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APP-001983

PROJECT DETAILS

Title	UPDATED ENVIRONMENTAL MANAGEMENT PLAN FOR THE RENEWAL OF THE ENVIRONMENTAL CLEARANCE CERTIFICATE FOR MINING OF DIMENSION STONE (SODALITE) ON MINING CLAIMS 70115 & 70116 AT OTJIMUHAKA VILLAGE, SWARTBOOISDRIFT, KUNENE REGION, NAMIBIA.		
HEEC Reference	HEEC0232020		
Proponent	**Mr. Vahumisa Edward Kaendapeke** P.O. Box 459, Opuwo Namibia Contact Person: Mr. Tjimelo Mervin Hihanguapo Contact Number: +264 81 641 2523 Email: mtjirimejo@gmail.com		
Report date	October 2020		
	Name	**Signature**	**Date**
Author	David S. Aiyambo	D. Aiyambo	07/10/2020

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ABBREVIATIONS

AIDS	Acquired Immuno-Deficiency Syndrome
Covid-19	Also known as the coronavirus pandemic, is an ongoing pandemic of coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The disease was first identified in December 2019 in Wuhan, Hubei, China
EA	Environmental Assessment
ECC	Environmental Clearance Certificate
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMA	Environmental Management Act
EMP	Environmental Management Plan
GG	Government Gazette
GIS	Geographic Information System
GN	Government Notice
GPS	Global Positioning System
HEEC	Healthy Earth Environmental Consultants CC
HIV	Human Immuno-deficiency Virus
I&APs	Interested and Affected Parties
NHC	National Heritage Council
PR	Proponent's Representative
Reg.	Regulation
S	Section
TB	Tuberculosis

1. INTRODUCTION

Dimension stone is considered by many to be the premium material in all kinds of construction. Its use dates to the dawn of civilization, and only buildings made of stone have survived from ancient times. Dimension Stone is stone that is cut and finished to specified sizes and shapes, which can be used for buildings, monuments, paving, furniture, and decorative objects. Sometimes called cut stone, it is typically quarried in rectangular blocks, then sawed and finished to specification. Mining is an important sector in the Namibian economy. The sector contributes significantly to GDP, commercial revenues and government tax receipts. The expansion and development of this sector is however constrained by mainly insufficient investment in mineral exploration. Globalisation has impacted on the market for international investments by increasing the levels of competition for financial resources. Globally, dimension stone and crushed rocks are considered to be key resources, that is, resources that enable proper functioning of the economy and satisfy the living standards of the society. Demand for these rock raw materials, due to their properties being used in the construction industry, including in building, road and railroad industries and modernization, is related to the growth of the economy. Thus, it is essential to ensure sustainable consumption and production patterns of these natural resources in accordance with the United Nations' Sustainable Development Goals Agenda, including goal 12 of responsible consumption and production through responsible territorial development policies (https://www.undp.org/content/undp/en/home/sustainable-development-goals/goal-12-responsible-consumption-and-production.html , accessed 05/10/2020).

The Government of Namibia recognises that the exploration, mining and development of its mineral wealth could best be undertaken by the private sector. Government therefore focuses on creating an enabling environment through appropriate competitive policy and regulatory frameworks for the promotion of private sector investment coupled with the provision of national geo-scientific data bases essential for attracting competitive exploration and mining (http://www.mme.gov.na/files/pdf/minerals_policy_draft_final.pdf, accessed 05/10/2020).

It is with this background that Mr. Vahumisa Edward Kaendapeke has decided to mine dimension stone (sodalite) for commercial purposes to China via the Walvis Bay Port and derive the monetary benefits associated with these natural resources after following all the necessary procedures to satisfy the relevant Authorities enabling them to mine the dimension stone from the allocated portions on the Zebra Mountain.

However uncontrolled natural resource mining/ excavation has resulted in negative environmental effects in the respective areas. This has been largely attributed to the fact that people were under no obligation to rehabilitate the affected areas and thus left behind large open pits/quarries which pose a danger to both humans and animals.

Mr. Vahumisa Edward Kaendapeke, hereinafter referred to as the proponent intends to carry out the following activity:

- **Environmental Assessment (EA) for the renewal of the environmental clearance certificate for mining of dimension stone (sodalite) on mining claims 70115 & 70116 at Otjimuhaka Village, Swartbooisdrift, Kunene Region, Namibia.**

The objective of the intended Environmental Assessment is thus needed in order to assess the potential social and environmental impacts associated with the renewal of the environmental clearance certificate for mining of dimension stone (sodalite) on mining claims 70115 & 70116 at Otjimuhaka Village, Swartbooisdrift, Kunene Region, Namibia and also to formulate methods of rehabilitation of the open quarry pits at the sites.

The above is a listed activity in terms of the Environmental Management Act (No. 7 of 2007) and Environmental Impact Assessment Regulations (Government Notice No. 30 of 2012).

In terms of the Environmental Management Act (No. 7 of 2007) and Environmental Impact Assessment Regulations (Government Notice No. 30 of 2012), the following listed activities in **Table 1** were triggered by the proposed project:

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

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

1.1 The Scope of the Proposed Activities

1.1.1 Surface Excavation of dimension stone

Dimension stone is a collective term for various natural stones used for structural or decorative purposes in construction and monumental applications. The defining feature of dimension stone is that unlike other mineral commodities which have value mainly as a result of their physical properties, the physical properties of a rock are merely the minimum qualification in determining whether it is fit for use in dimension stone applications. The ultimate success in marketing a natural stone as a dimension stone lies firstly in its appearance, and secondly in the possibility of producing rectangular blocks of suitable dimensions (hence the term dimension stone) to allow for successful production of the final product in the required sizes.

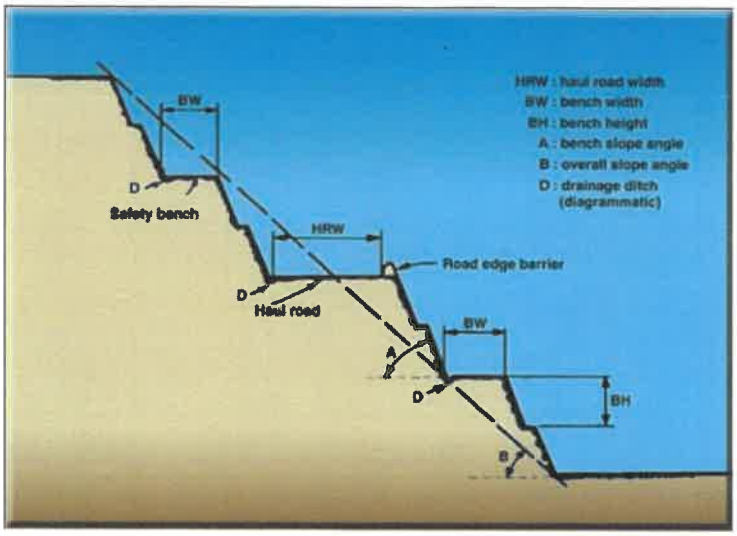
Dimension stone can be defined as "naturally occurring rock material cut, shaped or selected for use in blocks, slabs, sheets or other construction units of specialised shapes and sizes". A dimension stone block thus has value as a result of its dimensions and appearance, underlain by a set of minimum physical properties (among these are various strength parameters, workability, ability to take a polish, and resistance to physical and chemical weathering) (Ashmole I, Motloung M, 2008).

This defining feature, together with the set of minimum physical properties required has important implications in terms of the environmental impacts of dimension stone mining, as well as the management thereof. When it is the intention to merely blast and remove stone for its physical properties (such as in crushed aggregate or ore mining), recovery can be almost 100% of the volume removed, while when the same stone is quarried with the intention of producing dimension stone blocks, recovery of saleable blocks is typically between 3% and 60%. This results in large quantities of waste rock which need to be disposed of, with resulting environmental implications.

The physical properties required of a successful dimension stone also have significant environmental implications – due to the requirement for inert materials which are not affected by weathering (and in today's context, the effect of severe chemically polluted atmospheric environments), dimension stone residues are typically benign from a pollution point of view. Like natural aggregates, dimension stone is used in its natural state, and does not require concentration and extraction from an ore. It is these latter two processes that usually results in significant environmental impacts such as acid mines drainage and other toxic effects associated with many of the metal extraction industries, and are therefore not applicable to this type of mining.

This mining operation can be classified as quarrying the open or surface excavation of dimension stone. Quarrying starts from the earth's surface and maintains exposure to the surface throughout the extraction period. For both access and safety, the excavation usually has stepped or benched side slopes as shown in Illustration 1 below.

Illustration 1: A simple diagram showing different design parameters



Quarrying methods depend mainly on the desired size and shape of the stone and its physical characteristics and the main equipment used are diamond saws (Rotary saws). Diamond saws are large diamond-impregnated circular blades up to 2 m in diameter that are used to form vertical cuts in the rock by moving the machine along a guideline or rail. Extremely accurate cuts can be made in this way.

- Wire saws are also used. These consist of several pulleys over which pass an endless carborundum or diamond-impregnated steel wire.

It must be noted that the market requires solid blocks of a specific minimum dimension and any blocks smaller than such or exhibiting any cracks or blemishes are not exported but are destined for the local market for a variety of decorative uses by stone artists/carvers. It is perhaps worth noting that the mining method using circular diamond saws employed here maximises recovery. Wire saw sites have recovery rate in the range of only 10%. Mining will take advantage of previously developed access roads and faces to begin production. However, at some of the quarries the mining model requires an absolutely flat floor upon which rails are placed for use by the rotary blades. In order to achieve the flat floor, the rock may initially be hewn by diamond wire saws.

The efficiency in respect of a dimension stone mine is related to the actual mining of the material and is a result of many factors such as:

- Structural integrity of the material
- Efficiency of the mining method
- Operator experience
- Dressing success.

Material will thus be excavated in layers in the benches of various depths. Mining will be done by Rotary saws, Hydraulic excavators, Jack Hammer Drills, Compressors and loaders for loading of mineral into trucks, trippers and tractor/ trolleys. Some of the mining machineries and transporting vehicles will be deployed on contractual basis to support the local small & medium enterprises. There will be no processing plant at these claim sites. There is only the dressing of the cut blocks to make them square. The production (extraction) rate for the different quarries depends on their state of development. The first 5 years provides for production build up or development of the new quarry and thereafter production stays constant per annum.

An Environmental Management Plan (EMP) is one of the most important outputs of the EA process as it synthesises all of the proposed mitigation and monitoring actions, set to a timeline and with specific assigned responsibilities. Regular monitoring of environmental parameters is of immense importance to assess the status of environment during project operation. The knowledge of baseline conditions comes through monitoring of environmental parameters; the bi-annual monitoring program will serve as an indicator for environmental conditions due to operation of the project. Monitoring is an important tool for the management, environmentalist and policy makers to make changes in pollution control equipment, environmental policy to reduce the environmental impacts of the mining operations. It is a decision making tool for the state of environment carried out through periodic monitoring. Regular monitoring program of the environmental parameters is essential to take into account the changes in the environmental quality over the period of time to comply environmental conditions necessary to save environment. The environmental consultant (HEEC) will carry out biannual environmental audits during the lifespan of this dimension stone mine. This EMP details the mitigation and monitoring actions to be implemented during the following phases of these developments:

- Dimension stone mining Phase – the period during which the proponent, having dealt with the necessary legislative and administrative arrangements, appoints a contractor to engage in the extraction of dimension stone from the project site to be transported to the Walvis Bay Port for commercial purposes;
- Transportation Phase- the period during which the proponent transports the dimension stone from the quarry to Walvis Bay port for commercial.
- Dressing Phase- the period during which the proponent processes the excavated dimension stone, by cutting them into the required dimensions so that they can be used as building/decorative materials by the customers will be done in China and therefore is not in the scope of this EMP.

The rehabilitation of the quarries at the dimension stone mining site once activities have ceased is highly recommended so as to ensure that the subject area assumes economically viable alternative land uses and not pose a drowning threat/injury to the livestock and locals making use of these farm lands; when the event occurs then some recommendations have been outlined in **Table 4 & 5.**

2 ROLES AND RESPONSIBILITIES

The proponent (Mr. Vahumisa Edward Kaendapeke) is ultimately responsible for the implementation of the updated EMP, at the dimension stone mining phase to the quarry rehabilitation phase of the dimension stone (sodalite) on mining claims 70115 & 70116 at Otjimuhaka Village, Swartbooisdrift, Kunene Region, Namibia. The proponent will delegate this responsibility as the project progresses through its life cycle. The delegated responsibility for the effective implementation of this EMP will rest on the following key individuals:

- Proponent's Representative;
- Environmental Control Officer; and
- Contractor (Mr. Vahumisa Edward Kaendapeke).

2.1 PROPONENT'S REPRESENTATIVE

Mr. Vahumisa Edward Kaendapeke, the proponent, has assigned the responsibility of managing all aspects of this development for all development phases (including all contracts for work outsourced) to a designated member of staff, referred to in this updated EMP as the Proponent's Representative (PR). The proponent may decide to assign this role to one person for the full duration of these mining activities, or may assign a different PR to each of the mining phases – i.e. one for the dimension stone mining & one for the continuous quarry rehabilitation phase. The PR's responsibilities are as follows:

Responsibility	Project Phase
Making sure that the necessary approvals and permissions laid out in **Table 2** are obtained/adhered to	Throughout the lifecycle of this project
Suspending/evicting individuals and/or equipment not complying with the EMP	• Dimension stone mining • Transportation of dimension stone • Quarry rehabilitation.
Issuing fines for contravening EMP provisions	• Dimension stone mining • Transportation of dimension stone • Quarry rehabilitation.

2.2 ENVIRONMENTAL CONTROL OFFICER

The PR has assigned the responsibility of overseeing the implementation of the whole EMP on the ground during the dimension stone mining & quarry rehabilitation phases to a designated member of staff, referred to in this EMP as the Environmental Control Officer (ECO). The PR/ Mr. Vahumisa Edward Kaendapeke may decide to assign this role to one person for all three activities, or may assign a different ECO for each activity. The ECO will have the following responsibilities during the mining, operation and the continuous rehabilitation phases of these developments:

- Management and facilitation of communication between the Proponent, PR, the contractors, and Interested and Affected Parties (I&APs) with regard to this EMP;
- Conducting regular inspections (recommended minimum frequency is once every six months) with respect to the implementation of this EMP (monitor and audit the implementation of the EMP);
- Assisting the Contractor in finding solutions with respect to matters pertaining to the implementation of this EMP;
- Advising the PR on the removal of person(s) and/or equipment not complying with the provisions of this EMP;
- Making recommendations to the PR with respect to the issuing of fines for contraventions of the EMP; and
- Undertaking an annual review of the EMP and recommending additions and/or changes to this document.

2.3 DIMENSION STONE MINING & QUARRY REHABILITATION CONTRACTOR

A contractor, in this case being the proponent, conducts the dimension stone mining & quarry rehabilitation activities for dimension stone (sodalite) on mining claims 70115 & 70116 at Otjimuhaka Village, Swartbooisdrift, Kunene Region, Namibia and is therefore automatically responsible for implementing all provisions contained within the relevant chapters of this EMP. The dimension stone mining & quarry rehabilitation contractor will be responsible for the implementation of this EMP applicable to any work outsourced to subcontractors. **Table 3** applies to contractors appointed during the dimension stone mining phase and **Table 4** to those appointed during the continuous quarry rehabilitation phase. In order to ensure effective environmental management the aforementioned chapters **must** be included in the applicable contracts for outsourced work relating to the intended activities.

The tables in the following chapter (**Chapter 3**) detail the management measures associated with the roles and responsibilities that have been laid out in this chapter.

2.4 Covid19 INFECTION PREVENTION AND CONTROL MEASURES

Coronavirus disease (COVID-19) is an infectious disease caused by a newly discovered coronavirus i.e. severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The virus that causes COVID-19 is mainly transmitted through droplets generated when an infected person coughs, sneezes, or exhales. These droplets are too heavy to hang in the air, and quickly fall on floors or surfaces. You can be infected by breathing in the virus if you are within close proximity of someone who has COVID-19, or by touching a contaminated surface and then your eyes, nose or mouth.

Employers must implement a code of practice to manage and prevent the spread of COVID-19. This is to ensure that mine employees returning to work and any other persons at the mine site, are protected from transmission of the coronavirus at the workplace, whilst providing guidance to all stakeholders regarding their roles and responsibilities in the management of the virus. The regulations require mine operators to supply protective equipment, screen all people entering the mine, provide standby quarantine facilities before transferring infected persons to the state quarantine centres, identify those with pre-existing conditions and carry out routine disinfection.

They also have to keep mineworkers between one and two metres apart. Failure to enforce the rules would constitute a violation of the nationwide Covid19 regulations as stipulated by the Head of State and the relevant arms of government to curb the spread of the corona virus.

After arrival of employees at the mining site, employers should comply with the following:

- Infection prevention and control measures should be applied to all modes of transport for employees, screening areas and active work areas.

2.4.1 Education of workers should be given on:

Maintaining physical distancing. Ensure employees and staff keep a distance of at least 1-2 m when in contact with other people; where this is not possible, issue appropriate facemasks, as per the Guidance on PPE for COVID-19.

- Regular washing of hands with soap.
- Regular sanitising of hands with alcohol-based hand rub (ABHR) or other appropriate sanitisers.
- Avoid touching your face areas (mouth, eyes and nose).
- Avoid physical hand contact such as handshakes.
- Avoid using other people's personal belongings such as stationery, cell phones and sharing food etc.
- When coughing or sneezing do not use your hands, rather use a tissue/toilet paper or the inside of your elbow.
- Use disposable tissues rather than a handkerchief; immediately dispose of these tissues in a closed bin and wash or sanitise your hands thereafter.
- Avoid big crowds and travelling.
- Avoid touching objects before sanitising, like steering wheels on machinery, toilet seats, tables and chairs.
- Coach and teach family members.
- Wearing and handling of appropriate PPE.

a) Posters on Infection Prevention to be visible at designated areas of the mining claim sites (See **Figure 1** for a typical Covid19 information poster).

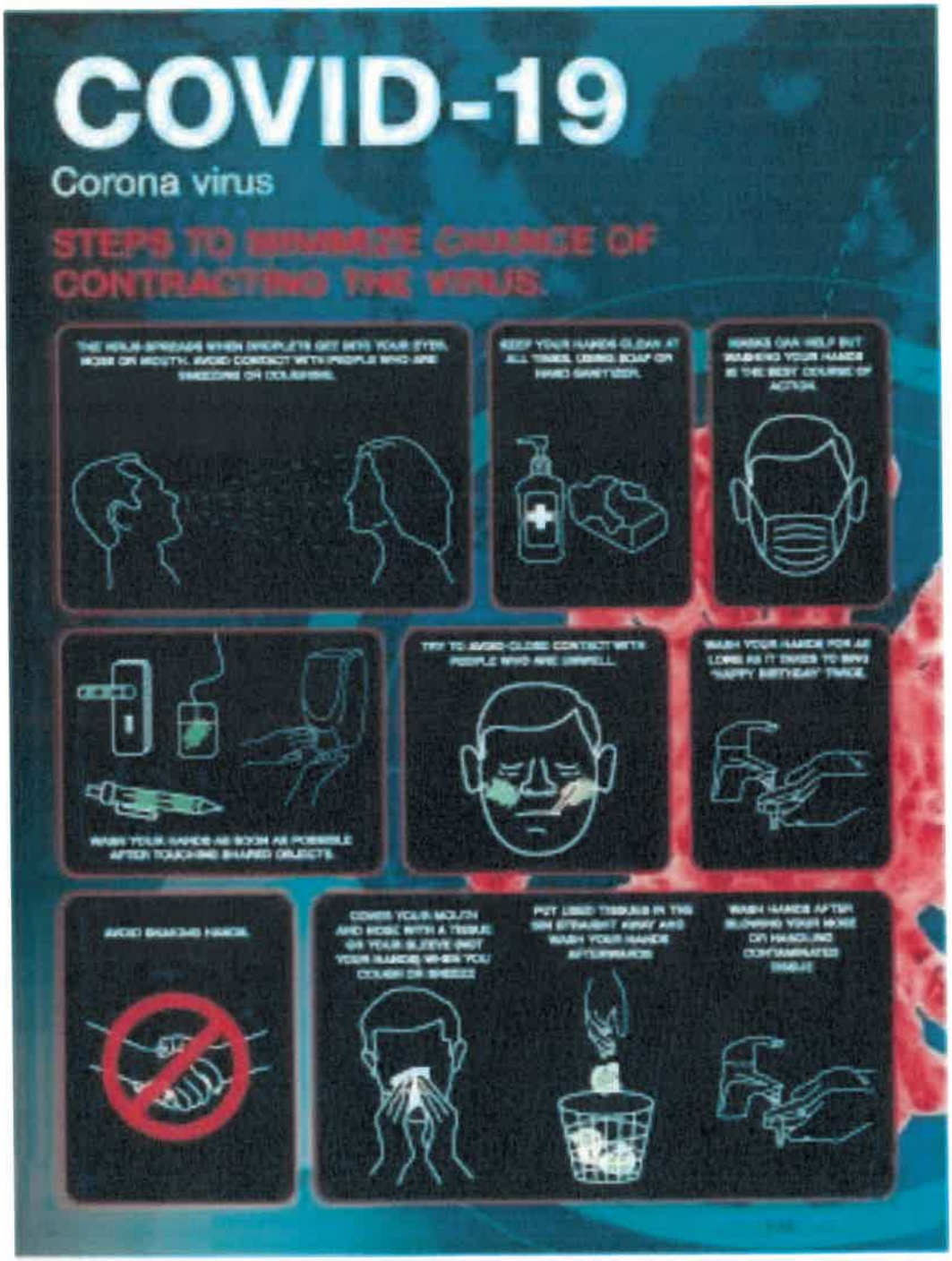


Figure 1: Typical COVID-19 information poster to be placed at designated areas at the mining sites.

b) Sanitisers (as per World Health Organisation guidelines) should be made available at the entrance and exit points of all screening facilities, security entrances and all entrances and exits at the common areas at the mining camp, and at the starting points and end points of all places where close contact among workers is likely to occur, including in underground working places.

c) Sanitisers (as per World Health Organisation guidelines) should be available in each consultation room and testing areas at the screening centre, and sanitisation should take place before and after every consultation.

d) PPE is required for all staff, and PPE management programmes should be in place to ensure that PPE is worn correctly (including fit testing), replaced as necessary, stored correctly and disposed of safely.

e) Employees not able to socially distance by 1 m should be provided with PPE as per the Guidance on PPE for COVID-19.

f) Re-enforce compliance with the taking of chronic medication.

2.5 Screening and testing at the designated areas

Employers should comply with the following:

a) Where there is company accommodation, initial pre-screening should be done at the residences, before getting to the work site. This is to isolate and quarantine any possible cases and suspects.

b) At work, pre-screening of workers should be done before entering the facility (at the gate) either by nursing or security staff as per agreed-on protocol. This should include a temperature check.

c) Employees with elevated temperatures should be referred directly to the isolation area for assessment by a Registered Nurse.

d) Employees who do not have elevated temperatures should be referred to the site office for COVID-19 Risk Assessment and to complete a return to work medical (**Appendix B**).

2.6 Continuous Measures

Employers should comply with the following:

a) Training of staff and employees.

b) Continually re-enforcing of universal hygiene precautions.

c) Enforce physical distancing in the workplace.

d) Continue use of facemasks.

e) Promotion of good hygiene practices.

The employer should allocate an appropriate person to monitor and document compliance with this EMP specifically for ensuring adherence to the Covid19 regulations as continually prescribed as the pandemic is monitored and as per WHO guidelines.

3 MANAGEMENT ACTIONS

The aim of the management actions in this chapter of the EMP is to avoid potential impacts where possible. Where impacts cannot be avoided, measures are provided to reduce the significance of these impacts.

The following tables provide the management actions recommended to manage the potential impacts rated in the scoping-level EA conducted for these activities. These management actions have been organised temporally according to project phase:

- Applicable legislation (**Table 2**);
- Dimension stone mining Actions (**Table 3**);
- Quarry rehabilitation Management Actions (**Table 4**); and
- Decommissioning phase management actions (**Table 5**).

The responsible persons from the proponents' team have assessed these commitments in detail and have committed to the specific management actions where indicated in the tables below.

3.1 ASSUMPTIONS AND LIMITATIONS

This EMP has been updated based on the scoping-level Environmental Assessment (EA) conducted for the operation and management of the intended dimension stone mining & quarry rehabilitation activities as represented in **Figure 2**. HEEC will not be held responsible for the potential consequences that may result from any alterations to the agreed course of action in terms of the intended activities on the Otjimuhaka Village, and the surrounding Swartbooisdrift area.

It is assumed that labourers will be sourced mostly from the Epupa Constituency area and that migrant labourers (if applicable) will be housed within established pre-fabricated accommodation facilities at the Otjimuhaka village.

3.2 APPLICABLE LEGISLATION

There are multiple legal instruments that regulate and have a bearing on good environmental management in Namibia. **Table 2** below provides a summary of the legal instruments considered to be relevant to the dimension stone mining & quarry rehabilitation activities and the environmental assessment process.

Table 2: Legal provisions relevant to these activities

LEGISLATION/POLICIES	RELEVANT PROVISIONS	RELEVANCE TO PROJECT
The Constitution of the Republic of Namibia as Amended	Article 91 (c) provides for duty to guard against "the degradation and destruction of ecosystems and failure to protect the beauty and character of Namibia." Article 95(l) deals with the "maintenance of ecosystems, essential ecological processes and biological diversity" and sustainable use of the country's natural resources.	Sustainable development should be at the forefront of management of the intended mining activities.
Environmental Management Act No. 7 of 2007 (EMA)	Section 2 outlines the objective of the Act and the means to achieve that. Section 3 details the principles of Environmental Management	The management of this project must be informed by the EMA.
EIA Regulations GN 28, 29, and 30 of EMA (2012)	GN 29 Identifies and lists certain activities that cannot be undertaken without an environmental clearance certificate. GN 30 provides the regulations governing the environmental assessment (EA) process.	**Activity 3.1 (Mining and Quarrying Activities)** The construction of facilities for any process or activities which requires a licence, right or other form of authorisation, and the renewal of a licence, right or other form of authorisation, in terms of the Minerals (Prospecting and Mining Act), 1992. **Activity 3.2 (Mining and Quarrying Activities)** Other forms of mining or extraction of any natural resources whether regulated by law or not. **Activity 3.3 (Mining and Quarrying Activities)** Resource extraction, manipulation, conservation and related activities.
Convention on Biological Diversity (1992)	Article 1 lists the conservation of biological diversity amongst the objectives of the convention.	The dimension stone mining & quarry rehabilitation activities should consider the impact it will have on the biodiversity of the area.

LEGISLATION/POLICIES	RELEVANT PROVISIONS	RELEVANCE TO PROJECT
Draft Procedures and Guidelines for conducting EIAs and compiling EMPs (2008)	Part 1, Stage 8 of the guidelines states that if a proposal is likely to affect people, certain guidelines should be considered by the proponent in the scoping process.	The EA process should incorporate the aspects outlined in the guidelines.
Namibia Vision 2030	Vision 2030 states that the solitude, silence and natural beauty that many areas in Namibia provide are becoming sought after commodities and must be regarded as valuable natural assets.	Care should be taken that the dimension stone mining & quarry rehabilitation activities do not lead to the degradation of the natural beauty of the surrounding farmland area.
Water Act No. 54 of 1956	Section 23(1) deals with the prohibition of pollution of underground and surface water bodies.	The pollution of water resources should be avoided during dimension stone mining & quarry rehabilitation activities.
The Ministry of Environment and Tourism (MET) Policy on HIV & AIDS	MET has recently developed a policy on HIV and AIDS. In addition it has also initiated a programme aimed at mainstreaming HIV and gender issues into environmental impact assessments.	The proponent and its contractor have to adhere to the guidelines provided to manage the aspects of HIV/AIDS. Experience with similar projects has shown that a significant health risk is created when migrant construction workers/labourers interact with local communities.
Local Authorities Act No. 23 of 1992	The Local Authorities Act prescribes the manner in which a town or municipality should be managed by the Town or Municipal Council. Sections 34-47 make provision for the aspects of water and sewerage.	Dimension stone mining & quarry rehabilitation activities have to comply with provisions of the Local Authorities Act.
Labour Act No. 11 of 2007	Chapter 2 details the fundamental rights and protections. Chapter 3 deals with the basic conditions of employment.	Given the employment opportunities presented by the dimension stone mining & quarry rehabilitation activities, compliance with the law is essential.
Public and Environmental Health Act of 2015	This Act (GG 5740) provides a framework for a structured uniform public and environmental health system in Namibia. It covers notification, prevention and control of diseases and sexually-transmitted infections; maternal, ante-natal and neo-natal care; water and food supplies; infant nutrition; waste management; health nuisances; public and environmental health planning and reporting. It repeals the Public Health Act 36 of 1919 (SA GG 979).	Dimension stone mining & quarry rehabilitation activities are to comply with these legal requirements.

LEGISLATION/POLICIES	RELEVANT PROVISIONS	RELEVANCE TO PROJECT
Nature Conservation Ordinance No. 4 of 1975	Chapter 6 provides for legislation regarding the protection of indigenous plants.	Indigenous and protected plants have to be managed within the legal confines.
Environmental Assessment Policy of Namibia (1995)	The Policy seeks to ensure that the environmental consequences of development projects and policies are considered, understood and incorporated into the planning process, and that the term ENVIRONMENT is broadly interpreted to include biophysical, social, economic, cultural, historical and political components.	This updated EMP considers this term of Environment.
Minerals (Prospecting and Mining) Act, 1992 (Act 33 1 of 1992)	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. "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) agriculture, building works, fencing or road making; (ii) the manufacture of bricks and tiles;	The intended activity involves the mining of dimension stone for commercial purposes.
Soil Conservation Act 6 of 1969 Ministry of Agriculture, Water and Forestry	This Act covers the prevention and combating of soil erosion; the conservation, improvement and manner of use of the soil and vegetation; and the protection of water sources	Soils should not be polluted or left un-rehabilitated.

This EMP was formulated, updated and compiled in accordance with the EIA Regulations.

3.3 PROJECT LOCATION

The proponent intends to undertake mining activities on mining claims 70115 & 701116 situated at Swartbooisdrift, Otjimuhaka village, 120 km northeast of Opuwo, Epupa Constituency, Kunene Region, Namibia (northwest). Refer to the locality map of Otjimuhaka village in Figure 1 and Figure 2 for the locality of the 2 mining claims 70115 & 70116 for the dimension stones (GPS: -17.31055556, 13.74333333) for the dimension stone covering a total of 304 711m^2.

Figure 2: Locality map of Otjimuhaka village, Swartbooisdrift, Kunene Region (Google 2020).

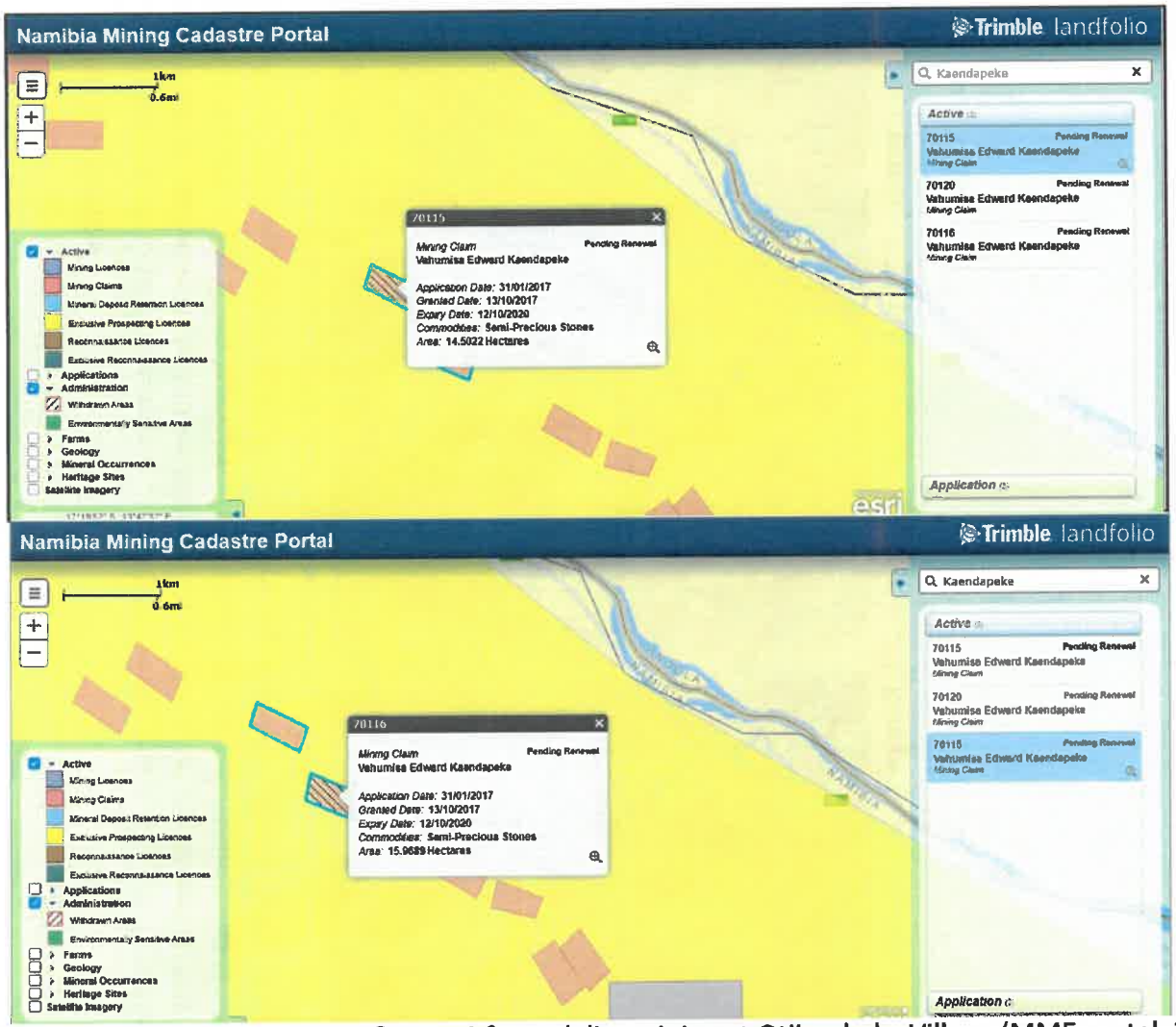
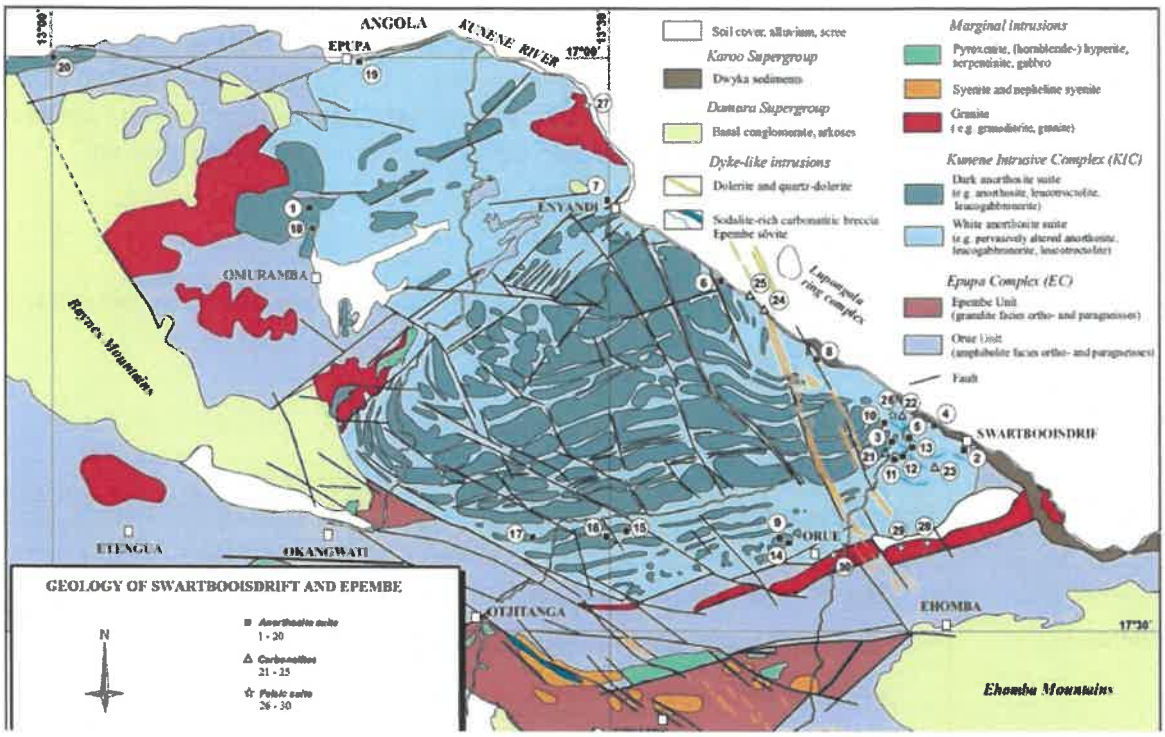


Figure 3: Mining claims 70115 & 70116 for sodalite mining at Otjimuhaka Village (MME portal, 2020)

3.4 THE NATURAL ENVIRONMENT- GEOLOGY OF THE SWARTBOOISDRIFT AREA

A swarm of sodalite rich carbonatite dykes occurs near Swartbooidrift on the Namibia/Angola border (Menge 1986) (Figure 3).



■ ***Anorthosite suite***

1: Ku-97-02, Ku-01-19, -20, -21, -22, -23
2: Ku-97-03, -03b, -03c, -04, -05, -05a, -06, -08a, -08b, -12, -13
3: Ku-97-28, -28a, -31, -31b, -33, -33a, -33b, -99a, Ku-98-23, -45
4: Ku-97-30
5: Ku-97-44, -Ku-98-77, -78, -79, -84, -92, -94, -95
6: Ku-97-92, -92a
7: Ku-97-93
8: Ku-97-95
9: Ku-97-96, -104, -105
10: Ku-98-41
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14: Ku-98-220, -221a, -221b, -222
15: Ku-98-228
16: Ku-98-230
17: Ku-98-231
18: B-98-274a, -274b
19: B-98-281b
20: B-98-101a

△ ***Carbonatites***

21: Ku-97-19, -24, -26 Ku-98-130a, -130b, -131, Ku-01-OD1, -Od2, -Od3
22: Ku-98-27, -28, -80, -83
23: Ku-99-SA11
24: Ku-01-08
25: Ku-01-10

☆ ***Felsic suite***

26: Ku-98-07
27: Ku-01-13, -16
28: B-98-170a
29: B-98-180a
30: B-99-410

Figure 3: Geological map of Swartbooidrift (Geological Survey of Namibia 2001).

They consist of banded ankerite, sodalite, analcite, cancrinite, albite and magnetite as principal constituents, and were intruded along pre-existing lamprophyre and syenite dykes. The sodalite has been exploited as semi-precious stone.

At Epembe 40 km southwest of Swartbooidrift a broad apatite-bearing sövite dyke cuts across an oblong body of nepheline syenite accompanied by several smaller syenites and nepheline syenites stocks (Menge 1986, Ferguson et al. 1975). The sövite is 6.5 km long and up to 250 m wide. Minor constituents are biotite, K-feldspar, plagioclase, magnetite, epidote, aegirine, riebeckite, and a betafite-like mineral.

These two occurrences have been linked as belonging to one alkaline igneous province but there is considerable doubt about their age. SACS (1980) classified Epembe as Phanerozoic. This was

been described from across the border in Angola, and are genetically connected with the Lupongola carbonatite ring complex only about 25 km from Swartbooidrift (Lapido-Loureiro 1973).

3.4.1 Economic importance: Swartboois drift

The sodalite rich carbonatite has been quarried for decades to be used as ornament and dimension stone. Production in 1964 was about 6 350 kg and increased to 140 000 kg in 1985 and most of their products are exported to foreign markets (Menge, 1986). To date small scale miners are operating these quarries. The large operation was abandoned owing to unfavorable rock properties.

3.5 DIMENSION STONE MINING PHASE

The PR should ensure that the management actions detailed in **Table 3** below should be adhered to during the operation of the dimension stone mining activities.

Table 3: Dimension Stone Mining Phase Management Actions

Aspect	Management Actions	Responsibility	Monitoring Agent (s)
Environmental Incidents	• The ECO on site shall maintain a register of all environmental incidents occurring as a result of the activities associated with the project. Environmental incidents that shall be recorded include (but are not limited to): ➢ Fires; ➢ Drowning; ➢ Accidents (e.g. traffic); ➢ Spills of hazardous materials, contaminating soil or water resources; ➢ Non-compliances with applicable legislation; and ➢ Non-compliances with this EMP. • Environmental incident reports shall include (as a minimum) a description of the incident, the actions taken to contain any damage to the environment, personnel, or the public, and the actions taken to repair / remediate any such damage. • Additional measures shall be prescribed that may be required to remediate damage resulting from the incident and / or to prevent similar incidents occurring in the future.	-ECO	-ECO -MEFT, -MAW&LR -MHSS
Traffic	• Ensure that road junctions have good sightlines.	CONTRACTOR	-Roads

Aspect	Management Actions	Responsibility	Monitoring Agent (s)
	• Adhere to the speed limit. If permissible, caution signs and 40 km/hr signs shall be placed at regulation distance from heavy vehicle crossing signs at the intersections of the access tracks and the D2344 road. • Designate no-drive zones. Implement traffic control measures where necessary by keeping a number plate register of all vehicles transporting dimension stone at the site and restricting access to authorised contractors.		
Quarries/dimension stone mining site areas at mining claims 70115 & 70116 at Otjimuhaka Village, Swartbooisdrift, Kunene Region.	• Dimension stones should be sourced from quarries with a valid ECC. • The dimension stone mining sites must be clearly demarcated by means of a perimeter stock-proof fence with a lockable gated entrance. • Dimension stones mining and resultant operations shall only take place within this demarcated area. • A detailed photographic record of the demarcated mining areas, prior to any mining activities, shall be taken. These records are to be kept by the Proponent and PR for reference purposes during the rehabilitation of the site. • There will be **'No unauthorised access'** signs at the mining site gates until to restrict entry and/or harm to people not involved in the dimension stone mining operations.	-CONTRACTOR -ECO	-MME - MEFT, -MAW&LR
EMP training	All workers at the site are to undergo EMP training that should include as a minimum the following: • Explanation of the importance of complying with the EMP. • Discussion of the potential environmental impacts of the intended dimension stone mining and quarry rehabilitation activities. • Employees' roles and responsibilities, including emergency preparedness and response requirements	-CONTRACTOR -ECO	-MME - MEFT, -MAW&LR -MHSS

Aspect	Management Actions	Responsibility	Monitoring Agent (s)
	• The potential consequences of departure from specified operating procedures; and rewards for enhancing mitigation measures or avoiding negative environmental effects.		
Fauna and Flora	• Prevent the destruction of protected tree species. • Encourage the regrowth and regeneration of trees with exposed roots at the site. • The excavation of the dimension stone should incorporate existing trees[1]. • The Contractor should compile a Tree Management Plan which should include the following as a minimum: • Trees if not already accounted for in an existing Geographic Information System (GIS), should be surveyed, co-ordinates/location incorporated into the Contractor's GIS, marked with paint (or other means so as to be readily visible) and protected; • Trees, which are impossible to conserve, need to be identified and their location recorded on a map; • The Contractor should apply to the relevant authority (Ministry of Agriculture, Water & Forestry) for a permit to remove these trees. • A list should be compiled of all trees to be removed detailing the location of the tree, the species as well as which trees will be planted to replace these. The nursery where these trees will be sourced from should also be included; • Each tree that is removed needs to be replaced with an indigenous tree species; • Some of these trees can be obtained at the nearest forestry office or at a commercial nursery such as the Forestry office in Opuwo. Assistance can be sought from the nearest forestry office regarding nearby nurseries where additional trees may be bought and advice sought. • Only a limited width +/- 5 m on the side of the access roads may be partially cleared of vegetation.	CONTRACTOR -ECO	-MME - MEFT, -MAW&LR

Aspect	Management Actions	Responsibility	Monitoring Agent (s)
	• Prevent contractors from collecting wood and veld food such as amphibians, migrating birds, etc. during the dimension stone mining phase. • Prevent contractors from fishing in the nearby ephemeral rivers or catching aquatic species.		
Lay-down areas and materials camp	• Suitable locations for the contractors lay-down areas and materials camp should be identified with the assistance of the PR and the following should be considered in selecting these sites: • The areas designated for the services infrastructure should be used as far as possible. • Second option should be degraded land. • Avoid sensitive areas (e.g. wetlands/rivers/drainage lines)	-CONTRACTOR -ECO	-MME -MEFT
Hazardous waste	• All heavy duty vehicles and equipment on site should be provided with a drip tray. • All heavy duty delivery vehicles should be maintained regularly to prevent oil leakages. • Maintenance and washing of vehicles should take place only at a designated workshop area. • Workshops may be prone to hydrocarbon spillages that change the soil chemistry and may affect groundwater quality (only in severe cases). If fuel is stored on site, there is a possibility of spontaneous combustion that may lead to uncontrollable fires, groundwater and soil contamination. • All hazardous substances (e.g. fuel etc.) or chemicals should be stored in a specific location on an impermeable surface that is bunded - with a volume of 120 % of the largest single storage container or 25 % of the total storage containers, whichever is greater.	-CONTRACTOR -ECO	-MME - MEFT, -MAW&LR -MHSS
Surface and Ground Water Impacts	No perennial water body is present in the close proximity to the mine • It is recommended that dimension stone mining takes place outside of the rainy season in order to limit erosion & flooding on site and surface	-CONTRACTOR -ECO	-MME - MEFT, -MAW&LR -MHSS

Aspect	Management Actions	Responsibility	Monitoring Agent (s)
	vehicles should be limited where possible to the existing access roads and tracks. The stationary plant must be fitted with drip trays to avoid groundwater contamination. • Contaminated runoff from the sites should be prevented from entering the surface water bodies. • Workers should be given ablution facilities at the sites that are located at least **30 m** away from any surface water and regularly serviced. • Washing of personnel or any equipment should not be allowed on site.		
Topsoil	• When excavations are carried out, topsoil[2] should be stockpiled in a demarcated area and used in profiling and rehabilitating of the depleted, open quarries at the mining sites at the farm. • Stockpiled topsoil should be used to rehabilitate post-harvesting degraded areas and/or other nearby degraded areas within the Epupa Constituency in consultation with the residents of Otjimuhaka village and settlements.	-CONTRACTOR -ECO	-MME - MEFT, -MAW&LR
Soil Erosion	• Clear the vegetation of the project area in phases during the dimension stone mining period in order to keep the soil more compacted as well as to limit overall disturbance to the area over time. • It is recommended that most dimension stone mining takes place outside of the rainy season in order to limit potential flooding and the run off of loose soil causing further erosion. • Appropriate erosion control structures must be put in place where soil may be prone to erosion. • Checks must be carried out at regular intervals to identify areas within the mining site where erosion is occurring. Appropriate remedial actions are to be undertaken wherever erosion is evident.	-CONTRACTOR -ECO	-MME - MEFT, -MAW&LR -MHSS

Aspect	Management Actions	Responsibility	Monitoring Agent (s)
Rehabilitation	• Upon completion of the dimension stone mining phase consultations should be held with the local community/property owner(s) regarding the post-dimension stone mining use of remaining excavated areas (if applicable) and to identify priority areas. • Sand/waste rock at the site should be levelled so it can be reclaimed for other purposes once the dimension stone mining has ceased and rather than leaving the quarries open which will pose a threat to people and animals in the area. • In the event that no post-operation uses are requested, all excavated/degraded areas need to be rehabilitated as follows: • Excavated areas may only be backfilled with clean or inert fill. No material of hazardous nature (e.g. sand removed with an oil spill) may be dumped as backfill. • Rehabilitated excavated areas need to match the contours of the existing landscape. • The rehabilitated area should not be higher (or lower) than nearby drainage channels. This ensures the efficiency of re-vegetation and reduces the chances of potential erosion. • Topsoil is to be spread across excavated areas evenly. • Deep ripping of areas to be rehabilitated is required, not just simple scarification, so as to enable rip lines to hold water after heavy rainfall. • Ripping should be done along slopes, not up and down a slope, which could lead to enhanced erosion.	-CONTRACTOR -ECO	-MME - MEFT, -MAW&LR -MHSS
HIV/AIDS and TB awareness	• The Contractor should approach the Ministry of Health and Social Services to co-opt a health officer to facilitate HIV/AIDS and TB education programmes periodically on site during the project operation. • A wellness program should be initiated to raise awareness on health issues, especially the impact of	CONTRACTOR	-ECO -MME - MEFT, -MAW&LR -MHSS

Aspect	Management Actions	Responsibility	Monitoring Agent (s)
	• Personnel should not overnight at the dimension stone mining sites, but only the security personnel.		
Road safety	• Demarcate roads clearly. • Off-road driving should not be allowed. • All vehicles that transport materials to and from the site must be roadworthy. • Drivers that transport materials should have a valid driver's license and should adhere to all traffic rules. • Loads upon vehicles should be properly secured to avoid items falling off the vehicle. • Limit and control the number of access points to the mining site. • The road leading to the mining sites should be properly maintained so as to reduce dust emissions when heavy vehicles travel on them.	-CONTRACTOR -ECO	-RA -MME -MET, -MAWF -MHSS
Safety around work sites	• **All rotary saws that are not being actively used for the dimension stone cutting must be tightly secured to rails to avoid injury to mine personnel if they accidentally fall due to wind or any other factors.** • Excavations/quarries should be left open for the shortest time possible. • Excavate short lengths of trenches and box areas for services or foundations in a manner that will not leave the trench unattended for more than 24 hours. • Demarcate excavated areas and topsoil stockpiles with danger tape. • Provide additional warning signage in areas of movement and in "no personnel" areas where workers are not active. • Quarries are to be fenced-off with stock-proof perimeter fencing. • Work areas must be set out and isolated with danger tape on a daily basis. • All materials and equipment are to be stored only within set out and demarcated work areas.	CONTRACTOR -ECO	-MME -MET, -MAWF -MHSS

Aspect	Management Actions	Responsibility	Monitoring Agent (s)
	• Comply with all waste related management actions stated above in this table.		
Ablutions	• Separate toilets should be available for men and women and should clearly be indicated as such. • Portable toilets (i.e. easily transportable) should be available at the quarry site: • 1 toilet for every 15 females. • 1 toilet for every 30 males. • Sewage needs to be removed on a regular basis to an approved (municipal) sewage disposal site in Opuwo. Alternatively, sewage may be pumped into sealable containers and stored until it can be removed, alternatively • Septic tanks and soak pits will be provided for the disposal of domestic/ washrooms effluents. • Workers responsible for cleaning the toilets should be provided with latex gloves and masks.	-CONTRACTOR	-ECO -MME -MET, -MAWF -MHSS
Open fires	No open fires may be made anywhere on the mining site.	-CONTRACTOR	-ECO -MME - MEFT, -MAW&LR -MHSS
General health and safety	• A fully stocked first aid kit (with unexpired medicines, include a snake bite kit) should permanently be available on-site as well as an adequately trained member of staff capable of administering first aid. • All workers should have access to the relevant personal protective equipment (overalls, hard toe boots, goggles, dust masks, sun hats heavy duty gloves etc.). • Sufficient potable water reserves should be available to workers at all times. • No person should be allowed to smoke close to fuel storage facilities or portable toilets (if toilets are chemical toilets – the chemicals are flammable). • No workers should be allowed to drink alcohol during work hours.	-CONTRACTOR	-ECO -MME - MEFT, -MAW&LR -MHSS -SSC

Aspect	Management Actions	Responsibility	Monitoring Agent (s)
Dust	• A watering truck should be used on gravel roads with the most heavy vehicle movement especially during dry and windy conditions. However, due consideration should be given to water restrictions during times of drought. • The use of waterless dust suppression means (e.g. lignosulphonate products such as Dustex) should be considered. • Cover any stockpiles with plastic to minimise windblown dust. • Dust protection masks should be provided to workers if they complain about dust. • During high wind conditions the contractor must make the decision to cease works until the wind has calmed down.	CONTRACTOR	-ECO -MME - MEFT, -MAW&LR -MHSS
Noise	Work hours should be restricted to between **08h00 and 17h00** where excavation involving the use of heavy equipment, power tools and the movement of heavy vehicles is less than 500 m from residential areas. If an exception to this provision is required, all residents and business owners within the **500 m** radius should be given 1 week's written notice. ➢ If workers are to be exposed to noise levels above 85dB for continuous extended periods of more than two hours, they are to be provided with ear muffs and allowed to take 10-15 minute breaks away from the noise source. • Optimum placement of waste dumps, location of haul roads, location of fixed plant loading hoppers. Waste dumps, stockpiles can be used to shield fixed items of plant which generate noise.	-CONTRACTOR	-ECO -MME - MEFT, -MAW&LR -MHSS
Vibration Management	Vibrations caused during drilling or blasting operations may be managed by: • Reducing the maximum instantaneous charge (MIC) by using delays, reduced hole diameter and/or deck	CONTRACTOR	-ECO -MME - MEFT, -MAW&LR -MHSS

Aspect	Management Actions	Responsibility	Monitoring Agent (s)
	drilling pattern, and/or delay layout, or altering the hole inclination. • Exercising strict control over spacing and orienting all blast drill holes. • Establish times of blasting to suit local conditions.		
Recruitment of labourers	The Contractor should compile a formal recruitment process including the following provisions as a minimum: • Adhere to the legal provisions in the Labour Act No. 11 of 2007 for the recruitment of labour (target percentages for gender balance, optimal use of local labour and SME's, etc.). • Recruitment should not take place at the dimension stone mining site. • Ensure that all sub-contractors are aware of recommended recruitment procedures and discourage any recruitment of labour outside these agreed upon procedures. • All contractors should give preference in terms of recruitment of sub-contractors and individual labourers to those who are qualified and from the project area and only then look to surrounding towns. • Clearly explain to all job-seekers the terms and conditions of their respective employment contracts (e.g. period of employment etc.) – make use of interpreters where necessary.	CONTRACTOR	-ECO -MME - MEFT, -MAW&LR -MHSS -SSC
Communication plan	The Contractor or PR should draft a Communication Plan, which should outline as a minimum the following: ➢ How Interested and Affected Parties (I&APs), who require on-going communication for the duration of the operation period, will be identified and recorded and who will manage and update these records; ➢ How these I&APs will be consulted on an on-going basis; ➢ Make provision for grievance mechanisms – i.e.	CONTRACTOR -ECO	-MME - MEFT, -MAW&LR -MHSS

Aspect	Management Actions	Responsibility	Monitoring Agent (s)
General communication	➢ The PR must appoint an ECO to liaise between the Contractor, I&APs and Mr. Vahumisa Edward Kaendapeke's management. ➢ The Contractor shall at every bi-monthly site meeting report on the status of the implementation of all provisions of the EMP. • The Contractor should implement the EMP awareness training as stipulated above in this table. • The Contractor must list the I&APs of the project and their contact details with whom on-going communication would be required for the duration of the contract. This list, together with the Communication Plan must be agreed upon and given to the PR before operation commences/resumes. • The Communication Plan, once agreed upon by the Developer, shall be legally binding. • A copy of the EMP must be available at the site office and should be accessible to all I&APs. • Key representatives from the above mentioned list need to be invited to attend monthly site meetings to raise any concerns and issues regarding progress to rehabilitate the excavated areas and surrounding quarries. • The Contractor should liaise with the proponent regarding all issues related to community consultation and negotiation before operation commences/resumes. • A procedure should be put in place to ensure that concerns raised have been followed-up and addressed. • All people on the I&APs list should be informed about the availability of the complaints register and associated grievance mechanisms in writing by the PR prior to the commencement of site activities.	CONTRACTOR	-ECO -MME - MEFT, -MAW&LR -MHSS
Archaeology		CONTRACTOR	ECO

Aspect	Management Actions	Responsibility	Monitoring Agent (s)
	• Demarcate the site with danger tape; • Determine GPS position if possible; • Report findings to the site foreman; • Report findings, site location and actions taken to superintendent; • Cease any works in immediate vicinity; • Visit find site and determine whether work can proceed without damage to findings; • Determine and demarcate exclusion boundary; • Site location and details to be added to a Geographic Information System (GIS) for field confirmation by archaeologist; • Inspect site and confirm addition to dimension stone mining site GIS; • Advise the National Heritage Council (NHC) and request written permission to remove findings from work area; and • Recovery, packaging and labelling of findings for transfer to National Museum. • Should human remains be found, the following actions will be required: • Apply the chance find procedure as described above; • Schedule a field inspection with an archaeologist to confirm that remains are human; • Advise and liaise with the NHC and Police; and • Remains will be recovered and removed either to the National Museum or the National Forensic Laboratory.		

3.6 QUARRY REHABILITATION PHASE (Continuous)

The management actions included in **Table 4** below applies during the continuous quarry rehabilitation phase of the mining operations and should be undertaken together with the mitigation measures in **Table 3** above.

Table 4: Quarry Rehabilitation Phase Management actions

Environmental Feature	Management Actions	Responsibility	Monitoring Agent
EMP training	All contractors appointed for the transportation of the dimension stone on mining claims 70115 & 70116 at Otjihumuka village, Swartbooisdrift, Kunene Region must ensure that all personnel are aware of necessary health, safety and environmental considerations applicable to their respective work.	- CONTRACTOR	-ECO -MEFT, -MME, -SSC.
Monitoring	The ECO should monitor the implementation of the EMP: • The ECO should regularly inspect the conditions around the dimension stone cutting mining site before work starts; and • The ECO should inspect the mining site at the end of each extraction period.	-CONTRACTOR	-ECO
Water and waste management	• Ensure that the infrastructure at the dimension stone cutting/dressing site is connected to the mining site drainage and wastewater reticulation. • Regular preventative maintenance should be carried out on the infrastructure to ensure that risks of overspills/leakages are minimised. • A no-go buffer area of at least **30 m** should be allocated to any water bodies in the area. • No dumping of waste products of any kind in or in close proximity to any surface water	CONTRACTOR	-ECO -MEFT, -MAW&LR -MHSS

Environmental Feature	Management Actions	Responsibility	Monitoring Agent
	• Sufficient weather and scavenger-proof bins (with lids, to prevent the escape of litter) shall be provided, and be easily accessible at all points where wastes are generated. • The site shall be kept clean and free of litter and no litter from the site shall be allowed to disperse to surrounding areas. • All personnel shall be instructed to dispose of all waste in the proper manner. • The Contractor shall identify and separate materials that can be reused or recycled to minimise waste e.g. metals, packaging and plastics, and provide separate marked bins for these items. • All materials (e.g. explosive cartridges) must be suitably stored and protected, so that they do not become damaged and unusable. • The Contractor shall be responsible for the regular disposal (at suitable and licensed municipal waste disposal facilities) of all waste generated as a result of the dimension stone cutting/mining. • Contaminated runoff from the various operational activities should be prevented from entering any surface water bodies.		

Environmental Feature	Management Actions	Responsibility	Monitoring Agent
	• Ensure that surface water accumulating on-site are channelled and captured through a proper storm water management system to be treated in an appropriate manner before disposal into the environment. • Disposal of waste from the properties should be properly managed. • No waste may be burned on site. • General waste is to be collected and removed by the proponent. • The frequency of collections will be such that waste containment receptacles do not unduly accumulate or overflow.		
Energy efficiency	• The use of solar energy should be encouraged to provide for general lighting and heating of water and buildings. • The use of water saving initiatives should be incorporated within the workers' pre-fabricated housing design in order to reduce water demand.	CONTRACTOR	-ECO -MEFT, -MAW&LR

3.7 DECOMMISSIONING PHASE

Mine closures can be planned for and should form part of an integrated land use strategy that involves the Traditional Authority and the community. The decommissioning of the dimension stone mining at the site is envisaged in the future. Planned closure, in consultation with the Traditional Authority and community, provides the opportunity to develop alternative land uses through rehabilitation, and to use

Table 5 is a guideline to the decommissioning plan, whereby an active care mine closure is going to be implemented.

Table 5: Decommissioning plan

Decommissioning Phase			
Possible Impact	**Mitigation**	**Responsibility**	**Monitoring Agent**
Physical/Biological -Land degradation& loss of aesthetic value	-Establish a vegetation cover as soon as possible (stabilization) -Vegetate cleared area with indigenous trees -Fencing of the dangerous areas	CONTRACTOR	-ECO -MEFT, -MAW&LR
-Injury to people and livestock	-Complete filling up of the trenches -Barricade the old workings with concrete -Fencing of the dangerous areas	CONTRACTOR	-ECO -MEFT, -MAW&LR
-Contaminated surface and underground water. -Soil pollution. -Acid water drainage	-clean up spills (chemicals, diesel and oil) -Water quality analysis. -Monitor soil and water quality for a specified time after closure.	CONTRACTOR	-ECO -MEFT, -MAW&LR
Resurgence of hazardous chemicals	-Treatment of hazardous chemicals (if any) -Neutralization -Precipitation, oxidation, reduction and acid/alkali hydrolysis	CONTRACTOR	-ECO -MEFT, -MAW&LR -MHSS
Accumulated solid waste	-Disposal of solid waste through source sorting, recycling, aerobic decomposition (composition), incineration or depositing in land fill and covering of land fill	CONTRACTOR	-ECO -MEFT, -MAW&LR -MHSS
Loss of biodiversity	-Eliminate environmental damage through reclamation	CONTRACTOR	-ECO -MEFT

Compacted soil	-Rehabilitate areas affected by excessive soil compaction and oil spillage	CONTRACTOR	-ECO -MEFT, -MAW&LR -MME
Social/Economic -Laying off workers -Loss of income -Drop in the standard of living	-Catering of welfare of laid off workers -Pension schemes -Creation of income generating projects for laid off workers -Secure alternative employment for workers	CONTRACTOR	-ECO -SSC
-Infrastructure may become derelict -Derelict building may detract from the value of surrounding properties	-Return of community access to infrastructure -Educate locals on the utilization of the infrastructure -Considering promoting water reservoir for fishing	CONTRACTOR	Ministry of Works and Transport
-Possible outbreaks of diseases	Educate communities on dangers of STIs and waterborne diseases	CONTRACTOR	Ministry of Health & Social Services(MHSS)
Damaged roads	Repair damaged roads	CONTRACTOR	-Roads Authority

In addition to the plan above, decommissioning should also be carried out as per the following guidelines:

- The Proponent/Owners and Managers of the mine should be capable of implementing responsible environmental management practices. The preparation of environmental management plans will facilitate this process and is strongly encouraged.
- All mined sites should be rehabilitated either progressively or at the end of mining. Each mining claim site should be left in a safe well drained and maintenance-free state, blending in as much as possible with the surrounding landscape.
- Mine operators should ensure that funds are available for progressive and final site (closure) rehabilitation.
- Unless otherwise approved (by an Inspector of mines) at mining closure, all machinery structures and buildings should be removed from the site and concentrate slabs broken up and buried. The site should be ripped; top soiled (if available), fertilized and re-vegetated using indigenous plant species. Alternatively, if approved, certain structures can remain for the benefit of the next land user.
- Surface and ground waters should be effectively managed to prevent contamination of mining operations.
- Effluent from mining and milling operations should be effectively contained and only released into river systems if the water quality satisfies the standards of the **Water Quality Guidelines (Annexure A)**.
- Measures to be taken to control noise and dust from mining/milling/hauling operations to ensure a comfortable and health working environment as specified in the **Labour Act No. 11 of 2007.**
- Measures should be taken to minimise excessive ground vibrations and air-blasts over pressure due to blasting. Peak particle velocities of 5 mm/sec and air-blasts over pressures of 120 dB (peak) should not be exceeded at the boundaries of the mining area.

- Measures should be taken to prevent or minimise soil erosion.
- As far as is practical, top soil should be stripped from all areas to be distributed by mining operations/milling and used immediately if possible or preserved for later rehabilitation.
- Areas disturbed by mining should be re-vegetated as far as is practical using indigenous grass or tree species. However, on sites such as tailings/waste dumps, where it is important to establish a vegetative cover as soon as possible on difficult growing mediums, the use of fast growing exotic species is acceptable .Care should be taken to prevent the entry and spread of noxious plants.
- Explosives, hydrocarbon fuels and other toxic materials should be transported stored and handled in a safe and acceptable manner. They should be stored in safe place, fenced to prevent entry of unauthorised persons. The owner /manager should ensure that toxic materials do not escape into the surrounding rivers/ground waters.
- Mine operators should strive to conserve local flora and fauna species and avoid unnecessary destruction of both.
- Unique archaeological, historical, geological and scenic features should be protected at all mining sites.
- Residents in the vicinity of a mine should not be subjected to excessive airborne emissions (including dust, gases and smokes), liquid effluent, noise, ground vibrations and air blast from mining /haulage operations.
- Unless otherwise approved, at the cessation of mining, or earlier if practical, waste rock dumps should be stabilized by reducing the slope angle and re-vegetated. Topsoil should be used if practicable.
- All shafts not being used should be securely capped/otherwise made safe to prevent the entry of persons/livestock.
- The final land use of open cast mine /quarry should be determined prior to the cessation of mining. For example, if the site is to be used for water storage, then at the end of the mine life, drainage could be directed into the pit. If the pit/quarry is to be used for any other purpose then drainage should not be diverted around the site.
- The final land use will dictate the amount of reshaping required on the pit faces. Where practical the slope of the steep faces should be reduced and benches top soiled (if available) to facilitate re-vegetation and blending with the surrounding landscape.
- If practical quarry faces should be oriented to minimise their visual impact from public areas.
- Dangerous excavations should be made safe to prevent entry of persons/livestock.
- In strip mining operations, overburden material, which is adverse to plant growth, should be buried and every effort should be made to recover and store top soil from mining path for later rehabilitation.
- Heap leach operations should be designed to ensure that there is zero discharge of process fluid on surface waters or ground waters.
- Unless otherwise approved, heap leach pads should be rehabilitated after leaching by detoxification, re-contouring, re-top soiling and re-vegetation so that they will be in stable

- The mining and rehabilitation method should ensure each layer disturbed should be replaced to its original sequence at topsoil as its final layer. All disturbed areas should be progressively rehabilitated.
- Tailings and Slimes from wasting plants should be expounded in properly constructed dams unless otherwise approved.
- All mining drill holes should be capped, plugged/filled in, either progressively or at the end of the program.
- All drilling sites, trenches and pits should be rehabilitated (i.e. backfilled and re-vegetated) after the cessation of mining activities.
- Each site should be left in a clean and tidy condition with all refuse removed.

Table 6: Decommissioning phase management actions

Environmental Feature	Management Actions
Deconstruction activity	Many of the mitigation measures prescribed for the dimension stone mining & quarry rehabilitation activities (**Table 3-5** above) would be applicable to some of the decommissioning activities. These should be adhered to where applicable.
Rehabilitation	In the event that decommissioning is deemed necessary, excavations need to be rehabilitated according to the management actions laid out in **Table 3-5** above.

4 ANNEXURE A- WATER QUALITY GUIDELINES

THE WATER ACT, 1956 (ACT 54 OF 1956) AND ITS REQUIREMENTS IN TERMS OF WATER SUPPLIES FOR DRINKING WATER AND FOR WASTE WATER TREATMENT AND DISCHARGE INTO THE ENVIRONMENT

1. INTRODUCTION

The provisions of the Water Act are intended, amongst other things, to promote the maximum beneficial use of the country's water supplies and to safeguard water supplies from avoidable pollution.

The drinking water guidelines are not standards as no publication in the Government Gazette of Namibia exists to that effect. However the Cabinet of the Transitional Government for National Unity adopted the existing South African Guidelines (461/85) and the guidelines took effect from 1April 1988 under the signature of the then Secretary for Water Affairs.

The sections of the Water Act that relate to the discharge of industrial effluents are:
- Section 21(1) which states that
-- The purification of waste water shall form an integral part of water usage and
-- that purified effluents shall comply with the General Standard Quality restrictions as laid out in Government Gazette R553 of 5 April 1962 and
- Section 21(2) which further stipulate that this purified effluent be returned as close as possible to the point of abstraction of the original water.

Where a local authority has undertaken the duty of disposing of all effluents from an industrial process the provisions of Section 21(1) and 21(2) apply to the local authority and not the producer of the effluents. If there is difficulty in complying with these provisions then the applicant may apply for an exemption from the conditions in terms of Section 21(5) and 22(2) of the Water Act. The Permanent Secretary after consultation with the Minister may grant the issuance of a Waste Water Discharge Permit under Sections 21(5) and 22(2) subject to such conditions as he may deem fit

2. GUIDELINES FOR THE EVALUATION OF DRINKING-WATER QUALITY FOR HUMAN CONSUMPTION WITH REGARD TO CHEMICAL, PHYSICAL AND BACTERIOLOGICAL QUALITY

Water supplied for human consumption must comply with the officially approved guidelines for drinking-water quality. For practical reasons the approved guidelines have been divided into three basic groups of determinants, namely:

- Determinants with aesthetic / physical implications: TABLE 1.
- Inorganic determinants: TABLE 2.
- Bacteriological determinants: TABLE 3.

2.1 CLASSIFICATION OF WATER QUALITY

The concentration of and limits for the aesthetic, physical and inorganic determinants define the group into which water will be classified. See TABLES 1 and 2 for these limits. The water quality has been grouped into 4 quality classes:

2.3 Group A: Water with an excellent quality
2.4 Group B: Water with acceptable quality
2.5 Group C: Water with low health risk
a) Group D: Water with a high health risk, or water unsuitable for human consumption.

Water should ideally be of excellent quality (Group A) or acceptable quality (Group B), however in practice many of the determinants may fall outside the limits for these groups.

If water is classified as having a low health risk (Group C), attention should be given to this problem, although the situation is often not critical as yet.

If water is classified as having a higher health risk (Group D), urgent and immediate attention should be given to this matter.

Since the limits are defined on the basis of average lifelong consumption, short-term exposure to determinants exceeding their limits is not necessarily critical, but in the case of toxic substances, such as cyanide, remedial measures should immediately be taken.

The overall quality group, into which water is classified, is determined by the determinant that complies the least with the guidelines for the quality of drinking water.

TABLE 1: DETERMINANTS WITH AESTHETIC / PHYSICAL IMPLICATIONS

DETERMINANTS	UNITS*	LIMITS FOR GROUPS			
		A	B	C	D**
Colour	mg/l Pt***	20			
Conductivity	mS/m !at 25 °C	150	300	400	400
Total hardness	mg/l $CaCO_3$	300	650	1300	1300
Turbidity	N.T.U****	1	5	10	10
Chloride	mg/l Cl	250	600	1200	1200
Chlorine (free)	mg/l Cl	0,1- 5,0	0,1 – 5,0	0,1 – 5,0	5,0
Fluoride	mg/l F	1,5	2,0	3,0	3,0
Sulphate	mg/l SO_4	200	600	1200	1200
Copper	µg/l Cu	500	1000	2000	2000
Nitrate	mg/l N	10	20	40	40
Hydrogen Sulphide	µg/l H_2S	100	300	600	600
Iron	µg/l Fe	100	1000	2000	2000
Manganese	µg/l Mn	50	1000	2000	2000
Zink	mg/l Zn	1	5	10	10
pH****	pH-unit	6,0 – 9,0	5,5 – 9,5	4,0 – 11,0	4,0 – 11,0

* In this and all following tables "l" (lower case L in ARIAL) is used to denote dm^3 or litre
**All values greater than the figure indicated.
*** Pt = Platinum Units
**** Nephelometric Turbidity Units
***** The pH limits of each group exclude the limits of the previous group

TABLE 2: INORGANIC DETERMINANTS

DETERMINANTS	UNITS	LIMITS FOR GROUPS			
		A	B	C	D*
Aluminium	µg/l Al	150	500	1000	1000
Ammonia	mg/l N	1	2	4	4
Antimonia	µg/l Sb	50	100	200	200
Arsenic	µg/l As	100	300	600	600
Barium	µg/l Ba	500	1000	2000	2000
Beryllium	µg/l Be	2	5	10	10
Bismuth	µg/l Bi	250	500	1000	1000
Boron	µg/l B	500	2000	4000	4000
Bromine	µg/l Br	1000	3000	6000	6000
Cadmium	µg/l Cd	10	20	40	40
Calcium	mg/l Ca	150	200	400	400
Calcium	mg/l $CaCO_3$	375	500	1000	1000
Cerium	µg/l Ce	1000	2000	4000	4000
Chromium	µg/l Cr	100	200	400	400
Cobalt	µg/l Co	250	500	1000	1000
Cyanide (free)	µg/l CN	200	300	600	600
Gold	µg/l Au	2	5	10	10
Iodine	µg/l I	500	1000	2000	2000
Lead	µg/l Pb	50	100	200	200
Lithium	µg/l Li	2500	5000	10000	10000
Magnesium	mg/l Mg	70	100	200	200
Magnesium	mg/l $CaCO_3$	290	420	840	840
Mercury	µg/l Hg	5	10	20	20
Molybdenum	µg/l Mo	50	100	200	200
Nickel	µg/l Ni	250	500	1000	1000
Phosphate	mg/l P	1	See note below	See note below	See note below
Potassium	mg/l K	200	400	800	800
Selenium	µg/l Se	20	50	100	100
Silver	µg/l Ag	20	50	100	100
Sodium	mg/l Na	100	400	800	800
Tellurium	µg/l Te	2	5	10	10
Thallium	µg/l Tl	5	10	20	20
Tin	µg/l Sn	100	200	400	400
Titanium	µg/l Ti	100	500	1000	1000
Tungsten	µg/l W	100	500	1000	1000
Uranium	µg/l U	1000	4000	8000	8000
Vanadium	µg/l V	250	500	1000	1000

* All values greater than the figure indicated.

Note FOR Table 2 on phosphate: Phospates are not toxic and essential for all life-forms. Natural water will, however, seldom contain phosphate; it is generally seen as an indicator of pollution and is usually accompanied by other pollutants. Wherever drinking water is combined with or consists wholly of reclaimed or recycled water, it may be expected to contain phosphate. The general guideline for a concentration level to be aimed at is 1 mg/l as P. But in many cases this may be difficult to achieve technically. For this reason the Department will allow a phosphate concentration level of up to 5 mg/l as P in water intended for human consumption. Please refer also to the "Note on Phosphate" under Section 3: General Standards for Waste/Effluent.

2.2 BACTERIOLOGICAL DETERMINANTS

The bacteriological quality of drinking water is also divided into four groups, namely:

- Group A: Water which is bacteriological very safe;
- Group B: Water which is bacteriological still suitable for human consumption;
- Group C: Water which is bacteriological risk for human consumption, which requires immediate action for rectification;
- Group D: Water, which is bacteriological unsuitable for human consumption.

TABLE 3: BACTERIOLOGICAL DETERMINANTS

DETERMINANTS	LIMITS FOR GROUPS			
	A**	B**	C	D*
Standard plate counts per 1 ml	100	1000	10000	10000
Total coliform counts per 100 ml	0	10	100	100
Faecal coliform counts per 100 ml	0	5	50	50
E. coli counts per 100 ml	0	0	10	10

* All values greater than the figure indicated.
□ In 95% of the samples.

NB If the guidelines in group A are exceeded, a follow-up sample should be analysed as soon as possible.

2.3 FREQUENCY FOR BACTERIOLOGICAL ANALYSIS OF DRINKING-WATER SUPPLIES

The recommended frequency for bacteriological analysis of drinking water is given in Table 4.

TABLE 4: FREQUENCY FOR BACTERIOLOGICAL ANALYSIS

POPULATION SERVED	MINIMUM FREQUENCY OF SAMPLING
More than 100 000	Twice a week
50 000 – 100 000	Once a week
10 000 – 50 000	Once a month
Minimum analysis	Once every three months

GENERAL STANDARDS FOR WASTE / EFFLUENT WATER DISCHARGE INTO THE ENVIRONMENT

All applications in terms of Section 21(5) and 22(2), for compliance with the requirements of Section 21(1) and 21(2) of the Water Act (Act 54 of 1956) that purified water shall comply with the General Standard as laid out in Government Gazette Regulation R553 of 5 April 1962.

TABLE 5 GENERAL STANDARDS FOR ARTICLE 21 PERMITS (EFFLUENTS)

DETERMINANTS	MAXIMUM ALLOWABLE LEVELS
Arsenic	0,5 mg/l as As
Biological Oxygen Demand (BOD)	no value given
Boron	1,0 mg/l as B
Chemical Oxygen Demand (COD)	75 mg / l as O
Chlorine, residual	0,1 mg/l as Cl_2
Chromium, hexavalent	50 Ng/l as Cr(VI)
Chromium, total	500 Ng/l as Cr
Copper	1,0 mg/l as Cu
Cyanide	500 Ng/l as CN
Oxygen, Dissolved (DO)	at least 75% saturation**
Detergents, Surfactants, Tensides	0,5 mg/l as MBAS – See also Note 2
Fats, Oil & Grease (FOG)	2,5 mg/l (!gravimetric method)
Fluoride	1,0 mg/l as F
Free & Saline Ammonia	10 mg/l as N
Lead	1,0 mg/l as Pb
Oxygen, Absorbed (OA)	10 mg / l as O*
pH	5,5 – 9,5
Phenolic Compounds	100 Ng/l as phenol
Phosphate	1,0 mg/l as P - See also Note 1
Sodium	not more than 90 mg/l Na more than influent
Sulphide	1,0 mg/l as S
Temperature	35°C
Total Dissolved Solids (TDS)	not more than 500 mg /l more than influent
Total Suspended Solids (TSS)	25 mg/l
Typical faecal Coli.	no typical coli should be counted per 100 ml
Zinc	5,0 mg/l as Zn

* Also known as Permanganate Value (or PV).

** In Windhoek the saturation level is at approx. 9 mg/l O_2.

Note (1) on phosphate: Phospates are not toxic and essential for all life forms. Natural water will seldom contain phosphate; it is generally seen as an indicator of pollution and is usually accompanied by other pollutants. Wherever drinking water is combined with or consists wholly of reclaimed or recycled water, it may be expected to contain phosphate. There is no general guideline for phosphate contained in the Regulation 553. But generally it is assumed that eutrophication or algal bloom in dams is promoted by nutrient concentrations as low as 0,01 mg/l as P; generally a phosphate concentration limit for dams of 0,1 mg/l is recommended. All water that is consumed and subsequently discharged, will eventually end up in rivers, dams or

groundwater – that is why for potable water, a concentration level of 1 mg/l as P is aimed at.

But, again, in many cases of waste and effluent treatment, this may be difficult to achieve technically, or the required waste and effluent treatment infrastructure is not available; as the required infrastructure is sophisticated and expensive. The current situation calls for a compromise and for this reason, this Department will judge each application individually on its merits and allow, in certain cases, a phosphate concentration level of up to 15 mg/l as P in any effluent or waste stream to be discharged into the environment. This regulation is subject to be reviewed every two years, calculated from the date of approval of this document.

Note (2) on detergents, surfactants and ten sides: The MBAS (or methylene blue active substances) – test does not encompass all surface active compounds currently, commercially available. The limit given is therefore only a guideline. Many of the cleaning agents are toxic to biological life-forms in rivers and dams.

It should be taken into consideration that some commercial products interfere with the effective removal of oil, fat and grease by grease and fat traps, by breaking up such long-chain molecules into shorter ones. These cleaning agents thus effectively allow such components to pass through the traps and land into sections of a treatment plant further down the line and interfere with the process there.

Many cleaning agents contain very powerful disinfectants, and/or biocides. Such substances may interact with biological treatment processes. They may reduce the effectiveness of such treatment or 'kill' it completely, if they land in septic tanks, biofilters or even activate-sludge plants. Their activity may be attenuated by dilution.

4. AUTHORIZATION

Herewith, the Guidelines for the Evaluation of Drinking Water for Human Consumption with regard to Chemical, Physical and Bacteriological Quality, as well as the General Standards for Article 21* Permits, amended for detergents, surfactants, ten sides, as well as phosphates, are confirmed and remain in force until further notice.

Issued under my hand with the authority vested in my office, within the Ministry for Agriculture, Water and Rural Development,

PERMANENT SECRETARY
Dr V Shivute

WINDHOEK, DATE STAMP

5 ANNEXURE B – COVID-19 RISK ASSESSMENT FORM (AS AMENDED PERIODICALLY BASED ON DEVELOPING MEDICAL INFORMATION)

Return to Work Medical Screening

Surname:		**First Name:**		**Company Number**	
Date Of Birth:		**Occupation:**		**Department:**	
Date Employed:		**Date Discharged:**		**Length Of Service:**	

1.

	Vital Data		
	Blood Pressure	**mmHg**	
2.	**Pulse**	**Bpm**	
	Temperature	**°C**	
	HGT (for known diabetics)	**mmol/L**	
3.	**Have you ever had a serious occupational accident or an Occupational disease?**	**Yes**	**No**
	Describe		
	Chronic Disease	**Yes**	**No**

4.	**Hypertension**		
	Diabetes		
	Epilepsy		
	Asthma		
	TB		
	Psycho-social problems **		
	If yes and symptomatic, or any vital signs out of normal limits, refer to the medical centre		
	**** If yes, refer to the medical centre for referral for EAP**		
5.	**Do you take <u>any</u> medication (List Below)**	**Yes**	**No**

	Symptom Check	**Yes**	**No**
	Fever		
	Cough		
6.	**Sore Throat**		
	Shortness of breath		
	Any contact with person diagnosed with COVID—19		
	If any symptoms are present refer the employee to the isolation area		
	Status (Tick appropriate box)		
7.	**Fit to work**		
	Refer to medical centre		
	Refer to isolation area		

I hereby declare that all the information furnished above is, to the best of my knowledge, true and correct and that no information has been omitted or withheld.

Signature of employee: _____

Assessed by: _____

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HEALTHY EARTH ENVIRONMENTAL CONSULTANTS CC

	MONITORING AND EVALUATION REPORT FOR THE OPERATIN AND MINING OF DIMENSION (SODALITE) ON MINING CLAIMS NO; 70115 & 70116 AT OROUTUMBA, SWARTBOOI, OPUWO DISTRICT, KUNENE REGION, NAMIBIA		
HEEC Reference	HEEC023-2020		
Proponent	Mr. Vahumisa Edward Kaendapeke P.O Box 459 Opuwo, Namibia Contact Person: Mr. Vahumisa Edward Kaendapeke Contact Number: +264 816412523 Email: marvin@gmail.com		
Report Date	October 2020		
Author	David S. Aiyambo	**Signature**	D. Aiyambo
Status	MONITORING AND EVALUATION REPORT (BI ANNUAL REPORTS)	**Reporting Period**	August 2017 – August 2020

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- *WATER QUALITY MONITORING AND MANAGEMENT*
- *WATER PROSPECTING*
- *WASTE MANAGEMENT*
- *ENVIRONMENTAL POLICY REVIEWS*
- *ENVIRONMENTAL AWARENESS AND TRAINING*
- *ENVIRONMENTAL MANAGEMENT SYSTEM (ISO14001) IMPLEMENTATION*
- *ENVIRONMENTAL CONSULTATION*
- *ECOSYSTEM EVALUATION*
- *ENVIRONMENTAL SAFETY, HEALTH AND MANAGEMENT*
- *FLORA IDENTIFICATION*
- *GEOGRAPHICAL INFORMATION SYSTEM (GIS) AND REMOTE SENSING*
- *BIOHAZARD MONITORING (AIR AND RADIATION POLLUTION MONITORING)*
- *GREEN CLAIMS AND CARBON TAX*
- *LANDSCAPING AND GREEN HOUSE IRRIGATION SUPPLIES AND MAINTENANCE*
- *MINING*
- *BUSH ENCROACHMENT CONTROL*
- *DATA COLLECTION AND ANALYSIS*
- *AGRICULTURE EXTENSION SERVICES*

1. INTRODUCTION

Mr. Vahumisa Edward Kaendapeke, Namibian, the holder of the mining claim 70115 and 70116, has secured technical and financial partners and he intends to renew the Environmental Clearance Certificate (ECC) for these mining claims which were obtained in 2017 after conducting an Environmental Impact Assessment (EIA) and formulating an Environmental Management Plan (EMP). It is with this background that Mr. Vahumisa Edward Kaendapeke, intends to commence with operations to mine dimension stones (blue sodalite) for export purposes to China via the Walvis Bay Port and derive the monetary benefits associated with these natural resources. Mr. Vahumisa Edward Kaendapeke as the holder of mining claim 70115 and 70116 has secured the mining claims from the Ministry of Mines and Energy, after following all the necessary procedures to satisfy the relevant Authorities to enable him to mine the dimension stones from the allocated portions.

After three years without operation, the scope and parameters of the project are exactly as defined in the 2017 environmental scoping report. There has been no deviation from the project description as given in the 2017 scoping report and no non-compliancy has been issued by the MEFT: DEA with regards to their activities. In addition, all the mitigation measures prescribed in the EMP are yet to be implemented. The updated Environmental & Management Plan (EMP) will be read together with the initial EMP which was formulated in 2017, this report complements the necessary updates which have been observed during the site visits although there has been no active mining operation in past three years. The aim is to improve the environmental sustainability of the mine and taking into consideration that rehabilitation will be undertaken as a continuous process that will be augmented at the closing/decommissioning phase. The ECC entails conditions that have to be adhered to during the operational phase of the mining project; in particular it calls for constant monitoring and evaluations on environmental performance to be carried out as well as the setting and monitoring of the targets for improvement. It is against this background that Healthy Earth Environmental Consultants (HEEC) has been appointed by Mr. Vahumisa Edward Kaendapeke to carry out the monitoring and evaluation process for the mining project on mining claim 70115 and 70116.

The bi-annual reports will be submitted to the Office of the Environmental Commissioner for the duration of the ECC validity and to necessitate its renewal. In preparation of the monitoring and evaluation report, HEEC conducts bi-annual site visits for inspections on the mining claims at Swaartbooisdrif, Otjimuhaka Village, Opuwo district, located about 10 km from the D3701 gravel road stretching from Opuwo to Ruacana. The site inspection entailed of two integral components; verbal feedback on distinct identified impacts and mitigation measures as defined in the Environmental Management Plan (EMP) and ground truthing which includes visual inspection and verification throughout the mining claims area. The inspection and reporting to Mr. Vahumisa Edward Kaendapeke and his technical and financial partners. The mitigation measures and the intensity of compliance have been given three (3) ranks namely; rank one (1) ranked as non-compliance and require certain critical intervention, rank two (2) indicating a medium level of compliance and require improvement and rank three (3) high level compliance and it should be maintained or even ameliorated.

2. MANAGEMENT ACTIONS

The Environmental Management Plan (EMP) tailor-made for this mining project has been formulated with the essence of identifying the management actions imperious to

mitigate the likely negative impacts associated with this mining project. Where the impact cannot be mitigated, measures have been put in place to moderate the significance of such impacts. The observation made during the site inspection over the period of 36 months have been outlined in the following section including site photos. A summation of the assessments and observations will be outlined for the impacts and mitigation measures derived from the EMP.

2.1 Fauna and Flora

Currently these impacts have been ranked three (3) high level compliance and it should be maintained or even ameliorated. Mr. Vahumisa Edward Kaendapeke has done little work on the mining claims with only artisanal mining activity visible at the site. Most of the area is still intact, however this ranking will change drastically once mining operation commence. Currently, there are no reports of illegal hunting or poaching of wild animals in the area. Habitat destruction will be inevitable during the operational phase; hence an appropriate restoration program should be established and executed.

2.2 Surface and Ground water

This impact has been ranked three (3) indicating high level compliance and it should be maintained or even ameliorated. There are no signs or records of oil leakage which potentially seep into the ground and contaminate the underground water. No signs of surface water bodies contaminated in the project area, hence this impact ranked three (3).

2.3 Visual and Sense of Place

All the mitigation measures for these impacts have been three (3) indicating high level compliance and it should be maintained or even ameliorated. However, there are some small pits made by artisanal miners which might pose some injuries to both human and animals. The mining claims area are well hidden from sight from both Otjimuhaka and Oroutumba villages, because the claims are situated on the slopes of Zebra Mountain. However due care will be required to ensure that the mined area blend in well with the natural environment.

2.4 Archeology and Heritage

There are no known artifacts or heritage significance found on the mining claim areas and the holder of the mining claims who is a headman and has been residing in the village for many decades, is not aware of any artifacts or areas of heritage significance, however any discovery or finding will be reported to the relevant authority which is the National Heritage Council of Namibia (NHC). This mitigation measures have been ranked three (3) indicating high level compliance and it should be maintained or even ameliorated.

2.5 Healthy, Safety and Security

Mr. Vahumisa Edward Kaendapeke and his technical and financial partners, intend to provide, health and safety training to their employees in their respective fields and regular site meetings/toolbox talks will be held on different topics and environmental topics will be given the highest priority. The workforce will be provided with the necessary Personal Protective Equipment (PPE). All the mitigation measures have been ranked three (3) indicating high level compliance and it should be maintained or even ameliorated. However, relevant signage should be erected around the mining

claim areas.

2.6 Social

Locals will receive the privilege of employment opportunity, which will improve the livelihoods of many people. Where it is feasible Mr. Vahumisa Edward Kaendapeke will source commodities locally. These mitigation measures are ranked three (3) high level compliance and it should be maintained or even ameliorated.

2.7 Traffic

The mining claim areas have demarcated existing access road, this will prevent the creation of unintended pathways. Vehicles will be kept in good condition, with a dedicated and a qualified mechanic who will be leading the technical team responsible for maintenance. The mobility of the vehicle will be kept to the optimum standard. The mitigation measure for this impact have been ranked three (3) high level compliance and it should be maintained or even ameliorated.

2.8 Noise

Mr. Vahumisa Edward Kaendapeke business operation will be from 08h00 am to 17h00 pm. Personnel will have access to PPE (earmuffs) where feasible. These mitigation measures have been ranked three (3) high level compliance and it should be maintained or even ameliorated.

2.9 Air Quality

The mitigation measure for this impact is ranked three (3) high level compliance and it should be maintained or even ameliorated. There is no dust impact, since there is no active mining operation that have taken place for the past 3 years on the mining claims. However, the situation will change drastically, when mining operation start, hence regular airborne dust sampling should be carried out and if it deems necessary minimal water can be used for dust suppression activities.

2.10 Solid Waste

This impact is ranked three (3) high level compliance and it should be maintained or even ameliorated. The fact that there is no active mining taking place on the two-mining claims it is advised that the proponent place skip containers onsite as receptacles of different kinds of waste i.e. solids; paper; plastics and organics to separate the waste that will be produced at the mine. The company should adopt the RRR (Reduce, Reuse and Recycle) for the purpose of waste management. Training should be conducted to ensure that the employees understand waste fractions and the importance of recycling. The use visual aids; for instance, the use of pictures of the type of waste allowed in the bin should be highly considered.

2.11 Hazardous substances

The hazardous substance impact has been ranked three (3) high level compliance and it should be maintained or even ameliorated. Sufficient storage facility should be provided for these substances.

2.12 Land use alteration and degradation

The mitigation measures for this impact is ranked three (3) high level compliance and it should be maintained or even ameliorated. The mitigation measures for this impact entails issues such as the development of a mining plan to have systematic excavation and trenching, performing site rehabilitation on continuous basis. Mr. Vahumisa Edward Kaendapeke will carry out mining operations with mindfulness to the biophysical environment.

2.13 Existing service infrastructure

This impact is ranked three (3) high level compliance and it should be maintained or even ameliorated. Mr. Vahumisa Edward Kaendapeke has optimised existing infrastructure such as borehole and roads. Plans are underway to explore for water conservation such as rainwater harvesting and recycling wastewater.

2.14 Environmental Management Plan (EMP) Training

Mr. Vahumisa Edward Kaendapeke regularly ensures that employees are cognizant of the relevant health, safety and environmental aspects appropriate to their daily activities. Environmental training has been given the highest priority and is the essence of site meetings/ toolbox talks that is habitually held, hence the mitigation measures for this impact is ranked three (3) high level compliance and it should be maintained or even ameliorated.

2.15 Monitoring

In accordance with the mitigation measures, Healthy Earth Environmental Consultant (HEEC) has been appointed by Mr. Vahumisa Edward Kaendapeke to carry out the monitoring and evaluation services. The site inspections are carried out on a bi-monthly basis, and bi-annual reports are to be submitted to the Office of the Environmental Commissioner, hence this report serving as the first bi-annual report ever, since the proponent was made aware of this requirement.

3. ANNEXURE A

Inspection reports

August 2017 – August 2020 (36 months)

Report on Environmental Monitoring and Evaluation Inspection was carried out on the mining claims 70115 and 70116, belonging to Mr. Vahumisa Edward Kaendapeke, at Swartbooidrift, Otjimuhaka Village, Opuwo District, Kunene region in August 2020.

In accordance with the service level agreement between Healthy Earth Environmental Consultant (HEEC) and Mr. Vahumisa Edward Kaendapeke, the 1st site inspection was carried out in August 2020 at the mining site where the site remains in its intact state. To ensure that the condition of the Environmental Clearance Certificate is in the outlook, it is imperative to take note that the Environmental Management Plan (EMP) is the main document outlining the intended mitigation and remedial actions that should be undertaken in various stages of the project, for this purpose the operation phase of the mining claims 70115 and 70116 belonging to Mr. Vahumisa Edward Kaendapeke at Otjimuhaka Village. The EMP should be viewed as a living and vibrant document that should be modified to improve the continuous mining activities.

To date no mining activities have been undertaken as the holder of mining claims 70115 & 70116, Mr. V. E Kaendapeke was securing the necessary financial and technical partners to commence with mining of dimension stones. The inspection comprised of two components the initial component comprises of ground proofing which includes visual inspection and authentication throughout the mining claim areas and secondly verbal feedback on distinct identified impacts and mitigation measures as defined in the Environmental Management Plan (EMP). Biannual reports will be compiled and submitted to MEFT: DEA once the project commences.

Yours faithfully,
D. Aiyambo
David Aiyambo

4. ANNEXURE B

Site photos of the mining claims 70115 and 70116, belonging to the Mr. Vahumisa Edward, situated at Swaartbooisdrif, Otjimuhaka Village, Opuwo district, Kunene region.

The pegged area demarcating the mining claim area for Mr. Vahumisa Edward Kaendapeke

Typical terrain of the mining claim area

An area with high concentration of blue sodalite within the mining claim areas

Scats of wild animals recorded in the mining claim areas