

# ENVIRONMENTAL IMPACT ASSESSMENT REPORT

THE ESTABLISHMENT OF A STONE CRUSHER AT OVIKOKOLA VILLAGE: RUACANA  
CONSTITUENCY - OMUSATI REGION – NAMIBIA: MINING CLAIMS 71427 – 71430.

FOR

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**PROJECT DETAILS**

**TITLE** ENVIRONMENTAL IMPACT ASSESSMENT REPORT – THE ESTABLISHMENT OF A STONE CRUSHER AT OVIKOKOLA VILLAGE IN RUACANA CONSTITUENCY – OMUSATI REGION - NAMIBIA.

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**AND SCOPE OF THE PROJECT** M.SHIKONGO'S INVESTMENT GROUP ONE (PTY) LTD

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A handwritten signature in black ink, appearing to read 'Josiah T. Mukutiri', written in a cursive style.

**JOSIAH T. MUKUTIRI**

**EIA PRACTITIONER**

## **Acknowledgement**

Many thanks to all stakeholders, Interested and Affected Parties, Omusati Regional Council and the Uukolonkadhi Traditional Authority for their corporation and contributions that have shaped this EIA study.

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# 1. INTRODUCTION

M.SHIKONGO'S INVESTMENT GROUP ONE (Pty) Ltd is planning to establish a quarry and crusher at Ovikokola Village in Ruacana Constituency – Omusati Region. Quarrying and any form of mining is a prescribed activity under the Environmental Management Act (2007) that requires an environmental impact assessment to be carried out before project implementation. This report was generated from the EIA process for the establishment of the proposed quarry and crusher by M.SHIKONGO'S INVESTMENT GROUP ONE (Pty) Ltd. The EIA was done in line with the Namibian Environmental Assessment Policy (1995), the Environmental Management Act (2007) and international environmental treaties and conventions binding Namibia.

## **1.2. Objectives**

- to describe the project in detail for everyone's understanding
- to describe the project environment and the interrelationships among the various components
- To identify potential positive and negative impacts of the project.
- To assess project alternatives
- To assess the significance of the positive and negative impacts of the project.
- To develop mitigation measures for the identified negative impacts of the project.
- To review the relevant policies and legislation governing the project.
- To develop an environmental monitoring and management plan for the project.

The EIA study focused on the quarry and crusher as the unit of study, no utilities were considered under this study. In the event that the proponent considers such developments in the future additional impact studies should be carried out as such to enable the upgrading of the EMP.

## **1.3. Project Concept**

The applicant, M.SHIKONGO'S INVESTMENT GROUP ONE (Pty) Ltd was founded by Mr. Matty Shikongo and is wholly Namibian owned company. **The proposed project involves the establishment of a quarry and a crusher at Ovikokola Village, Ruacana Constituency in Erongo Region. The proposed development is planned over a land area covering 72 Hectares as highlighted in the Mining Claims application submitted to the Ministry of Mines and Energy (MME).** The capital investment for the stone crusher is estimated to be fifteen million Namibian dollars (N\$15 m).

An access / track road already exists but may need upgrading into a standard gravel road which can handle heavy equipment especially during the rainy season. A business plan is being developed and will incorporate the environmental assessment findings. However, the proposed plant and machinery should have a capacity of producing 1500 tons of crushed stone per day. The project is expected to create at least 25 permanent jobs and 15 temporary when in full operation.

## **The need for the project**

The main driving forces for the establishment of the quarry and crusher are among other things:

- To produce aggregates of various sizes that can be used in various construction and road projects.
- Improve the availability of aggregates in Omusati and the surrounding regions.
- Create employment in Omusati and thus improve the well-being of the local previously disadvantaged people.

The EIA involved carrying out a detailed study on the possible environmental impacts of the proposed development. Beyond that the EIA suggested ways of avoiding or mitigating any negative environmental effects that the quarry and crusher may cause to the environment, and to enhance the benefits of the project. Environment is defined as the complex of natural and anthropogenic factors and elements that are mutually interrelated and affect the ecological equilibrium and the quality of life, including:

- the natural environment that is the land, water and air, all organic and inorganic material and all living organisms; and
- the human environment that is the landscape and natural, cultural, historical, aesthetic, economic and social heritage and values; (GRN, 2007).

An environmental scoping process was entered into by the applicant and a report, (*"a scoping report...to contain all the information that is necessary for a proper understanding of the nature of issues identified during scoping..."*) as contained herein, was compiled whereby the relevant information required in terms of the Environmental Management Act (2007), is provided. The environmental scoping report submitted to MET: DEA recommended that a full EIA be carried out and the Consultant has done as such giving rise to this EIA report.

### **1.3.1. Terms of Reference For The Environmental Impact Assessment**

M.SHIKONGO'S INVESTMENT GROUP ONE (Pty) Ltd appointed Outrun Investments cc to conduct an Environmental Impact Assessment for the establishment of a quarry and crusher at Ovikokola village in Ruacana Constituency. The EIA was carried out in 2 phases, the scoping phase and the detailed EIA study.

The EIA study took consideration of:

- Due consultation with the applicant and interested and affected parties.
- Review proposed development / activity at the local level.
- Identification of legal framework governing assessment.
- Identification of the nature of site.
- Identification through scoping and on – site evaluation of issues relating to the proposed development and its potential impacts on site.
- Methodology of assessing potential impacts
- Information relating to public participation process.
- Plan of study for assessment of impacts / issues.

Bio physical and social aspects, including major infrastructural development projects taking place in Ovikokola and the surroundings formed part of the EIA study and guided the Consultants during the study. Mitigation strategies and a complete environmental management plan were developed as part of the EIA study. Alternatives including the “no go” option were explored. The following activities were undertaken during the scoping and detailed EIA phases:

### **1.3.1 Activities carried out during the scoping phase**

The scoping process undertaken includes the following activities:

- Policy and legislation relevant to the establishment of a quarry and crusher.
- Description of the proposed project
- Description of the affected environment
- The public participation process
- A detailed description of the potential impacts associated with the proposed project
- Evaluation of the significance of the potential impacts.
- Evaluation of whether a full EIA is required or an Environmental Management Plan only.
- Submission of the final scoping report to MET: DEA for consideration and decision making.

### **1.3.2 Activities carried out during the EIA process**

The EIA study covered the following areas in detail:

- Detailed project description
- Public consultation and a register of issues raised
- Identification of the possible and known impacts of the project
- Detailed analysis of the impacts
- Review of relevant policies and legislation and the development of a legislative framework compliance plan
- Development of an Environmental Management Plan (EMP) with workable mitigation measures for adoption.
- Development of an environmental rehabilitation plan.
- Development of an Emergency Preparedness and Response Plan for the project.

## **1.4. Project Description**

M.SHIKONGO'S INVESTMENT GROUP ONE (Pty) Ltd intends to exploit silicified limestone of the Damara Sequence 20 km south of Ruacana. This deposit is a potential raw material for the production of coarse aggregates. Coarse aggregates of 75 mm, 37 mm, 19 mm, 13 mm, 9.5 mm and 4.75 mm grades are used for railroad ballast, concrete and bituminous paving and slurries for road construction. The main target market are construction companies working in Northern Namibia. The deposit is dolomitic and has favourable properties for the intended use as shown below:

- Rock classification - metamorphic.
- Rock strength - 100 – 120 Mpa.
- Hardness - 3-4.
- Density - 2.9
- Mining method: open pit, and analysis has also shown that it is less difficult to crush, 12 – 13 kWh/t.

### **1.4.1. Process description**

The proposed venture involves purely physical processes involving the mining of dolomite rock using open cast method. The different stages in the process comprises of the following activities:

#### **1.4.1.1. Mining**

An open – pit approach will be used and involves the drilling of rock surfaces using jack hammers followed by blasting to liberate the rock for crushing. The broken rocks are loaded onto haulage trucks using front-end loaders running on diesel. Haulage trucks will offload the rocks at the raw material stockpile from which it's loaded into a hopper feeding the primary crusher.

#### **1.4.1.2. Ore Crushing**

The raw material rock in the hoper is moistened by a fine water spray and fed into a crusher using an electrical vibrator. The crushed rock is taken by a conveyor belt to a vibrator screen were separation by size takes place depending on customer requirements. Secondary and tertiary crushing may be required.

#### **1.4.1.3. Product handling and despatch**

The product is stockpiled by size and loaded onto haulage trucks using front-end loaders. The haulage trucks and front-end loaders are powered by diesel. The haulage trucks will be used to transport products to the market. The schematic process flow diagram is shown below.

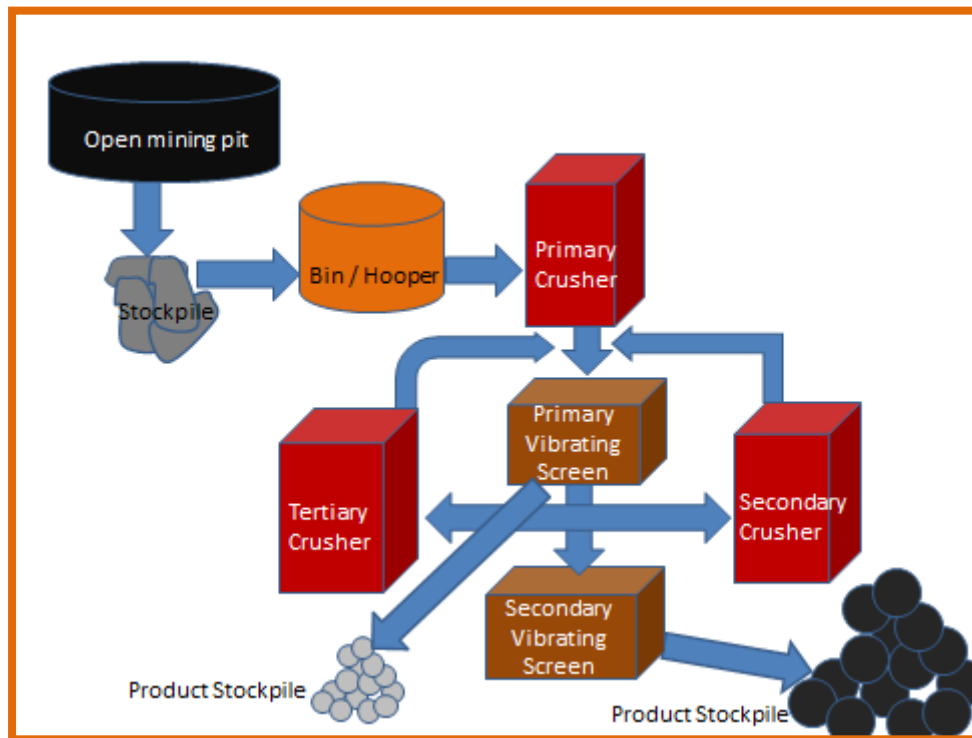


Figure 1. Schematic process flow showing all the stages from the mining to final products. Source: Own drawing by Josiah T. Mukutiri.

## 1.5. Infrastructure And Access To Services

### 1.5.1. Transport, Electricity and Telecommunications Infrastructure

Ovikokola is well accessible by a road network linking it to the major roads, the C46 (Oshakati to Ruacana), C35 (Kamanjab to Ruacana) and C41 (Okahao to Oshakati). The proposed project site is linked to C46 by a gravel road that stretches from C46 to Kamanjab through C35. Both mobile telecommunications networks, Telecom Namibia and Mobile Telecommunications Company (MTC) have good connectivity in the project area.

The proposed stone crusher will require different types of energy to power different types of equipment or various services. Most importantly some of the equipment will require electricity while others will require fossil fuels such as diesel and / or petrol especially for vehicles. The Proponent will use a diesel generator to generate electricity. The generated electricity will be used to power equipment such as the crushers, vibrating feeders, vibrating screens and office equipment. Fuels for the vehicle fleet, diesel and petrol can be obtained from the fuel stations in Ruacana being

the nearest town to the project site. Namibia has a reliable supply of fuel. There are no plans to store fuel onsite.

### 1.5.2. Water

NAMWATER Corporation is a state-owned enterprise responsible for bulk water supply to industries and municipalities. The proposed site is very remote from any possible connection lines. Ovikokola Village relies on boreholes installed the Directorate of Rural Water Supply, Ministry of Agriculture, Water & Forestry (MAWF). The Proponent will install one (1) borehole to supply water to the Stone crusher. The major uses of water in this process are dust suppression, cooling of equipment and domestic consumption.

## 1.6. Project Location

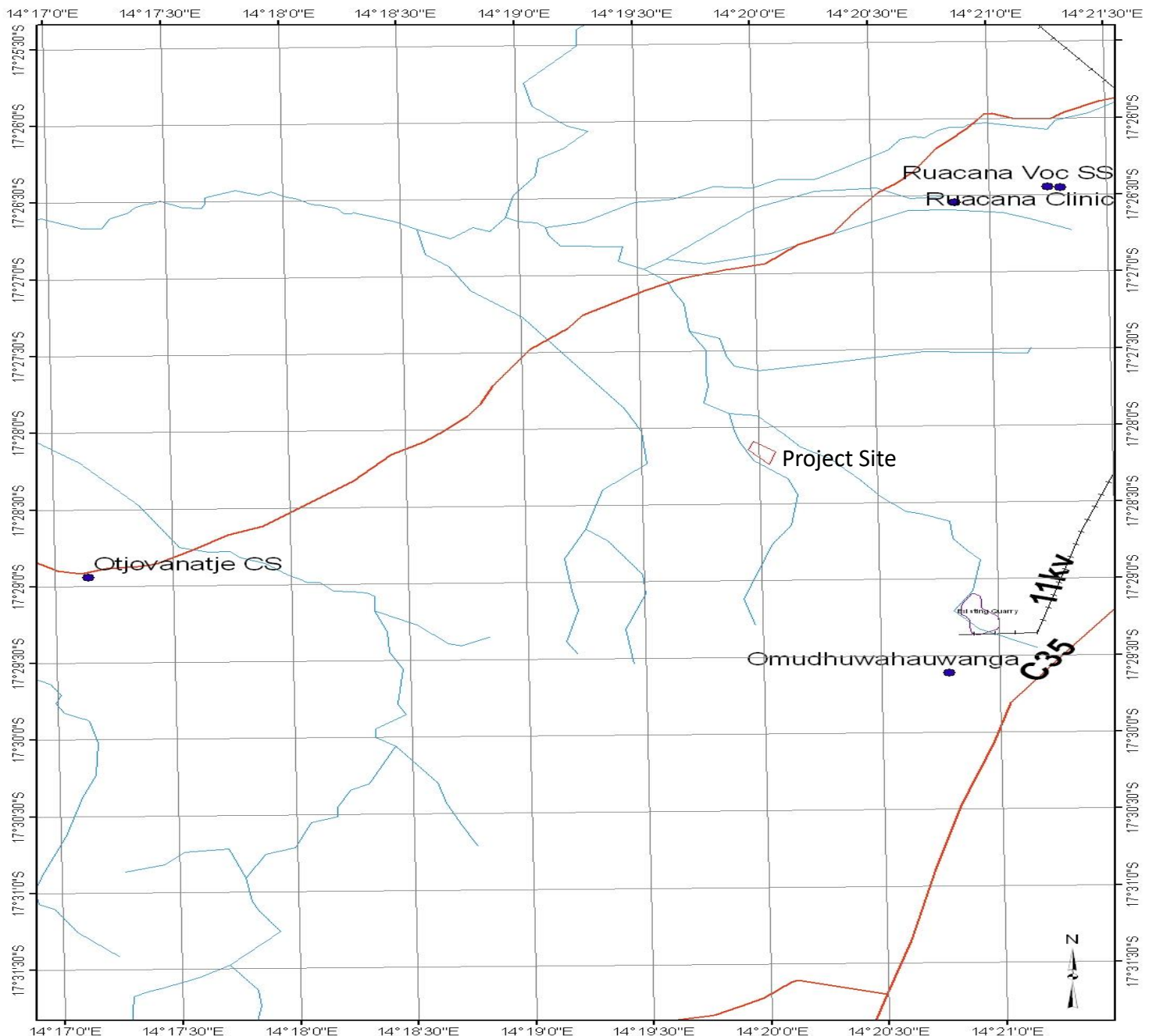


Figure 2: The location of the project site in relation to the village, clinic, school, vocational training centre and existing infrastructure.

Source: Own plot by Josiah T. Mukutiri.

## ***2. LEGAL REQUIREMENTS***

This section presents the treaties, policies and legislations that were reviewed in line with this project. The various compliance requirements are also presented.

### ***2.1. Relevant Treaties, International agreements and Protocols, policies and legislation.***



**Table 1. Relevant Treaties, International agreements and Protocols, Policies and Legislation.**

<p><b>2.1.1. Namibia’s Environmental Assessment Policy of 1994.</b></p>	<p>The policy contains a list of prescribed projects that may have significant negative impacts on the environment. Such projects require authorisation from the Ministry of Environment &amp; Tourism (MET) - Directorate of Environmental Assessment (DEA). Mining and mineral processing are listed activities that warrants an EIA since it involves the following activities:</p> <ul style="list-style-type: none"> <li>• Land clearing and removal of overland vegetation</li> <li>• Excavation of the land</li> <li>• Crushing of stones</li> </ul> <p>Accordingly, the project requires authorisation from MET: DEA, which will be based on the findings of the detailed EIA study.</p>
<p><b>2.1.2. Environmental Management Act (2007)</b></p>	<p>The Namibian Environmental Management Act of (2007) guided the EIA study and made reference to the principles contained in the Act. This is the very Act that binds all the responsible parties against their respective environmental obligations against which the EIA clearance is issued. Failure to comply attracts fines and / or prosecution depending on the severity of the matter. The Proponent should meet environmental conditions upon which the Environmental Clearance Certificate will be issued.</p>
<p><b>2.1.3. Water Act (1956)</b></p>	<p>Water Act 54 of 1956 and the Water Resources Management Act 24 of 2004, provides the general protection against surface and ground water pollution. It prohibits the pollution of underground and surface water bodies including liability of clean-up costs after closure / abandonment of an activity. It also regulates the drilling of boreholes for groundwater abstraction. No potential groundwater contamination anticipated during the quarrying and crushing of aggregate stones since no chemicals will be used. On the same note it is important to ensure that lubricants and other petroleum waste generated through equipment repair and servicing be handled appropriately reducing the chances of ground water contamination. However, the Proponent should follow the requirements of this Act when drilling boreholes. Water will be required for the quarry and crusher for dust control and other uses etc.</p>

## **Waste Management**

<p><b>2.1.4. Hazardous Substances Ordinance 14 of 1974</b></p>	<p>The hazardous substances ordinance 14 of 1974 controls substances with potential to cause injury or ill-health or death of human beings because of their toxic, corrosive, irritant, strongly sensitizing or flammable nature. There are many products that are covered under this Act including petroleum fuels, mining explosives that are used on a daily basis at the quarry. Care should be taken throughout the product lifecycle right from receiving, storage, product use and disposal. In cases where special storage facilities are required the Proponent should provide as such.</p>
<p><b>2.1.5. Petroleum Act (Act 2 of 1991)</b></p>	<p>This Act gives control over the storage of refined petroleum products, and to provide for matters incidental thereto. Handling and discharge of oil products is also regulated under this Act.</p>
<p><b>2.1.6. Pollution Control and Waste Management Bill</b></p>	<p>This bill aims to prevent and regulate the discharge of pollutants to air, water, and land. It further aims to promote the establishment of a system of waste management, and enable Namibia to meet its international obligations. Waste management should be guided by the 3R principle, Reduce, Reuse and Recycle. Only unrecyclable and unusable materials will be disposed of at a designated disposal site. Waste rock should be stockpiled for landscape rehabilitation exercise.</p>
<p><b>2.1.7. Atmospheric Pollution Prevention Ordinance 11 of 1976</b></p>	<p>This regulation sets the principles for the prevention of atmospheric pollution and associated matters arising thereto. Part IV and Part V prevents atmospheric pollution by dust and vehicles gaseous emissions respectively.</p>

## **General Environmental Protection And Management**

<p><b>2.1.8. Environmental Management Act (2007)</b></p>	<p>Requires that projects with significant environmental impacts be subjected to an environmental impact assessment (EIA) process and is presented above under, "item 2.1.2."</p>
<p><b>2.1.9. The Nature Conservation Ordinance, Ordinance 4 of 1975</b></p>	<p>This ordinance covers the protection and establishment of game parks and nature reserves, the hunting and protection of wild life, problem animals, and the protection of indigenous plants. No valuable protected species have been identified. Although the dominant protected plant species in the area is the Mopani it is wide spread in the area and its main importance is for fire wood and construction.</p>

<p><b>2.1.10. Parks and wildlife management bill, 2006.</b></p>	<p>It provides the legal framework to promote the maintenance of ecosystems, essential ecological processes and the biological diversity of Namibia, the sustainable utilization of natural resources for everyone benefit. This was borne out of Namibia's obligations under the international treaties such as the Convention of Biological Diversity</p>
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## **Noise And Vibration**

<p><b>2.1.11. Labour Act (1992)</b></p>	<p>The labour Act governs the employer to employee relationship including issues pertaining to occupational health and safety, remuneration, provision of appropriate protective clothing, grant of leave etc. It is important to refer to the Act and ensure compliance with fair labour practices.</p>
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## **Land Use and Planning Issues**

<p><b>2.1.12. Minerals (Prospecting and Mining) Act No. 33, 1992</b></p>	<p>The main purpose of this Act is to provide for the reconnaissance, prospecting and mining for, and disposal of, and the exercise of control over, minerals in Namibia; and to provide for matters incidental thereto. The product being sort after in this project i.e. dolomite rock for construction is not regarded as a mineral and as a result does not require claims registration with the Ministry of Mines and Energy. Refer to <i>definitions "mineral" means any substance, whether in solid, liquid or gaseous form, occurring naturally in, on or under any land and having been formed by, or subjected to, a geological process, excluding - (c) subject to the provisions of subsection (2), soil, sand, clay, gravel or stone (other than rock material specified in Part 2 of Schedule 1) if they are bona fide required for purposes of -</i></p> <ul style="list-style-type: none"> <li><i>(i) agriculture, building works, fencing or road making;</i></li> <li><i>(ii) the manufacture of bricks and tiles;</i></li> <li><i>(iii) the construction of sports fields, airfields, railways, bridges, dams, reservoirs, weirs, canals or other irrigation works;</i></li> </ul> <p>The Proponent obtains authority from the Traditional Authority for permission to extract and crush stones from the project area. The Proponent has obtained consent by the Uukolonkadhi Traditional Authority in that respect.</p>
<p><b>2.1.13. Communal Land Reform Act No.5 of 2002.</b></p>	<p>This Act is aimed at providing for the allocation of rights in respect of communal land; to establish Communal Land Boards; to provide for the powers of Chiefs and Traditional Authorities and boards in relation to communal land; and to make provision for incidental matters. The proposed site is part of the grazing area for the local community but due to the rocky nature of the area it is not their prime grazing area, hence the stone crusher will not impact heavily on the local community. This is supported by the consent granted by the traditional Authority.</p>

#### **2.1.14. The Forest Act (2001)**

Forests are extremely important resources. They conserve soil and water, maintain biological diversity, and provide many products such as wood and foods. Without forests, large areas in Namibia would become deserts, and the people in those areas, and the country as a whole, would suffer in various ways. The Forest Policy and Forest Act enable us to protect our forests. The basic aim of the Forest Policy is to protect and make our forests productive to improve the economic welfare of rural communities as part of the national poverty reduction plan. The Forest Act (No. 12 of 2001), as amended by the Forest Amendment Act (No. 13 of 2005), is the law through which the Forest Policy is implemented. Basically, the Act stipulates how forest resources may be used and the responsibilities of the users.

It aims to prevent deforestation by making it illegal to clear woody vegetation on more than 15 hectares of land or remove more than 500 cubic meters of forest produce per year. Removal of forest produce on any piece of land requires approval by the Director of Forestry. It is also illegal to carry out agricultural and livestock activities; remove, destroy or damage forest produce or vegetation; or light a fire in a protected forest area. Currently there 43 protected trees in Namibia but only the following have been identified in Ovikokola Village: *Colophospermum mopane* (Mopane) and the *Sclerocarya birrea* (Marula), (Museums Association of Namibia, 2011).

**Table 2: Legislative instruments governing the proposed project and the respective regulatory authorities.**

<b>Act/Regulation</b>	<b>Compliance</b>	<b>Regulatory Authority</b>
Environmental Management Act (2007)	Obtain EIA Clearance Certificate	Ministry of Environment & Tourism
Environmental Management Act Chapter 20:27	Produce quarterly reports; adhere to the EMP outline in EIA and renewal of EIA certificate.	Ministry of Environment & Tourism
Nature Conservation Ordinance 4 of 1975. Forest Act (2001)	Adhere to the regulations and re-vegetate any areas where vegetation has been destroyed / should be maintained.	Ministry of Environment & Tourism
Labour Act (1992)	It is important to refer to the Act and ensure compliance with fair labour practices and occupational health and safety.	Ministry of Labour
Water Act (1956)	Acquire water permits and pay the designated fees as prescribed.	Ministry of Agriculture, Water & Forestry
Water Resources Management Act (2004)	Monitor water quality and comply with waste water discharge quality standards. Prevent both surface and groundwater contamination.	Ministry of Agriculture, Water & Forestry

## **3. PROCESS AND METHODOLOGY**

### **3.1. Process**

Given that the development of a stone crushing plant is a prescribed activity under the Environmental Management Act (2007), it was obvious that an EIA was required to obtain an Environmental Clearance Certificate from MET: DEA. Geological investigations and exploration work done recommended open cast mining method. Open cast mining involves extensive vegetation clearing, stripping of overlying material and cutting of landscapes which negatively impacts on the environment. As a result, the scoping exercise recommended that a full EIA be carried out for this project. This chapter describes the EIA process followed during the study. The EIA study was guided by the Namibian Environmental Impact Assessment Policy of 1994 and the Namibian Environmental Management Act of 2007. Various methodologies were implemented to fulfill the requirements of each step in the EIA process list as shown below.

### **3.2 EIA Process**

Once the decision was taken that an EIA was required, (Environmental Management Act) the study that was conducted involved the following steps:

- Preliminary Activities setting terms of reference for the EIA, selecting consultant (agent who would prepare the EIA) to do the EIA,
- Literature review of all relevant information;
- Field work for making of detailed studies of the baseline situation. This included biodiversity, heritage and culture, weather and socio-economic conditions.
- An analysis of the potential environmental impacts. This included impact prediction and significance assessment;
- Public participation which included meetings, formal and informal interviews;
- The preparation of an environmental management plan for the project and finally;
- The compilation of the EIA report.

Below is a description of the phases mentioned above? This is only a bird's view description of the various phases followed by the assumptions and limitations derived from study of situation and discussions with the proponent.

#### **3.2.1 Clarifying terms of reference and levelling of expectations**

Leveling of expectations – an opening meeting was held between the consultancy team and the Proponent. The purpose of the meeting was to clarify the methodology to be followed, communication process between the consultancy team and the Proponent, time frame and expected outcomes of the EIA study.

#### **3.2.2 Literature review**

Various related documents were reviewed to gather information on the potential impacts, the alternatives, how to mitigate the impacts, decommissioning and amount of pollutants expected. The literature includes maps, publications, and report on topography, climate, land use, and socio-economic setup of the local community. The literature review helped in undertaking components

and areas that would deserve attention during field assessment. The literature review which was mainly based on the desk study method included the following;

**Information search from internet, journals, books and stakeholders:** Examples of quarry projects from both developing and developed world were reviewed including their merits and demerits. Besides its operation, potential environmental impacts were also reviewed.

**Analyze the potential environmental impacts of stone crushers from typical data and research.** The three major environmental compartments which are land, air and water were chosen to be observed and discussed in details. These compartments had been chosen because they are the main receiving environmental compartments that should be considered before implementing the project. Environmental data was analyzed to determine potential environmental impacts of the quarry and crusher. The potential impacts were ranked for impact significance as presented later on.

### **3.2.3 Field Survey**

Field surveys were carried out to verify some facts obtained from the literature review. A more informed assessment was however the main objective of the field studies. This was done to confirm the condition of the area in terms of climate, soils, land use, topography and socio-economic set up of the area. It also involved surveys to identify the different environmental components and their state to determine the most likely impacts.

### **3.2.4 Public Involvement**

A wide range of key stakeholders were consulted by means of public meetings, interviews and various media communication. The consultations were done mainly to get a view of the affected parties as well as how they think the project should be carried out for minimum impacts on health, environment and the well-being of the people. All the major issues which were highlighted by stakeholders were incorporated into the EIA process, the project design and the proponents have committed the same during project implementation.

### **3.2.5 Identification and analysis of impacts in terms of magnitude and significance**

Mining projects have potential negative impacts on the environment. Impacts will depend on the sensitivity of the environment and the stress already imposed on it. To accurately predict the various impacts caused by the above mentioned the ecological impacts as well as the socio-economic impacts were delineated. Potential environmental impacts were identified and an analysis criterion shown in the chapter on impact prediction and analysis were used to rank the impacts.

### **3.2.6 Recommended mitigation measures for identified impacts**

Mitigation measures were developed based on practical measures supported by research and scientific evidence. Extensive literature review of reputable publications and journals helped the formulation of mitigation measures.

### **3.2.7 Analysis of alternatives of the project – both economic and environmental**

The analysis of alternatives was done to ensure that resources were used efficiently and that decisions were environmentally sound.

### **3.2.8 Development of an environmental management plan**

An environmental management plan (EMP) was prepared to give a guideline base to the project proponent on how the identified impacts could be mitigated and managed. The plan was put in a tabular format indicating the impact, indicator, monitoring frequency and the responsible agent. When all the important information was derived from the impacts' prediction and analysis section, all the important aspects were put down and monitoring responsibilities were assigned to the different aspects.

### **3.2.9 Preparation of the EIA Report**

On completion of the various tasks assigned to the team members during the EIA process gave rise to separate individual reports. The reports were collated to come up with an environmental impact assessment report.

### **3.3. Project Team**

The execution of this work involved the expertise of the team mentioned below. All were assigned duties according to their educational background and experience:



**Table 3. Team of experts and their areas of responsibility in the EIA process.**

<b>ORGANIZATION</b>	<b>AREA OF RESPONSIBILITY / FIELD OF EXPERTISE</b>	<b>TEAM MEMBERS</b>
OUTRUN	Project management  EIA coordination  EIA process	Josiah T. Mukutiri  Josiah T. Mukutiri
M.SHIKONGO'S INVESTMENT GROUP ONE (PTY) LTD	Development of the business concept	Matty Shikongo
OUTRUN	Literature review / Desk study	Josiah T. Mukutiri and Selma lilonga
OUTRUN	Legislatory & Policy Review	Josiah T. Mukutiri
OUTRUN	Development of Environmental Management Plan (EMP)	Selma lilonga
OUTRUN	Public Consultation and Facilitation	Josiah T. Mukutiri and Matty Shikongo

**N.B. Abridged CVs of key Team Members are annexed at end of the report.**

### **3.3. Identification Of Alternatives**

This section covers a discussion of alternatives to the proposed establishment of a quarry and stone crushing plant. The “do nothing” alternative is also considered.

#### **3.3.1. Strategic alternatives**

##### **3.3.1.1. Road**

The proposed site is very accessible through a gravel road from Ruacana. There is a track road from the Ruacana gravel road to the proposed site which needs minor upgrading. The site is within a walkable distance from Ovikokola Village and the Proponent intends to take advantage of that and recruit workers from the village thus avoiding construction of a worker’s compound which is expensive and will require more land.

##### **3.3.1.2. Water**

There is ground water available in the area. The Proponent should apply for the relevant permit from MAWF before drilling boreholes.

##### **3.3.1.3. Electricity**

The Proponent intends to use diesel generators, but there is an 11 kV power line close to the site that brings electricity to the existing stone crusher that is close-by. In the event that the Proponent decides to use this source then relevant permits should be obtained from MME in conjunction with NAMPOWER and / or NORED.

##### **3.3.1.4. Potential land-use conflicts**

The current main land-use is grazing, sourcing of firewood and construction poles. All these are accessible from the surrounding areas with better grazing lands / pastures. The development of a stone crusher is likely to add more value to the locals. The project is not likely to cause and conflicts regarding user rights of the local community. This is also well supported by the initial consultations done with the Traditional Authority and the community. The Traditional Authority has already given consent for the project.

#### **3.3.2. Alternative sites**

The proposed site indicated in fig 1 is where the dolomite deposit to be mined exists naturally. There is no other dolomite deposit in the vicinity that the Proponent is aware of and as a result no other alternative site was studied.

#### **3.3.3. No-Go Option**

The “no-go” option means maintaining the status quo were no stone crusher plant will be built. This would be the best for the environment given that it remains untouched. However, that situation is not favoured as it means no development and lack of employment opportunities for the local people.

## **5. PUBLIC PARTICIPATION PROCESS**

Public consultation is an integral part of a comprehensive EIA and is done to ensure that issues are identified early during the process before major decisions are made. It is a requirement to carry out public consultations under the Namibia Environmental Assessment Policy of 1994 and also to achieve principles of best practice during the EIA process.

### ***5.1. Purpose Of The Public Participation Process***

The purpose of the public participation process is to:

- Provide information to I&APs and other stakeholders about the project background, proposed site, project concept and predicted potential impacts.
- Establish the public's interests, concerns and expectations regarding the proposed project.
- Obtain input from I&APs, the public and other key stakeholders.

### ***5.2. Identification Of Key Stakeholders***

The following key stakeholders were identified for consultation purposes:

- Ministry of Mines & Energy
- Uukolonkadhi Traditional Authority
- Omusati Regional Council
- Ovikokola Community members
- Ovikokola Business Community
- Other members with interest or affected by the project.

### ***5.3. Initiation of The Scoping Process***

The scoping process was initiated by publicising it through the Uukolonkadhi Traditional Authority, posters pinned at Ovikokola Village and publications done in the local newspapers. See Annexure 3 for the sample advertisement or poster. Both posters and advertisements announced the beginning of the scoping process and invited stakeholders and members of the public to register as I & AP as well as participation in public meetings. A Background Information Document (BID), see attached copy in Annexure 3, was forwarded to stakeholders and members of the public.

The BID contained the relevant information about the proposed stone crusher and promoted stakeholders and public participation in the scoping process. A comment sheet was provided at the end of the BID report inviting comments on issues of interest and importance to the stakeholders.

**Table 4: Media used to advertise for the meeting and the respective publication dates.**

<b>MEDIA USED</b>	<b>DATE OF PUBLICATION</b>
New Era	11 October 2019
Windhoek Observer	11 October 2019
New Era	18 October 2019
Windhoek Observer	18 October 2019

#### **5.4. Public Consultation**

Key informant interviews were held with members of the Omusati Regional Council. These were followed by a meeting held with the Ovikokola Community members at their village at Omudhuwahauwanga on the 26<sup>th</sup> of October 2019. The meeting was designed to give the stakeholders details regarding the project and the EIA process being followed.

The members present were given the chance to say their interests or concerns regarding the project. Communication was interactive and two languages used (English and Otjiherero). All the legible names and contact details of Attendees were included in the list of registered I&APs, see annexure 2. All the factors identified during the environmental scoping phase were studied during the EIA. IAPs were given ample time to comment on the draft reports before finalizing. All the issues and concerns raised during the meeting are presented below. Minutes of all public meetings are also attached as annexures for this report.

#### **5.5. Issues And Concerns Raised And Responses**

Records of all registered I&APs and stakeholders and the issues, concerns and comments on the proposed project were developed and are attached as annexure in this report. Below is a summary of issues raised during the meeting and interviews:

**PROCESS:** Attendance at the public meeting was very good and impressive. At least 30 people attended the meeting, (attendance register annexed).

**Biodiversity:** There were many useful plant species identified during the meeting by the villagers. The most important was the Mopani, which is mainly used for construction materials and as a host for Mopani worms. Mopani worms are a good source of protein in African dishes. ***Their value and further details will be presented in the EIA report. However, it was clear from the community members that these plants were abundant and found all over Ovikokola.***

**POTENTIAL NEGATIVE IMPACTS:** There were several potential negative impacts identified jointly with the community and they include the following:

- *Reduced access to the forests due to fencing off of mining claims.*
- *Potential injury to passers-by during blasting operations / activities.*
- *Dust pollution from the excavation works, crushing, loading and traffic.*

**POSITIVE IMPACTS:**

The following potential positive impacts were identified:

- *Employment creation, especially the youths.*
- *Contribute to poverty reduction*
- *Stimulate local business due to increased disposable income.*

**OTHER ISSUES:**

Other issues or concerns raised by community members included:

- *What criteria will be used to recruit workers, should they be trained etc.?*
- *Will the Proponent also employ women?*
- *Will the workers be permanent or casual?*
- *What will happen to the workers if the company closes down?*

No graves or other social cultural and traditionally bound attachments are known to exist at the proposed site. The community was well aware that the project will benefit the whole community directly or indirectly and are in full support of the project.

**See Annexure 3 containing minutes of the stakeholders' meetings.**

***5.6. Review Of Draft Scoping and Environmental Report***

The draft reports were put at the Shop in the community for public review and commenting but no additional comments were received.

***5.7. Public Participation: Way Forward***

The reports were then adopted as the final Scoping Report and the final Environmental Report respectively before submission to the MET: DEA. MET: DEA's decision regarding the EIA report will be made available to all I&APs.

## 6. DESCRIPTION OF THE RECEIVING ENVIRONMENT

### 6.1 GENERAL DESCRIPTION

#### 6.1.1. Legal status

The claims were pegged on 10 August 2019 and the application handed in to the Ministry of Mines and Energy on 15 August 2019. Both EPL holders, Mrs Ishitile and Mrs Scholtz gave their consent to explore and mine on the claims. As soon as Environmental Clearance has been given by the Ministry of Environment and Tourism, the claims will be granted to the applicant.

#### 6.1.2. Demography

The project site is located at Ovikokola Village in Ruacana Constituency in Omusati Region, Namibia. The region has a size of 26573 square kilometres. Its borders are: Angola to the north, Kunene region to the northwest, Oshana region to the east and Oshikoto region to the south. The total enumerated population for the region is 242,900 (NPC, 2012) and a population density of 9.1 persons per square kilometres.

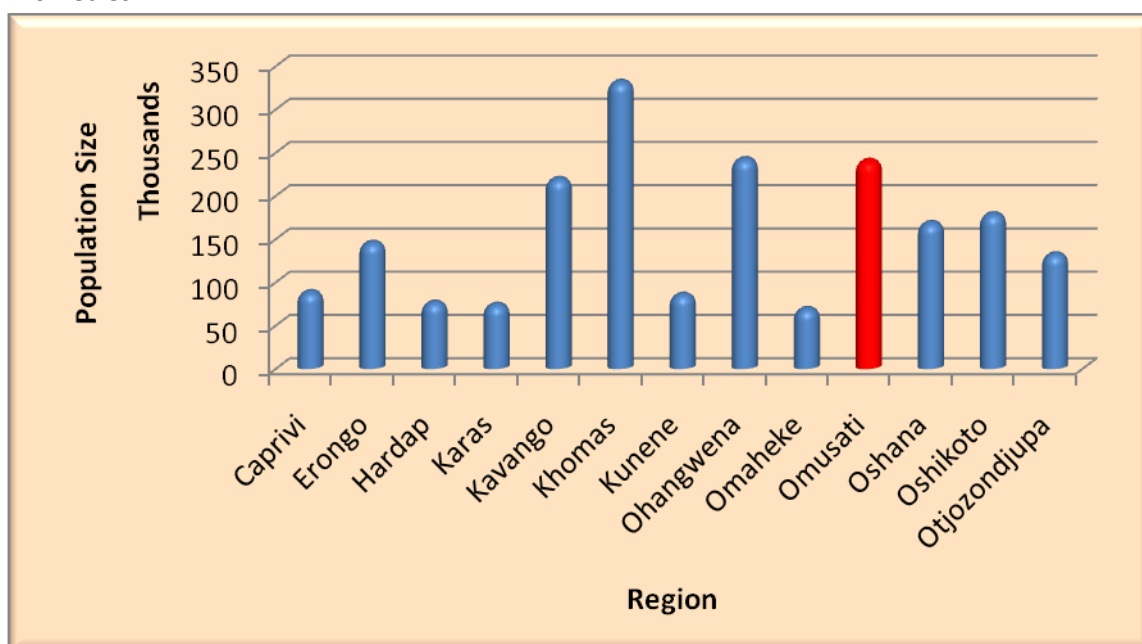


Figure 3. Total population by region as at April 2012.

Source: *National Planning Commission.*

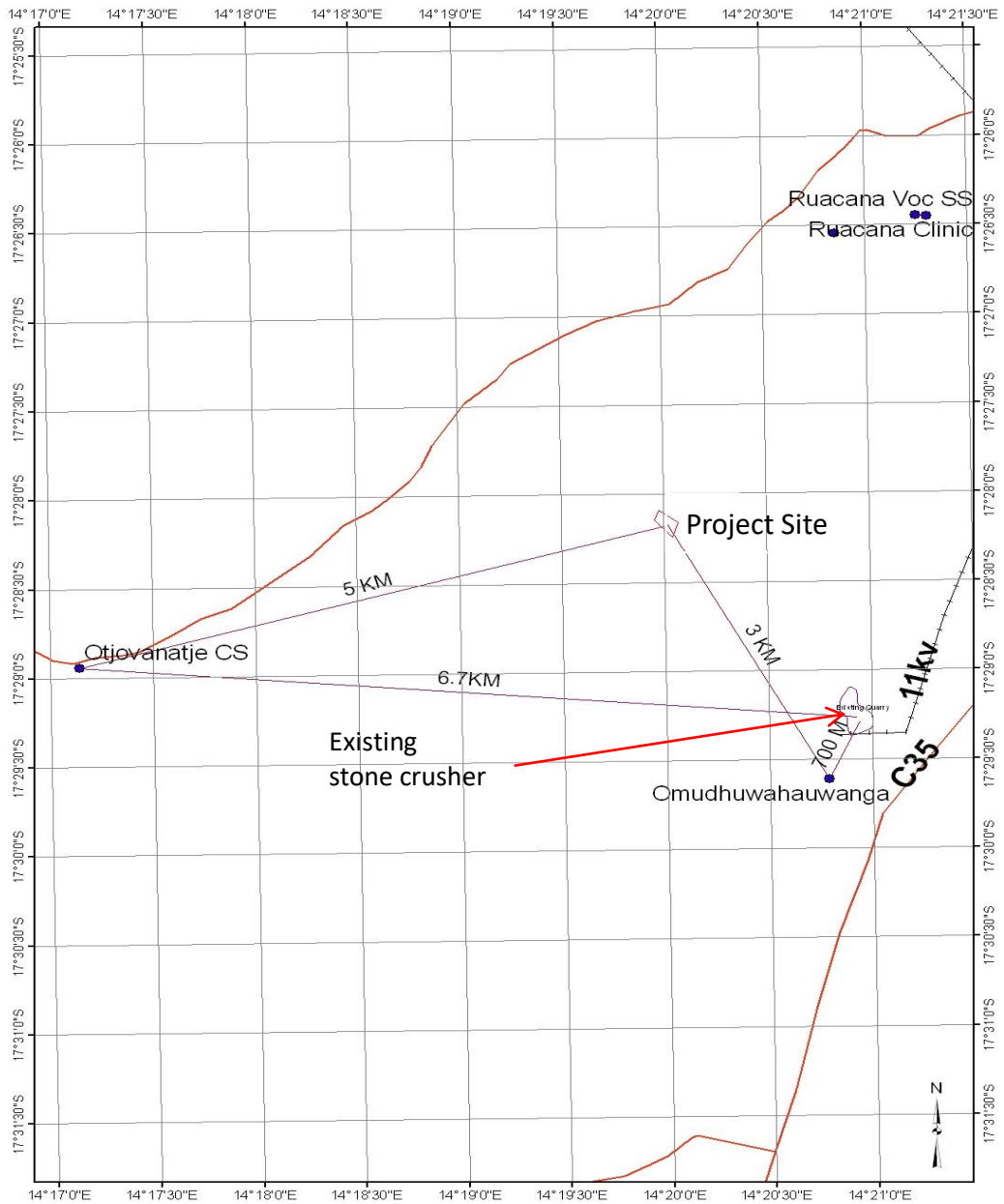
Ovikokola is a small village in Ruacana Constituency and is popularly known as Omudhuwahauwanga. The mining and crushing of stones are noisy and dusty in nature. We identified sensitive receptors to noise and dust emissions and mapped them in relation to the proposed project site. Recommendations and guidelines to support the EMP are presented later in the EMP chapter.

It is also important to note that this area's proximity to Ruacana Hydroelectricity generation plant made it a highly protected area during the apartheid era. The South African Defence Forces used 2 types of anti-personnel landmines, the R2M2 and the J69. The R2M2 is pressure detonated by about 5 pounds of pressure on the detonator. It will not kill its victim but serious injury will definitely occur

with possible loss of the leg in question and definite loss of the lower portion of the leg, below the knee. The J69 can be detonated by pressure or by means of a tripwire. Upon activation the J69 will bound about 1 metre high off the ground whereupon the primary detonation would occur, sending shrapnel in all directions. The lethality range of the J69 is 40 metres, with death a certain prospect. Serious injury can still occur out to about 60 metres. Mine clearing on pylons conveying electricity from the power plant southwards towards Windhoek was conducted by NDF. Development projects in the Northern regions have been accompanied by demining operations to protect personnel from injury. This is necessitated by discovery of live rockets during implementation / construction of capital projects. We recommend that the Proponent engages NDF to demine the proposed site before any operations commence.



**Figure 4: The R2M2 mine (left) and the J69 (right) set under a pylon. Source: NDF, 2000.**



**Figure 5: The proposed project site in relation to sensitive areas i.e. residential, school and clinics. Source: Own plot by Josiah T. Mukutiri.**



### 6.1.2. Climate

Climate refers to the meteorological or weather elements measured in a particular region or area over a long period of time of 20 to 30 years. The climate of an area is generally affected by the latitude, terrain, altitude and distance or proximity to water bodies. Climatic knowledge about an area is important because it shapes human activities of the people inhabiting the area. This is because climatic factors such as rainfall and temperature affect geomorphology, weathering and soil formation, transport of materials, flora and fauna and the use of natural resources, (Bertram and Broman, 1999). More importantly, it enables us to predict the potential project impacts on the livelihoods of the people inhabiting the surrounding communities.

### 6.1.3 Rainfall and temperature

The rainfall is generally semiarid with most of the rain falling during the summer months of November to April. Rainfall is spatially and temporally distributed. The eastern area of the region receives an average of 450 – 500 mm of rainfall per annum, while the south – western parts of the region receive an average of 250 – 300 mm per annum, (NPC, 2007). The project site lies in the north – western part of Omusati Region. Maximum temperature averages 30 – 35 °C in summer with minimum temperatures averaging 7 – 8 °C. Lower temperatures close to 0 °C are seldom experienced, (NPC, 2007).

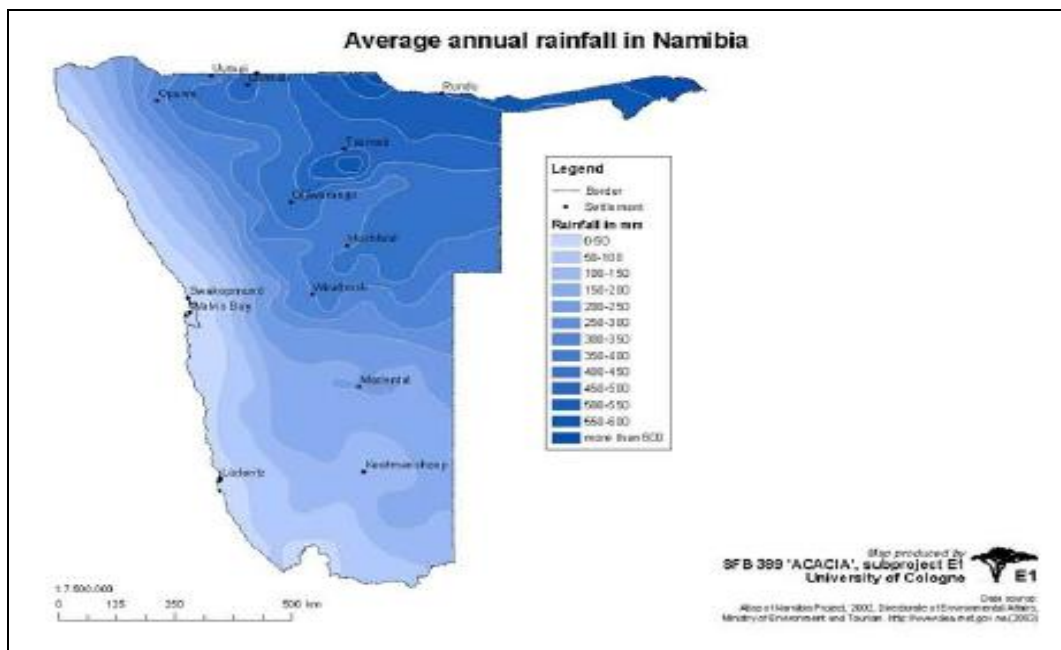


Figure 6. Average annual rainfall distribution map for Namibia.

It can be seen that the proposed site is drained by a number of ephemeral rivers running through the area and the surrounding areas. It is important that all excavated material be protected from possible erosion by flowing water. These rivers are an important source of drinking water during summer.

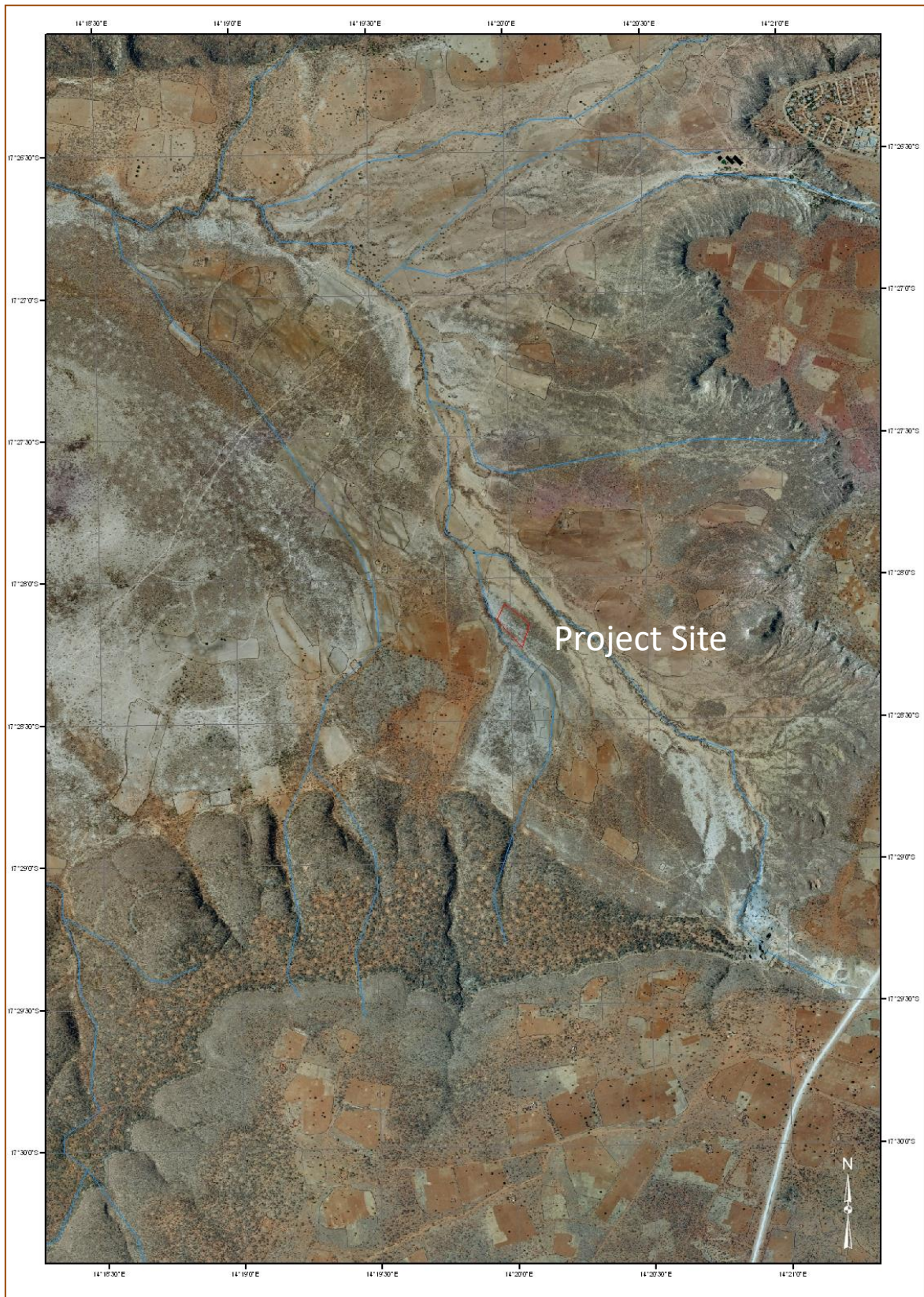


Figure 7: The drainage pattern for the proposed site and the surrounding areas.

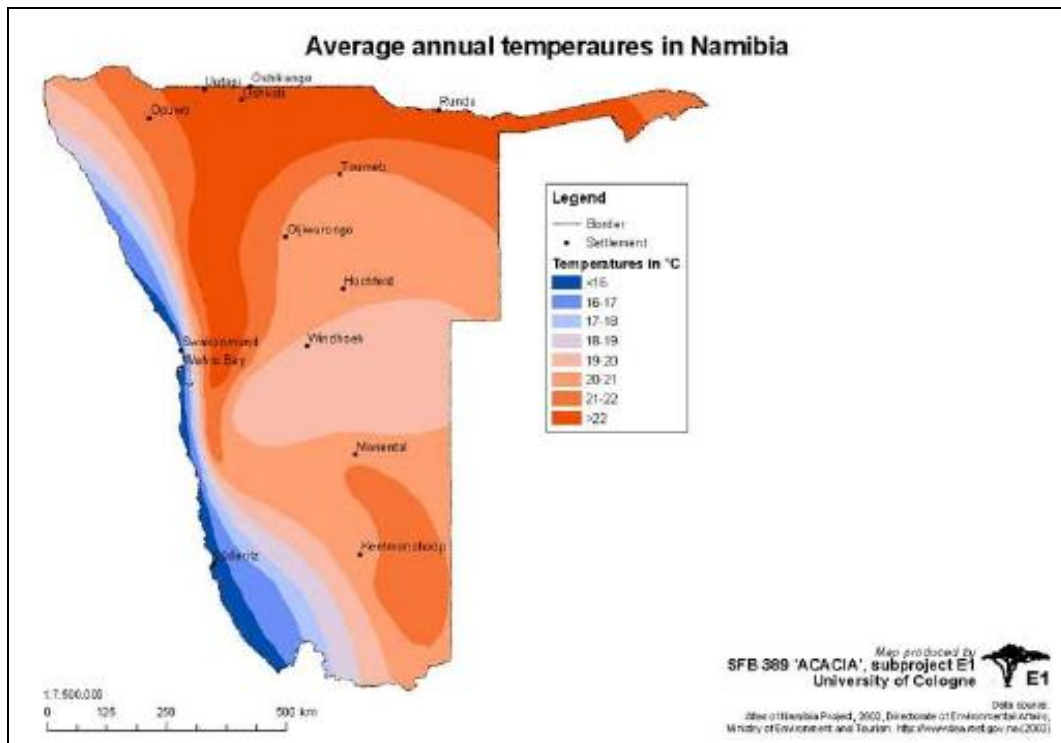


Figure 8. Average temperature map for Namibia.

## 6.2. PHYSICAL AND BIOLOGICAL ENVIRONMENT

### 6.2.1. Geology and Soils

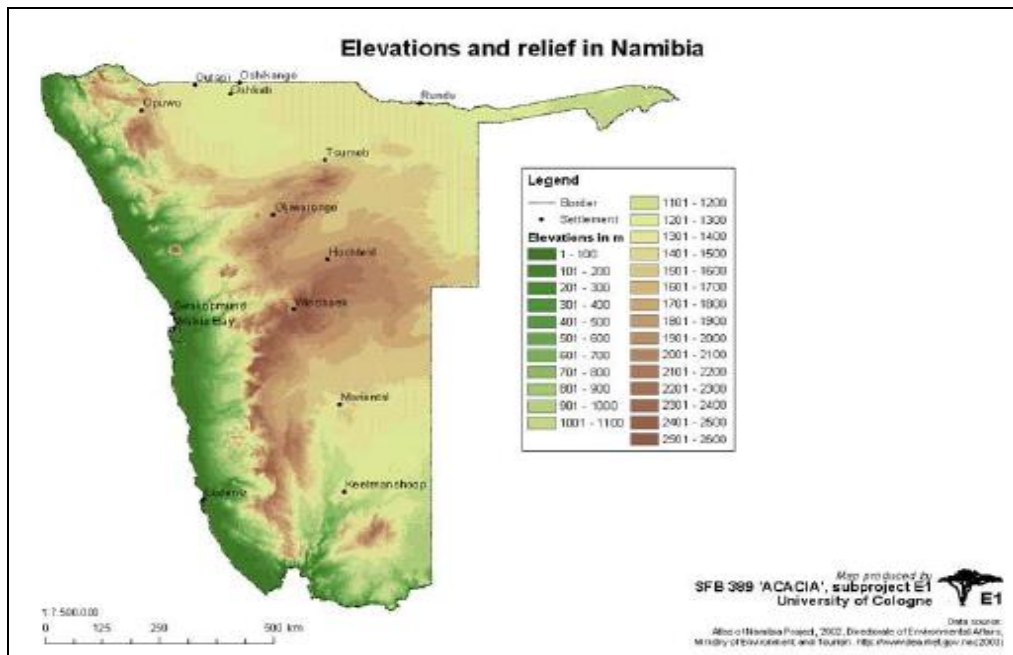
The soils are generally sandy, comprised of reddish brown to greyish sands and loamy sands. Clay pans, hard pans, calcrete outcrops and salt accumulations are also common. This area to the South of Ruacana is underlain by meta-sedimentary rocks of Namibian age. To the West of the claims, diamictite, schist, quartzite and Banded Iron Formation of the Chuos Formation occurs. The claims themselves are situated on dolomite, limestone, shale and chert of the Namibian Group. Main target of exploration and mining are silicified grey dolomites to be used as Industrial Minerals.



**Figure 9: Visible Calcrete rock outcrops found in the project area.**

### **6.2.2. Landforms, Elevation and Relief**

The country comprises three main physiographic regions, the western coastal plain of the Namib Desert, the central plateau stretching from the southern to the northern border and covering more than half the country, and the semi-arid Kalahari zone lying along most of the eastern portion of the country (Isaacson, 1995). The country has elevations ranging from 1m to 2600 m above sea level. The coastal areas are mostly 1m to 700m above sea level. Omusati region lies within elevations ranges of 1200 m to 1400 m above sea level.



**Figure 10. Elevation and relief in Namibia.**

### **6.2.3. Vegetation**

This area lies in the dry savannah zone that becomes a thorny bush and savannah bush. Towards the west – southern parts of the region the area is open and grassy. Vegetation is dominated by Mopani trees (*Colophospermum mopani*). Mopani trees grow in hot, dry low-lying areas. It is found in low, shallow and alkaline soils that are poorly drained. The Mopani tree has many uses as a heavy / hard wood for floors, sculptures; charcoal and firewood. Twine from the bark is very useful in construction while the leaves are used as a medicine for healing wounds. Ecologically the Mopani tree is the primary host for Mopani worms. Mopani worms are the protein rich larval forms / caterpillars of the moth (*Sonimbrasiabelina*). They are a delicacy in traditional African dishes and when harvested in large quantities are sold dry or cooked in the local markets.



**Figure 11. Mopani trees are the dominant species at the project site with sparse Acacia sp..**

## 8. IDENTIFIED IMPACTS, SOURCES AND NATURE OF IMPACT.

Activity	Aspect	Identified Impact(s)	Nature of impact
Quarry stone mining	Employment	Employment creation	+ve
	Economy	Boosting of local and national economy	+ve
	Economy	Infrastructure development	+ve
	Economy	Creation downstream investment opportunities in Ovikokola Village	+ve
	Economy	Creation of potential market for local produce.	+ve
Excavation works	Dust	Air pollution	-ve
	Noise	Noise Pollution	-ve
	Landscape	Land degradation	
	Water flow channels	Siltation of ephemeral rivers and degradation of surface water flows.	-ve
	Water quality	Water pollution	-ve
	Biodiversity	Loss of biodiversity	-ve
	Habitats	Loss of habitats	-ve
	Livestock	Livestock injuries.	-ve
Earthmoving equipment	Noise and dust	Noise and dust pollution	-ve
Use of ablution facilities	Waste water quality	Water pollution	-ve
Influx of employees of other ethnicity not Ovahimba / Oshiwambo.	Culture	Cultural dilution	-ve
Increase in disposable	Health	Increase in HIV / AIDS new infections	-ve

income			
Use of water at the stone crusher	Water	Increase in demand for water supply	-ve
Influx of people into the area in search of opportunities	Health	Increase in demand for social services e.g. health and police services.	-ve
Daily stone crushing work activities	Occupational Health and Safety risks	Work place accidents	-ve



## 8. ASSESSMENT EVALUATION OF IMPACTS

The impact assessment has two major components namely impact analysis and impact evaluation. Evaluation of impacts takes into cognizance the ecological, social and physical baseline surrounding the project. Each of the components will be discussed fully in this chapter. This chapter deals with all impacts that were raised during stakeholder consultation and downloaded from consultant's experience and research. This chapter enables us to estimate the depth and extend of each and every impact in the production life cycle of this project. Negative impacts and other enhancement measures noted from this chapter are carried forward to chapter seven that deals with the EMP that seeks to provide road-map and steps to deal with these impacts.

### 8.1 IMPACT ANALYSIS

Following the identification of the various potential social, health and environmental impacts through public consultation (chapter five) and literature review an impact analysis and evaluation this framework is established. The framework looks at the impacts under the following aspects;

- i. **Nature of the impact:** This dimension reveals if the impact is direct or indirect, cumulative or instantaneous and whether the impact is positive or negative.
- ii. **Magnitude:** This parameter discusses the intensity of the impact, whether it is low, moderate or high intensity.
- iii. **Extent:** The extent gives the quantitative aspects of the impact and the spatial distribution of the impact.
- iv. **Timing:** This shows when the impact would occur in terms of the project life cycle. This can be classified according to the phases such as planning, implementation, operation and closure.
- v. **Duration:** The parameter reveals whether the impact is short term or long term, intermittent or continuous.
- vi. **Permanence:** This shows whether the impact is reversible or it is irreversible. In the table below **P** means permanent, **SP** means semi-permanent while **T** means temporal.
- vii. **Likelihood:** This tells us the probability of the impact occurring. This is judged in close relation with the prevailing circumstances that ranges from adaptability to resilience of the affected community.
- viii. **Significance:** This tells the value that the affected stakeholders put on the aspect affected. This aspect is best captured through stakeholder consultations.
- ix. **Residual Impacts:** Potential impact remaining after mitigation measures have been adopted into a project. Dougherty and Wall (1995)

The analysis of the environmental impacts is focusing on the entire project life of this project.

## **8.2 IMPACT ASSESSMENT**

Following the identification and analysis of potential environmental impacts, this section focuses on the evaluation of the significance of the identified impacts and the impact of the potential remedial action or enhancement measures. As indicated in the impact analysis, this evaluation only focuses on the impacts arising from the planning, construction, operation and decommissioning phases of the project. A systematic process was followed in evaluating significance, distinguishing between 'as predicted' and 'residual' impacts.

- 1) This first step involved evaluating the significance of 'as predicted' impacts to define the requirements for mitigation and other remedial actions.
- 2) The second step two involves evaluating the significance of the 'residual' impacts, i.e. after mitigation measures are taken into account. This test is the critical measure of whether or not a proposal is likely to cause significant impacts. It is determined by the joint consideration of its characteristics (magnitude, extent, duration etc.), that is intensity and the importance (or value) that is attached to the resource losses, environmental deterioration or alternative uses which are foregone.

Firstly, a technical judgment was made of the extent to which mitigation will reduce 'as predicted' impacts. Second, a subjective value was placed on the significance of residual impacts, using criteria and tests described below.

Assessed significance is found as a product of intensity and importance as given below by the mathematical equation below;

**Intensity x Importance = Impact significance**

In the above equation, intensity refers to the quantitative characteristics (magnitude, frequency of occurrence, duration) of the impact while the importance is based on value that the affected stakeholders place on the impact. Intensity is based on facts on the impact while the attached importance is quite subjective and is so much influenced by the perceived value. The following key will be used in the allocation of significance and importance to each and every impact.

**Table 5. Key for impact intensity, importance and significance.**

<b>RANGE</b>	<b>INTENSITY</b>	<b>IMPORTANCE</b>	<b>SIGNIFICANCE</b>	<b>SIGNIFICANCE</b>
1	Extremely low intensity	Extremely low importance	1 to 5	Extremely low significance
2	Low intensity	Low importance	5 to 10	Low significance
3	Moderate intensity	Moderate importance	10 to 15	Moderate significance
4	High intensity	High importance	15 to 20	High significance
5	Extremely high intensity	Extremely high importance	20 to 25	Extremely high significance

The conventional classification was applied for both the positive and negative impacts with the only difference being that when considering positive impact, enhancement measures will be applicable while mitigation was applied to negative impacts. The “as predicted significance” pertains to unmitigated negative impacts and also level of positive benefit has before the enhancement measures. The residual significance refers to the magnitude of negative impacts that remain even after mitigation and also refers to the level of positive benefit after the enhancement measures are implemented in this project.

**Table 6. Positive impacts analysis and evaluation.**

IMPACT		MAGNITUDE & EXTENT	DURATION	LIKELIHOOD	PERMANENCE	PREDICTED SIGNIFICANCE			RESIDUAL SIGNIFICANCE			ENHANCEMENT REQUIRED
						SEVERITY	IMPORTANCE	SIGNIFICANCE	SEVERITY	IMPORTANCE	SIGNIFICANCE	
1	Employment creation	Pronounced benefits since up to at least 20 people will be employed permanently as long as the mine is operational.	Occurs continuously during operation phase	Definite & highly significant considering the fact that the project is located in a rural area with very low income.	T	3	5	15	1	5	5	Proponent shall employ locally available unskilled labour from the community. Technical staff should come from Omusati Region and anywhere else in the country.
2	Boosting of local and national economy	Pronounced improves the community livelihoods standards	Occurs continuously during operation phase	Definite & highly significant since the mineral resources base is high	T	3	5	15	2	5	10	The mineral should be sold through approved market. Value addition of the mineral should be done locally. Aspect of corporate social responsibility
3	Infrastructure development	Directly benefits the local community	Occurs continually during the project life	Pronounced since the area is lowly serviced and rural	P	3	4	12	5	5	20	Provisions of infrastructure in form of school improvements and upgrading road network will improve livelihoods of the area.

IMPACT		MAGNITUDE & EXTENT	DURATION	LIKELIHOOD	PERMANENCE	PREDICTED SIGNIFICANCE			RESIDUAL SIGNIFICANCE			ENHANCEMENT REQUIRED
						SEVERITY	IMPORTANCE	SIGNIFICANCE	SEVERITY	IMPORTANCE	SIGNIFICANCE	
4	Corporate Social Responsibility	Applies directly to the community	Occurs continuously in the operational phase	Definite and highly significant considering the level partnerships required for community development	P	3	4	12	3	5	15	Regular and cooperative meetings between local Ovikokola community and the proponent.
5	Creates downstream investment opportunities in Ovikokola community	Directly benefits the whole community.	Occurs continuously operational phases	Definite and highly significant considering the high investment drive in the area	P	1	5	5	2	5	10	Establishment of downstream business networks such as construction
6	Creation of potential market for local produce.	Directly benefits the community	Occurs in the implementation stage and lasts for life of mine.	Definite & highly significant	SP	3	5	15	3	5	15	There is an expected increase in disposable income among the local community. The community will sell agricultural produce to the workers and contractors.

**Table 7: Negative impacts analysis and evaluation**

IMPACT		MAGNITUDE & EXTENT	DURATION	LIKELIHOOD	PERMANENCE	PREDICTED SIGNIFICANCE			RESIDUAL SIGNIFICANCE			MITIGATION REQUIRED
						SEVERITY	IMPORTANCE	SIGNIFICANCE	SEVERITY	IMPORTANCE	SIGNIFICANCE	
1	Dust pm10	Directly affect employees and neighbouring community	Occurs continually from construction to mining / operation phase	Definite & highly significant considering soil type and pneumoconiosis	SP	5	5	25	5	5	25	The proponent shall carry out dust suppression measures such as watering and to conduct periodic dust emission testing
2	Noise.	Directly affects the community and employees.	Occurs intermittently during excavation and ore crushing	Definite and highly significant	SP	3	5	15	2	5	10	Operation of machinery by night shall be avoided to decrease noise levels at night. Servicing of equipment reduce noise levels
3	Noise from Blasting.	Directly affects the community and employees.	Occurs during mining and excavation phase	Highly significant considering granitic underlying geology in the area	SP	5	4	20	2	2	4	The proponent shall carry out noise inspections and safety procedures meant to reduce noise propagation.

IMPACT		MAGNITUDE & EXTENT	DURATION	LIKELIHOOD	PERMANENCE	PREDICTED SIGNIFICANCE			RESIDUAL SIGNIFICANCE			MITIGATION REQUIRED
						SEVERITY	IMPORTANCE	SIGNIFICANCE	SEVERITY	IMPORTANCE	SIGNIFICANCE	
4	Erosion of dumps and washings by runoff.	Directly affects the local environment.	Occurs continuously in the operational phase	Definite and low significance considering the gentle gradient	P	3	4	12	2	4	8	Establish cut-off trenches around the mine dust stock piles. Plant trees around the plant area
5	Water pollution through erosion and siltation	Directly affects the nearby streams.	Occurs during construction, operational & decommissioning phase	Low probability significance considering soil type, topography and proximity to river	SP	4	4	8	2	5	10	Deforestation should be reduced. Mined out pits should be backfilled and rehabilitated soon after excavations.
6	Destruction of vegetation and habitat.	Direct effect on the targeted project area	Occurs continuously in the operation phase.	Definite and highly significant	SP	5	5	25	4	5	20	Destruction of vegetation and habitat to be confined to specific project areas and vegetation shall be part and parcel of the rehabilitation and decommissioning plan
7	Land degradation and disruption	Direct effect on the local	Occurs continuously in the	Highly probable and high significance considering the fact	P	3	3	9	4	3	12	Resultant trenches and pits should be backfilled and vegetated.

IMPACT		MAGNITUDE & EXTENT	DURATION	LIKELIHOOD	PERMANENCE	PREDICTED SIGNIFICANCE			RESIDUAL SIGNIFICANCE			MITIGATION REQUIRED
						SEVERITY	IMPORTANCE	SIGNIFICANCE	SEVERITY	IMPORTANCE	SIGNIFICANCE	
	of natural landscape	landscape	operational phase	that the area is undisturbed.								
8	Livestock injuries.	Directly affects the community members	Occurs incidentally in the operational phase	Low probability but highly significant considering the fact that the mine is away from populated community	P	4	4	16	3	4	12	Create safe access route into the pasture land. Install sturdy fence in strategic sides of pits and the mine. Create ridges on strategic sides
10	Cultural dilution.	Directly affects local culture	Occurs continuously in the operation phase	Low probability and medium significance considering the life of the mine	T	2	3	6	3	6	18	Employment of the locals as professional and non-professional staff will help reduce cultural erosion.
11	HIV and AIDS proliferation	Directly affects that employees and the community	Occurs Intermittently	Low probability and highly significant considering the fact that labour will come from the local	SP	1	5	5	1	3	3	Raise awareness using HIV/AIDS campaigns in collaboration with MoHSS before commissioning the mine / quarry and crusher.



IMPACT		MAGNITUDE & EXTENT	DURATION	LIKELIHOOD	PERMANENCE	PREDICTED SIGNIFICANCE			RESIDUAL SIGNIFICANCE			MITIGATION REQUIRED
						SEVERITY	IMPORTANCE	SIGNIFICANCE	SEVERITY	IMPORTANCE	SIGNIFICANCE	
				community								
12	Veld fires from the mine plant	Directly affect vegetation and animals in the area	Occurs continuously during the implementation phase	High probability considering the type of vegetation (mopane trees) in the area	SP	5	4	20	3	3	9	Creation of 9m fire guard on camp and induction of workers on veldt fire management and control are the key ways to mitigate veld fires. Fire extinguishers shall be in place at the mine.

14	Disruption of wildlife by habitat disruption and poaching	Directly affect Ovikokola Community and the nearby ecosystems	Occurs during construction and implementation of the project	Very unlikely considering that there is a similar mining operation next to the proposed site. Large game / wildlife is expected to have migrated to the conservancies.	T	1	5	2	1	3	2	Do not provoke animals. Avoid direct passage through animal resting places in the mine claims.
15	Traffic accidents with domestic or wild animals	Directly affects the local environment and the miners	Accidents in the implementation phase	Remote probability considering the low speeds and induction of exploration team members	P	2	3	6	3	2	6	General caution when driving, giving way to animals and speed control there should be clear signage along the access road to the mine. Maintain low speed and use licenced drivers only.
17	Increase in demand for water supply	Directly affects the host community.	Occurs continuously during project life.	Probable and highly significant considering that the mine will use water for dust control	P	5	4	20	5	5	20	The proponent should comply with the Water Act and drill boreholes for the mine. No water should be drawn from the community boreholes. Alternatively, the Proponent can also explore the possibility of being connected to NAMWATER water supply system.

18	Increase in demand for social services e.g. health and police / security services.	Directly affects the health and law enforcement sectors.	Occurs continuously in the operation phase	Probable and high significance since already the health and law enforcement sectors are overwhelmed with the demand for their services.	P	3	5	15	5	5	25	Council should upgrade its infrastructure (schools, clinics & etc) to meet the growing demand as a result of this project.
19	Occupational Health and Safety risks	Directly affect employees	Occurs in the operation phase	Highly probable considering deep trenches that will excavated	T	5	4	20	4	3	12	Use safe mining methods. Provide adequate and appropriate personal protective equipment for employees during the mine establishment and operational stages.

## **9. ENVIRONMENTAL MANAGEMENT PLAN (EMP)**

The environmental management plan presents a summary of management initiatives that will be required to ensure the identified potential negative and positive impacts are mitigated and maximized respectively. However, this EMP will be focussing on negative impacts presented earlier. Indicators are suggested for each identified impact, and this is followed by the assigned responsible implementing agent and the monitoring frequency. Where there are budgetary implications besides the common project costs, they will be indicated specifically. It is not to the will of the consultant to see the EMP used as a substitute to indigenous knowledge systems (IKS) but rather the two should complement each other for the best on environmental protection.

The chapter also lays down the plan for monitoring the potential impacts during project implementation and decommissioning stages. The EMP is also aimed at ensuring continued compliance even after the duration of project. In some cases, the implementing agencies would need the assistance of the consultant to adequately formulate local area and more specific implementation strategies. It is important that the proponent implements this EMP with reference to the impact analysis and evaluation chapters which have more detail on the impacts and the suggested mitigation measures. The EMP summarized the impacts and configured them into objectives that can be pursued sustainably.

The EMP will focus on quite a number of issues ranging from fire management to complex waste management aspects of this project. Total adherence to this EMP shall guide the proponent toward the road to sustainable economic development. The EMP sets out the best practises that ensure sustainable development as summed up by the figure below.

Table 8. Environmental Management Plan.

ACTIVITY	ENVIRONMENTAL ASPECT	IDENTIFIED IMPACT	POSITIVE \NEGATIVE	SOURCE	MITIGATION	INDICATOR(S)	IMPLEMENTING AGENT	RESPONSIBLE AGENT	MONITORING AGENT	MONITORING FREQUENCY
<b>DESIGN AND PLANNING PHASE</b>										
<b>Inadequate mining and crusher plant design</b>	<b>Noise</b>	Noise pollution	-ve	Plant operation / running equipment	Incorporating low-noise equipment in the plant design. Maintaining trees around the plant to serve as barriers.	Acoustic levels measured in decibels	Design Engineer	MSIG	DEA Ministry of Labour	At the design stage and commissioning phase.
	<b>Occupational hazards</b>	Injuries / loss of life	-ve	Plant operation / running equipment.  Rock falls / walls collapsing during mining	Carrying standard hazard assessment and operation procedures at the commissioning stage. Occupational health and safety training of the operators. Employ qualified Miner with the ability to use support effectively.	Uncovered moving parts, lack of safety or warning signs.  Dangerous unsupported overhanging rocks and walls	Design Engineer	MSIG	Ministry of Labour and Social Welfare  Ministry of Mines & Energy	At commissioning stage and thereafter Monthly

ACTIVITY	ENVIRONMENTAL ASPECT	IMPACT	POSITIVE \ NEGATIVE	SOURCE	MITIGATION	INDICATOR	IMPLEMENTING AGENT	RESPONSIBLE AGENT	MONITORING AGENT	MONITORING FREQUENCY
<b>CONSTRUCTION PHASE (Crusher Plant)</b>										
<b>Soil excavation and earthworks</b>	<b>Dust</b> Fugitive dust comprising total suspended particulates and PM <sub>10</sub> .	Dust irritates workers at the site, nearby residents and businesses.  Causes and / or contributes to respiratory illnesses.  Negatively affects flora  Reduces aesthetic value of the surrounding areas.	-ve	Excavation works, Construction vehicle movements.	Wetting of ground surfaces and providing dust masks to employees.  Contractors should have appropriate adequate personal protective equipment and should have undergone safety training.	Dust deposition	Contractor	MSIG	Ministry of Labour DEA	Monthly

ACTIVITY	ENVIRONMENTAL ASPECT	IMPACT	POSITIVE \ NEGATIVE	SOURCE	MITIGATION	INDICATOR	IMPLEMENTING AGENT	RESPONSIBLE AGENT	MONITORING AGENT	MONITORING FREQUENCY
Transportation of equipment to the site	Traffic	Disruption of traffic flow	-ve	Interaction with heavy construction vehicles	Local Traffic Department must be informed at least 1 week in advance if traffic flow will be affected and the abnormal loads should be marked as such in line with Namibian traffic laws.  Movement should avoid peak hours.	Traffic flow	Contractor	MSIG	Local Traffic Control Unit	Once off at the beginning construction phase.
	Traffic	Increased accidents resulting in injuries or loss of life.  Can also result	-ve	Increased traffic flow	Observe speed limits and ensure vehicles are properly maintained.	Cases of over speeding, accidents.	Contractor	MSIG	Local Traffic Control Unit	Daily during construction

ACTIVITY	ENVIRONMENTAL ASPECT	IMPACT	POSITIVE \NEGATIVE	SOURCE	MITIGATION	INDICATOR	IMPLEMENTING AGENT	RESPONSIBLE AGENT	MONITORING AGENT	MONITORING FREQUENCY
		in damage to property.								
	<b>Traffic</b>	Noise irritates site workers with the potential of impairing hearing, nuisance to nearby residence and school.	-ve	Increased traffic flow and movement of equipment.  Noise associated with hammering during construction.	Limit the noise to the site. Restrict site construction activities to working hours (7:00 am to 5:00 pm) and noisy activities to morning hours (8:00 am to 12:00 pm). Ensure vehicles are properly maintained and avoid raving during offloading and loading.	Noise levels and duration of exposure	Contractor	MSIG	DEA	Daily during construction



ACTIVITY	ENVIRONMENTAL ASPECT	IMPACT	POSITIVE \NEGATIVE	SOURCE	MITIGATION	INDICATOR	IMPLEMENTING AGENT	RESPONSIBLE AGENT	MONITORING AGENT	MONITORING FREQUENCY
<b>Construction of the Crusher Plant</b>	<b>On-site accidents</b>	Injuries and / or loss of life.  Damage to property	-ve	Un-informed pedestrians, passer byes and drivers.	Persons and vehicle access during construction should be restricted or controlled so as to prevent potential accidents.	Number of accidents or incidences	Contractor	MSIG	Local traffic control unit.  Ministry of Labour	Daily

ACTIVITY	ENVIRONMENTAL ASPECT	IMPACT	POSITIVE \ NEGATIVE	SOURCE	MITIGATION	INDICATOR	IMPLEMENTING AGENT	RESPONSIBLE AGENT	MONITORING AGENT	MONITORING FREQUENCY
<b>Construction of the Crusher plant</b>	<b>Health and safety hazards</b>	Occupational diseases and accidents	-ve	Machinery and moving equipment.	Workers should be provided with personal protective equipment and be trained on safety and health issues. Warning signs to be posted to indicate dangerous areas and risks associated.	Number of incidences and accidents	Contractor	MSIG	Ministry of Labour	Daily during construction
<b>Construction and earthworks</b>	<b>Solid waste including wood</b>	Loss of aesthetic value,	-ve	Generated from land clearing and earthworks etc.	Topsoil should be heaped and protected from erosion and used for rehabilitation. Trees that cannot be replanted can be used as fire wood by the villagers.	Amount of waste generated by type.	Contractor	MSIG	DEA	Weekly

ACTIVITY	ENVIRONMENTAL ASPECT	IMPACT	POSITIVE NEGATIVE	SOURCE	MITIGATION	INDICATOR	IMPLEMENTING AGENT	RESPONSIBLE AGENT	MONITORING AGENT	MONITORING FREQUENCY
<b>OPERATIONAL PHASE (Mining)</b>										
<b>Ore extraction</b>	<b>Safety hazards</b>	Accidents	-ve	Rock falls	Put wall supports	No. of accidents	Mine Manager  Occupational Health & Safety Officer	MSIG	Ministry of Labour	Daily
<b>Operation</b>	<b>Occupational health</b>	Diseases such as diarrhoea	-ve	Poor and inadequate sanitation facilities	Build on-site improved sanitation facilities  Provide on-site clean drinking water and promote hygienic practices.	Number of people falling sick due to unhygienic practices	Mine Manager  Occupational Health & Safety	MSIG	Ministry of Labour  Ministry of Health & Social Services	Quarterly
<b>Ore conveyance</b>	<b>Safety hazards</b>	Accidents	-ve	Moving parts of the conveyor system	Moving parts should have safety guards.  Employees should not have loose	Accidents	Mine Manager  Occupational Health & Safety	MSIG	Ministry of Labour	Daily when the plant is in operation

ACTIVITY	ENVIRONMENTAL ASPECT	IMPACT	POSITIVE NEGATIVE	SOURCE	MITIGATION	INDICATOR	IMPLEMENTING AGENT	RESPONSIBLE AGENT	MONITORING AGENT	MONITORING FREQUENCY
					clothing or hanging clothes		Officer			
<b>Crusher and mining operation</b>	<b>Health and safety hazards</b>	Occupational diseases and accidents.	-ve	Machinery and moving equipment;	Workers should be provided with personal protective equipment and be trained on safety and health issues. Warning signs to be posted to indicate dangerous areas and risks associated.	Number of incidences and accidents	Mine Manager  Occupational Health & Safety Officer	MSIG	Ministry of Labour	Every six months

<b>Crusher and mining operation</b>	<b>Noise pollution (See detailed analysis below)</b>	Noise is a nuisance and long exposure times can cause hearing impairment.	-ve	Plant operations	Workers should be provided with personal protective equipment and be trained on safety and health issues. Warning signs to be posted to indicate dangerous areas and risks associated.	Noise exposure measurement in decibels	Mine Manager Occupational Health & Safety Officer	MSIG	Ministry of Labour	Daily during crusher operation
<b>Crusher and mining operation</b>	<b>Dust emissions</b>	Irritates and causes lung diseases	-ve	Dust generated from the crushing of ore into aggregates	Provide workers with appropriate protective clothing and also use water during crushing to suppress dust	Dust deposition	Mine Manager Occupational Health & Safety Officer	MSIG	Ministry of Labour	Hourly when plant is online
<b>Crusher and mining operation</b>	<b>Air pollution</b>	Irritates and causes lung diseases over long exposure periods	-ve	Vehicle and machinery exhaust fumes	Use efficient vehicles and machinery and ensure they are well serviced and maintained	Carbon monoxide and SO <sub>2</sub>	Mine Manager Occupational Health & Safety Officer	MSIG	Ministry of Labour	Quarterly

<b>Crusher and mining operation</b>	<b>Accidents</b>	Injuries to domestic animals and passers by	-ve	Injuries due to blasting	Fence off the mining and crushing plant to restrict entrance.  Use warning sirens before blasting	Number of accidents	Mine Manager  Occupational Health & Safety Officer	MSIG	Ministry of Labour	Quarterly
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ENVIRONMENTAL ASPECT	IMPACT	POSITIVE NEGATIVE	SOURCE	MITIGATION	INDICATOR	IMPLEMENTING AGENT	RESPONSIBLE AGENT	MONITORING AGENT	MONITORING FREQUENCY
<b>DECOMMISSIONING PHASE</b>									
<b>Land degradation</b>	Scarred earth and bare ground	-ve	Destruction of trees and removal of overburden during mining	<p>Refill all dug out pits and replace topsoil.</p> <p>This should be followed by planting of trees and grass.</p> <p>Borehole water can be used to water them until they have established well.</p>	Land cover, tree population and number of un-rehabilitated pits	Mine Manager	MSIG	DEA	Twice / once a year
<b>Land degradation</b>	Solid waste and loss of aesthetic value	-ve	Removal of crusher plant	<p>Rubble from concrete works should be disposed of at designated sites.</p> <p>Reusable or recyclable materials should be separated and treated as such.</p>	Area of un-rehabilitated land surface	Mine Manager	MSIG	DEA	Twice / once a year

**Detailed guidelines and conditions for managing loss of vegetation.**

Open cast impacts on vegetation were assessed and various mitigation measures presented in the EMP. The following guidelines were formulated to support the EMP with respect to managing and monitoring vegetation loss during establishment and operation of the proposed stone crusher. The aspects and potential impacts of the proposed stone crusher that may affect flora are:

- Disturbance and clearing land to make way for the construction of infrastructure;
- Changes to the groundwater table through the modification of drainage; and
- Changes to surface hydrology.

Management of these and their potential impacts on flora and vegetation are described below.

- **GROUNDWATER LEVEL DEPLETION**

Groundwater recharge may be affected negatively due to modified surface water drainage. These areas, in effect may become permanently dry if the ephemeral rivers in the area do not receive any water during summer. Such a situation is caused by permanent diversion of surface flow due to alterations to the drainage pattern of the area.

- **LAND CLEARING**

A standard land clearing procedure should be developed prior to land clearing and be part of the overall environmental management system. The areas to be cleared should be surveyed, pegged and clearly indicated on the map.

**REHABILITATION**

The main objective of rehabilitation is to develop stable decommissioned landforms where mining is no-longer being done that can regenerate into self-sustaining ecosystems. The flora should comprise of native local provenance species collected as seed from within a 100 km radius of the project site. Closure criteria should be developed as part of the internal environmental management systems for the stone crusher.

**MONITORING**

**Noise control**

Noise generated during excavation works and hauling of rock raw materials is nuisance to sensitive areas such as residential, schools and clinics etc. Noise measurements should be taken at these sensitive areas.



**Table 9: Allowable noise guidelines by the World Bank.**

Sensitive area	Allowable noise (dB)	
	Day (0700Hrs to 2200hrs)	Night (2200hrs to 0700hrs)
Residential, institutional, educational	55	45
Industrial and commercial areas	70	70

*Source: World Bank, 1998.*

**Dust control**

Dust monitoring stations should be established outside the boundaries of the mining area, preferably at the sensitive areas shown on the map above. Try to disturb natural surfaces as little as possible.

**Vehicle use**

- No-one should be allowed to drive any vehicle without a valid driver’s licence.
- No driving under the influence of alcohol or drugs.
- No new roads should be made without permission.
- Haulage vehicles should not speed on and off the mine site.
- Roads should have appropriate signage and no vehicle should drive off road.

**Vegetation**

Vegetation monitoring sites should be established and be monitored on the project and surrounding areas. Some of these sites, particularly those in sensitive areas can be used to identify changes in vegetation due to surface or groundwater flow. Such sites should also have detailed plant characterization profiles on soil moisture tolerance by plant species. In addition, these should be supported by ground water level and quality monitoring. The management of flora during establishment and operation of the stone crusher lies with the Proponent. In the event that Contractors are engaged, it remains the responsibility of the Proponent to bind them contractually and ensure that the environmental obligations are met.

**Sanitation**

The proponent is expected to construct flush to septic toilet facilities for the workers on the mine. Grey water from the showers and the kitchen can be drained through a soak away bed of reeds.

### **Solid waste**

There should be proper training and waste segregation system in place to ensure general and hazardous waste are not mixed and are handled separately. Part of the training for workers should empower them with knowledge to:

- Identify containers for different types of waste
- Know colour coding for different types of waste

No burning of waste should be allowed on-site. Always embrace 3Rs, reduce, reuse and recycle.

### **Saving water**

Report and attend to water leaks promptly

Do not leave taps running, ensure taps are properly closed at all times after use.

Try to use as little water as possible.

Instructions to the Borehole Drilling Contractor

## ***Instructions to the Borehole drilling Contractor.***

### **Objective**

To minimise environmental disturbance during the borehole drilling exercise.

### **Responsible Agent**

These instructions must be incorporated in the driller's contract and must be implemented during drilling.

The Project Manager must make site inspections before, during and after drilling in order to make sure the instructions are being followed.

A retention fee of 10 to 15 % should be retained until a certificate of work completion has been issued based on the inspection and satisfied that it complied with this EMP.

### **INSTRUCTIONS**

- The siting of the borehole must be done by a qualified hydrogeologist.
- Access to the borehole site must be such that there is minimal disturbance especially cutting down of trees.
- The project area is predominantly covered by Mopani trees and the driller should apply for a permit from the Ministry of Water and Agriculture if there is need to cut down trees.
- The area must be barricaded to keep out passers-by and visitors.
- Solvents and paints must not be spilled or discarded on the ground.
- Use water sparingly during construction.
- All waste must be collected and disposed of at the designated dumpsite at Ruacana.
- All vehicles must be road worthy, properly maintained and be driven by licenced drivers.

ENVIRONMENTAL IMPACT ASSESSMENT REPORT FOR A QUARRY AND CRUSHER AT OVIKOKOLA VILLAGE –  
RUACANA CONSTITUENCY - OMUSATI REGION – NAMIBIA.

- No wildlife should be hunted.
- No unnecessary clearing of land will be tolerated.

## 10. SUSTAINABILITY ASSESSMENT

Sida (2004) describes sustainability as being the likelihood that the benefits from an intervention will be maintained at an appropriate level for a reasonably long period of time. The benefits to be sustained may be assets, skills, facilities or improved services derived from the development project. The impact or changes are supposed to help to reduce poverty and thereby increase the well-being of the people. Assessing sustainability involves evaluating the extent to which relevant social, economic, political, institutional and other conditions are present and, based on that assessment, making projections about the national capacity to maintain, manage and ensure the development results in the future. The ex-post evaluation which is a type of summative evaluation of an initiative after it has been completed usually conducted two years or more after completion, studies how well the initiative (programme or project) served its aims, assesses sustainability of results and impacts and is used to draw conclusions for similar initiatives in the future. In this case an EIA renewal will be expected after the three year period to assess the intervention.

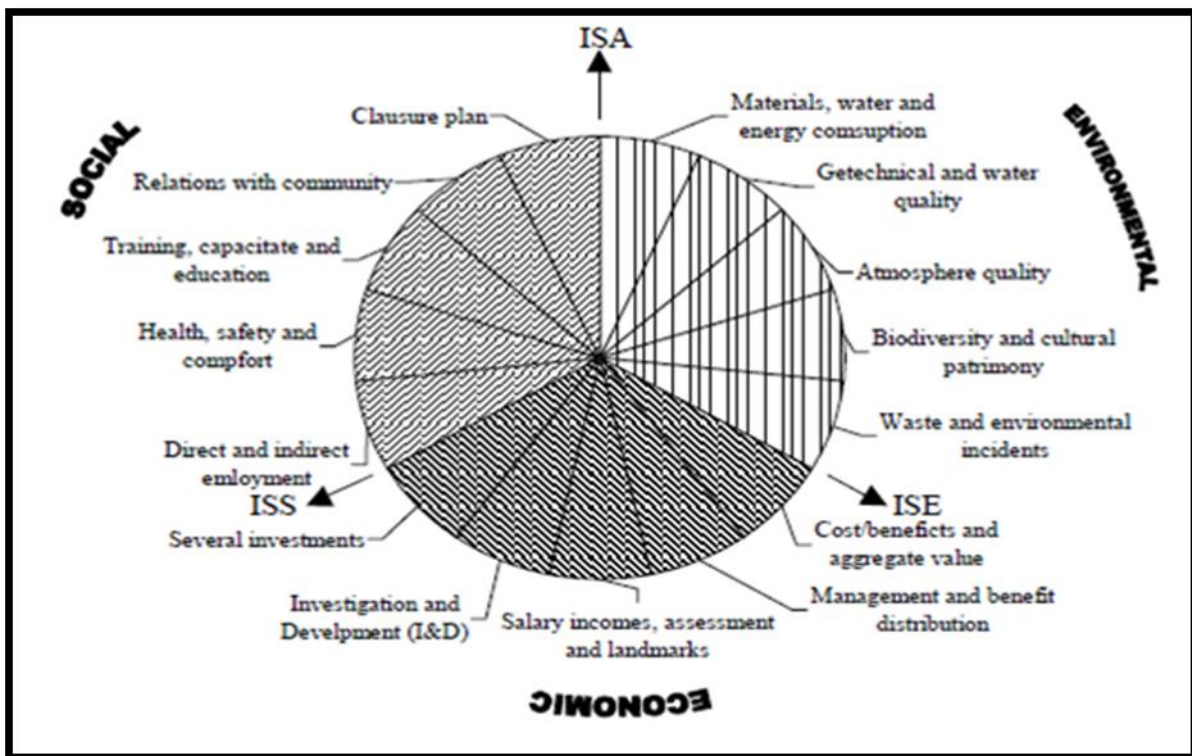


Figure 12. Sustainability chart in mineral mining projects.

### 10.1 STAKEHOLDER INVOLVEMENT

The critical factor in promoting sustainability is the role of stakeholders, that is, those directly concerned with the program or project, especially the partner government, and the implementing agency and those who stand to benefit. Sustainability cannot be achieved without their involvement and support. Stakeholder participation of both men and women throughout the programming cycle ensures ownership, learning and sustainability of results. Specific measures have to be built into

programme and project management processes to ensure continued and effective involvement of stakeholders (UNDP 2009). Without partner country or stakeholder ownership development interventions can usually not be sustained. The active participation of stakeholders in the planning, implementation, monitoring and follow up of the development activities helps to stimulate local ownership. Chaplowe, S.G (2008) pointed out that the participation of beneficiaries in project review or evaluation can be empowering, builds local ownership, capacity and project sustainability. However, such assessments can be biased by local politics or dominated by the more powerful voices in the community. Also, training and managing local beneficiaries can take time, money and expertise, and it necessitates buy-in from stakeholders. To counter this, various forums for stakeholder consultation and participation can be created. However, participatory assessments may be worthwhile as people are likely to accept, internalize, and act upon findings and recommendations that they identify themselves. The stakeholder consultation process which was carried out on the project forms the backbone of the sustainability of the project and continued consultations should be carried out during the project life cycle.

## **10.2 COMMUNITY STRUCTURES**

The project has to build on existing assets and knowledge is also another sustainability factor. Community participation in and ownership of initiatives and thus their sustainability is much greater when the Proponent draws on existing practices and engage established community institutions, as opposed to creating new structures and mechanisms. By building on existing community assets and knowledge, the Proponent can promote positive community attitudes towards collaboration and collective decision-making, as well as support social cohesion by strengthening relationships between internal and external parties. The right management structure requires an adequate institutional analysis during the project design phase and this requires specific knowledge, skills and field time. The Proponent can use, for example, the Traditional Authority as a communication link to reach out to the community to give them a platform to participate in decision making. This approach has proved to work during the initial public consultations. Most of the participants received project information through the Traditional Authority than the radio and newspaper.

## **10.3 GENDER**

In terms of gender a greater participation by women in identification, design and decision-making is a key part of a sustainability strategy. Their participation in all parts of the activity cycle is essential for the success of the project. Ensuring that sex disaggregated data is collected during preparation and that a gender analysis is undertaken to determine the differential impact of costs and benefits on men and women will help to achieve sustainability. For sustainable outcomes, poverty reduction objectives must specifically address the needs of women given that they are over-represented in the poorest sections of many societies. During the public consultation it was observed that most women were worried or concerned about their chance to be employed against their male counter parts.

## **11. CONCLUSIONS AND RECOMMENDATIONS**

### **11.1. CONCLUSION**

The proposed activity, the establishment of a quarry and crusher plant has potential negative environmental impacts. The evaluation recommends that with specified mitigation and monitoring, the project will have no significant environmental impacts (minor negative impacts). The identified impacts, mitigation and monitoring activities, indicators, responsible parties and monitoring frequency are indicated in the EMP. The EMP should form the obligatory conditions upon which the EIA clearance certificates will be issued and non-compliance attracts prosecution. The EMP should be implemented throughout the project lifecycle: design, construction, operation and decommissioning. Environmental monitoring and performance evaluations should be conducted and targets for environmental improvement set and monitored throughout the project lifespan. It is also our determination that the findings should be incorporated earlier in the planning phase and includes the Contractor's environmental obligations in the Contractual agreement conditions for the establishment of the crusher plant.

### **11.2. RECOMMENDATION**

- The proponent should focus solely on rehabilitation and replacing of the trees that would have been destroyed due to the mining activities. Overburden or top soil should be well covered and protected from erosion agents for rehabilitation purposes. The proponent is advised to do its best by compilation of biannual reports in the event that this project has been authorised by the Environmental Commissioner.
- The EIA clearance will not exempt the Proponent from obtaining other relevant permits and should do as such. This includes permit to drill boreholes, clearing land and mining issued by MAWF, MET and MME respectively.

- The Proponent is advised to engage NDF to demine the project site before any work commences on the site.

### **11.3. WAY FORWARD**

The EIA will be submitted to MET: DEA. The decision made by MET: DEA will be made known to the Proponent and I&APs.

**END**

## **REFERENCES**

1. Atlas of Namibia Project, 2002. Directorate of Environmental Affairs. Ministry of Environment and Tourism.
2. Government Gazette 27 December 2007 No. 3966. Act No. 7, 2007 ENVIRONMENTAL MANAGEMENT ACT, 2007.
3. National Planning Commission, 2012. Namibia 2011 Population and Housing Census Preliminary Results. Republic of Namibia.
4. Namibia Defence Force, Windhoek Maschinenfabrik, Ronco, Force XXI, 2000. Ruacana Powerline Clearing.

**PHOTO GALLERY**



**Figure 13: Pigs are some of the livestock reared by the local people practising subsistence farming.**



**MINUTES OF THE PUBLIC MEETING HELD AT OVIKOKOLA VILLAGE IN RUACANA CONSTITUENCY,  
ERONGO REGION.**

**PROPONENT: EIA FOR M.SHIKONGO'S INVESTMENT GROUP ONE (PTY) LTD**

**PROJECT: ESTABLISHMENT OF A QUARRY AND STONE CRUSHER AT OVIKOKOLA VILLAGE**

**DATE: 26 OCTOBER 2019 TIME: 1000HRS**

**INTRODUCTION**

The meeting took place at Ovikokola Village and it commenced with a prayer and followed by introductions. After that the Outrun Consultants were given the floor. Josiah, the Environmental Consultant explained the purpose of the meeting, described the details of the project and opened the floor for comments and issues and concerns.

**ISSUES AND CONCERNS RAISED BY THE COMMUNITY MEMBERS AND THE PROPOSED INTERVENTIONS**

<i>Issue / Concern</i>	<i>Proposed solution s / intervention</i>
Dust pollution may affect community people and workers at the stone crusher	<i>Dust monitoring stations will be set-up at sensitive areas and water will be used to suppress dust during operations.</i>
Noise pollution	<i>Equipment will be maintained to avoid noise and will also be monitored at sensitive areas. Workers will be provided with appropriate protective clothing.</i>
Injury to livestock from blasting operations	<i>Mine area will be fenced off to prevent access by stray animals.</i>
Will company employ local people?	<i>Yes, the company will try as much as possible to employ local people except for highly skilled positions.</i>
Will the company recruit males or females only?	<i>Both males and females have equal opportunities to be employed and women encouraged to apply.</i>
How many people will be employed and will they be staying on the mine site?	<i>People will stay in their homes in the village and the project can employ a maximum of 30 people when fully operational.</i>
Will employees be compensated if mine closes	<i>All employees will be compensated according to</i>

prematurely?	<i>the requirements / provisions of the labour Act.</i>
Will the workers be employed permanently or temporarily?	<i>Workers will be employed permanently after a successful 4 month probation period.</i>

**VOTE OF THANKS**

The Consultant thanked the community for their contributions. He further expressed their commitment to take their issues seriously during the EIA study and keep them updated of the progress. The meeting was closed with a prayer at 1600hrs and refreshments were served.