil removal will take place to expose the targeted rock unit. Mitigation measures are included in the EMP to preserve topsoil and reduce impacts on topsoil.</p>
Regional Councils Act (Act No. 22 of 1992)	MURD	<p>The Regional Councils Act legislates the establishment of Regional Councils that are responsible for the planning and coordination of regional policies and development.</p> <p>The main objective of this Act is to initiate, supervise, manage, and evaluate development in the regions.</p> <p>The relevant Regional Council for this project is the Erongo Regional Council which is an I&amp;AP and has been provided with the opportunity to comment on the proposed project.</p>
Petroleum Products and Energy Act (No. 13 of 1990) Regulations (2001)	MME: Petroleum Affairs Division	<p>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.</p> <p><b>This law is applicable to this project because diesel will be stored on site at any given point in time to support the power generator and all site equipment.</b></p>
The Road Traffic and Transport Act (No. 22 of 1999)	MWT: Roads Authority	<p>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.</p>

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LEGISLATION CONSIDERED	CUSTODIAN ORGAN OF STATE	IMPLICATION ON THIS PROJECT
<b>Relevant Acts</b>		
		<p><b>Should the proponent wish to undertake activities involving road transportation or access onto existing roads, the relevant permits will be required. The law nonetheless applies to this project as all site equipment operators would need to be licensed.</b></p>
<p>National Heritage Act (Act No. 27 of 2004)</p>	<p>MEAC</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 might be required in the event of damage to a protected site occurring as an inevitable result of development. Part VI Section 55 Paragraphs 3 and 4 require that any person who discovers an archaeological site should notify the National Heritage Council. Section 51 (3) sets out the requirements for impact assessment.</p> <p><b>No objects of heritage concern were noted onsite. However, should any objects of heritage/ archaeological significance be identified during project activities, the work must cease immediately in the affected sites and the necessary steps taken to seek authorization from the Council.</b></p>
<p>Public Health Act (Act No. 36 of 1919)</p>	<p>MoHSS: Occupational Health</p>	<p>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.</p> <p>The proponent should ensure that the facility is designed and operated in a way that is not unsafe, or injurious or dangerous to public health and that the noise and dust emissions which could be considered a nuisance remain at acceptable levels. This will be applicable during the mine preconstruction and mine construction and operational phases of the proposed project to the employees but not so much to landowners as there is currently no one residing on the farm, with no farming or agricultural activities taking place on site or to where quarrying will take place.</p>

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LEGISLATION CONSIDERED	CUSTODIAN ORGAN OF STATE	IMPLICATION ON THIS PROJECT
<b>Relevant Acts</b>		
Labour Act, 2007	MLIEC	<p>Sections 3, 4, 5, 11, 16, 23-27, 44 and 135 make provision for the following:</p> <ul style="list-style-type: none"> <li>• That a person may not employ a child under the age of 14years</li> <li>• That children are prohibited for employment in a mine and other dangerous circumstances</li> <li>• That forced employment of persons is prohibited</li> <li>• That an employee is entitled to monetary remuneration daily, weekly, fortnightly, or monthly in cash, cheque, and direct deposit into a bank account</li> <li>• That the work hours of an employee are 45 hours in a week, over and above which an employee is entitled to additional payment overtime wage</li> <li>• That employees are entitled to (a) annual leave on the basis of the average number of days worked over the year, (b) a day's sick leave for every 26 days worked, (c) compassionate leave for a period of 5days in 12 months which is fully paid, and (d) leave on public holidays,</li> <li>• That female employees that have completed 6 months of employment are entitled to 12 weeks of maternity leave, which can be extended for a further period of one month</li> <li>• That the minister is empowered to make regulations in relation to safety, health, hygiene, sanitation, and welfare of persons employed in or about mines, including sea-bed operations</li> </ul> <p>The proponent is expected to be compliant with the above provisions and as such the above provisions were accounted for in the ESA report and EMP.</p>
<b>Relevant Policies and Regulations</b>		
Environmental Assessment Policy (1994)	MEFT: DEA	This policy aims to promote sustainable development and economic growth while protecting the environment in the long term by requiring environmental assessment prior to undertaking of

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LEGISLATION CONSIDERED	CUSTODIAN ORGAN OF STATE	IMPLICATION ON THIS PROJECT
<b>Relevant Acts</b>		
		<p>certain activities. Annexure B of the policy contains a schedule of activities that may have significant detrimental effects on the environment, and which require authorization prior to undertaking.</p>
<p>Mine Health &amp; Safety Regulations (under section 138A of the Mining Act, 1992)</p>	<p>MME: Mine Safety &amp; Services Division  MoHSS: Occupational Health Division</p>	<p>These set of regulations are aimed at ensuring that mines are operated in a safe manner to prevent fatalities, injuries, and long-term health hazards. The regulations make provision for:</p> <ul style="list-style-type: none"> <li>• Employee's right to leave unsafe working places</li> <li>• Obligation of a mine manager to provide for all safety measures in a mine or quarry</li> <li>• Reporting of accidents to the chief inspector and keeping a record of such accidents</li> <li>• Requirements for the mine manager to provide occupational health services at area of mining activity</li> <li>• Requirements for stability of excavations; provision of waiting areas; provision of fencing and gates; schemes for working in vicinity of water body</li> <li>• Provision for mine dump or mine tailings facility</li> <li>• Ensuring that all parts of a mine are well ventilated with minimum standards of air quality</li> <li>• The mine manager's responsibility to formulate a scheme for safe movement of vehicles being use in the mine/ quarry</li> <li>• The mine manager's responsibility to formulate a scheme for identifying hazards at the area of mining activity and provision of appropriate protective equipment</li> <li>• Ensure that the mine manager provides first aid and firefighting equipment and procedures where quarrying activities are being conducted</li> </ul> <p>All the above-mentioned provisions are relevant to this project and were thus considered in the ESA process and EMP.</p>

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LEGISLATION CONSIDERED	CUSTODIAN ORGAN OF STATE	IMPLICATION ON THIS PROJECT
<b>Relevant Acts</b>		
Atmospheric Pollution Prevention Ordinance (1976)	MoHSS	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.
Hazardous Substance Ordinance, No. 14 of 1974	MoHSS	<p>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.</p> <p>This Ordinance is relevant to the project under review as potentially toxic substances such as drilling fluids will be utilized during the operational phase of the project.</p>
Road Ordinance 1972 (Ordinance 17 of 1972)	MWT: Roads Authority	<p>Width of proclaimed roads and road reserve boundaries (S3.1) Control of traffic on urban trunk and main roads (S27.1)</p> <p>Infringements and obstructions on and interference with proclaimed roads. (S37.1)</p>
Waste Management Regulations of Karibib Town Council	<p><b>Mr. R. Ashiyana (Environmental Health Department)</b>  <b>Tel: 064 550 016 or 081 398 7777</b>  <i>With all official correspondence addressed to the office of the Chief Executive Officer (P. o. Box 19 Karibib)</i></p>	<p>The Proponents should familiarize themselves with the Karibib Town Council's Regulations with regards to managing waste (both solid and liquid) on the project sites and where to dispose it. This will also entail the process to apply for permission to dispose of waste on designated Town Councils landfill/waste sites.</p>

**Table 3-2: Summary of relevant acts and applicability thereof (in terms of licenses, authorizations and or permits) as listed in the 2012 EIA Regulations.**



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ACTIVITY	DESCRIPTION OF ACTIVITY	RELEVANCE OF LISTED ACTIVITY
Activity no. 2.1	The construction of facilities for waste sites, treatment of waste and disposal of waste	The proposed activity will require development of stockpiles for waste rock as well as stockpiling of topsoil stripped off to access the targeted rock unit
Activity No. 3.1	The construction of facilities for any process or activities which requires a license, right or other form of authorization, and the renewal of a license, right or other form of authorization, in terms of the Minerals (Prospecting & Mining Act), 1992	The proposed project will entail marble quarrying activities, both of which require environmental clearance and prospecting/ mining permitting prior to commencement as per the EMA.
Activity No. 3.2	Other forms of mining or extraction of any natural resources whether regulated by law or not	The proposed project would require surface clearing, stripping, grubbing, topsoil removal and excavation over the footprint of the targeted rock unit, followed by subsequent extraction of marble blocks.
Activity No. 3.3	Resource extraction, manipulation, conservation & related activities	
Activity No. 9.4	The storage and handling of a dangerous goods, including petrol, diesel, liquid petroleum gas or paraffin, in containers with a combined capacity of more than 30 m <sup>3</sup> (30 000L) at any one location	Diesel will be stored on site in a trailer mounted tank to provide fuel to the power generator and all plant.
Activity No. 10.1 (b)	The construction of – public roads	The proposed project may include the widening of existing access roads for access to the site.

### 3.2 International Treaties and Conventions

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

**Table 3-3: International Treaties and Convention applicable to the project.**

STATUTE	PROVISIONS	PROJECT IMPLICATIONS
The United Nations Convention to Combat Desertification (UNCCD)	Addresses land degradation in arid regions with the purpose to contribute to the conservation and sustainable use of biodiversity and the mitigation of climate change	The project activities should not be such that they contribute to desertification.
Convention on Biological Diversity 1992	Regulate or manage biological resources important for the conservation of biological diversity whether within or outside protected areas, with a view to ensuring their conservation and sustainable use.  Promote the protection of ecosystems, natural habitats, and the maintenance of viable populations of species in natural surroundings	Removal of vegetation cover and destruction of natural habitats should be avoided and where not possible minimised
Stockholm Declaration on the Human Environment, Stockholm (1972)	It recognizes the need for: "a common outlook and common principles to inspire and guide the people of the world in the preservation and enhancement of the human environment.	Protection of natural resources and prevention of any form of pollution.

## **4 DESCRIPTION OF THE RECEIVING ENVIRONMENT (BASELINE)**

### **4.1 Climatic Conditions**

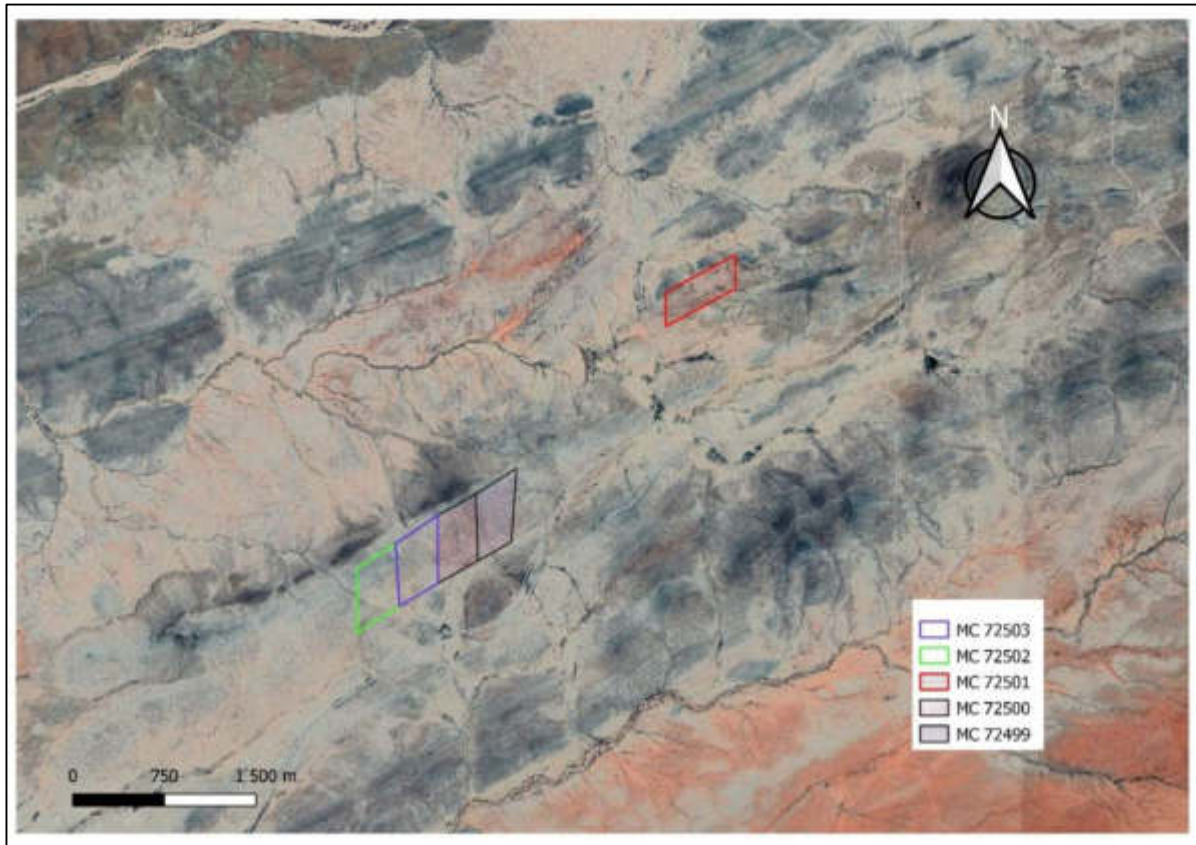
Data records from the Karibib weather station for the period 2009 to 2019 was analysed to provide insight on climatic conditions surrounding the project site. The data is based on records by the Namibia Meteorological Services. A summary of the analysis performed is provided below.

- Average annual temperatures of 32 degrees from October to December, with the coldest months in July with temperatures dropping to 9 degrees Celsius at night (Mendelsohn *et al.*, 2009).
- The highest average annual rainfall for the last ten-year period consisted of 109 mm, between December and March. The lowest rainfall may be expected in May, June, July and August with little to no rainfall anticipated during these months (Mendelsohn *et al.*, 2009).
- Relative humidity in the Karibib area ranges between 51 and 61% during the most humid months and between 21 and 28% during the least humid months.
- Average annual rates of evaporation in the Karibib area are generally range between 2100 and 2240 mm (Mendelsohn *et al.*, 2009).
- The project area does not have a weather station with reliable wind records. However, based on the regional wind patterns the area appears to be dominated by a north-eastern and southwest wind.

### **4.2 Topography**

The topography rises from the sea level in the western part of the region towards the east and north eastern parts of the region. Figure 4-1 illustrates that the study area lies in the central parts of Erongo Region characterized by a dendritic drainage system and a mix of medium dense grassland plants, rolling hills and high rising inselbergs.

The terrain surrounding mining claims 72499, 72500, 72501, 72502 and 72503 is relatively rugged with moderately steep slopes.



**Figure 4-1: Topography of Mining Claims 72499, 72500, 72501, 72052 and 72503.**

### **4.3 Geology**

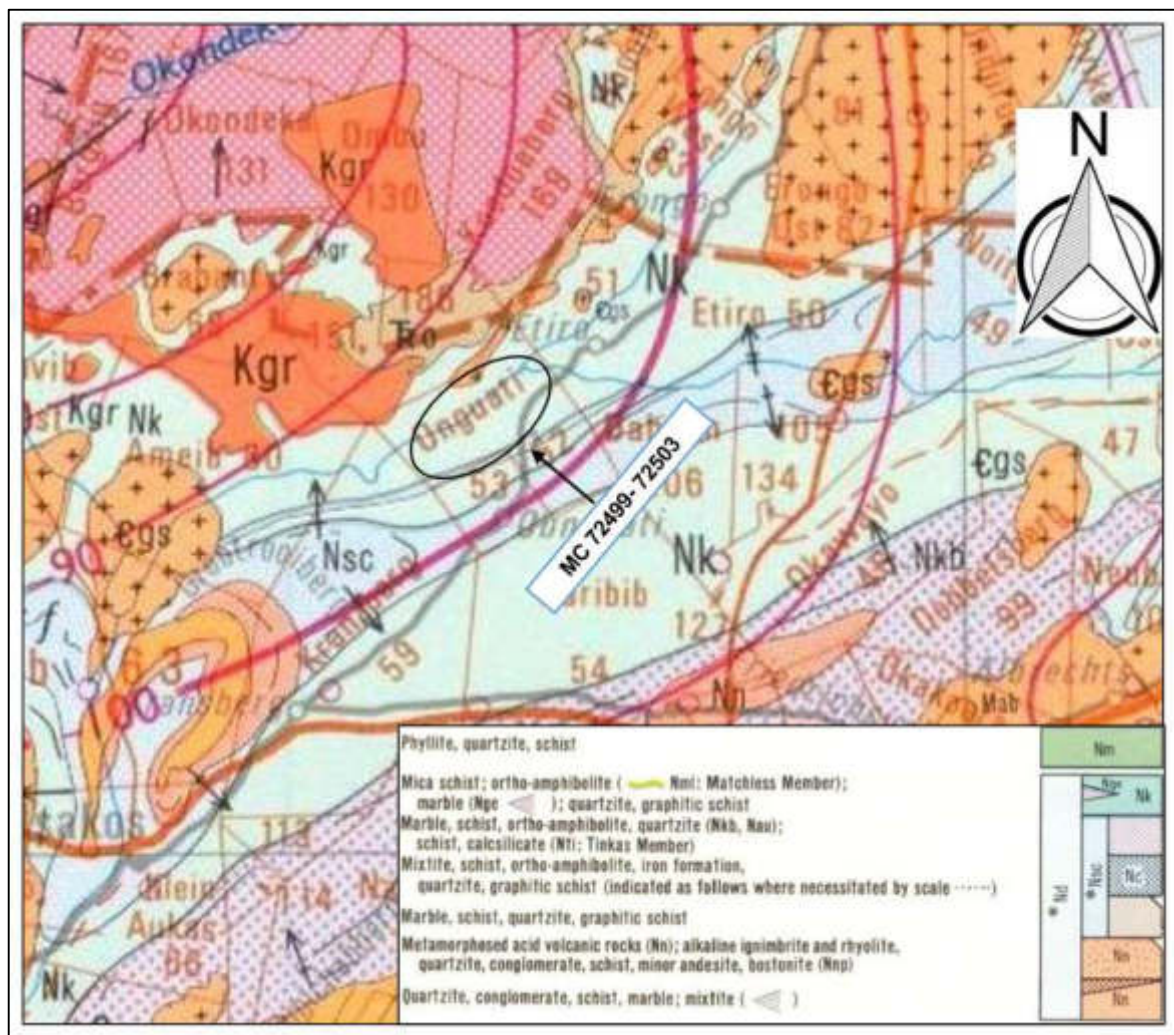
The Karibib constituency lies within the Damara Belt which is an ENE-trending belt that was formed during the Damara Orogen. The belt is a divergent orogeny that formed during high-angle convergence between the Congo and Kalahari Craton (Miller, 1983). The belt is made up of fault and shear zone bounded zones of varying structural style, ranging from north to south as a fold-thrust belt displaying complex fold interference, a granite dominated inner zone with elongate, WNW-trending basement cored domes and Damara Sequence basins and in the south a transposed schist belt and another marginal fold-thrust zone with basement cored fold nappes (Gray et al., 2006).

The geology of the Karibib area is characterized mainly by the Damara Supergroup and Gariiep Complex rock formations, making up some of the oldest rock formations aged between 850 – 600 million years. In terms of its composition, the Karibib formation consists chiefly of a thick succession of dolomite marble with very subordinate intercalations of biotite-quartz schist. The development of this formation varies considerably from place to place. It is therefore difficult to establish a complete and correct stratigraphic section for this unit.

Dolomitic marbles in the Karibib Formation are distinguished by their beigecoloured surfaces and weathering resistance, forming < 1 m and up to 10 m high

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ridges. They are medium- to coarse-grained and more competent than the calcitic and cream-coloured marbles, often displaying boudinage in higher strained parts of the Karibib Formation. Fresh surfaces are typically medium- to coarse- grained, white, and with a recrystallized sugary texture (Porada & Hill, 1974). The general geology of the project site consists of thin transported soils underlain by a well-developed pedogenic (calcrete) horizon.



**Figure 4-2: Regional Geology of Mining Claims 72499, 72500, 72501, 72502 and 72503.**

#### **4.4 Groundwater and Hydrogeology**

As discussed in section 4.3, the geology of mining claims 72499, 72500, 72501, 72502 and 72503 consists of marble and schist of the Swakop Group, Damara Sequence.

Christelis et al (2001), notes that the groundwater potential of fractured aquifers in the Swakop Group of the Damara Sequence is generally low with limited potential. However, the marbles such as those on site are of moderate potential and at properly selected targets like fracture zones and karstified contact zones, high yields can be found. The above is influenced by the amount of rainfall and associated weathering discharge.



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Furthermore, gully erosion is usually limited by the depth of the underlying rock, with the gully observed off site resembling a large ditch measuring 10 m deep and roughly 20 m wide. According to Valentin et al (2005), gully erosion has a negative impact on the social aspects of human beings, such as; reduced land available for agriculture, displacement of people, workload, loss of life, injuries, and risk of flooding that affects infrastructures. As there is currently no agricultural and farming activities on Farm Onguati No. 52 and No. 53 and no one residing on site, the above negative impacts are considered to be negligible. Figure 4-5 shows a zoomed in aerial map of the gully in relation to the mining claims.



**Figure 4-4: Deep erosional gully located 250m north of mining claims 72502 and 72503.**



Figure 4-5: Location of the erosional gully in relation to mining claims 72499 - 72503.

## 4.6 Fauna and Flora

### 4.6.1 Flora

According to Risk Based Solutions (2020), at least 79 of the 109 larger species and shrubs are known to exist in the general Karibib area, whereby at least 5 species are classified as endemic and 4 species are near endemic, 24 species protected under the Ordinance No. 4 of 1975 and 4 species classified as CITES Appendix II species.

The study area consists of varied shrublands and grasslands forming part of the Nama Karoo Biomes. The vegetation type observed during the site visit is as follows:

- Commiphora glaucescent,
- Euphorbia Damarana,
- The endemic grass – Eragrostis omahekensis,
- Ziziphus mucronata (blinkblaar-wag-'n bietjie" ),and
- Camelthorn trees and shrubs (Acacia mellifera).

The plant species noted above are considered to be endemic, near endemic and to be of least concern. Therefore, during ongoing exploration and marble quarrying these species may be removed, however, great care should be taken, where necessary. Figure 4-6 shows the vegetation encountered on Farm Onguati No. 52 and No. 53.



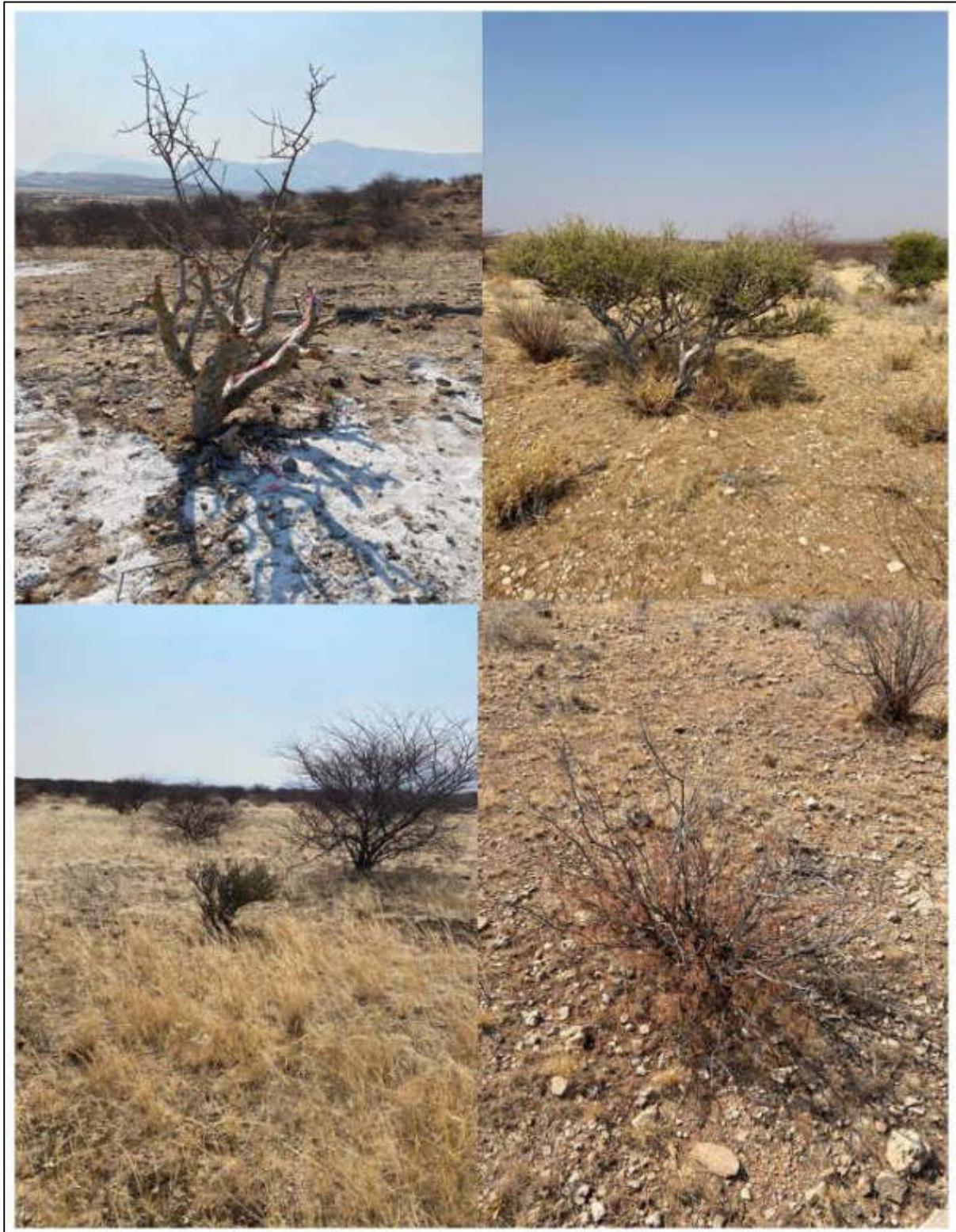


Figure 4-6: Typical Flora in the proposed project area.

## **4.6.2 Fauna**

### Reptiles

The high percentage of endemic reptile species (45%) associated with the rocky escarpment region of central western Namibia highlights the importance of this area without formal state protection. The most important species expected to occur in the general area are viewed as tortoises *Stigmochelys pardalis* and *Psammobates oculiferus*; pythons – *P. anchietae* and *P. natalensi*). Reptiles that are considered "rare" are *Rhinotyphlops lalandei*, *Mehelya vernayi* and *Afroedura Africana*, although very little is known about them (Risk-Based Solutions, 2019). Habitat alteration and destruction are the main threats of quarrying activities against the many small and secretive lizards and snakes that occur in the area. The extent of these impacts is not considered to be wide enough to threaten any of the species.

### Birds

A total of 658 species of birds have been recorded in Namibia (Mendelsohn, 2002). Of the 658 species, two-hundred and sixteen (216) bird species are found in the general Karibib and Usakos areas. This includes 12 of the 14 Namibian endemics (85.7% of all Namibian endemic species or 5.6 % of all the species expected to occur in the area). The following are the most important endemic species known to occur in the general area (Risk Based Solutions, 2020):

- Monteiro's Hornbill (*Tockus monteiri*),
- Damara Hornbill (*Tockus damarensis*),
- Ammomanopsis grayi (Gray's Lark),
- Namibornis herero (Herero Chat),
- Eupodotis rueppellii (Ruppell's Korhaan) and
- Poicephalus rueppellii (Ruppells Parrot).

All the avifauna listed as endangered, vulnerable and near threatened have been considered and also viewed as important.

### Mammals

At least 88 species of mammals can be located in the Karibib / Usakos area (Risk Based Solutions, 2020). Of the 88 species, 10 species are considered to be endemic while the Namibian laws classes a further 5 as vulnerable, 2 species as rare, 3 species as specially protected game, 9 species as protected game and 5 as insufficiently known. In regards to the area under study (MC 72499 – 72503), the most significant specified are most likely those classed as rare (i.e. *Cistugo seabrai* and *Atelerix frontalis angolae*) and vulnerable (i.e. *Galago moholi*, *Proteles cristatus*, *Hyaena brunnea*, *Acinonyx jubatus*, *Felis silvestris*, *Otocyon megalotis*, *Vulpes chama* and *Giraffa camelopardalis*) under the Namibian law and near threatened (i.e. *Eidolon helvum*, *Hipposideros commersoni*, *Hipposideros vittatus*, *Hyaena*

brunnea and *Panthera pardus*) and vulnerable (i.e. *Acinonyx jubatus*, *Equus zebra hartmannae*) by the International Union of Conservation for Nature (IUCN, 2016). Monkey footprints are shown in **Error! Reference source not found.** below.



**Figure 4-7: Monkey footprints located within the mining claims.**

#### **4.7 Demographic Overview: Regional and Constituency level**

According to recent statistics availed by the Namibia Statistics Agency (2011), the population of the Erongo Region has seen a growth of 40% since the 2001 census to reach 150,809 in 2011. The population of the Karibib Constituency increased with 10% since 2001 to 13,320 in 2011, which calculates to a mere 1% annual growth. The town of Karibib in 2011 had a population of 5,132, owing to minimal economic activities in the area. The Karibib Constituency has a population density of 0.9 people per km<sup>2</sup> and an 8.8% urbanisation rate (NSA, 2011).

The Karibib Constituency has a relatively intermediate aged population with a median age of 24 years. A population is considered 'intermediate' when it has a median age of between 20 and 29 years. The male population is slightly higher than the female population in the Karibib Constituency with the 51.9% (male) and 48.1% (female). This is partially due to the dominance of the mining and agriculture sector in the constituency (NSA, 2011). The average household size in the Karibib Constituency is 3.3 persons per household.

## **4.8 Economic Development**

The local economy of Karibib town is small and largely dependent on the Navachab mine and to some extent the business activities derived from travellers on their way to Swakopmund or Windhoek and the agriculture and tourism activities in the hinterland of the constituency. The town itself has a small economic base, which is a concern especially realising the challenge the town will face if the Navachab mine closes down.

Within the Karibib Constituency 58% of the household income is derived from wages and salaries and 7.8% from business activities. According to the Namibia Statistics Agency (2011) census, the private sector employs the majority of the employed population in the Karibib Constituency (51.22%) and 22.82% is employed within the agriculture sector and 22.95% is employed within the mining sector.

A variety of business activities can be found in the Karibib Town such as retail outlets, petrol stations, accommodation establishments, government offices, schools and a hospital. The proposed establishment of a small to medium scale marble quarry by the Proponent will have mostly positive impacts on the community of Karibib, and nearby farms. These positive impacts will be realized in the form of job creation, support to local retailers and payment of export tax and VAT to the Namibian Government.

## **4.9 Project Site Land Use**

### **4.9.1 Mining**

The majority of people in Karibib are heavily reliant on the dimension stone industry for their livelihood, further substantiating the need for the proposed establishment of the small to medium scale quarry project.

The Karibib district has a significant number of small-scale miners, quarrying for dimension stone, albeit on a small scale. Concerns exist among the local community of Karibib, with regard to small scale miners selling their exploration / mining licenses to foreign investors, due to a lack of start-up capital. As much as it is seen as a threat, potential opportunities in the form of collaborative partnerships or shareholding agreements could be reached between the local community, foreign investors and the Proponent.

From the recently conducted site walkover, evidence of exploration activities was noted in particular areas of the site. Scattered rock chips forming white patches can be seen in certain areas of the site (Figure 4-4). These rock chips are produced during reverse circulation (RC) drilling. This indicates that the current conditions on site are not pristine.



**Figure 4-8: Evidence of historical exploration activities on mining claims 72499, 72500, 72501, 72502 and 72503.**

## **4.10 Services Infrastructure**

In terms of local infrastructure, the following was observed on site:

- **Electricity:** Electricity is supplied and distributed by the Erongo Regional Electrical Distributor (ErongoRed), which was formed by merging the service of electricity distribution from various municipalities and town councils in the Erongo Region namely the municipality of Walvis Bay, Swakopmund, Henties Bay and Omaruru; the Town Council of Karibib, Usakos and Arandis; Erongo Regional Council and Nampower.

The project site consists of a wildlife farm set up and as shown in Figure 4-9, the Khan – Omburu 2 220kV power line borders MC 72501 to the east and MC 72499, 72500, 72502 and 72503 to the southeast.

- **Roads:** The B1 and B2 main roads connect the Erongo Region to the rest of Namibia. MC 72499 -72503 are accessible from the Kranzberg Railway Station by the B2 road and then via a dirt road leading to the project site.
- **Railways:** Karibib is connected to a number of towns in the north of Namibia via the railway junction at Kranzberg. The project site borders the Kranzberg railway line to

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the south (Figure 4-10), which is currently undergoing rehabilitation and improvement. The increased capacity of this railway line and improved axle load capacity will promote competitiveness and potentially service future transportation of marble blocks to the port of Walvis Bay.

- **Water:** Water in the Erongo Region is supplied in bulk to industries and municipalities by Namwater. Namwater abstracts water from the large Kuiseb River and Omaruru delta, which is then pumped to several reservoirs that provide water to towns in the Region such as Karibib, Arandis, Swakopmund, Walvis, Henties Bay and the local mines. Water on Farm Onguati No.52 and No.53 is supplied through privately owned boreholes on the farms, which in the past fed a 20000L water reservoir located south east of the mining claims and also shown in Figure 4-11. At the time of conducting the field reconnaissance survey, the reservoir was observed to be in a poor condition, dilapidated and empty.



**Figure 4-9: Khan – Omburu 2 220kV power line marked in blue.**



Figure 4-10: Kranzberg Railway Line located south of MC 72499 - 72503.



Figure 4-11: Water reservoir located south of MC 72499 - 72503.

## **4.11 Archaeology and Heritage**

The results of the AIA research, cultural heritage background review, site inspection and assessment of significance indicate that there are no high-risk archaeological, cultural, and historical areas with potential to be disturbed by the proposed quarrying activities.

The detailed Archaeological Assessment Report is presented in **Appendix D**.

## **5 PUBLIC CONSULTATION PROCESS**

### **5.1 Registered Interested and Affected Parties (I&APs)**

Pre-identified stakeholders were identified and a list drafted before commencement of the EA process. These stakeholders range from central government officials, regional councillors, local authority, parastatals, and the landowner. As the public participation process evolved, this list of Interested and Affected Parties (I&APs) was continuously updated.

The pre-identified I&APs were informed about the ESA process by email, WhatsApp and SMS.

A complete list of the I&APs identified and registered for the project can be found in **Appendix E**. Summarized below is a group of key registered I&APs:

- **Central or national government:** Ministry of Environment, Forestry & Tourism, Ministry of Mines & Energy, Ministry of Agriculture & Land Reform, Ministry of Urban & Rural Development
- **Regional government:** Erongo Regional Council
- **Local authority:** Karibib Town Council
- **Parastatals / Government Agencies:** Nampower, Namwater, Roads Authority, Epangelo Mining, Transnamib, National Heritage Council of Namibia etc.
- **Affected land / farm owner:** Farm Onguati No. 52 & 53.
- **Interested members of the public.**

### **5.2 Public Consultation Process**

To ensure that the I&APs were adequately consulted and involved, a public participation was conducted. The steps undertaken during the consultation process are as follows:



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**Table 5-1: Steps undertaken during the consultation process.**

<b>TASK</b>	<b>DESCRIPTION</b>	<b>DATE</b>
<b>Notification - regulatory authorities and I &amp; APs</b>		
Notification to DEAF	OMAVI engaged with MEFT - DEAF to notify them of the project and discuss direction to the ECC and EIA Scoping process	Sept-21
ECC Application	ECC application was submitted by OMAVI to the MEFT: DEAF	Sept-21
IAP identification	A database of relevant stakeholders was developed. This database is continuously updated. A copy of all I&AP is attached in Appendix E.	Sept-21
Distribution of Background Information Document (BID)	BID was distributed which provides a description of the proposed activities and the whole procedure of the EIA to be followed. The BID was also distributed on request by I&APs during the scoping process	Sept-21
Newspaper Advertisements	Formal public notices announcing the commencement of the EA process and an invitation to register as an I&AP were placed in The Namibia, Die Republikein, The Sun Newspaper and Allgemeine Zeitung newspapers.	Sept-21
<b>Stakeholder Meetings and I&amp;AP submission of comments</b>		
One-on-one focused engagements / meetings	<p>Consultation with I&amp;APs and landowner included meetings, constant telephonic conversations, SMS and e-mail correspondence. One-on-one discussions were held with the landowner.</p> <p>The purpose of the discussion with the landowner was as follows:</p> <ul style="list-style-type: none"> <li>• Provide a description of the proposed activity.</li> <li>• Provide information on the ESA process.</li> <li>• Seek input by providing I&amp;APs with initial opportunity to be involved in the ESA process.</li> <li>• Identify any potential environmental issues and impacts, and</li> <li>• Describe the way forward, highlighting further opportunities to be involved in the ESA process.</li> </ul>	Sept-21
Site visit	Site visits were undertaken to MC72499-72503 by staff of OMAVI.	Sept-21
Comments and Responses	All comments received during the process are attached in Appendix H.	Sept-21

### **5.2.1 Public Site Meetings**

Site notices/posters informing the public and affected landowners about the ESA process were placed at the following locations as shown in Figure 5-1:

- Entrance at Erongo Regional Council.
- Entrance of Karibib Town Council.
- Entrance of Farm Onguati No. 52 and 53.



**Figure 5-1: Placement of public site notices at the Karibib Town Council, Erongo Regional Council and on Farms Onguati No. 52 and 53.**

### **5.3 Summary of Comments and Feedback: Consultation/Public Meetings**

In line with the public participation regulations set forth in the Environmental Management Act of 2007, OMAVI did not receive enough expressions of interest to substantiate a public consultation meeting. Invitation to participate in the concerned projects were, however, availed in the form of newspaper adverts; site notices placed at the Karibib Town Council, Erongo Regional Council offices in Karibib, Erongo Regional Council Headquarters in Swakopmund; and gates of the respective farms concerned. The participation of all I&APs was promoted and decisions considered the interest, needs and values of I&APs.

A one-to-one teleconference meeting was conducted between OMAVI and the farm owner of Farm Onguati No. 52 and No. 53. This allowed OMAVI to provide the landowner with a description of the proposed project, seek information of the ESA process and seek input in identifying any potential environmental issues and impacts. During this one-to-one meeting, the Landowner notified OMAVI that the land is not currently in use and that the Landowner grants approval and consent in the proposed establishment of the proposed small to medium scale quarry. Additionally, no objections were raised to the proposed activities.

Issues and concerns voiced by the I&APs during the public participation through emails, WhatsApp, SMS, telephonic conversations are stated hereunder. These issues were not considered critical or having the potential to stop the proposed establishment of a small to medium scale quarry on mining claims 72499 - 72503. The significant issues are summarized below:

1. Written input by Bianca Foelscher residing in Karibib has been received. The following is a summary of her submission:
  - Request for BID to be shared with her and to be registered as an I&AP.
  - Query on the date of public participation.
  - Requested information on project justification and possible positive impacts from the proposed activities, i.e. employment opportunities.

The comments received by Bianca Foelscher were addressed by OMAVI. Comments received from all I&APs are attached in **Appendix F**.

## **6 IMPACT IDENTIFICATION AND ASSESSMENT**

The purpose of this section is to identify and assess the most pertinent environmental impacts by describing certain quantifiable aspects and to provide possible mitigation measures. This is primarily aimed at minimizing the magnitude of the impacts that are likely to arise from the various mine workings within mining claims 72499, 72500, 72501, 72502 and 72503.

By identifying potentially adverse impacts, this process facilitates in mitigation, reduction, elimination and management of such affects to tolerable limits in adherence to mitigation measures set forth in the EMP Report. The feedback received during the public consultation process has been reflected upon in the assessment of these potential impacts.

The following potential impacts have been identified:

### **Potential Positive Impacts:**

- The proposed project has the potential to employ approximately 10 -15 people on a full-time basis, which could improve livelihoods and make a positive contribution towards unemployment reduction and advancement of unemployed youth of Karibib through the transfer of certain skills.
- The skills transfer aspect is likely to arise as the proponent will implement ad-hoc training programs for some of its staff members, particularly on the operation and maintenance of equipment / machinery.
- During the decommissioning / closure phase, opportunities for casual employment are likely to increase as the number of unskilled positions will likely increase. The project will increase and guarantee the supply of dimension stone to the whole of Namibia.
- Other potential positive impacts include operating levies and surface rental fees payable to local authorities and the landowner; potential revenue collection by the national road agency through fees charged on loaded trucks; and potential new business for the local business such as small transport, cleaning, maintenance, security and canteen businesses through sub-contracting.

**Potential Negative Impacts per Primary Activity:**

Quarrying:

**Table 6-1: Potential negative impacts per primary activity.**

PRIMARY ACTIVITY – MINE PRECONSTRUCTION	
<u>Activity/ Hazard</u>	<u>Potential Impact</u>
<p>Bush clearance and grubbing and topsoil removal over the footprint of surface infrastructure such as the quarry pit, stockpile bays, mobile site office, and temporary ablation facilities.</p>	<ul style="list-style-type: none"> <li>• Potential destruction of natural vegetation</li> <li>• Potential disturbance of natural ecosystem for wildlife</li> <li>• Potential disturbance and alteration of soil structure due to construction and traffic compaction, resulting in increased runoff coefficients and possible increase in erosion susceptibility</li> <li>• Potential generation of solid waste</li> <li>• Potential generation of dust from earthworks</li> <li>• Potential injuries and fatalities of wildlife from fall and trips arising from exposed excavations</li> </ul>
<p>Establishment and setting up of quarry site, mobile site office, and temporary ablation facilities</p>	<ul style="list-style-type: none"> <li>• Potential alteration to land uses to quarrying. Restriction of current land uses within the development footprint.</li> <li>• Topographical and landscape changes due to establishment of the quarry pit and associated surface infrastructure sites.</li> </ul>

	<ul style="list-style-type: none"> <li>• The quarry site traverses the toe of an existing tributary located north of the mining claims. Interception of surface runoff from the tributary is likely to lead to erosion and diversion from natural flow paths, thereby fragmenting the watershed grassland</li> <li>• Risk of personnel injuries and fatalities</li> </ul>
<b>PRIMARY ACTIVITY – MINE DESIGN AND CONSTRUCTION</b>	
<p>Extraction of blocks and bulk excavation of loosened rock</p>	<ul style="list-style-type: none"> <li>• Removal of marble dimension stone blocks will leave an open pit and possibly expose steep faces which may be visible from the southeastern railway line bordering the project site. The thick medium dense vegetation cover will likely conceal the open pits.</li> <li>• Introduction of harmful substances such as drilling fluids and hydrocarbons for blade and diamond saw cutting equipment may contaminate surface water during runoff; impact flora through direct ingestion by roots of plants; and through indirect ingestion when animals and humans feed on contaminated plants, animals and water.</li> <li>• Potential generation of noise and vibrations from blade and diamond saw cutting equipment, increased movement of traffic, which could become a nuisance to surrounding farmers.</li> </ul>

	<ul style="list-style-type: none"> <li>• Potential generation of dust from bulk excavations and blade and diamond saw cutting equipment.</li> <li>• Potential pit slope failures after heavy rains due to reduced shear strengths in rock mass discontinuities.</li> <li>• Potential disturbance and damage to unforeseen archaeological or heritage sites during quarrying, ongoing drilling exploration, and excavation activities and movements in the area.</li> </ul>
<p>Loading and hauling of blocks to Processing Plants in Karibib</p>	<ul style="list-style-type: none"> <li>• Possible collisions between earthmoving equipment and personnel and animals</li> <li>• Potential generation of noise as trucks will be moving to and from the plant throughout day hours</li> <li>• Potential generation of dust from loading and offloading of blocks on to trucks, and from haul roads. Dust may impair visibility, creating unsafe working conditions.</li> <li>• Possible fuel spills from trucks if breakdowns occur and unexpected hydraulic pipe bursts occur.</li> <li>• Development of haul roads may interfere with the migration of certain fauna and create possible collisions with vehicles and moving plant.</li> <li>• Potential accidents arising from poor haul road conditions.</li> </ul>
<p>Movement of personnel, machinery, and wildlife near the edge of the quarry</p>	<ul style="list-style-type: none"> <li>• Potential injuries and fatalities as well as damage to plant.</li> </ul>

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Decommissioning/ closure of the quarry operations	<ul style="list-style-type: none"> <li>• Decommissioning of the quarry operation will result in the lay-off of employees, reducing formal employment opportunities and income levels.</li> </ul>
<b>PRIMARY ACTIVITY - WASTE ROCK STOCKPILES</b>	
Material stockpiling from bulk earthwork excavations	<ul style="list-style-type: none"> <li>• Potential generation of excessive dust and consequent impairment of visibility.</li> <li>• Potential theft of stockpiled materials through unauthorized access to stockpile bays.</li> <li>• Potential collisions between plant and personnel / animals</li> </ul>
<b>PRIMARY ACTIVITY - CROSS ACTIVITIES</b>	
Illegal hunting and firewood gathering during operating hours of quarrying	<ul style="list-style-type: none"> <li>• Potential increased pressure on local fauna and flora due to illegal hunting and firewood gathering, respectively</li> </ul>
Workers being on site	<ul style="list-style-type: none"> <li>• Possible littering and solid waste pollution in and around working areas.</li> <li>• Possible human waste.</li> </ul>
Storage of old unused equipment/ tyres/ oil drums on site	<ul style="list-style-type: none"> <li>• Potential adverse visual impacts, as well as soil and water pollution from hydrocarbon spills.</li> <li>• Increased loitering on site.</li> </ul>
Active workers and plant on site	<ul style="list-style-type: none"> <li>• Possible nuisance on landowners and neighbors due to noise and dust.</li> </ul>

It is evident from the table above that the majority of impacts are safety (for both personnel and animals) and pollution related, and can therefore be managed through measures outlined in the accompanying EMP.



## 6.1 Impact Assessment Screening

The potential impacts identified by OMAVI based on professional experience as well as through consultations with Interested and Affected Parties (I&APs) were screened according to a set of questions (presented in Figure 6-1). This resulted in highlighting the key impacts requiring further detailed assessment of each impact in the respective sections of this chapter.

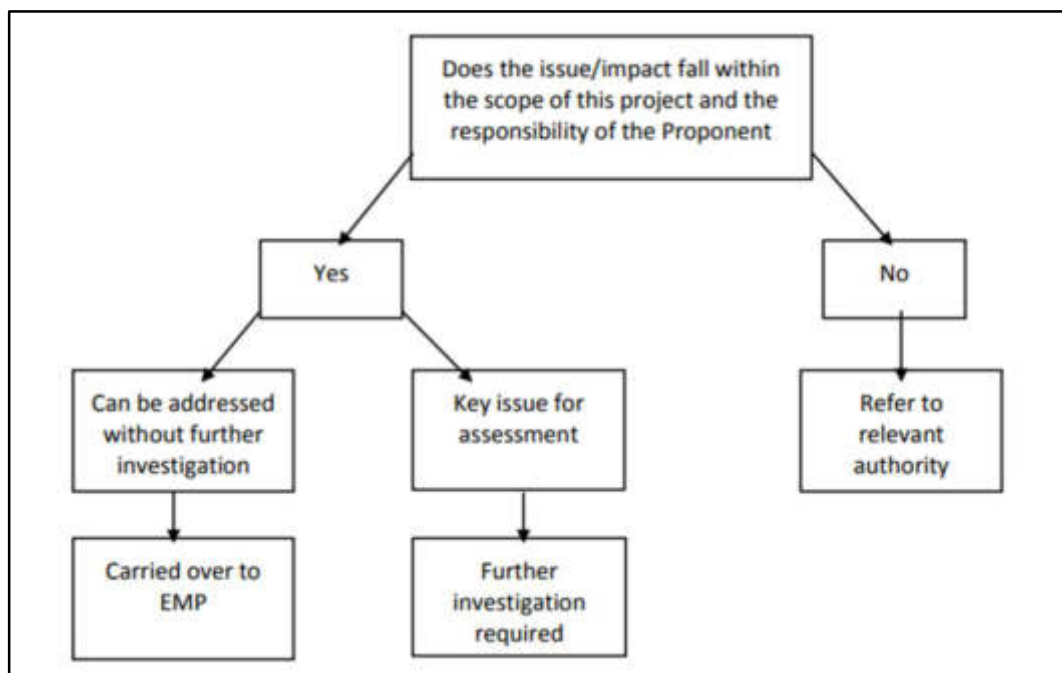


Figure 6-1: Screening process for determining key impacts.

## 6.2 Impact Assessment Methodology

The impact prediction and evaluation stage is a key component of the EIA process because it brings together project characteristics with the baseline environmental characteristics. Impact prediction and evaluation involve envisaging the possible changes to the environment as a result of the project. The methodology was applied to determine the magnitude of impact and whether or not the impact was considered significant and need further investigation. The assessment methodology considered all stages of the project's life cycle that is scoped into the assessment and is presented in this report. **Error! Reference source not found.** below summarises the impact assessment criteria adopted in this report.

Table 6-2: Assessment methodology for evaluating potential impacts.

<b>Risk Event</b>	Description of the hazard that may lead to an impact.
<b>Status (+ or -)</b>	<b>Positive</b> - environment overall will benefit from the impact <b>Negative</b> - environment overall will be adversely affected by the impact <b>Neutral</b> - environment overall will not be affected
<b>Extent</b>	<b>Site specific:</b>

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	<p><b>Local</b> - limited to within 15 km of the area  <b>Regional</b> - limited to ~100 km radius  <b>National</b> - limited to within the borders of Namibia  <b>International</b> - extending beyond Namibia's borders</p>
<b>Duration</b>	<p><b>Very Short</b> (days, &lt;3 days)  <b>Short</b> (days, 3 days – 1 month)  <b>Medium</b> (months, 1 - 5 years)  <b>Long</b> (years, 5 - 20 years)  <b>Permanent</b> (&gt;20 years)</p>
<b>Intensity</b>	<p><b>No lasting effect</b> - No environmental functions and processes are affected  <b>Minor effects</b> - The environment functions, but in a modified manner  <b>Moderate effects</b> - Environmental functions and processes are altered to such extent that they temporarily cease  <b>Serious effects</b> - where environmental functions and processes are altered such that they permanently cease and/or exceed legal standards/requirements</p>
<b>Probability</b>	<p>Refers to the probability that a specific impact will happen following a hazard event.  <b>Improbable</b> - low likelihood  <b>Probable</b> - distinct possibility (50% probability)  <b>Highly probable</b> - most likely  <b>Definite</b> - impact will occur regardless of prevention measures</p>
<b>Prevention</b>	<p>Measures to reduce the probability of an impact occurring.</p>
<b>Significance (no mitigation)</b>	<p><b>None</b> - A concern or potential impact that, upon evaluation, is found to have no significant impact at all.  <b>Low</b> - Any magnitude, impacts will be localised and temporary. Accordingly, the impact is not expected to require amendment to the project design.  <b>Medium</b> - Impacts of moderate magnitude locally to regionally in the short term. Accordingly, the impact is expected to require modification of the project design or alternative mitigation.  <b>High</b> - Impacts of high magnitude locally and in the long term and/or regionally and beyond. Accordingly the impact could have a 'no go' implication for the project unless mitigation or re-design is practically achievable</p>
<b>Mitigation</b>	<p>Description of possible mitigation measures</p>
<b>Significance (with mitigation)</b>	<p><b>None</b> - A concern or potential impact that, upon evaluation, is found to have no significant impact at all.  <b>Low</b> - Any magnitude, impacts will be localised and temporary. Accordingly, the impact is not expected to require amendment to the project design.  <b>Medium</b> - Impacts of moderate magnitude locally to regionally in the short term. Accordingly, the impact is expected to require modification of the project design or alternative mitigation.  <b>High</b> - Impacts of high magnitude locally and in the long term and/or regionally and beyond. Accordingly the impact could have a 'no go' implication for the project unless mitigation or re-design is practically achievable.</p>

<b>Confidence Level</b>	<p>The degree of confidence in the predictions, based on the availability of data/ information and specialist knowledge.</p> <p><b>Low</b> - would indicate that further investigation is required if the impact could potentially be significant</p> <p><b>Medium</b> - further investigation may be required if the impact could be significant</p> <p><b>High</b> - based on the site specific specialist knowledge and information. The impact is well understood. However monitoring may be required to determine the effectiveness of possible mitigation measures</p>
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### **6.3 Impact Assessment**

A complete assessment of the potential impacts identified is presented in Error! Reference source not found. below.

Table 6-3: Assessment of identified impacts.

IMPACTS ON SOIL DEGRADATION AND EROSION	
<b>Description of Potential Impact</b>	Soil degradation will result from soil disturbance caused by heavy machinery and trucks; clearing, stripping, grubbing and topsoil removal; soil compaction by traffic; loss of original soil depth and volume; degradation of stockpiled topsoil due to erosion; and contamination of soils by drilling fluid residues and hydrocarbon spills  Soil erosion will also result from loosening of soil as a result of earthworks, removal of vegetation and increased surface runoff due to surface compaction.
<b>Nature</b>	Negative
<b>Extent</b>	<b>Site Specific</b> and <b>Local</b>
<b>Duration</b>	<b>Long term</b> – the structure and depths of soils will be altered long term
<b>Intensity</b>	<b>High</b>
<b>Probability</b>	<b>Highly Probable</b> – as removal of vegetation and topsoil is inevitable
<b>Prevention</b>	Complete prevention of this impact will not be possible
<b>Significance (no mitigation)</b>	<b>Low</b> – due to the localized extent of the project

<p><b>Mitigation</b></p>	<ul style="list-style-type: none"> <li>• Minimize the project footprint and therefore disturbance to a minimal area as much as possible by utilizing areas which are not pristine and have already been disturbed i.e. existing exploration areas observed on site</li> <li>• Minimize soil contamination through containment and handling of potentially polluting materials</li> <li>• Implement soil conservation measures (e.g. segregation, proper placement and stockpiling of clean soils and overburden material for existing site remediation and maintaining soil fertility o topsoil stored for future rehabilitation)</li> <li>• Ensure that the overall thickness of soils utilized for rehabilitation is consistent with surrounding undisturbed areas and future land use</li> <li>• Design quarry and haul road slopes to an appropriate gradient for rehabilitation</li> <li>• Implement regular soil quality testing, especially from sites downstream of the quarry and other working areas</li> <li>• Design haul roads with appropriate drainage channels along the road to avoid erosion</li> <li>• Schedule construction works to avoid heavy rainfall periods to the extent practical</li> <li>• Minimize length and steepness of slopes</li> <li>• Re-vegetate areas promptly to the extent possible</li> <li>• Design channels and ditches for post construction flows</li> <li>• Line steep channels and slopes, or place rip rap in such channels</li> <li>• Identify and stabilise areas that are highly susceptible to erosion</li> </ul>
<p><b>Significance (with mitigation)</b></p>	<p><b>Low</b> – provided slopes are made safe and no excess compaction</p>
<p><b>Confidence Level</b></p>	<p><b>Moderate</b></p>
<p style="text-align: center;"><b>IMPACTS ON CHANGES IN LAND USE</b></p>	
<p><b>Description of Potential Impact</b></p>	<p>According to the farm owner, the proposed project area is not currently in use. The project infrastructures (e.g. actual quarrying operations, waste rock stockpile bays, haul roads, site office) will require clearing, stripping and grubbing and topsoil removal, ground levelling development of waste rock stockpile bays. These activities will prohibit any ongoing activities on the farm, albeit none.</p>
<p><b>Nature</b></p>	<p>Negative</p>

<b>Extent</b>	<b>Site Specific to Local</b>
<b>Duration</b>	<b>Long term</b> – The Quarry site cannot be reclaimed to its original state and sites earmarked for other infrastructure will take long to recover to their natural state
<b>Intensity</b>	<b>High</b>
<b>Probability</b>	<b>Definite</b>
<b>Prevention</b>	Complete prevention of this impact will not be possible, but the extent of the impact can be minimized by ensuring that changes in land use are confined to the footprints of the proposed structures and also that already disturbed areas are utilized
<b>Significance (no mitigation)</b>	<b>Low</b> – due to the localized extent
<b>Mitigation</b>	<ul style="list-style-type: none"> <li>• Minimize the project footprint and therefore disturbance to a minimal area as much as possible</li> <li>• Restrict access to sensitive soil areas</li> <li>• Avoid mixing topsoil (which typically rich in seeds) with subsoils during storing of topsoil. Topsoil will have to be removed and safely stockpiled in a particular area and demarcated for later use in rehabilitation work</li> </ul>
<b>Significance (with mitigation)</b>	<b>Low</b>
<b>Confidence Level</b>	<b>High</b>
<b>IMPACTS ON TOPOGRAPHY AND LANDSCAPE</b>	
<b>Description of Potential Impact</b>	Changes in landscape and topography will result from creation of an open pit, removal of overburden, coupled with levelling of ground for support infrastructures
<b>Nature</b>	Negative

<b>Extent</b>	<b>Site Specific to Local</b>
<b>Duration</b>	<b>Permanent</b>
<b>Intensity</b>	<b>High</b>
<b>Probability</b>	<b>Definite</b>
<b>Prevention</b>	Complete prevention of this impact will not be possible unless the no go option is implemented
<b>Significance (no mitigation)</b>	<b>Medium</b>
<b>Mitigation</b>	<ul style="list-style-type: none"> <li>• Exercise ongoing rehabilitation by backfill open pits and replacing soil on cut platforms / access ramps</li> <li>• Practice rockface blinding by placing natural waste rock material against exposed slopes and quarry ramp face</li> </ul>
<b>Significance (with mitigation)</b>	<b>Low</b> – as the impact will be localized
<b>Confidence Level</b>	<b>High</b> – the detailed mine/ quarry plan will facilitate more detailed management recommendations
<b>IMPACTS ON VEGETATION</b>	
<b>Description of Potential Impact</b>	Destruction of habitats by clearing, stripping, grubbing and topsoil removal over footprints of the proposed quarry, waste rock stockpile bays and mobile container office
<b>Nature</b>	Negative

<b>Extent</b>	<b>Site Specific to Local</b>
<b>Duration</b>	<b>Long term</b> – Even though the current planned life of quarry is 5 years, cleared vegetation is unlikely to recover completely within the next 20 years, especially at the quarrying site
<b>Intensity</b>	<b>High</b> as vegetation over the footprints of these structures will be removed completely. Intensity is lower for animals
<b>Probability</b>	<b>Definite</b>
<b>Prevention</b>	Complete prevention of this impact will not be possible
<b>Significance (no mitigation)</b>	<b>High</b>
<b>Mitigation</b>	<ul style="list-style-type: none"> <li>• Avoid illegal wood gathering by enforcing harsh measures to workers for non-compliance</li> <li>• Rescue any geophytes, and donate them to nurseries</li> <li>• Establish a nursery on site if necessary and if budget permits</li> <li>• Make minor adjustments to proposed haul roads between the quarry, support infrastructure and stockpile bays to avoid areas of thick and/ or sensitive vegetation</li> </ul>
<b>Significance (with mitigation)</b>	<b>Medium</b>
<b>Confidence Level</b>	<b>High</b>
<b>IMPACTS FROM SOLID WASTE</b>	
<b>Description of Potential Impact</b>	Generation of solid waste around the working areas (e.g. quarry pit); in areas where maintenance of machinery will be carried out; in sites where used parts, used oil and scrap metal will be stored; and from offices (e.g. packaging, paper, kitchen waste).
<b>Nature</b>	Negative



<b>Extent</b>	Site Specific
<b>Duration</b>	Medium term as per the current mine plan of 5 years
<b>Intensity</b>	Low
<b>Probability</b>	Probable
<b>Prevention</b>	<ul style="list-style-type: none"> <li>Implementation of strict measures, and site staff are disciplined for non-compliance</li> </ul>
<b>Significance (no mitigation)</b>	Low
<b>Mitigation</b>	<ul style="list-style-type: none"> <li>Removal of general waste to an approved landfill in Karibib</li> <li>Recycling or disposal to Karibib's hazardous waste site</li> <li>All hazardous waste must be sent to Karibib for recycling or disposal at Karibib Town Councils hazardous waste disposal site,</li> <li>Wastewater generated from domestic sewage should be recycled, treated and re-used e.g. for dust suppression.</li> </ul>
<b>Significance (with mitigation)</b>	Low
<b>Confidence Level</b>	High
<b>IMPACTS ON INDIGENEOUS FAUNA (REPTILES, MAMMALS, BIRDS)</b>	
<b>Description of Potential Impact</b>	Displacement of indigenous fauna from their natural habitat due to potential fatalities arising from contaminated surface water, road kills or other hazards / litter. Restriction of movement and migration of fauna due to increased movement of vehicles/ plant and increased noise levels. Potential loss of habitats for feeding and possibly breeding sites for birds.
<b>Nature</b>	Negative

<b>Extent</b>	The footprint of the mining claims, access roads and immediate surrounds
<b>Duration</b>	<b>Medium to long term</b> – Impacts will persist over the lifespan of the project. Mine design and construction operations impacts are likely to persist long after end of quarrying
<b>Intensity</b>	<b>Low</b> as most animals will easily migrate away from the affected sites
<b>Probability</b>	<b>Highly Probable</b>
<b>Prevention</b>	Complete prevention of this impact will not be possible
<b>Significance (no mitigation)</b>	<b>Medium</b>
<b>Mitigation</b>	<ul style="list-style-type: none"> <li>• Prevent animal access to artificial water bodies through fencing</li> <li>• Speed limits of 35 km/h and implementation of traffic management plans and road signs at crossings to minimise the risk of road kills and collisions</li> <li>• Prevent illegal hunting and trapping by enforcing harsh non-compliance measures to workers</li> <li>• Prevent creation of hazards by means of good “housekeeping” and prevention of litter</li> <li>• Any animal fatalities should be recorded, and the causes established and remedied</li> <li>• Avoid activities close to large trees near the base of the mountains</li> </ul>
<b>Significance (with mitigation)</b>	<b>Low</b>
<b>Confidence Level</b>	<b>High</b>
<b>DUST IMPACT ON AIR QUALITY</b>	
<b>Description of Potential Impact</b>	Generation of excessive dust resulting from site preparation earthworks, quarrying activities (mining operations and ongoing exploration, bulk excavation), hauling trucks, stockpiling of waste rock. The generated dust will reduce visibility across the site, create unsafe working conditions and adversely impact on the respiratory well-being of

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	personnel working in close proximity to the source areas. Additionally, photo-transpiration efficiency of the surrounding plants may be hampered.
<b>Nature</b>	Negative
<b>Extent</b>	<b>Site Specific to local</b> - Dependent upon the mobility of particles and prevailing weather (wind speed, wind direction, precipitation, etc) conditions. Typically dust from quarrying (actual pit excavation and stripping of the overburden to create direct access for extraction of fresh unweathered marble blocks) affects areas within 2 – 3 km of the source, beyond which air quality conditions normalize. For dust generated from site preparation earthworks, quarrying activities and ongoing exploration, stockpiling only on very windy days will dust travel further than 15km because the source is generally fixed and is a single vector to the affected site and will not move unlike with trucks on dirt roads.
<b>Duration</b>	<b>Medium term</b> as the dust generating activities will be ongoing throughout the life of the quarry. Flora whose functioning will be adversely affected by dust cover are those directly downwind.
<b>Intensity</b>	<b>Moderate effect</b> as air quality conditions will be altered temporarily for the period of these dust generating activities
<b>Probability</b>	<b>Highly Probable</b>
<b>Prevention</b>	<ul style="list-style-type: none"> <li>• Prevention of dust generation for the proposed activities is inevitable</li> </ul>
<b>Significance (no mitigation)</b>	<b>Medium</b> - The small to medium scale quarrying will adversely change the ambient conditions that often prevail. Transportation of the recovered marble blocks will create dust plumes trailing behind them, but this will be limited by speed restrictions of 35 km/h. The impact is persistent for the medium term (i.e. up to 5 years).
<b>Mitigation</b>	<ul style="list-style-type: none"> <li>• Stockpile soils and waste rock with vegetation in /on it</li> <li>• Use of water trucks to spray haul roads with recycled water</li> <li>• Enforce speed limits of 35 km/h on site</li> <li>• Stop bulk excavation on very windy days</li> <li>• Train personnel to wear personal protection equipment at all times</li> <li>• Test personnel health at regular intervals and implement dust monitoring from the start of production</li> </ul>

	<ul style="list-style-type: none"> <li>Install dust collection buckets 500m, 1km and 2km down-wind of the quarry to monitor dust levels through time and to help evaluate how the dust concentrations vary with distance from the quarry.</li> </ul>
<b>Significance (with mitigation)</b>	<b>Medium</b>
<b>Confidence Level</b>	<b>High</b> <ul style="list-style-type: none"> <li>Dust monitoring program must be implemented right from the start of production to establish dust levels</li> </ul>
<b>NOISE AND VIBRATIONS IMPACTS FROM QUARRYING (MINE WORKINGS)</b>	
<b>Description of Potential Impact</b>	Noise and ground vibrations will be generated from ongoing exploration and quarrying activities. The proposed quarry activities will potentially contribute to the cumulative effects of traffic noise in areas within a radius of 2 to 3 km from the quarry site. The noise may also impact on the temporary or permanent habits of the fauna in that particular location where activities takes place.
<b>Nature (-/+)</b>	<b>Negative</b>
<b>Extent</b>	<b>Site specific</b> and <b>Localized</b>
<b>Duration</b>	<ul style="list-style-type: none"> <li>Vehicles in the quarry – 14 to 16 hours/day x 6 days/week</li> <li>Medium term (up to 5 years as per the current mine plan)</li> </ul>
<b>Intensity</b>	<ul style="list-style-type: none"> <li>At 3km from the site, the impact should be low.</li> </ul>
<b>Probability</b>	<b>Probable</b> – depending on distance from the source
<b>Prevention</b>	Noise creation cannot be prevented completely and will occur and should be mitigated as best as possible.

<b>Significance (no mitigation)</b>	<b>Low</b> - although fairly intense with 1 km radius, it will be of very short duration each day																																																													
<b>Mitigation</b>	<ul style="list-style-type: none"> <li>- Regular maintenance of drilling machinery and should maintain the acceptable noise levels for operators working with the machines. The activities are to take place during daylight hours only. Periods of silence during the day may be necessary.</li> <li>- Maintain silencers on equipment and vehicles</li> <li>- Leave as much vegetation in the surrounding as possible</li> <li>- Any complaints regarding noise should be recorded.</li> </ul> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th rowspan="3" style="background-color: #ADD8E6;">Type of District</th> <th colspan="6" style="background-color: #ADD8E6;">Equivalent Continuous Rating Level (<math>L_{Req,T}</math>) for Noise (dBA)</th> </tr> <tr> <th colspan="3" style="background-color: #ADD8E6;">Outdoors</th> <th colspan="3" style="background-color: #ADD8E6;">Indoors, with Open Windows</th> </tr> <tr> <th style="background-color: #ADD8E6;">Day-night <math>L_{R,dn}^{1)}</math></th> <th style="background-color: #ADD8E6;">Day-time <math>L_{Req,d}^{2)}</math></th> <th style="background-color: #ADD8E6;">Night-time <math>L_{Req,n}^{2)}</math></th> <th style="background-color: #ADD8E6;">Day-night <math>L_{R,dn}^{1)}</math></th> <th style="background-color: #ADD8E6;">Day-time <math>L_{Req,d}^{2)}</math></th> <th style="background-color: #ADD8E6;">Night-time <math>L_{Req,n}^{2)}</math></th> </tr> </thead> <tbody> <tr> <td>a) Rural districts</td> <td>45</td> <td>45</td> <td>35</td> <td>35</td> <td>35</td> <td>25</td> </tr> <tr> <td>b) Suburban districts with little road traffic</td> <td>50</td> <td>50</td> <td>40</td> <td>40</td> <td>40</td> <td>30</td> </tr> <tr> <td>c) Urban districts</td> <td>55</td> <td>55</td> <td>45</td> <td>45</td> <td>45</td> <td>35</td> </tr> <tr> <td>d) Urban districts with one or more of the following: workshops; business premises; and main roads</td> <td>60</td> <td>60</td> <td>50</td> <td>50</td> <td>50</td> <td>40</td> </tr> <tr> <td>e) Central business districts</td> <td>65</td> <td>65</td> <td>55</td> <td>55</td> <td>55</td> <td>45</td> </tr> <tr> <td>f) Industrial districts</td> <td>70</td> <td>70</td> <td>60</td> <td>60</td> <td>60</td> <td>50</td> </tr> </tbody> </table> <p style="font-size: small; margin-top: 5px;">Note: Daytime: 06:00 to 22:00, Night-time: 22:00 to 06:00.  <sup>1)</sup> Equivalent continuous rating levels that include corrections for tonal character and impulsiveness of the noise and the time of day.  <sup>2)</sup> Equivalent continuous rating levels that include corrections for tonal character and impulsiveness of the noise.</p>	Type of District	Equivalent Continuous Rating Level ( $L_{Req,T}$ ) for Noise (dBA)						Outdoors			Indoors, with Open Windows			Day-night $L_{R,dn}^{1)}$	Day-time $L_{Req,d}^{2)}$	Night-time $L_{Req,n}^{2)}$	Day-night $L_{R,dn}^{1)}$	Day-time $L_{Req,d}^{2)}$	Night-time $L_{Req,n}^{2)}$	a) Rural districts	45	45	35	35	35	25	b) Suburban districts with little road traffic	50	50	40	40	40	30	c) Urban districts	55	55	45	45	45	35	d) Urban districts with one or more of the following: workshops; business premises; and main roads	60	60	50	50	50	40	e) Central business districts	65	65	55	55	55	45	f) Industrial districts	70	70	60	60	60	50
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<b>Confidence Level</b>	<b>High</b>
<b>IMPACTS ON SURFACE WATER RESOURCES</b>	
<b>Description of Potential Impact</b>	Potential contamination of surface water will result from: reduced quality of runoff and seepage from the quarry, stockpile areas and waste rock dumps; accidental effluent discharge; Accidental discharge of grease, oil, fuel and other hydrocarbon from storage facilities; erosion resulting in mobilisation of soils into streams and rivers from exposed road surfaces and other cleared areas
<b>Nature (+ or -)</b>	<b>Negative</b>
<b>Extent</b>	<b>Local</b>
<b>Duration</b>	<b>Medium Term</b> – Contaminants may however stay in the water stream for a long term
<b>Intensity</b>	Generally <b>Low</b> , except during heavy rains
<b>Probability</b>	<b>Highly Probable</b> – as the proposed project site generally lies on moderately steep slopes
<b>Prevention</b>	Complete prevention of these impacts is not possible
<b>Significance (no mitigation)</b>	<b>Low</b>
<b>Mitigation</b>	<ul style="list-style-type: none"> <li>• Establish water controls</li> <li>• Design, construct and maintain temporary drainage installations for reoccurrence periods stipulated under the Roads Authority Drainage Manual</li> <li>• Keep clean water away from quarry sites through the use of diversion channels</li> <li>• Keep dirty water contained so that it cannot be discharged to the environment but reused within the plant</li> <li>• Apply erosion controls to minimize sediment runoff</li> <li>• Install at least three (3) water quality monitoring borehole downstream of the quarry</li> </ul>
<b>Significance (mitigation)</b>	<b>Low</b>

<b>Confidence Level</b>	<b>High</b>
<b>IMPACTS ON GROUNDWATER</b>	
<b>Description of Potential Impact</b>	Potential contamination of groundwater by residues of drilling fluids, fuels and oils from vehicles and machinery used in the quarry, hydraulic fluids or domestic sewage. Other potential sources of groundwater contamination may include wash water from vehicles.
<b>Nature (+ or -)</b>	<b>Negative</b>
<b>Extent</b>	Since water will be abstracted from a single borehole and probably the quarry, the cone of depression should be sufficient to limit any contamination to an area close to the site.
<b>Duration</b>	The potential for contamination will exist for as long as the mine operations continue
<b>Intensity</b>	<b>Low to Minor</b>
<b>Probability</b>	<b>Highly probable</b> – unless mitigation is effectively implemented
<b>Prevention</b>	<ul style="list-style-type: none"> <li>• Prevention of the impacts is possible, if for instance vehicles are properly maintained and all parking lots are paved with peripheral diversion ditches to divert any contact water</li> </ul>
<b>Significance (no mitigation)</b>	<b>Low</b>
<b>Mitigation</b>	<ul style="list-style-type: none"> <li>• Pump water from quarry pit for use</li> <li>• Maintain all vehicles to prevent spills of oils, hydraulic fluids etc</li> <li>• Pave vehicle parks and collect runoff</li> <li>• Bund all hazardous liquid storage installations such as the trailer mounted diesel tank</li> <li>• Ensure collection of liquid waste and recycling or legal disposal at an approved disposal facility in Karibib</li> <li>• Water quality tests should be undertaken to establish baseline water quality, and periodic water quality monitoring from abstraction boreholes is recommended during operations.</li> </ul>

<b>Significance (mitigation)</b>	<b>Low</b>
<b>Confidence Level</b>	<b>High</b>
<b>OCCUPATIONAL HEALTH AND SAFETY IMPACTS</b>	
<b>Description of Potential Impact</b>	The potential impacts on human safety resulting from project activities could include occupational accidents and injuries, vehicle accidents, exposure to weather extremes, trips and fall on uneven terrain, adverse health effects from dust generation and emissions, and contact with hazardous materials. The potential for these impacts to occur would be low due to the small scale of operations.
<b>Nature (+ or -)</b>	<b>Negative</b>
<b>Extent</b>	<b>Site specific</b>
<b>Duration</b>	<b>Permanent</b>
<b>Intensity</b>	<b>Minor to Serious Effects</b>
<b>Probability</b>	<b>Highly probable</b>
<b>Prevention</b>	<p>An integrated health and safety management system acts as a monitoring tool and mitigating tool. Typical mitigating measures within the health and safety management systems are:</p> <ul style="list-style-type: none"> <li>• Operational and procedural manuals</li> <li>• Health and safety training</li> <li>• Housekeeping rules</li> <li>• Colour coding areas, pipes, equipment and substances</li> <li>• Signage for personal protective equipment (e.g. protective clothing like safety boots and hard hats)</li> <li>• Safe working procedures and permits to work</li> <li>• Emergency response plans</li> <li>• Material Safety Data Sheets (MSDS)</li> <li>• First aid treatment and training to employees on site</li> </ul>



	<ul style="list-style-type: none"> <li>• Medical procedures and emergency services</li> <li>• Daily safety reminders and/or drills</li> <li>• Regulations for handling fuel</li> </ul> <p>The MSDS gives health related medical responses for personnel assisting staff who are exposed to the fuels.</p>
<b>Significance (no mitigation)</b>	<b>Low</b>
<b>Mitigation</b>	<ul style="list-style-type: none"> <li>• Procedures for dealing with injuries or accidents must be in place and all contact details for emergency personnel available. The company safety manual must be applied as developed by the guidelines and statutory requirements under the Labour Act.</li> <li>• As per the Labour Act (Act 6 of 1992) and SABS 10083 (2004) workers will need to be protected against dust and noise in the workplace. SABS 10083 (2004) requires that noise levels in the workplace (as defined and measured in accordance with that standard) should not exceed 85 dBA. If this limit is reached, then a noise zone must be declared. A noise zone has special requirements for protective equipment and for training of exposed personnel.</li> <li>• Dust will be released into the air during quarrying and stockpile bays and haul roads. SABS 1929 (2005) provides the following standards for PM10 particulate matter:             <ul style="list-style-type: none"> <li>○ The daily limit for the protection of human health over a 24hour period is 75 µg/m<sup>3</sup></li> <li>○ The annual limit for a calendar year is 40 µg/m<sup>3</sup></li> <li>○ Workers must go for regular (bi-annual) health check-ups to ensure that these targets are met. In addition, continuous dust monitoring must be implemented</li> <li>○ Borehole abstracted for human consumption must comply with acceptable water quality specifications provided in Section 21 of the Water Act (Act 54 of 1956) of the Republic of Namibia</li> </ul> </li> </ul>
<b>Significance (with mitigation)</b>	<b>Low</b>
<b>Confidence Level</b>	<b>High</b>

POTENTIAL SECURITY ISSUES	
<b>Description of Potential Impact</b>	Potential increase in illegal wildlife hunting due to increase in people and vehicles on the farms
<b>Nature (+ or -)</b>	<b>Negative</b>
<b>Extent</b>	<b>Local</b> (Project Farm and neighbouring farms)
<b>Duration</b>	<b>Medium Term</b> – i.e. for as long the operation is ongoing
<b>Intensity</b>	<b>Low</b>
<b>Probability</b>	<b>Improbable</b>
<b>Prevention</b>	Prevention is possible if stringent security and non-compliance measures/ actions are enforced
<b>Significance (no mitigation)</b>	<b>Low</b>
<b>Mitigation</b>	<ul style="list-style-type: none"> <li>Establish security checkpoints and control points</li> <li>Conditions of employment</li> <li>Enforce stringent measures/ actions for non-compliance</li> </ul>
<b>Significance (with mitigation)</b>	<b>Low</b>
<b>Confidence Level</b>	<b>Medium</b> - depends on the effectiveness of security management
VISUAL IMPACTS AND LIGHTING	
<b>Description of Potential Impact</b>	<p>Visual impacts are likely to arise from changes to the aesthetic appeal of the area due to presence of people, vehicles and machinery. Visible changes to habitats due to human activities and the quarry pit.</p> <p>Lighting at night could be visible from the B2 road and railway line.</p>
<b>Nature (-/+)</b>	<b>Negative</b>
<b>Extent</b>	<b>Localized</b>

<b>Duration</b>	<b>Short</b> (presence of vehicles, personnel and machinery) <b>Long</b> (un-rehabilitated site)
<b>Intensity</b>	<b>Moderate Effects</b>
<b>Probability</b>	<b>Definite</b>
<b>Prevention</b>	<ul style="list-style-type: none"> <li>Prevention is not possible for the quarry and waste rock stockpile bay sites.</li> </ul>
<b>Significance (no mitigation)</b>	<b>Medium</b>
<b>Mitigation</b>	<ul style="list-style-type: none"> <li>Minimize the footprint of personnel, vehicles and machinery. As far as is possible no vegetation is to be removed. Where new roads are constructed, the methods should be low intensive.</li> <li>Quarry pits should be levelled or possibly turned into earth dams which gently sloped sides once mining activities cease so as to restore the visual sense of place of the area to its natural state.</li> <li>The remains of all structures that may have been erected at the quarry and support infrastructure shall be demolished and removed on completion of the project.</li> <li>Care must be taken to ensure that all rehabilitated areas are similar to the immediate environment in terms of visual character, vegetation cover and topography and any negative visual impacts will be rectified to the satisfaction of the MEFT officials.</li> <li>Stripped overburden to be backfilled as part of the rehabilitation programme</li> </ul>
<b>Significance (with mitigation)</b>	<b>Low</b>
<b>Confidence Level</b>	<b>Medium</b> – Overtime fauna and flora will recolonize disturbed sites and rehabilitate the area from an aesthetic perspective. The aim is to minimize the footprint to achieve the least impact due to anthropogenic influences and utilize already disturbed areas.
<b>IMPACTS ON HERTIAGE</b>	
<b>Risk Event</b>	Potential disturbance and damage to unforeseen / undetected archaeological or heritage sites during site clearance and quarrying activities.

**Environmental Assessment Report: Small to Medium Scale Quarrying on Mining Claims 72499, 72500, 72501, 72052 and 72503**

<b>Description of Potential Impact</b>	Any archaeological or historic sites of significant importance within the mining claims that are damaged or destroyed would constitute an impact on the heritage of Namibia.  The procedure of 'chance finds' is to be followed where no known sites of importance are recorded for the MC area.
<b>Nature (-/+)</b>	<b>Negative</b>
<b>Extent</b>	<b>Site specific</b>
<b>Duration</b>	<b>Long term</b>
<b>Intensity</b>	<b>Minor effect</b> (no sites of importance are currently known)
<b>Probability</b>	<b>Improbable</b>
<b>Prevention</b>	Impacts of this nature are avoided especially if the site locations are known.
<b>Significance (no mitigation)</b>	<b>Medium</b>
<b>Mitigation</b>	<ul style="list-style-type: none"> <li>A 'chance find' of any potential heritage site should be communicated to the police and the National Heritage Council of Namibia. If activities occur at the location where a 'chance find' has been made, then the activities should cease until the necessary authorities have visited the site and provided the go ahead to proceed with activities.</li> </ul>
<b>Significance (with mitigation)</b>	<b>Low</b>
<b>Confidence Level</b>	<b>Medium</b> - Knowledge of the whereabouts of heritage sites is not known.
<b>PUBLIC PERCEPTION</b>	

<b>Description of Potential Impact</b>	It is not possible to apply the assessment table to this issue. Public perceptions just need to be managed through good supply of information and publicity programmes
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## **6.4 Decommissioning**

In a perfect world, mines only close when their mineral resources are exhausted and a mine closure plan is in place and progressively implemented. The decommissioning phase refers to the cessation of all mine (quarry) workings as well as the removal and/ or rehabilitation of any support infrastructure at the proposed project area. Closure and decommissioning of the Project must be accomplished in accordance with local legislation and the Proponents Company Policy and Standards.

Disturbance of the earth's surface by any form of mining will result in complete removal of existing vegetation and ecosystems within the disturbed area. The impacts are significant, but localized to the disturbed area, and the overall extent of the impact is determined by the concentration of mining and the sensitivity and recovery rate of the disturbed ecosystems. Poorly closed and derelict (orphaned and abandoned) quarries provide a difficult legacy issue for governments, communities and dimension stone companies and, ultimately, tarnish the mining industry as a whole.

Taking a more integrated approach to decommissioning and mine closure planning, and doing it earlier, can achieve effective mine closure and completion, and ameliorate the negative effects of unexpected or unplanned closures. During the operational phase of a quarry, the impact on the environment can be lessened by planning with future closure in mind. The vision of a mine closure and decommissioning plan should be to ensure that a process is established to guide all decisions and actions during a mine's life that:

- Future public health and safety are not compromised.
- Environmental resources are not subject to physical and chemical deterioration.
- The post-mining use of the site is beneficial and sustainable in the long term.
- Any adverse socio-economic impacts are minimised.
- The opportunity is taken to maximise socio-economic benefits.
- Comply with relevant regulatory requirements and attain regulatory consensus on the successful closure and rehabilitation of the Project area.
- Produce a final "walk away" landform that is stable and that blends aesthetically into the surrounding landscape, yet as far as possible does not impend possible future land uses.

## **6.5 Site Rehabilitation**

Reclamation activities shall be designed to achieve, at a minimum, post-mining land use consistent with a level of productivity and biodiversity present at pre-mining levels. Post-mining land use would be determined in consultation with the EAP, other Namibian governmental institutions (MET, MME) and stakeholders.

The objectives of the site rehabilitation are to:

- Undertake ongoing and staged rehabilitation works to limit the area of disturbance at any given time.
- Provide a safe and stable landform compatible with the intended final use.
- Re-establish habitat for local flora and fauna.
- Reduce the need for long term monitoring and maintenance by achieving effective rehabilitation.
- Complete the closure, decommissioning and rehabilitation works as quickly and cost effectively as possible whilst achieving primary objectives.
- Minimise visual impact of the operation during the operational phase as well as post-quarrying.

The Proponent should keep the disturbed areas to a minimum; trees and other plants should not be removed unless necessary; selective quarrying should be adopted so that the entire site is not cleared and affected at once; backfilling and rock shading should be practiced while exhausted areas should be closed to the extent possible before opening new ones.

### **6.5.1 Planning for Rehabilitation**

Quarrying sites will have features that influence the procedures adopted in the rehabilitation program. These characteristics may be obvious but critical differences are often only identified by careful investigation. The proposed post mining land-use will also influence the procedure and the plant species used for rehabilitation.

The following are basic rehabilitation practices as summarized after the Minerals Council of Australia (2015), which with appropriate modifications, will apply to most disturbed areas.

- 1. Education and Training:** It is important to educate mine contractors and personnel about what is required in relation to design, placement of soils and waste rock. An education / training program should be developed that explains the long-term mine closure goals and rehabilitation goals, and the reasons why materials are segregated and potential long-term impacts on the environment and closure. Regular reviews and rollout, especially to new contractors and employees, is critical for its success. The commencement of a new operation is the ideal time to establish the basic environmental ground rules for all activities on the site through staff education and then enforcing environmental management systems and protocols.
- 2. Health and Safety:** A key objective of successful mine closure and rehabilitation is to ensure that the future public health and safety of the community is not compromised. After educating and training all personnel, the first step is to clean up and make the area to be rehabilitated and safe. For this project this shall involve the following:

  - Development of proactive engagement strategies with employees, local communities and other stakeholders on health and safety aspects of the closure process.
  - Introduction of increased safety risks to employees, who—faced with mine closure and consequent loss of employment may have reduced motivation and morale, which can lead to workplace safety issues.
  - Removal of support infrastructure and unused or unwanted equipment from the affected site. No facilities or equipment should remain on site unless with the written approval of the landowner or relevant authority (i.e. Karibib Town Council's Environmental Health Department and Environmental Commissioner's Office).
  - Sealing or capping of all boreholes.
  - Partial reclamation of open pit voids by backfilling with waste rock.
  - Removal of all industrial and domestic solid and liquid waste for disposal at approved sites in Karibib. Care is required with residual toxic or hazardous materials including contaminated packaging and containers.
- 3. Topsoil Management:** The site rehabilitation strategy may include the following measures which are designed to minimize the loss of topsoil material, which must be respread on rehabilitated areas thereby promoting successful vegetation establishment.



- A maximum stockpile height of 3 meters will be maintained to preserve viability and reduce soil deterioration.
- Minimize the length of time that topsoil material is to be stockpiled.
- Topsoil will be re-spread in the reverse sequence to its removal, so that the organic layer, containing any seed or vegetation, is returned to the surface.
- Topsoil will be spread to a minimum depth of 50 mm on 1:3 or steeper slopes and to a minimum depth of 150 mm on flatter slopes.
- Re-spreading on the contour will aid runoff control and increase moisture retention for subsequent plant growth.
- Stockpiles shall be located in areas away from drainage lines or windy areas in order to minimize the risk of soil and wind erosion.
- Rehabilitated areas of returned topsoil will be ripped to about 1 m depth, with care taken not to bring subsurface materials to the surface (e.g., large rocks). Ripping should only be sufficient to allow equipment to work efficiently.

**4. Progressive rehabilitation:** The ability to progressively rehabilitate sections of the mine site as they become available is an important way of reducing the long-term closure liability and is encouraged by most regulatory authorities. Actively rehabilitating areas during the operational stage can usually be cost-effective. Earthworks can be completed when equipment is available or when contractor equipment is mobilised to a site for other jobs. The most cost-effective earthworks can be completed when they are integrated into the mine plan for example, when waste rock is being hauled out of a pit and placed into a dump, the waste rock could be transported to an adjacent dump that needs a rock mulch cover over the final landform to reduce erosion. Rather than doublehandling the material, the incremental initial cost in transporting it the extra distance is more than compensated by the resulting cost-effective and timely progressive rehabilitation.

Benefits of progressive rehabilitation include:

- reduction of the overall un-rehabilitated 'footprint' of the mine.
- an ability to trial various options and demonstrate rehabilitation outcomes to wider community
- showing commitment to stakeholders and employees that the mine has an active mine rehabilitation program.
- reduction of the overall closure costs.
- reduction of the risk of failure and ultimate liability.

## **7 CONCLUSIONS**

### **7.1 Closing Remarks**

The aim of this environmental scoping assessment was to identify the potential impacts associated with the proposed marble mining and ongoing exploration activities on mining claims 72499, 72500, 72501, 72502 and 72503 and assess their significance and recommend practical mitigation measures.

The public and all directly affected stakeholders were consulted as required by the EMA and its 2012 EIA Regulations (Section 21 to 24). The public was informed via the three newspapers, advertisement used for this assessment; site/public notices placed in the project site area, relevant local and regional offices notice boards, as well as email, WhatsApp and SMS communications to identified and registered I&APs.

One-on-one interactions were held with the landowner. The interested and affected parties raised their comments and concerns on the proposed project activities. The concerns and comments received from the public and the local community members formed the basis for this report as well as the accompanying EMP.

Overall, due to the nature and localized scale of the proposed marble quarrying and ongoing exploration activities, and the environmental context of the site, the potential environmental and social effects are limited and unlikely to be significant. Where possible, it is suggested that the proponent utilizes disturbed areas on the site in order to protect pristine areas. Focus should be placed on developing and utilizing existing disturbed and contaminated grounds.

Based on this and the residual significance of the impacts identified after implementing proposed mitigation measures, it is recommended that an Environmental Clearance Certificate be issued for the proposed quarrying and mine workings on mining claims 72499, 72500, 72501, 72502 and 72503; subject to the implementation of the management and mitigation measures outlined in the accompanying EMP report. It is crucial that environmental monitoring be implemented as detailed in the EMP and ECC.

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**APPENDIX A – ECC APPLICATION AND  
BACKGROUND INFORMATION DOCUMENT  
(BID)**

ANNEXURE 1  
FORMS

APP-003007

Form 1

REPUBLIC OF NAMIBIA

ENVIRONMENTAL MANAGEMENT ACT. 2007

(Section 32)

APPLICATION FOR ENVIRONMENTAL CLEARANCE CERTIFICATE



PART A: DETAILS OF APPLICANT

1. Name: (person or business) <b>Herman Honeb</b>	
2. Business registration/identity No. <b>63040401718</b>	
3. Correspondence Address: <b>P.O Box 334, Henties Bay, Erongo, Namibia</b>	
4. Name of Contact Person: <b>Herman Honeb</b>	
5. Position of Contact Person: <b>Project Proponent</b>	
6. Telephone No.: <b>+2648 405 9135 or +264 81 478 6303</b>	
7. Fax No.: <b>N/A</b>	
8. E-mail Address: if any <b><u>lithoneb63@yahoo.co.uk</u> OR <u>info@omavi.com.na</u></b>	

**PART B: SCOPE OF THE ENVIRONMENTAL CLEARANCE CERTIFICATE****1. The Environmental Clearance Certificate (ECC) is for:**

Undertaking small-medium scale quarrying for dimension stone quality marble and other economic rock deposits on Mining Claims (MC) 72499 to 72503 in the Karibib Constituency, Erongo Region, for the production of dimension stone.

The proposed activities are listed activities under the Environmental Management Act (7 of 2007) and its 2012 EIA Regulations, and may not be conducted without a valid ECC obtained from the Department of Environmental Affairs (DEA). The proposed activities would trigger a number of listed activities as indicated in the table below:

ACTIVITY	DESCRIPTION OF ACTIVITY	RELEVANCE OF LISTED ACTIVITY
Activity no. 2.1	The construction of facilities for waste sites, treatment of waste and disposal of waste	The proposed activity will require development of stockpiles for waste rock not suitable for dimension stone production as well as stockpiling of top soil stripped off to access the targeted rock unit
Activity no. 3.1	The construction of facilities for any process or activities which requires a license, right or other form of authorization, and the renewal of a license, right or other form of authorization, in terms of the Minerals (Prospecting & Mining Act), 1992	The proposed project will entail brownfield exploration and quarrying activities, both of which require environmental clearance and prospecting/ mining permitting prior to commencement
Activity no. 3.2	Other forms of mining or extraction of any natural resources whether regulated by law or not	The proposed project would require surface clearing and excavation over the footprint of the targeted rock unit, followed by subsequent butterfly cutting & splitting of the targeted bedrock (during exploration and quarrying) and finish diamond wire-saw cutting (during quarrying of dimension stone blocks).
Activity no. 3.3	Resource extraction, manipulation, conservation & related activities	
Activity no. 5.1(c & d)	Change in land use from agricultural use to industrial (mining & marginal beneficiation) use	The proposed project would require the establishment of portable housing/ office units and a quarry at the sites, thus changing the land use from grazing land to mining for the duration of the quarry activities
Activity no. 8.1	The abstraction of ground or surface water for industrial or commercial purposes	The proposed exploration and quarrying activities may require drilling or rehabilitation of a borehole(s) and subsequent abstraction of groundwater, with a combined water requirement of approximately 60 000 L per week for both domestic and exploration/ quarrying activities. Water to be recycled during the operations
Activity no. 9.4	The storage and handling of a dangerous	It is anticipated that a portable

	goods, including petrol, diesel, liquid petroleum gas or paraffin, in containers with a combined capacity of more than 30 m <sup>3</sup> (30 000L) at any one location	diesel generator will be used for power generation for both domestic and industrial use at the site.
Activity no. 10.1 (b)	The construction of – public roads	The proposed project will include the construction and/ or extension of existing access roads for access to the various quarry sites

2. Details of the activity(s) covered by the environmental clearance certificate:

**Title of Activity:**

Quarrying of good quality marble and other dimension stone quality rocks for the production of dimension stone on Mining claims 72499 to 72503 in the Karibib Constituency, Erongo Region.

**Nature of Activity:**

The proposed activity will entail small-medium quarrying of marble and other dimension stone quality rocks for dimension stone production purposes. The planned operation will entail quarrying, on-site sizing and stacking/ stockpiling of 5 and 7 m<sup>3</sup> blocks, and continuous brownfield exploration within each claim. The planned activities, required equipment, desirability of the project as well as the apparent potential environmental impacts are documented in the Background Information Document (BID) attached herewith and are also briefly described below.

**Planned Activities**

The quarrying and first stage processing activities will include:

- Stripping of top soils and loose debris to expose the targeted rock units
- Creation of quarry access haul roads through cut and fill operations
- Quarrying with a combination of diamond wire saws and butterfly cutters to cut out rectangular blocks of 5 m<sup>3</sup> and 7 m<sup>3</sup>
- Stacking and stockpiling of cut out blocks in designated bays adjacent to site access roads for ease of loading onto trucks. Further processing of the mined out blocks will either take place at one of the stone processing factories in Karibib or Walvis Bay. Transportation of blocks from site will be by means of flat deck interlink trucks or by rail.
- Stockpiling and simultaneous backfilling and wall cladding of open quarries with waste rock, and ultimately, surface topping with top soil.

**Required infrastructure and equipment**

**Track Access Roads:** The claims will be accessed from Karibib and the B2 national highway via numerous existing farm tracks. There are existing exploration and farm access tracks running to and from these claims which will be utilized as the main routes. For this reason, only few new tracks or access roads will be created to access specific targeted sites within each mining claim. Existing tracks will be widened in the process due to the wider axle width of trucks and various earth moving plant such as front-end loaders, excavators and trucks.

**Power Supply:** A fixed diesel engine powered generator, with an enclosure canopy for sound absorption, will be used for power supply at each operational quarry. Such



generator will be placed on a concrete bund for stability and leakage control purposes. More specifically, this generator will be used to power air compressors, portable drilling machines, and various cutting machines. Diesel to power all machinery (trucks, earth-moving plant, bakkies, generator, air compressor) will be stored on site in a portable above-ground 10 000L diesel tank. Power for domestic use will be by means of solar panels to be installed at the workers quarters.

**Water Supply:** All water requirements for the proposed activities will be sourced from existing and new boreholes, subject to permission being granted by the concerned farmer of Farm Onguati 52 and 53.

**Transportation:** Cut out dimension stone blocks will be hauled by long distance flat deck interlink trucks from the test quarry sites to stone processing factories in Karibib or Walvis Bay for further processing and quality assessment. Total load for every truck leaving the site shall comply with the maximum permissible load requirements for Roads Authority. Additionally, the blocks shall be secured safely on the back of such trucks to the satisfaction of the truck driver and exploration program supervisor.

**Support infrastructure:** Temporary pre-fabricated and/ or containerised site office and accommodation quarter shall be set up in the vicinity of the 5 claims. These movable structures shall be erected at the site to provide accommodation for the mining crew, storage space for kitchen and food supplies, storage space for mechanical spares, site office and ablution facilities with septic tanks. Open quarries will be fenced off to ensure the safety of loaming wildlife.

**Sewage and Waste Facilities:** Portable ablution facilities with septic tanks will be provided within close proximity to the workers quarters. Additionally, designated solid waste disposal bins which will be provided at or near the accommodation and working areas for domestic waste collection purposes. Industrial waste such as scrap metals, empty containers, and used oils and grease will be stored in a designated fenced off small yard at the camp site. Waste rock and top soil shall be stored/ preserved at designated bays near each site. Vegetation cleared during stripping shall be burnt on site, and care shall be taken by the site supervisor to ensure that such fires are well contained and do not spread to other areas.

**Soil Management:** Top soil and overburden stripped from the surface to expose the targeted bedrock will be stockpiled for backfilling during the site reclamation and rehabilitation phase.

**Required Equipment:** The following equipment and machinery will be mobilized to support the prospecting activities:

- front-end loaders – for stripping, creation of access tracks, and loading earth onto trucks
- excavators – for overburden removal and loading of overburden onto trucks
- trucks – for removal and haulage of overburden to designated stockpiling spots
- portable drill machine – for rotary core drilling of holes through blocks and bedrock for block sizing and production purposes
- blade and wire saw cutters – for cutting out blocks during ongoing exploration and quarrying
- bakkies to carry supplies and transport workers
- air compressors

**Closure Phase**

Considering the size of the 5 mining claims, the resource of the 5 mining claims is expected to last in excess of 25 years. Rehabilitation will be carried out on an ongoing basis through backfilling, flattening of quarry pits and closure of access roads. Production boreholes will be sealed off to avoid unwanted entry of external substances. All solid and liquid waste such be removed from site and transported. Water boreholes will be donated to the affected farmer.

**Location of Activity:**

The claim are located approximately 20 km NW of Karibib on Farm Onguati 52 and 53, Karibib Constituency in the Erongo Region. The area can be access via existing farm access tracks and gravel roads.

Project Location			
Combined site extent:	84 Ha		
Approximate Site coordinates:	Mining claim 72499:		
	<b>MC</b>	<b>Lat</b>	<b>Long</b>
	72499	-21.843864°	15.763772°
		-21.838992°	15.763575°
		-21.837500°	15.766389°
		-21.842500°	15.766389°
	Mining claim 72500:		
	72500	-21.845528°	15.760586°
		-21.840578°	15.760561°
		-21.838992°	15.763575°
		-21.843864°	15.763772°
	Mining claim 72501:		
	72501	-21.821389°	15.784167°
		-21.823889°	15.784167°
		-21.826667°	15.778611°
		-21.824167°	15.778611°
	Mining claim 72502:		
	72502	-21.849075°	15.754231°
		-21.844483°	15.754208°
		-21.842619°	15.757219°
-21.847203°		15.757561°	

	<b>Mining claim 72503:</b>									
	72503	<table border="1"> <tr> <td>-21.847203°</td> <td>15.757561°</td> </tr> <tr> <td>-21.842619°</td> <td>15.757219°</td> </tr> <tr> <td>-21.840578°</td> <td>15.760561°</td> </tr> <tr> <td>-21.845528°</td> <td>15.760586°</td> </tr> </table>	-21.847203°	15.757561°	-21.842619°	15.757219°	-21.840578°	15.760561°	-21.845528°	15.760586°
-21.847203°	15.757561°									
-21.842619°	15.757219°									
-21.840578°	15.760561°									
-21.845528°	15.760586°									
<b>Local Authority:</b>	Peter Berger (Owner of Farm Onguali 52 & 53)									
<b>Regional Authority:</b>	Karibib constituency, Erongo Regional Council									

**Scale and Scope of Activity:**

The proposed activity covers an area of 84 Ha. The mining claims follow a calc-silicate and marble ridge that belongs to the Namibian Formation. Because the rock unit is not homogeneous in terms of rock mass quality it is unlikely that quarrying will be conducted throughout the footprints of the mining claims. As such the physical area to be affected by the activity is anticipated to be smaller than 84 Ha.

The envisaged scope of activities is briefly outlined under the planned activities subsection.

**Anticipated Environmental Impacts:**

The obvious potential impacts of the quarrying operations are highlighted below. It is important to note that the type and scale of impacts will differ between different phases of the project, and as such the environmental monitoring and management measures will also differ between the different phases of the project.

**Potential Positive Impacts:**

- Employment opportunities during the quarrying and processing phase
- Contribution towards the sustained operation of the Karibib and Walvis Bay dimension stone processing factories, which are significant contributors to the local economy and social livelihoods in these towns
- Sustained and increased revenue generation for shareholders and the state.
- Support to local businesses through the procurement of consumable items such as PPE, machinery spare parts, security, lubricants and mechanical maintenance
- Skills transfer for locals

**Potential negative Impacts identified:**

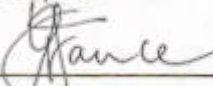
- Dust generation due to surface excavation, drilling and diamond wire sawing.
- Impact on vegetation and fauna: some vegetation may need to be removed to create access roads and working space, potentially leading to habitat disturbance. The satellite

imagery of the area suggests that the site has sparse vegetation, and hence it is anticipated that minimal disturbance to vegetation will occur.

- Possible over-abstraction and pollution of groundwater.
- Noise generated by earth moving, drilling and quarrying machinery
- Potential damage to subgrade due to traffic compaction along tracked/ haul access roads. This has the potential to increase surface runoff, especially where the top soil is relatively cohesive.
- Risk of hydrocarbon spillages in the working areas and workshops if not properly managed
- Health and safety hazards to personnel from moving/ operating machinery and quarry slope failures if proper risk mitigation measures and thorough geotechnical assessments are not conducted.
- Excess pore water pressures may develop in quarry walls below the water table, and potentially cause slope collapse or failure, especially along fracture zones.
- Possible adverse socio-economic impacts include:
  - Disputes between mining proponent/ contractor and farmer and/ or other EPL or mining claim holders
  - Conflicting land use (e.g. cattle ranching vs quarrying)

#### PART C: DECLARATION BY APPLICANT

I hereby certify that the particulars given above are correct and true to the best of my knowledge and belief. I understand the environmental clearance certificate may be suspended, amended or cancelled if any information given above is false, misleading, wrong or incomplete.

	<b>Herman Honeb</b>	<b>License Holder</b>
Signature of Applicant	Full name in Block Letters	Position
<b>Herman Honeb</b>		<b>02 September 2021</b>
On behalf of		Date



REPUBLIC OF NAMIBIA

**PRO-FORMA ENVIRONMENTAL CONTRACT**

WHEREAS the Applicant/ Company referred to below, has been notified under section 48(4) of the Minerals (prospecting and Mining) Act, 1992 that the Minister of Mines and Energy is prepared to grant the applicant Mining Claims subject to certain terms and conditions and;

WHEREAS such terms and conditions include the condition precedent that the applicant enters into an Environmental Contract with the Government of Namibia;

IT is hereby agreed as follows:

1. PARTIES.

The parties to this contract are: Ni. Herman Horeb (hereinafter referred to as the "Holder") being the holder of Non-Exclusive Prospecting Licence ..... N/A .....  
Mining Claims ..... 72499, 72500, 72501, 72502, 72503 .....

on the one hand, and THE GOVERNMENT OF NAMIBIA  
(Hereinafter referred to as "the Government")

duly represented by:  
THE MINISTRY OF ENVIRONMENT, FORESTRY & TOURISM (MEFT)  
and THE MINISTRY OF MINES & ENERGY (MME)

on the other.

2. GENERAL OBLIGATIONS.

- 2.1 The provisions contained in this contract are in addition to and do not detract from any obligations which the Holder may have under the Minerals (Prospecting and Mining) Act, 1992 (the Act).
- 2.2 The Holder recognises that its prospecting / mining operations may have significant impacts on the environment. Accordingly the Holder undertakes that during the course of its operations it will take every practicable step necessary to ensure the mitigation of such impacts. In doing so it will liaise with the MEFT and MME as provided for in 3.3 and 4 below.
- 2.3 In particular the Holder will undertake necessary and adequate steps to ensure that environmental damage is reduced to a minimum and prevented insofar, as is practicable.

- 2.4 Should the Holder not carry out its environmental obligations it shall be liable for the environmental damage that may result. In this regard the Government reserves the right to:
- 2.4.1 demand at any time financial or other guarantees to restore the environment or mitigate environmental damage which has, or which may occur, as a result of the Holder's activities;
  - 2.4.2 itself undertake such mitigatory or restorative measures and to recover the costs thereof from the Holder;
  - 2.4.3 claim compensation for environmental damage, which may have been brought about by the Holder's activities.
- 2.5 The Holder shall on completion or suspension of its operations, ensure that the impact on the environment is minimised and that every reasonable and practicable step is undertaken to ensure that the environment is left in a reasonable state. The provisions of clause 2.4 apply *mutatis mutandis* to environmental damage evident after prospecting; mining or other operations have been suspended or completed.
- 2.6 The Holder acknowledges that should it apply for a mining licence in consequence of its prospecting or other operations, it will have to comply with Namibia's National Environmental Assessment Policy (Directorate of Environmental Affairs, Jan, 1995) and that this will entail the carrying out of an Environmental Assessment (EA).

### 3. THE ENVIRONMENTAL CONDITIONS

- 3.1 In accordance with section 68(f) of the Act, which provides that an application for a licence shall contain particulars of the existing condition of the environment, an estimate of the effect which the proposed operations may have, and the proposed steps to be taken to prevent or minimise such effect, the Holder has attached Environmental Conditions marked Appendix A.
- 3.2 The Holder acknowledges that once the MEFT and MME has determined that the information furnished in Appendix A is satisfactory, it will form part of this contract.
- 3.3 The Holder warrants that the information contained in Appendix A is to the best of its knowledge and belief true and correct and that it will notify the Government of any material changes therein. Should there be such material changes, the Government reserves the right to re-negotiate the terms and conditions of this agreement.



4. COMPLIANCE AND NOTIFICATION

- 4.1 The Holder acknowledges that the reports, which it is obliged to furnish to the MME (which is provided for in the notice from the office of the Mining Commissioner under section 48(4) of the Act) will include an Environmental Report.
- 4.2 The Holder acknowledges that officials from the MME and/or the MEFT may at any time conduct a compliance and/or performance inspection of its operations.
- 4.3 The Holder will keep records of its environmental performance and make these available to the officials referred to in 4.2.

SIGNED AT Windhoek on this 9<sup>th</sup> day of September 2021

For the Holder:  
(duly authorised thereto)



.....

For the Government of Namibia:

.....  
Mr Timoteus Mufeti  
Environmental Commissioner  
Ministry of Environment, Forestry and Tourism

and

.....  
Mr. E. Shivolo  
Mining Commissioner  
Ministry of Mines and Energy

## **BACKGROUND INFORMATION DOCUMENT (BID)**

**Proposed small to medium scale quarrying of marble for dimension stone production on Mining claims 72499, 72500, 72501, 72502 and 72503 in the Karibib Constituency, Erongo Region, Namibia**

**Proponent:** H. Honeb  
**Prepared by:** Omavi Geotechnical & Geo-Environmental Consultants  
(*Environmental Assessment Practitioner*)  
**Email:** [geotech@omavi.com.na](mailto:geotech@omavi.com.na)



## **1 INTRODUCTION**

### **1.1 Aim of this document**

The purpose of this document is to:

- Briefly introduce the proposed project, related activities and the impact evaluation process to be followed to potential interested and affected parties (I&APs).
- Provide information on the Environmental Scoping Assessment (ESA) process and how I&APs can become and remain involved by contributing ideas, issues and concerns relating to the proposed activities or project.
- Invite members of the public to register as I&APs and be added to the project's stakeholder database so that they can stay informed about the ESA progress; and
- To afford all I&APs with an opportunity to comment or provide inputs and concerns on the proposed project activities, encompassing a diverse array of aspects such as biophysical, socio-economic, water resources, visual, heritage/ archaeological and geological factors.

All comments, inputs and suggestions received from I&APs will be incorporated into the ESA and Environmental Management and Rehabilitation Plan (EMRP) reports. These reports will ultimately be submitted to the relevant Competent Authorities, namely: the Department of Environmental and Forestry Affairs (DEFA) in the Ministry of Environment, Forestry and Tourism and the directorate of mines in the Ministry of Mines and Energy.

### **1.2 About the Proponent**

H. Honeb is the sole holder of the five (5) mining claims concerned, namely: 72499, 72500, 72501, 72502 and 72503. The license holder holds several other prospecting and mining rights and is adequately experienced in dimension stone quarrying.

### **1.3 About the Environmental Assessment Practitioner**

OMAVI Geotechnical & Geo-environmental Consultants is a specialist environmental consulting entity, established in 2018. OMAVI has experience and a holistic know-how in biophysical and socio-economic impact assessments, state of the environment reporting, Waste Management Planning, Environmental Management and Rehabilitation Planning, public participation coordination, as well as the management and co-ordination of all aspects of the Environmental Impact Assessment (EIA) process. OMAVI has been active in the above fields, and in so doing has made a positive contribution towards environmental management and sustainable development in Namibia. We believe that a balance between socio-economic development and environmental protection can be achieved through strategic planning, as well as transparent engagements between all parties involved in a project.

## 1.4 Project Locality

OMAVI Geotechnical & Geo-environmental Consultants were requested by Mr. H. Honeb (herein “the Proponent”) to undertake an Environmental Scoping Assessment (ESA) and prepare a site-specific Environmental Management and Rehabilitation Plan (EMRP) for the proposed re-commencement of quarrying activities for dimension stone production purposes on mining claims 72499, 72500, 72501, 72502 and 72503. This request is in accordance with the Environmental Management Act of 2007 and its EIA regulations of 2012.

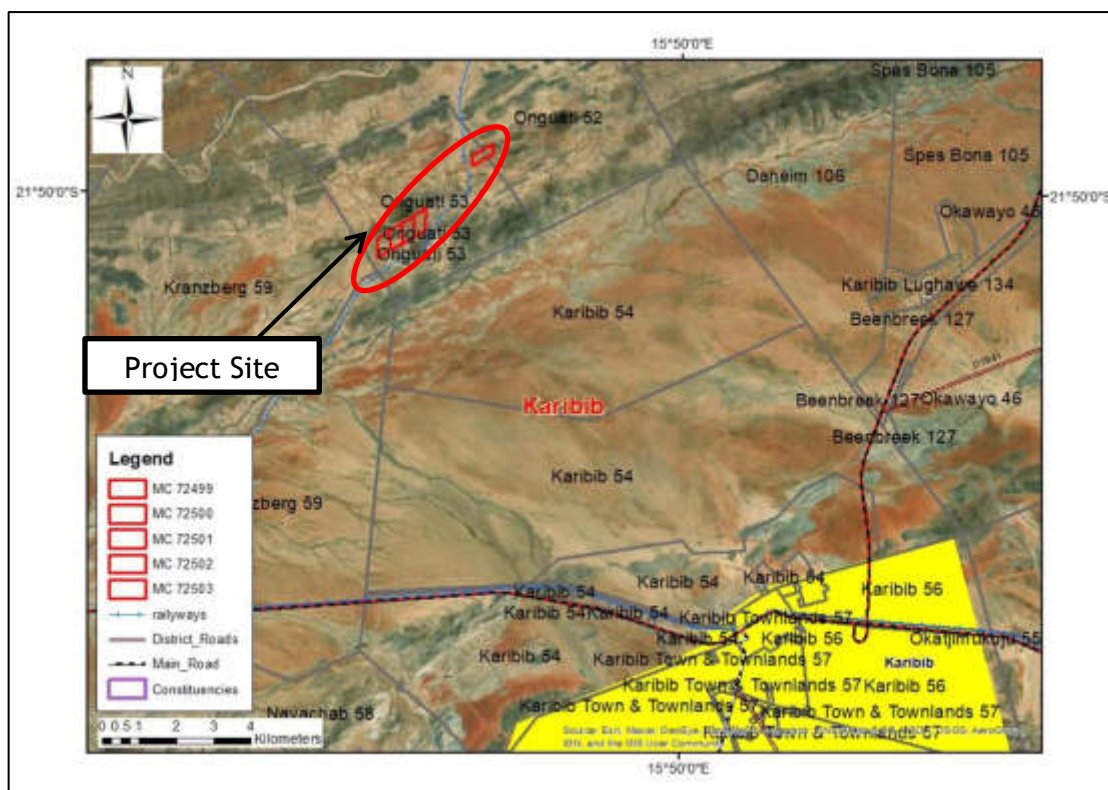
Mining claims 72499, 72500, 72501, 72502 and 72503 are located approximately 20 km northwest of Karibib on Farm Onguati 52 and 53, Karibib Constituency, Erongo Region. The approximate corner coordinates for the claims are provided in Table 1 below, and together, the 5 blocks measure about 84 Hectare (Ha) in areal extent. The mining claims lie within the Karibib Constituency as shown in Figure 1 below.

**Table 1-1: As pegged corner coordinates of mining claims 72499, 72500, 72501, 72502 and 72503**

Project Location			
Approximate Site coordinates:	<b>Mining claim 72499:</b>		
	MC	Lat	Long
	72499	-21.843864°	15.763772°
		-21.838992°	15.763575°
		-21.837500°	15.766389°
		-21.842500°	15.766389°
	<b>Mining claim 72500:</b>		
	72500	-21.845528°	15.760586°
		-21.840578°	15.760561°
		-21.838992°	15.763575°
		-21.843864°	15.763772°
	<b>Mining claim 72501:</b>		
	72501	-21.821389°	15.784167°
		-21.823889°	15.784167°
		-21.826667°	15.778611°
		-21.824167°	15.778611°
<b>Mining claim 72502:</b>			
72502	-21.849075°	15.754231°	
	-21.844483°	15.754208°	

**Background Information Document (BID): Mining Claims 72499, 72500, 72501, 72502 and 72503**

	-21.842619°	15.757219°
	-21.847203°	15.757561°
<b>Mining claim 72503:</b>		
72503	-21.847203°	15.757561°
	-21.842619°	15.757219°
	-21.840578°	15.760561°
	-21.845528°	15.760586°



**Figure 1-1: Locality map of mining claims 72499, 72500, 72501, 72502 and 72503 in relation to nearby settlements.**

**1.5 Why is an Environmental Scoping Assessment (ESA) required?**

In terms of the Environmental Management Act (EMA), 2007 and the Environmental Impact Assessment Regulation, 2007 (No. 30 of 2011) gazetted under the Environmental Management Act, 2007, the proposed activities will entail the extraction of mineral resources. This is a listed activity which may not be undertaken without an Environmental Clearance Certificate (ECC) issued by the Environmental Commissioner. The provision of such listed activities in the EMA is as follows:

**Mining and quarrying activities**

## **Background Information Document (BID): Mining Claims 72499, 72500, 72501, 72502 and 72503**

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

To support the application for an ECC, an Environmental Scoping Assessment (ESA) study must be conducted, and a report must be submitted to the Department of Environmental and Forestry Affairs (DEFA) for scrutinization. This would in turn enable the DEFA to make an informed and knowledge-based decision on the issuance of an ECC. The ESA and EMRP will in turn hold the proponent accountable to extract the targeted resource in an environmentally responsible manner.

For this project, the competent authorities are the Ministry of Mines and Energy (MME). Consequently, a proof of submission and a date stamped copy of the ECC application (by MME) will be uploaded onto the Ministry of Environment, Forestry and Tourism (MEFT)'s EIA Portal for project registration purposes. Once the ESA process is completed, the findings will be consolidated into an ESA Report and together with a draft Environmental Management and Rehabilitation Plan (EMP) submitted to the Department of Environmental Affairs and Forestry (DEAF) for consideration of the ECC issuance.

## **2 PROJECT BACKGROUND AND DESCRIPTION**

The proponent intends to commence with quarrying for suitable marbles that may be suitable for the production of dimension stone blocks for both the local and international markets.

According to the provisions of Section 1 (Part 1) of the Minerals Prospecting and Mining Act (Act No. 33, 1992), the dimension stone groups of minerals and rocks includes all rock material occurring naturally in, on or under the earth which can be cut, shaped, or used in blocks, slabs, counter tops, and tiles for construction or cladding of buildings, paving, monuments and memorials.

The most desired and an important physical property of dimension stone for the construction, decorative and statuary industry includes durability, strength, pattern, and the ability of the stone to give off a smooth and aesthetically appealing finish after polishing. The project will involve the following activities:

### **2.1 Quarry development and Construction phase**

This phase will entail the following activities:

- Clearing and construction of new and widening of existing access roads to the sites and on-site haul roads

## **Background Information Document (BID): Mining Claims 72499, 72500, 72501, 72502 and 72503**

- Clearing of stockpile bays for topsoil, waste rock and production blocks storage
- Drilling of water supply boreholes and water level monitoring boreholes
- Setting up of power infrastructure (likely diesel generator and solar)
- Setting up of prefabricated office, ablution and workshops structures
- Setting up of above-ground fuel storage tanks
- Setting up of wastewater recovery systems
- Setting up of domestic solid waste disposal site
- Obtain water abstraction permits for drilled and/ or rehabilitated boreholes

### **2.2 Quarry operation**

This phase will entail the following activities:

- Topsoil stripping,
- Actual quarrying and extraction of blocks using blade and diamond saw cutters,
- On site sorting and storage of mined blocks,
- Transportation of mined blocks to existing stone processing factories in Karibib or Walvis Bay,
- On site waste management (e.g., waste rock, wastewater, domestic waste),
- Ongoing rehabilitation of quarries and maintenance of roads, waste storage areas,
- Continuous implementation of the EMRP and environmental performance monitoring, and
- Ongoing and transparent community engagement

### **2.3 Transportation and processing of blocks**

Once the blocks have been extracted from the ground, they will be sorted based on colour, patterns, impurities, frequency of cracks, and rock type. Blocks found to meet a certain quality will be transported to processing factories in Karibib and/ or Walvis Bay for further processing into more usable shapes.

### **2.4 Ongoing rehabilitation**

In compliance with industry best practice, the National Policy on the Prospecting and Mining of mineral resources stipulates that companies involved in prospecting and mining should take responsibility for performing adequate rehabilitation and restoration, during and upon closure of their activities. Ongoing rehabilitation will take place as quarrying progresses and will be funded from the recurring annual operation budget. Rehabilitation will be undertaken at selected sites as soon as a decision has been taken that a piece of land is no longer needed for current or future quarrying operations. Rehabilitation will involve:

- Cleaning up all sites and spreading topsoil over worked out areas
- Backfilling quarries

- Closing off roads that are not in use, and subsequent ripping of traffic compacted areas

### **3 PROJECT JUSTIFICATION**

The proposed project is substantiated on the following merits:

- The project will have substantial benefits on the socio-economic upliftment of the Karibib Constituency through creation of employment opportunities and possible livelihood improvement, surface lease fees to the farmowner and the Karibib Constituency.
- Support to local skills transfer and training of local Namibians in dimension stones quarrying and processing technical know-how.
- Potential upgrading and maintenance of boreholes which will be shared with the local community.
- In the long run the project is expected to contribute positively at a national level through payment of mining levies to the Ministry of Mines and Energy, as well as through payment of export levies when semi-processed or processed blocks of dimension stone are exported overseas
- Possible increase in revenue for the affected community through the procurement of local services such as cleaning services, security services, sourcing of food products (meat products) and diesel from nearby towns/settlements, etc.

#### **3.1 Project Inputs Resources**

As part of the project inputs the following equipment and resources will be required:

##### **Vehicles, Machinery and Equipment**

- front end loaders, excavators, bull dozers and operators for:
  - creation of access roads,
  - surface clearing at quarrying sites, and
  - stockpiling of topsoil
- Rotary core/ RC Drill rig and the following support resources.
  - drill operators
  - drill assistants
  - 4x4 bakkie
- Blade and diamond saw cutting equipment and operators to cut out blocks
- Water bowsers and an operator/ driver
- diesel engine powered generators to supply power.
- air compressors to be used for air blowing.
- Two-way radios for communication between various operators.
- Tipper trucks and Long distance haulage trucks for onsite and off site transportation of materials and blocks

##### **Water Resources**

## **Background Information Document (BID): Mining Claims 72499, 72500, 72501, 72502 and 72503**

- Water for quarrying operations will be sourced from boreholes in the area and will then be carted to active quarry sites. The anticipated water requirement during full quarry operations will be approximately 120 m<sup>3</sup> per month.

### **Power sources**

- Power supply for air compressors and cutting equipment will be by means of a high-capacity mobile diesel engine powered generator.
- Power supply for domestic usage will be by means of solar

### **Health and Safety**

- All workers will be provided with personal protective equipment (PPE) in the form of ear plugs, safety glasses, hard hats, safety boots, safety harness (where necessary), goggles and protective gloves. First aid kits will be made readily available on site to attend to any minor injuries. Major injuries shall be attended to at the Karibib clinic

### **Fire management**

- Provision of fire extinguishers will be made available in vehicles and work sites.

## **4 PROPOSED ENVIRONMENTAL ASSESSMENT PROCESS**

For the purpose of the environmental assessment process, worst case scenario impacts from the proposed activities shall be identified, considered and systematically assessed to help reduce, manage and/ or prevent possible adverse consequences while enhancing positive ones. The flow chart shown in Figure 2 below will be followed in completing the environmental scoping assessment and drafting a site-specific environmental management plan.

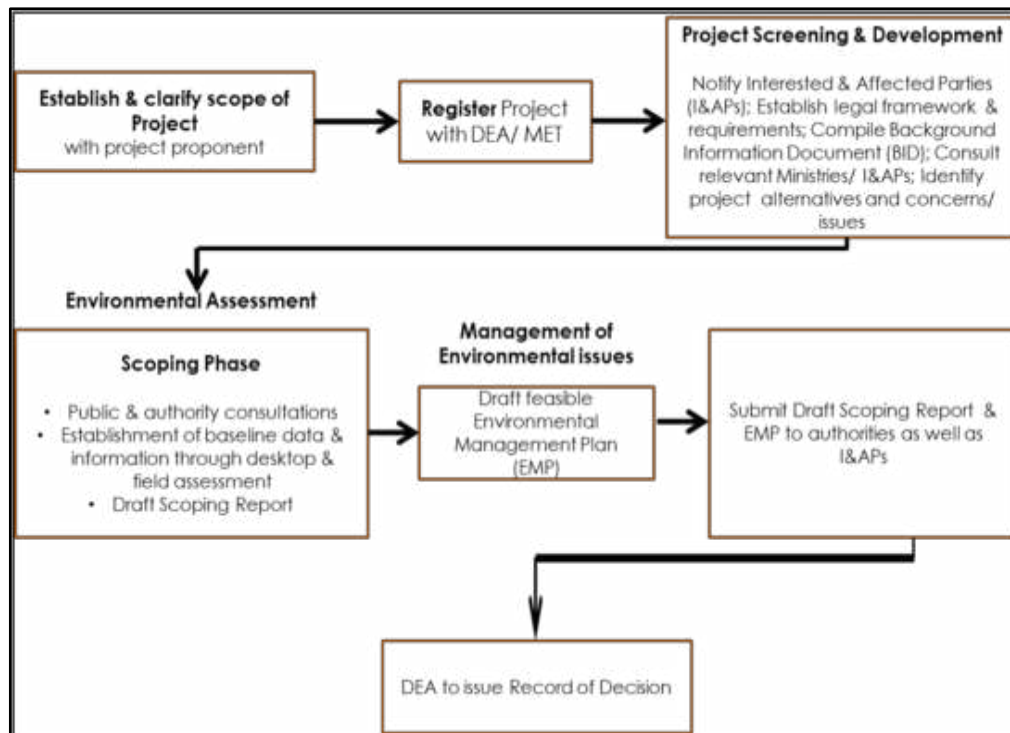


Figure 4-1: EIA Process.

## 4.1 Potential Impacts

### Potential Positive Impacts Identified

The proposed project has potential to stimulate and boost local economic activity if all impact mitigation and enhancement measures that will be outlined in the draft Environment Management and Rehabilitation Plan (EMRP) are effectively implemented, closely monitored and continuously revised by a dedicated and well-equipped task team comprising members from both the proponent and the affected community.

Approximately 20 to 30 people will be employed during operational phase. Priority will be given to locals and previously disadvantaged Namibians from the local community. This will primarily include skilled (e.g. mechanic), semi-skilled, unskilled workers, drivers, machine operators and general workers.

Other positive impacts include: operating levies payable to local authorities, potential revenue collection, and potential new business for local communities and farmers (e.g. through surface lease, possible lease for accommodation, supply of meat products, etc).

### Potential Negative Impacts Identified

- **Physical land / soil disturbance:** Soil pollution including petrochemical spills from vehicles (bakkies), water trucks, diesel operated generator as well as the trailer mounted diesel tank for fuel storage. Traffic compaction could also lead to change in soil structure.



## **Background Information Document (BID): Mining Claims 72499, 72500, 72501, 72502 and 72503**

- **Land Degradation:** Removal of topsoil due to clearing of land for access roads, excavating, drilling, and blasting activities may leave the land bare and exacerbate land degradation.
- **Air environment:** Dust generation from drilling, excavation and cutting during quarrying and increased traffic flow.
- **Impact on local biodiversity (fauna and flora):** Potential displacement of existing fauna and loss of vegetation. Habitat disturbance due to drilling, quarrying, increased movement of traffic, and illegal hunting or firewood collection.
- **Noise:** The main source of noise will be due to traffic, drilling and quarrying operations.
- **Environmental pollution:** During drilling operations, the seepage / leakage of effluent water to the surrounding areas could be a major source of pollution, particularly if no sealant is used to contain the drilling fluid. Additionally, littering in the area, which includes solid waste from packaging food or other products / consumables, may cause pollution.
- **Sense of place:** The proposed activities have potential to destruct the sense of place around the affected areas if not properly managed.
- **Water resources pollution:** Boreholes, wells, public taps, nearby streams and rainwater are a valuable source of water for the communities in the project area. Water contamination induced by poor management of waste, accidental spills of waste water, drilling fluid, lubricants and oil that could infiltrate the ground water table are a potential source of pollution for surface and groundwater. This may also be triggered by site operations such as maintenance activities or accidental fuel spillages.
- **General social nuisance to farmers / landowners:** Increased movement in the surrounding area.

**These pre-identified potential impacts together with any new ones to be raised and submitted by the I&APs (if any) will be described in more detail and subsequently systematically assessed to determine their significance level. This will form the basis of the environmental scoping assessment (ESA). Practical impact mitigation and/ or management measures will be provided in the draft Environmental Management and Rehabilitation Plan (EMP) Reports. To ensure that the recommended management measures are effectively implemented and yield the desired outcomes, environmental monitoring (including performance indicators, implementation responsibilities, etc.) will be provided in the EMRP.**

### **4.2 The Public Participation Process**

Public consultation is a crucial part of the environmental scoping process that is also provided for under Section 21 to 24 of the 2012 EIA Regulations. The process provides interested and affected parties (I&APs) with an opportunity to learn about the proposed activity and be afforded a chance to continuously participate and raise any factual issues or concerns they might have regarding the project. The feedback received from I&APs will form part of the ESA Report and the draft EMRP.

## **Background Information Document (BID): Mining Claims 72499, 72500, 72501, 72502 and 72503**

I&APs are encouraged to submit their comments and concerns in writing during the period of this ESA's comments' period. For these comments to be considered, they must reach Omavi Geotechnical & Geo-environmental Consultants, in writing, before close of business on the **30<sup>th</sup> September 2021**

### **4.3 Consultations as per the Minerals (Mining and Prospecting) Act No. 33 of 1992**

The usual environmental assessment public consultation also incorporates the requirements of Section 52 (1) of the Minerals Act whereby the project Proponent and or the holder of a mineral license covering someone else's land is required to reach a land lease or purchase agreement with the landowner (e.g. private farmer). This entails the signing of agreements to access the land and consent to undertake the intended activities on the land / farm.

**Should you require more information about the proposed project activities, or wish to contribute any comments or concerns, please send your written concerns, issues, or comments to the following details:**

**Mobile.:** +264 81 478 6303 (*For record keeping purposes, comments should be submitted via SMS or WhatsApp for I&APs without email addresses*)

**Email:** [geotech@omavi.com.na](mailto:geotech@omavi.com.na)



## National Heritage Council of Namibia

52 Robert Mugabe Avenue, Windhoek  
Private Bag 12043, Ausspannplatz, Windhoek, Namibia  
Tel: (061) 244 375 • Fax: (061) 246 872 •  
E-mail: [info@nhc-nam.org](mailto:info@nhc-nam.org)

### CONSENT

(Section 55(9) of the National Heritage Act, 2004 (Act No. 27 of 2004)) Consent is hereby given to:

17<sup>th</sup> December 2021

**Consent Number No:** 70/2021

**Name of applicant:** Mr. H. Honeb

---

(Title and full name of the applicant)

**Address of applicant:** P.O Box 1642, Windhoek, Namibia

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(Address of the applicant and of the applying institution (if applicable))

**For:**

Proposed small to medium scale quarrying of Marble for Dimension stone production

---

(Type of Activity applied for)

**Of:** Yes, old gold prospecting site, old residence of Italian mine workers and evidence of tin and bottles and likely old grave sites.

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(Description of Heritage Resources)

**From:** The mining-on-mining claims 72499, 72500, 72501, 72502, and 72503 in the Karibib Constituency, Erongo Region, Namibia. The concerned mining claims are

situated approximately 20 km northwest of Karibib on Farm Onguati 52 and 53, Karibib Constituency. Together the five blocks measures approximately 84 (Ha) extent.

---

(Description of the site, location as in the application)

**In accordance with:**

Heritage Impact Assessment (HIA) for mining of base rare metals, dimension stone, industrial materials and precious metals on mining claims claims 72499, 72500, 72501, 72502, and 72503 on Farm Onguati 52 and 53, Erongo region.

10/11/2021

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(Specify relevant documentation and Permit application date)

The following conditions (imposed in terms of section 55(9) of the Act.) apply to this permit:

- a) that the activity authorised by the consent be supervised by a person with appropriate professional qualifications or experience in the identification and conservation of heritage.
- b) that any archaeological or palaeontological object or meteorite found in the course of the activity authorised by the consent must be recorded, conserved and dealt with as per the manual on chance find procedures of heritage resources; and
- c) that Namibian citizen, especially members of the local community in and around the project area, be engaged in the activity authorised by the consent for the purpose of identification of heritage resources in the project area as well as of receiving professional training;
- d) that the consent holder reports back to the National Heritage Council every six (6) months on compliance with the conditions of this consent.



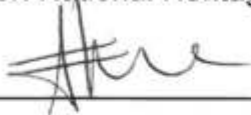
- e) This Consent does not exempt the holder from any conditions that may be imposed by owners, hosts or any other relevant authorities in consultation with NHC who have a stake in the project area.
- f) NHC shall not be liable for any losses, damages or injuries to persons or properties as a result of any activities related to this permit.
- g) Existing roads and access tracks should be rerouted to detour the burial sites by at least 50 m
- h) The local Community should be consulted about possible fencing of the burial sites.
- i) This Consent is subject to the provisions of the National Heritage Act (Act 27 of 2004). Should any of the conditions contained herein conflict with the Act; the provisions of the Act as per section 55 (10) shall prevail.
- j) This consent is renewable, upon submission of an application at least two months before the current permit lapses

---

(List any conditions that the Council may see fit to impose in terms of section 55 (9) of the act

This Consent will be valid from 17<sup>th</sup> December 2021 to 17<sup>th</sup> December 2022

Director: National Heritage Council



**National Heritage Council of Namibia**



**PHASE 1 ARCHAEOLOGICAL AND CULTURAL IMPACT ASSESSMENT  
REPORT FOR PROPOSED SMALL TO MEDIUM SCALE QUARRYING OF  
MARBLE FOR DIMENSION STONE PRODUCTION ON MINING CLAIMS  
72499, 72500, 72501, 72502 AND 72503 IN THE KARIBIB CONSTITUENCY,  
ERONGO REGION, NAMIBIA**

Compiled by

Henry Nakale [Bachelor of Arts Honours Degree in Archaeology, Museums and  
Heritage Studies] (GZU), [Bachelor of Social Science in Heritage and Museum Studies]  
(UP), [Masters of Social Science in Tangible Heritage Conservation & Management]  
(UP).

&

Henry Chiwaura [Bachelor of Arts Degree in Archaeology and Economic  
History] (UZ), [Post – Graduate Diploma in Care of Collections and Heritage  
Management] (UON), [Master’s Degree in Heritage Studies] [UZ]

Compiled for:

Omavi Geo - technical and Geo-Environmental Consultants

Tel: +264818264867

Email: [infor@omavi.com.na](mailto:infor@omavi.com.na)

Item	Description
Proposed development and location	H. Honeb (The Proponent) is proposing to undertake mining, on mining claims 72499, 72500, 72501, 72502 and 72503 in the Karibib Constituency, Erongo Region, Namibia. The concerned mining claims are situated approximately 20 km northwest of Karibib on Farm Onguati 52 and 53, Karibib Constituency, Erongo Region. The mining claims lie within the Karibib Constituency and together the 5 blocks measure about 84 Hectare (Ha) extent.
Title	<b>ARCHAEOLOGICAL AND CULTURAL IMPACT ASSESSMENT REPORT FOR PROPOSED SMALL TO MEDIUM SCALE QUARRYING OF MARBLE FOR DIMENSION STONE PRODUCTION ON MINING CLAIMS 72499, 72500, 72501, 72502 AND 72503 IN THE KARIBIB CONSTITUENCY, ERONGO REGION, NAMIBIA.</b>
Purpose of the study	Archaeological and Heritage Impact Assessment report that describes the cultural values and heritage factors that may be impacted on by the proposed mining activities.
Coordinates	
Municipalities	Karibib
Predominant land use of surrounding area	Farming
Developer	<b>H. Honeb</b>
Heritage Consultant	Henry Nakale & Henry Chiwaura
Date of Report	20 September 2021
Contact person	Henry Nakale +264816680633
Author(s) identification	Henry Nakale, Henry Chiwaura (Archaeologists and Heritage

	specialists)
Project Number	008

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**Authorship:** This A/HIA Report has been prepared by Messer Henry Nakale, Henry Chiwaura (Professional Archaeologist). The report is for the review of the National Heritage Council of Namibia.

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

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

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

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

Signed by





## **Acknowledgement**

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The authors acknowledge Omavi Geotechnical and Geo-Environmental Consultants for their assistance with project information as well as responding to technical queries related to the project.

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## EXECUTIVE SUMMARY

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This Archaeological and Heritage Impact Assessment (AIA/HIA) Report has been prepared to address requirements of the National Heritage Act 27 of 2004. The study was commissioned by **Omavi Geotechnical and Geo-Environmental Consultants** to conduct this Archaeological and Heritage Impact Assessment (AIA/HIA) Study for the proposed small mining activities. The proposed mining is located in the Karibib constituency in Erongo region. This report includes an impact study on potential archaeological and cultural heritage resources that may be associated with the proposed quarrying activities. This study was conducted as part of the specialist input for the Environmental Impact Assessment exercise. The proposed development consists of in small to medium scale quarrying of marble for dimension stone production in Karibib constituency in Erongo Region. The project information has been passed to research team by the OMAVI project engineers. Analysis of the archaeological, cultural heritage, environmental and historic contexts of the study area predicted that archaeological sites, cultural heritage sites, burial grounds or isolated artefacts were likely to be present on the affected landscape. The field survey was conducted to test this proposition and verify this prediction within the proposed quarrying site. The general project area is predominantly residential, agriculture (livestock rearing) and mining.

The report makes the following observations:

- The findings of this report have been informed by desktop data review, field survey and impact assessment reporting which include recommendations to guide heritage authorities in making decisions with regards to the proposed project.
- Most sections of the project area are very accessible, and the field survey was effective enough to cover all sections of the project receiving environs. However, some small portions of the proposed mining claims sites had limited access because of the rugged terrain cover.
- The immediate project area is predominantly farming.
- Some sections of the proposed quarrying sites are severely degraded environmental clearance from agriculture.
- The study did not record any archaeological site cultural) or place of historical significance at the proposed quarrying site.

The report sets out the potential impacts of the proposed development on heritage matters and recommends appropriate safeguard and mitigation measures that are designed to reduce the impacts where appropriate. The Report makes the following recommendations:

- ❖ The prospecting/mining teams must be inducted on the possibility of encountering archaeological resources that may be accidentally exposed during subsurface mining prior to commencement of work on the site to ensure appropriate mitigation measures and that course of action is afforded to any chance finds.
- ❖ If archaeological materials are uncovered, work should cease immediately, and the National Heritage Council (NHC) be notified, and activity should not resume until appropriate management provisions are in place.
- ❖ The findings of this report, with approval of the NHC, may be classified as accessible to any interested and affected parties within the limits of the legislations.

This report concludes that the impacts of the proposed project of the cultural environmental values are not likely to be significant on the entire MC 72499, 72500, 72501, 72502 and 72503 if the Chance Find Procedures (CFP) are followed including recommended safeguard and mitigation measures identified in this report.

## **ABBREVIATIONS**

<b>AIA</b>	<b>Archaeological Impact Assessment</b>
<b>CFP</b>	<b>Chance Find Procedure</b>
<b>ECO</b>	<b>Environmental Control Officer</b>
<b>EAP</b>	<b>Environmental Assessment Practitioner</b>
<b>EIA</b>	<b>Environmental Impact Assessment</b>
<b>EM</b>	<b>Environmental Manager</b>
<b>EMP</b>	<b>Environmental Management Plan</b>
<b>HIA</b>	<b>Heritage Impact Assessment</b>
<b>LA</b>	<b>Local Authority</b>
<b>LIA</b>	<b>Late Iron Age</b>
<b>MC</b>	<b>Mining Claim</b>
<b>NHA</b>	<b>Nation Heritage Act, Act 27 of 2004</b>
<b>SM</b>	<b>Site Manager</b>
<b>NHCN</b>	<b>National Heritage Council of Namibia</b>
<b>NMN</b>	<b>National Museum of Namibia</b>

## **1.0 Introduction**

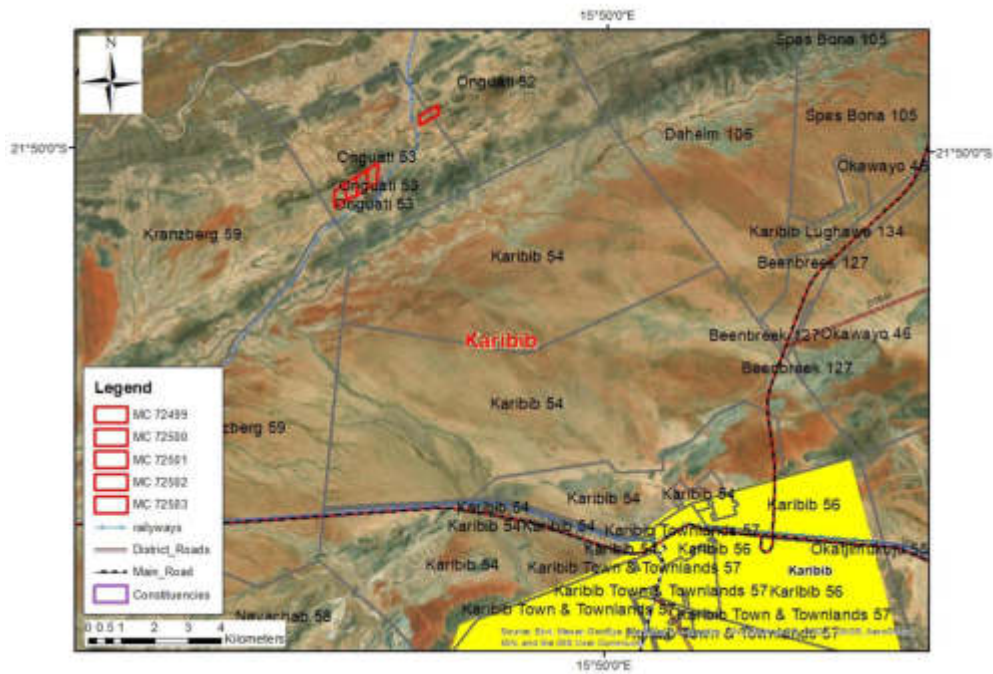
H. Honeb has appointed OMAVI Geotechnical & Geo-Environmental Consultants to conduct an Environmental Scoping Assessment (ESA) and apply for the Environmental Clearance Certificate (ECC) to the Competent Authority in accordance with the Environmental Management Act (EMA) No. 7 of 2007 and its 2012 EIA Regulations. OMAVI in turn requested archaeologists from OTAH Consultants to conduct Cultural and Archaeological Impact Assessment (AIA) at MC 72499, 72500, 72501, 72502 and 72503 in the south of the town of Karibib, Erongo Region. Mining claims 72499, 72500, 72501, 72502 and 72503 are located approximately 20 km northwest of Karibib on Farm Onguati 52 and 53, Karibib Constituency, Erongo Region. The 5 blocks measure about 84 Hectare (Ha) in area extent. The proponent intends to commence with quarrying for suitable marbles that may be suitable for the production of dimension stone blocks for both the local and international markets.

Due to the destructive tendency of such quarrying activities, which may include earth moving/ land alteration operations, it is a pre-requisite to conduct an Archaeological and/ or Heritage Impact Assessment (AIA) as obligated by the National Heritage Act, Act No. 27 of 2004 and, in part, by the Environmental Management Act, Act No. 7 of 2007. The main thrust of the provisions of the legislations is to protect and salvage cultural/ archaeological and environmental resources from potential destruction resulting from developmental activities. It was against this background that an Archaeological Impact Assessment (AIA) was carried out on MC 72499, 72500, 72501, 72502 and 72503 to fulfill the following objectives:

- a) To identify and document cultural/ archaeological materials and sites occurring in the area of the proposed mining claims.
- b) To assess the nature and scale of archaeological impact of the proposed mining activities to heritage resources,
- c) To suggest some conservation strategies for the cultural heritage resources that might occur in the area proposed for mining which can be potentially destroyed during detailed quarrying.

## 2.0 Site Description and Location

The concerned mining claims are located approximately 20 km northwest of Karibib on Farm Onguati 52 and 53, Karibib Constituency, Erongo Region. The 5 blocks measure about 84 Hectare (Ha) in extent. The mining claims lie within the Karibib Constituency as shown in Plate 1 below.



**Plate 1** Map showing location of MC 72499, 72500, 72501, 72502 and 72503

## 2.1. Scope of the Proposed Project

The property, which is the subject of this assessment, is registered under the name of Herman Honeb. The proponent proposes small to medium scale quarrying of marble for dimension stone production.

### **2.1.1 Quarry development and Construction phase**

This phase will entail the following activities:

- Clearing and construction of new and widening of existing access roads to the sites and on-site haul road Clearing of stockpile bays for topsoil, waste rock and production blocks storage.
- Drilling of water supply boreholes and water level monitoring boreholes
- Setting up of power infrastructure (likely diesel generator and solar)
- Setting up of prefabricated office, ablution and workshops structures
- Setting up of above-ground fuel storage tanks
- Setting up of wastewater recovery systems
- Setting up of domestic solid waste disposal site
- Obtain water abstraction permits for drilled and/ or rehabilitated boreholes



### **2.1.2 Quarry operation**

This phase will entail the following activities:

- Topsoil stripping,
- Actual quarrying and extraction of blocks using blade and diamond saw cutters,
- On site sorting and storage of mined blocks,
- Transportation of mined blocks to existing stone processing factories in Karibib or Walvis Bay,
- On site waste management (e.g., waste rock, wastewater, domestic waste)
- Ongoing rehabilitation of quarries and maintenance of roads, waste storage areas,
- Continuous implementation of the EMRP and environmental performance monitoring, and
- Ongoing and transparent community engagement

### **2.1.3 Transportation and processing of blocks**

Once the blocks have been extracted from the ground, they will be sorted based on colour, patterns, impurities, frequency of cracks, and rock type. Blocks found to meet a certain quality will be transported to processing factories in Karibib and/ or Walvis Bay for further processing into more usable shapes.

### **2.1.4 Ongoing rehabilitation**

In compliance with industry best practice, the National Policy on the Prospecting and Mining of mineral resources stipulates that companies involved in prospecting and mining should take responsibility for performing adequate rehabilitation and restoration, during and upon closure of their activities. Ongoing rehabilitation will take place as quarrying progresses and will be funded from the recurring annual operation budget. Rehabilitation will be undertaken at selected sites as soon as a decision has been taken that a piece of land is no longer needed for current or future quarrying operations. Rehabilitation will involve:

- Cleaning up all sites and spreading topsoil over worked out areas
- Backfilling quarries

### **3.0 Legal Framework**

In most cases where the aspect of mining is involved, cultural and/ or archaeological evidence located within areas earmarked for development usually face the danger of either complete erasure or destruction. Such a risk is so high especially in areas that had not been built or mined before as the mining work will involve earth moving activities which will in turn destroy environmental resources as well as archaeological and/or cultural resources that might occur within the project area. In order to ensure that this unique heritage of our past is protected and well documented, the National Heritage Act 27 of 2004 and EIA Terms of Reference in relation to the assessment of impacts of the proposed mining on the cultural and heritage resources associated with the receiving environment shall be used to guide the exploration exercise. The statutory mandate of heritage impact assessment studies is to encourage and facilitate the protection and conservation of archaeological and cultural heritage sites, in accordance with the provisions of the National Heritage Act, Act 27 of 2004 and Environmental Management Act (EMA) No. 7 of 2007 and its 2012 EIA Regulations.

The legislations require that, when constructing a linear development exceeding 300m in length or developing an area exceeding 5000 m<sup>2</sup> in extent, the developer must notify the responsible heritage authority of the proposed development and they in turn must indicate within 14 days whether an impact assessment is required.

### **4.0 Methodology**

Methodologically, primary data for the AIA was collected from the National Heritage Council of Namibia. A stratified systematic survey was conducted in areas which are accessible and with good archaeological visibility, where individuals were walking parallel to each other, and spaced by 5 meters. However, in areas with rugged terrains, a stratified random survey was conducted, where attention was given to areas with

archaeological potential. Secondary data was obtained from relevant literary sources, both published and unpublished. Significant information (predominantly unpublished) was mainly obtained from National Heritage Council of Namibia (NHC) and the National Museum of Namibia, these included field reports, national database, marked topographical maps (1:50,000), data recorded on site index cards and graphic information.

### **5. 0 Brief heritage setting of the Project Area**

Stone Age archaeology is prevalent in the larger geographical area. No systematic research has been carried out in the area project area. Kinahan has carried out comparative research on rock painting shelters in Erongo region from ‘Snake Rock’ in Hungorob Gorge – Brandberg Mountain, ‘Bushman Paradise’ in Pondok Mountain – Spitzkoppe Mountain and at “Rainman Shelter” in Upper Otjohorong Granite Hill in 1998 (Nankela, 2020). About 150 sites were recorded. The region is also endowed with Iron Age and contemporary heritage that has to be ascertained at a later date. Erongo region has 37 heritage sites which are listed as national monuments.

### **6.0 Fieldwork Findings**

field survey took place on 11<sup>th</sup> of September 2021 at Farm Onguati 52 and 53. A detailed foot survey of the area surrounding the footprint of Mining claims 72499, 72500, 72501, 72502 and 72503 in Karibib on Farm Onguati 52 and 53. Farm Onguati 52 and 53 did not yield any archaeological evidence. However, there are number of late pre-colonial archaeological sites related to grass seed exploitation, hunting of migratory antelope as well as several stone hunting blinds (Kinahan, 2006; 2020). Mining claims 72499, 72500, 72501, 72502 and 72503 did not yield any sites that are considered significant.

## **7.0 Results of Desktop Research**

Information from the NHC shows that the project area falls under the cultural landscape occurring in Erongo Region. The national monuments list has 37 national monuments recorded within Erongo Region. Table 1 shows details of the part of the national monuments occurring in the same region as the project and are recorded in the National Monuments Register.

Table 1. National Monuments Recorded in National Database

Site Name	Information on Site Index Card
Ameib	`Phillipp's Cave' with rock art drawings.
Badges 158 Farm	Regimental badges laid out in stone of 2 Durban Light Infantry, dating from 1915
Brandberg.	Area of 450km <sup>2</sup> of archaeological, ecological and geomorphological importance
Bushman Paradise Cave	Was `one of the finest collections of rock art in Namibia'. (Spitzkoppe
Cape Cross	Replica (1895) of original stone pillar left by Diogo Cão in 1484. First European contact with Namibia.
Erongo Farm	Rock paintings at six sites
Karibib	Rösemann building façade, erected in 1900
Karibib	Quartermasters Stores. Built in 1911
Karibib	Kubas Railway Station. Built in 1900
Karibib	Haus Woll. Built in 1900s
Karibib	Hotel Zum Grünen Kranze. Built in 1913
Karibib	Erf 46 and the Hälbich buildings. Built in 1900s
Karibib	Kaiserbrunnen (Imperial well) - well, water reservoir and drinking trough. Built in 1906

**NB.** These recorded sites occur on the same cultural landscape but different farms

## 8.0 Conclusions and Recommendations

### 8.1 Findings and Analysis

- a. It was noted during this assessment that **Herman Honeb** initiated Archaeological and Cultural Impact Assessment as provided for by the Environmental Management Act (2007) and National Heritage Act 27 of 2004 and guidelines for developers.
- b. The assessment team also noted that the proposed project area does not have visible cultural and archaeological material that might be impacted by the proposed quarrying activities.

### 8.2 Recommendations

The study did not find any high-risk heritage with a potential to be disturbed by the quarrying activities development. The following recommendations are based on the results of the A/HIA research, cultural heritage background review, site inspection and assessment of significance.

#### **Recommendation 1**

Since no surface archaeological materials were found the Consultant is to ensure that all the existing archaeological reference guidelines (Chance Find Procedure Guideline by NHC (2017) is shared with the proponent for guidance. Against the background of the above, it is hereby **recommended that H. Honeb can be granted permission to proceed with the proposed project on Mining Claims 72499, 72500, 72501, 72502 and 72503 located approximately 20 km northwest of Karibib on Farm Onguati 52 and 53.** It should also be noted that when such permission to proceed with quarrying is granted, the proponent will still be obliged to comply with the provisions of the National Heritage Act, act 27 of 2004 and if he/she encounters subsurface archaeological/ cultural materials in the course of quarrying. If such a thing happens, he is obliged by this said Act for him to cease operations and make a report to National Heritage Council for the way forward.

### **Recommendation 2**

The footprint impact of the proposed mining should be kept to minimal as shown in the locality map to limit the possibility of encountering chance finds within servitude.

### **Recommendation 3**

The Project Public Participation Process should ensure that any cultural heritage related matters for this project are given due attention whenever they arise and are communicated to NHC throughout the proposed project development. This form of extended community involvement would pre-empt any potential disruptions that may arise from previously unknown cultural heritage matter that may have escaped the attention of this study.

## **9. Conclusion**

The literature review and field study confirmed that the project area is situated within a contemporary cultural landscape dotted with settlements with long local history. Field survey established that the affected project area is degraded by environmental clearance. Although the area is degraded, there is a possibility that subsurface archaeological material can be discovered. This report concludes that the proposed quarrying on MC 72499, 72500, 72501, 72502 and 72503 may be approved by NHCN to proceed as planned subject to recommendations herein made and Chance Find Procedures are followed (also see Appendices). The measures are informed by the results of the HIA study and principles of heritage management enshrined in the NHA, Act 27 of 2004.

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Nankela, A. 2020. Joint archaeological monitoring impact assessment study report Otjohorongo Granite Hill and Gross Okandjou farm, Erongo Region.

Nankela, A (2019) Klein Spitzkoppe Mountains archaeological research (phase 1), May 2019 Unpublished report, National Heritage Council of Namibia.

**Appendix 1** Chance Find Procedure Guideline by NHC (2017)



Areas of proposed development activity are subject to heritage survey and assessment at the planning stage. These surveys are based on surface indications alone, and it is therefore possible that sites or items of heritage significance will be found in the course of development work. The procedure set out here covers the reporting and management of such finds.

**Scope:** The “chance finds” procedure covers the actions to be taken from the discovery of a heritage site or item, to its investigation and assessment by a trained archaeologist or other appropriately qualified person.

**Compliance:** The “chance finds” procedure is intended to ensure compliance with relevant provisions of the National Heritage Act (27 of 2004), especially Section 55 (4): “a person who discovers any archaeological .... object .....must as soon as practicable report the discovery to the Council”. The procedure of reporting set out below must be observed so that heritage remains reported to the NHC are correctly identified in the field.

**Responsibility:**

**Operator** To exercise due caution if archaeological remains are found

**Foreman** To secure site and advise management timeously

**Superintendent** To determine safe working boundary and request inspection

**Archaeologist** To inspect, identify, advise management, and recover remains

**Procedure:**

Action by person identifying archaeological or heritage material

- a) If operating machinery or equipment stop work
- b) Identify the site with flag tape
- c) Determine GPS position if possible
- d) Report findings to foreman

**Action by foreman**

- a) Report findings, site location and actions taken to superintendent
- b) Cease any works in immediate vicinity

**Action by superintendent**

- a) Visit site and determine whether work can proceed without damage to findings
- b) Determine and mark exclusion boundary
- c) Site location and details to be added to project GIS for field confirmation by archaeologist

Action by archaeologist

- a) Inspect site and confirm addition to project GIS
- b) Advise NHC and request written permission to remove findings from work area
- c) Recovery, packaging and labeling of findings for transfer to National Museum

**In the event of discovering human remains**

- a) Actions as above
- b) Field inspection by archaeologist to confirm that remains are human
- c) Advise and liaise with NHC and Police
- d) Recovery of remains and removal to National Museum or National Forensic Laboratory, as directed.