

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN FOR



NEW APPLICATION for Environmental Clearance Certificate (ECC) to support the operational continuity of the existing Walvis Bay dimension stone processing facility located on state land within Farm No. 38 in the Walvis Bay Rural Constituency, Erongo Region - Namibia

| | |
|--|---|
| ENVIRONMENTAL ASSESSMENT PRACTITIONER | OMAVI Geotechnical & Environmental Services P.O Box 1642, Windhoek Email: info@omavi.com.na Tel: +264814786303 |
| PROPONENT | BC Stone Products (Namibia) (Pty) Ltd P.O Box 4676 Walvis Bay Namibia |
| ECC APPLICATION NO. | APP-00323 |
| SUBMITTED | February 2023 |
| DOCUMENT VERSION | FINAL for MEFT Evaluation |
| Copyright: | <i>This report and the information it contains is subject to copyright and may not be reproduced or copied in whole or part without written consent of the authors.</i> |
| Disclaimer: | <i>The data and information contained in this report is based on information provided by the project proponent, and is deemed to be correct. OMAVI shall not be held liable for any incorrect information/ data provided by the project proponent</i> |

Table of Contents

| | | |
|-------|--|----|
| 1 | INTRODUCTION..... | 4 |
| 1.1 | General..... | 4 |
| 1.2 | Objectives of this document | 4 |
| 1.3 | Why is an Environmental and Social Management Plan (EMP) needed? | 5 |
| 1.4 | About the Project Proponent..... | 5 |
| 1.5 | About the Environmental Assessment Practitioner..... | 5 |
| 2 | PROJECT BACKGROUND AND description OF CURRENT + PLANNED ACTIVITIES | 6 |
| 2.1 | Project location | 6 |
| 2.2 | Project background and Description of activities | 8 |
| 2.2.1 | Scope of current and future activities | 10 |
| 3 | APPLICABLE REGULATORY FRAMEWORK..... | 19 |
| 3.1 | National Legislation | 19 |
| 4 | EMP IMPLEMENTATION strategy AND RESPONSIBILITIES OF KEY PLAYERS..... | 25 |
| 4.1 | Factory Manager | 25 |
| 4.2 | Safety, Health and Environmental (SHE) Officer | 26 |
| 4.3 | Public Relations/ Human Resources Officer (PRO/ HRM) | 27 |
| 4.4 | Walvis Bay Municipality and Walvis Bay Rural Constituency Office | 27 |
| 4.5 | Ministry of Mines & Energy (MME); Ministry of Environment, Forestry & Tourism (MEFT) . | 28 |
| 4.6 | Contractors and sub-contractors..... | 29 |
| 5 | ENVIRONMENTAL AND SOCIAL MANAGEMENT ACTION PLANS | 29 |
| 6 | QUICK GUIDE ON EMP IMPLEMENTATION MONITORING | 57 |
| 7 | CONCLUSIONS AND RECOMMENDATIONS..... | 58 |

LIST OF ABBREVIATIONS

| | |
|------------------|--|
| DEAF | Department of Environmental Affairs and Forestry |
| ESSA | Environmental and Social Scoping Assessment |
| EIA | Environmental Impact Assessment |
| EMRP | Environmental Management & Rehabilitation Plan |
| EMA | Environmental Management Act |
| ECC | Environmental Clearance Certificate |
| I&APs | Interested and Affected Parties |

| | |
|--------------|--|
| MAWLR | Ministry of Agriculture, Water & Land Reform |
| MEFT | Ministry of Environment, Forestry and Tourism |
| MLIEC | Ministry of Labour, Industrial Relations and Employment Creation |
| MME | Ministry of Mines and Energy |
| MWT | Ministry of Works and Transport |
| SWM | Solid Waste Management |



1 INTRODUCTION

1.1 General

This Environmental Management Plan (EMP) report is prepared to support the application for Environmental Clearance Certificate (ECC) for operating the **existing** BC Stone dimension stone processing (i.e., block cutting, trimming, polishing, packaging, distribution) factory located on state land (on Farm No. 38) south-east-east of the central business district of Walvis Bay. Politically and geographically the concerned site falls under the Walvis Bay Rural Constituency in the Erongo Region, and is managed by the Municipality of Walvis Bay.

The report provides a summary of:

- the scope of ongoing and future activities, processes and structures at the factory, including the various technologies used,
- the significant environmental and socio-economic impacts identified,
- recommended pragmatic measures and controls (including key performance indicators which would help evaluate the effectiveness of the impact management measures and controls proposed) for managing identified present and future potential impacts, and
- a guide on who is or shall be responsible for implementing the various aspects of the EMP.

For completeness, this report should be read and evaluated with the accompanying Environmental and Social Scoping Assessment (ESSA) report.

1.2 Objectives of this document

The objectives of this report can be summarised as follows:

- To document the scope of ongoing and/ or current activities, processes, structures, and their spatial extent, which must be covered by the new ECC being applied for
- To provide decision-makers such as the Competent Authority (i.e., the ministry of mines and energy) and the Department of Environmental Affairs and Forestry (DEAF) with clear documentation of the impacts identified, recommended implementable impact management measures and controls, and an indication of roles which are deemed to be key in the implementation of the EMP so that an informed decision can be made on the issuance/ rejection of the ECC.

1.3 Why is an Environmental and Social Management Plan (EMP) needed?

In terms of the Environmental Management Act (EMA), 2007 and the Environmental Impact Assessment Regulations of 2012, the current activities (e.g., transportation, storage, cutting, smoothening and polishing of marble and granite blocks, packaging and subsequent storage of processed natural stone products, and the distribution of final natural stone products) entailed in the current and future operations of the natural stone processing facility are classified as listed activities which may not be carried out without a valid Environmental Clearance Certificate (ECC) issued by the Environmental Commissioner. Listed activities of the Environmental Management Act (EMA), 2007, under which the current and possible future activities are covered are as follows:

- **Activity 2.3: WASTE MANAGEMENT, TREATMENT, HANDLING AND DISPOSAL ACTIVITIES** – *The import, processing, use and recycling, temporary storage, transit or export of waste*
- **Activity 3.1: MINING AND QUARRYING ACTIVITIES** - *The construction of facilities for any process or activities which requires a license, right or other form of authorization, and the renewal of a license, right or other form of authorization, in terms of the Minerals (Prospecting and Mining Act), 1992.*
- **Activity 10.2: INFRASTRUCTURE** – *the construction and operation of various infrastructure for business and industrial use*

To support the application for Environmental Clearance Certificate (ECC), Environmental and Social Scoping/ Impact Assessment, and Environmental Management Plan (EMP) reports must be submitted to the Department of Environmental and Forestry Affairs (DEAF) for scrutinization. This would in turn enable the DEAF to make an informed and knowledge-based decision on whether there is merit to clear the project from an environmental and social sustainability point of view.

BC Stone Products Namibia (Pty) Ltd intends to apply for a new ECC, which would exclusively cover all its current and future operations on the existing Walvis Bay Dimension Stone processing factory located on farm no. 38 and nearby areas.

1.4 About the Project Proponent

BC Stone Products Namibia (Pty) Ltd is a Namibian registered company with local headquarters situated on Farm No. 38 on the eastern outskirts of the harbour and port town of Walvis Bay. The company owns and manages 100% of the Walvis Bay dimension stone processing factory located on Farm No. 38, which is presently the largest dimension stone beneficiation factory in the SADC region.

1.5 About the Environmental Assessment Practitioner

OMAVI Geotechnical & Environmental Services was appointed by BC Stone Products Namibia (Pty) Ltd to undertake an Environmental and Social Scoping/ Impact Assessment (ESA) and

prepare a project-specific Environmental Management Plan (EMP) which would support the application for a new Environmental Clearance Certificate (ECC) for the continued operation of the Walvis Bay dimension stone processing factory.

OMAVI Geotechnical & Environmental Services is a specialist environmental management consulting and advisory entity, with considerable industry experience in environmental management planning, environmental compliance monitoring and management of mineral resources prospecting and mining projects as well as infrastructure development projects. OMAVI's team of scientists carries the right set of interpersonal, technical, and analytical skills which holistically ensure that we understand, in an integrated manner, how a set of planned or ongoing project activities interact with the biophysical, socio-economic, and political landscape within which such activities take place.

2 PROJECT BACKGROUND AND DESCRIPTION OF CURRENT + PLANNED ACTIVITIES

2.1 Project location

The Walvis Bay dimension stone processing factory was commissioned in November 2014 and is situated on a 46Ha portion of land on farm no. 38 in the Walvis Bay Rural Constituency, which is being leased from the state, through the Municipality of Walvis Bay, on a long-term lease basis. The site is located approximately 9 km from the harbour town of Walvis Bay. The approximate corner coordinates of the factory site are summarized in Table 2-1.

Table 2-1. Approximate corner coordinates of the project site

| WALVIS BAY STONE PROCESSING FACTORY | |
|-------------------------------------|--------------------------|
| • | 22.991336°S/ 14.587720°E |
| • | 22.990423°S/ 14.589892°E |
| • | 22.992772°S/ 14.591941°E |
| • | 22.992770°S/ 14.596748°E |
| • | 22.993174°S/ 14.598193°E |
| • | 22.995578°S/ 14.598185°E |
| • | 22.998456°S/ 14.591751°E |

The site can be accessed via the M36 tarred and D1983 salt roads. Based on an assessment of historical satellite imagery in google earth, dating back to 2004, the western and northern portions of the leased project area on which the current BC Stone factory lies had previously been used as a source area for borrow material to service local construction activities. For this reason, the concerned factory site was not in a pristine when BC Stone Products Namibia (Pty) Ltd constructed its dimension stone processing factory as there were already surficial mining activities prior. Project locality and layout maps are provided in **Figure 2.1** below.

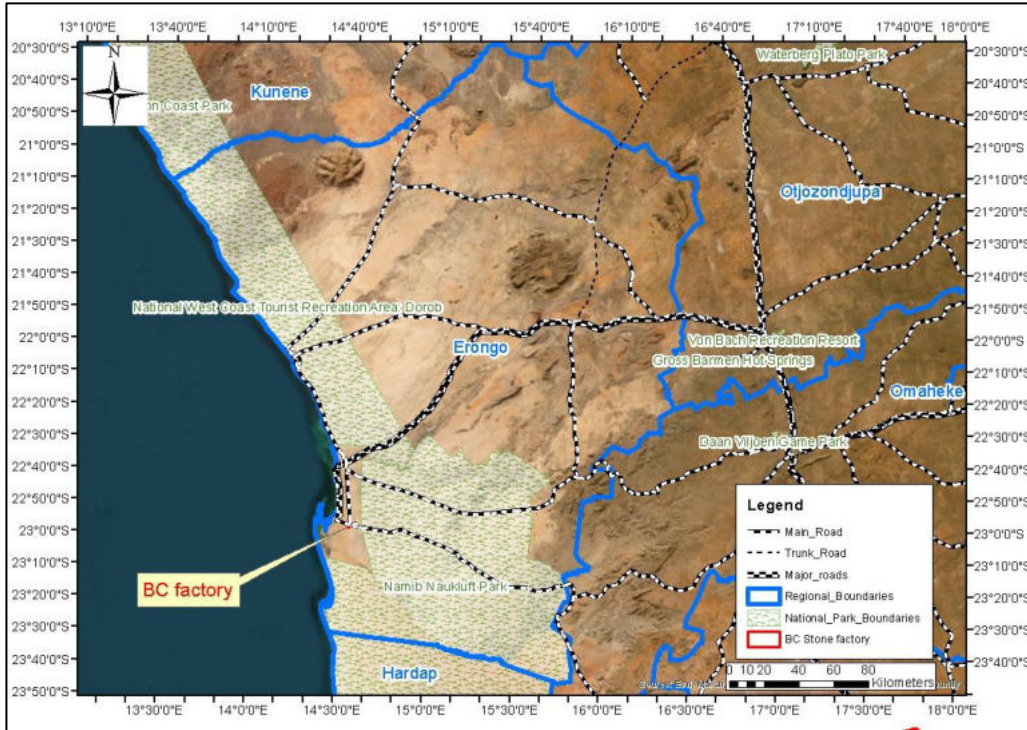


Figure 2.1: Location of the Project Site: BC Stone Processing Factory near Walvis Bay in the Erongo Region.

2.2 Project background and Description of activities

The concerned project site is currently under the custodianship of BC Stone Products Namibia (Pty) Ltd, and initially formed part of an approximately 300-hectare (Ha) piece of land on Farm No. 38 which was leased to Erongo Quarry & Civil Works (Pty) Ltd (EQCW) by the Walvis Bay municipality. EQCW had leased the land from the municipality for the purpose of producing various grades of crushed aggregates and stone slabs from the abundant granite rock formations in the area. A site wide Environmental Clearance Certificate (ECC) had previously been granted to Mr. J. Gurirab of EQCW in July 2012 which covers these activities and all EQCW's activities on the initially leased 300-hectare (Ha) piece of land. However, the scope and spatial extent of this historic ECC has since been amended and reduced to exclusively cover EQCW's activities on a smaller portion land.

In 2014 BC Stone Products Namibia (Pty) Ltd commissioned the largest dimension stone Processing Facility in SADC on the same portion of land and subsequently commenced to operate this Stone Processing Facility under the same ECC. Because of the reduced scope of the ECC held by EQCW, however, and the fact that BC Stone Products Namibia (Pty) continues to fully operate its dimension stone processing factory independently of EQCW, a separate ECC which is independent from EQCW's one is required. This new ECC will be registered under BC Stone Products Namibia (Pty) Ltd and will exclusively cover the full scope of ongoing plus future activities and all existing structures (e.g., boundary fence, stone processing factory, water recycling dams, offices, accommodation facilities, ablution facilities, sewer system, block storage yard, final product storage yard, loading and offloading bays, small mechanical workshop, parking areas, marble & granite mud-drying ponds) plus processes (e.g., primary block cutting; gang saw cutting; smoothing, polishing and final cutting/ trimming of slabs; packaging and distribution of the final stone products) on the 46-hectare (Ha) portion of land which is directly leased by BC Stone Products Namibia (Pty) Ltd from the Walvis Bay municipality. Collectively, this report and the accompanying ESSA will help to guide and inform the following:

- provide management (including supervisors) and workers with a general understanding of the different adverse and positive impacts triggered, or which could be triggered by the current and future operation of the factory
- safe and sustainable operation of the factory in a manner which is aligned with environmental stewardship and environmental protection best practice.
- provide management (including supervisors) and workers with environmental awareness and pragmatic measures for:
 - effective management of various forms of wastes produced and the management of various forms of risks to the environment plus personnel health and safety,
 - optimization of water recycling, re-use and conservation,
 - reduction in reliance on grid electricity
 - response to emergency situations which may pose a hazard to the health and safety of workers and the environment.
- compliance to environmental permitting and auditing requirements of the Walvis Bay municipality and the country at large.

A statistical summary of some key aspects of the Walvis Bay stone processing factory is provided in Table 2-2.

Table 2-2. Factual data for the Walvis Bay stone processing plant

| DATA ATTRIBUTE | PROPONENT'S RESPONSE |
|---|---|
| Type of natural stone processed | Granite & Marble |
| Operating hours of the factory | 24 hours, 7 days |
| Year of commissioning | Commissioned in Nov 2014 |
| Source of Power for the factory | Erongo Red power grid & roof top solar |
| Source of water for the factory | Water supplied by Namwater. |
| Approximate monthly water requirement | Average 1270 units per month |
| Number and capacity (in cubic meters or litres) of water recycling dams | 14 Dams x 500m ³ each = 7 000 m ³ |
| Type of final products produced | Slabs, countertops, cut to size projects, tiles |
| Type of pre-processing technology | Cutting - Gangsaw, circular saw, single wire saw |
| Type of Surface treatment applied to final products | Rust remover, stone sealer, resin & hardner, fiberglass webbing |
| Production capacity in terms of cubic meters or squares of rock processed monthly | 500m ³ |
| % of rock mass that ends up as waste stone scraps | 20-30% (depending on raw material quality) |
| % of rock mass that ends up as waste stone sludge | Approximately 8-10% |
| Total number of employees | 147 |
| Number & % of female employees | 13 Female |
| Number & % of Namibian employees | 95% |
| Number & % of employees who reside on factory site | 5% |
| Current management controls/ measures for scrap metal waste | Scrap metal to be removed by scrap metal contractor |
| Current management controls/ measures for waste or used oils | Used oil to be removed from site by recycling contractor |
| Current management controls/ measures for waste wood | Waste wood are either burned or removed by garbage removal contractor |
| Current management controls/ measures for waste stone offcuts | Stored on site (at this moment) due to shortage of containers worldwide. Usually, packaged into 1m3 bags and shipped offshore for beneficiation |
| Current management controls/ measures for office and domestic waste | Removed by garbage removal contractor |
| Current management controls/ measures for employee health and safety | *Regulations *Safety Officer *Training |
| Mode of transportation of blocks & final products to and from factory, respectively | Local transport contractor |
| List of social corporate activities done to date | *Donation to Round Table- Shacks Burned Twaloloka *Police Station Office Counter Tops *Covid 19 Clinic Kitchen Counter Tops *Blood Transfusion Campaigns |
| Name and main responsibilities of current health, safety and environmental officers | Mr. Louwrence Sibastianus *Promoting Health and Safety awareness *Establishing and Maintaining |

| | |
|---|--|
| | Legal Referenes and appointments *Developing, Implementing and maintaining SHE Policies and Procedures *Conducting Internal organisational Audits *Conducting the training of employees in H & S Environmental processes and procedures *Implementation of Health and Safety Procedure |
| List of procurement opportunities typically available to local contractors or consultants | *Supply of wood for packaging *Fuel supply & recycling *Transport of blocks & final products *Consumables (e.g., PPE, rust removers, others) *On-site security *Cleaning services *earthworks contracting (e.g., spreading of mud at mud-drying ponds) *Consulting and advisory services (e.g., legal, environmental permitting & training, occupational health & safety audits, etc) |

A full description of the scope of activities associated with the current and anticipated future operations and maintenance of this factory is provided in subsections below.

2.2.1 Scope of current and future activities


Typical current and future activities of the natural stone processing factory can be summarised as follows:



- Delivery of 6 to 12 m³ blocks by flatbed interlink trucks to the block storage yard at the processing facility on the outskirts of Walvis Bay
- Gang sawing of blocks into slabs, whereby up to 120 steel blades work their way through a single block of stone (in the case of slabs) or up to a certain depth equal to the width of the required tiles (in the case of tiles)
- Cutting of slabs to desired sizes using various forms single blade cutters
- Smoothing, polishing, and trimming of surfaces and edges plus addition of web-mesh for additional product durability. Polishing is achieved by passing the slab, strip or tile through a series of high-speed heads containing varying degrees of cardurundum stones which ensure effective grinding and smoothing of the stone.
- Packaging and warehousing of final products and some of the stone offcuts/ breakoffs. Final products such as slabs, tops, cladding stone and tiles are typically packed in wooden cardboards and wrapped in shrink wrap material, which are then packed on wooden pallets ready for offsite transportation. On the other hand, some of the stone break-offs are typically packaged in 1 ton polypropylene bags while others are currently used to backfill depressions and/ or create earth platforms within the premises.

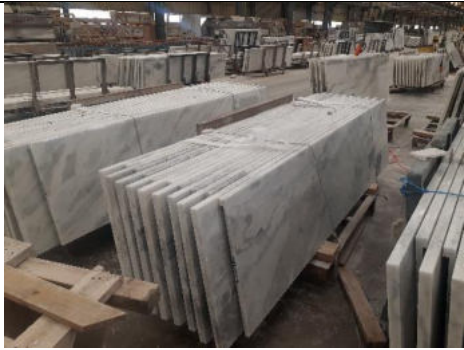

- Loading of packaged final products and some of the stone breakoffs into 6m and 12m containers for transportation to markets (both local and overseas via the Walvis Bay Port). The distribution of these products is facilitated by office personnel based in Walvis Bay and Windhoek.
- During the block and/or slab cutting, polishing and trimming processes water is continuously sprinkled onto cutting, trimming machines for cooling, lubrication and dust suppression purposes. This slurry/mud containing water is collected via an existing network of concrete lined drainage trenches installed throughout the processing facility which drain towards a centralized trench that delivers all the mud-concentrated process water to a designated water recovery structure comprising 14 concrete-lined water recovery/ recycling dams. In these dams the water flows in a zig-zag pattern through several dams, and as that happens sedimentation of the suspended marble/ granite fine particles takes place. The relatively clear water is pumped back into the processing plant for reuse.
- Periodic recovery of marble/ granite mud from the water recovery/ recycling dams, through a filter press system, followed by on site disposal and subsequent spreading of the mud within the 7 designated mud-drying ponds located on the stone processing premises.
- Based on approximate figures provided by the project proponent, about 51% of all material extracted from dimension stone quarries typically turns into waste (mainly as waste rock and to a limited extent as mud/ dust) during the extraction operation, and roughly 40% of the material that arrives at dimension stone processing facilities end up as waste (primarily as stone breakoffs/ cutoffs, and mud or dust) during the processing operation. Therefore, the typical overall percentage recovery of the dimension stone production process is only about 30%, signifying the significant volumes of resources lost and the large amounts of natural stone waste generated. This natural stone waste is typically in addition to other forms of waste such as used tyres, used oils and lubricants, scrap metals, waste wood, office/ domestic waste or litter, and sewage.
- Further to the key activities associated with the production process, the following support activities are regularly carried out on the same site:
 - On-site sorting of waste (scrap metals, used oils and lubricants, wood, stone off-cuts, tyres, domestic waste, etc.)
 - Mechanical maintenance of fixed and mobile machinery on site
 - Civil maintenance of buildings, access roads, and sewage systems
 - Maintenance of electricity infrastructure
 - Pumping of sewage from the sewer dams for off-site disposal by designated local contractors.



Each of these activities involves certain material inputs and outputs which are summarised in the table below.


Table 2-3. Summary of project activities with their respective inputs and outputs


| ACTIVITY - DESCRIPTION | INPUTS | OUTPUTS |
|---|--|---|
| Based on current practices and activities | | |
| <p>Hauling of blocks to factory and subsequent offloading and stockpiling of blocks at the block storage yard</p>  | <ul style="list-style-type: none"> - Contractor interlink flat deck trucks, front-end loaders - Designated block stockpiling bay - Access, district & national roads from source quarries | <ul style="list-style-type: none"> - Block stockpiles at designated block storage yard/ bay |
| <p>Loading blocks onto different gang sawing stations and subsequent gang sawing of blocks into slabs</p> | <ul style="list-style-type: none"> - 6 to 12 m³ sized marble/ granite rectangular &/or square blocks - Lifting and loading equipment such as heavy duty overhead crane & forklifts for moving blocks from storage yard/ bay onto gang sawing stations - Multiple stations of heavy duty gang-saws - Electricity to power cutting machinery - Healthy and trained personnel for programming & operating cutting machinery | <ul style="list-style-type: none"> - Slabs, stone break-offs and mud from the block cutting process - Wet marble/ granite mud generated during the cutting process. Such wet dust remains suspended in the process water and drains to sedimentation concrete lined dams. Due to sedimentation the dust (solid) settles down and the transparent supernatant water is pumped back for reuse to sprinkle the blocks.. Thus, about 20 - 25 % of the marble block processed results into marble slurry while about 5 – 10% end up as stone break-offs (from broken edges & slabs). The marble slurry has nearly 35 - 45% |

| | | |
|--|--|---|
|  | <ul style="list-style-type: none"> - The water requirement is fulfilled through a network system of water supply pipelines that is directly connected to Namwater's fresh water supply system. - Water sprinkling system for continuous sprinkling of water onto blocks for lubrication, cooling & dust suppression | <p>water content. 5-7% of processed marble block turns into polishing waste upon grinding & polishing of the block. Current practice at the facility involves pumping the settled mud/ slurry from the concrete lined dams onto the mud-drying ponds. The mud is then regularly spread over the pond by means of a front-end loader. The discharge pipes through which this mud or slurry discharged onto the ponds are rotated between the 7 mud drying ponds.</p> |
| <p>Cutting of slabs to desired sizes and shapes using various forms of vertical and horizontal single blade cutters</p>  | <ul style="list-style-type: none"> - Slabs with irregular edges, not shaped - Electricity to power cutting machinery - Healthy and trained personnel for programming & operating machinery - Water sprinkling system for continuous water sprinkling for lubrication, cooling & dust suppression | <ul style="list-style-type: none"> - 20, 25 and 30 mm thickness tops which have been sized but still have irregular edges - wet marble/ granite mud suspended in process water - stone break-offs and off-cuts |
| <p>Smoothing, polishing, trimming of surfaces and edges, removal of rust plus addition of web-mesh for additional product durability.</p> | <ul style="list-style-type: none"> - polishing and trimming machines - Resin to attach the web-mesh on the underside of slabs - Unshaped table tops, tiling tops, cladding slabs | <ul style="list-style-type: none"> - polished, sized and trimmed final & market ready products (tiles, table tops, cladding stone) - stone break-offs and off-cuts |

| | | |
|---|---|--|
|  | <ul style="list-style-type: none"> - Electricity to power polishing, trimming and web-meshing machines - Water-based rust remover - Web-mesh - Healthy and trained personnel for programming & operating machinery | <ul style="list-style-type: none"> - waste web mesh, resin and rust remover |
| <p>Packaging and warehousing of final products and slab offcuts/ breakoffs</p>  | <ul style="list-style-type: none"> - Wood for assembling packaging cardboards and pallets - Plastic, wrapping tape & machinery for wrapping for packaging final products - Healthy and trained personnel for programming & operating machinery - 1 ton polypropylene bags for packaging stone break-offs/ off-cuts - forklift to move & load final products & bagged stone break-offs/ off-cuts - Concrete lined warehousing space - Final product loading bay - Diesel to power forklift - Electricity to power packaging, wrapping machinery | <ul style="list-style-type: none"> - Packaged (sealed and packaged on pallets) final products - Stone break-offs/ off-cuts bagged in 1 ton polyester bags - Waste wood & waste shrink wrap plastic from the wrapping & packaging operations |

| | | |
|---|---|---|
|  | | |
| <p>Loading, transportation & distribution of packaged final products and stone breakoffs to markets</p>  | <ul style="list-style-type: none"> - Interlink flat deck trucks & forklifts - Diesel to power trucks/ forklifts' - 6m & 12m containers for transporting finished products as well as bagged stone off-cuts - Loading bays & access road from B2 tarred road to warehouse loading bay - Healthy and trained personnel for operating machinery - Personnel for handling all necessary paperwork | <ul style="list-style-type: none"> - Loaded containers in the Walvis Bay port, or on trucks destined for local and landlocked countries in SADC |
| <p>Drainage of mud-concentrated process water to water recovery dams and the subsequent removal of marble/ granite slurry from the water recovery/ recycling dams, followed by on site discharge of moist mud, and subsequent spreading of the mud and/ or dust within the mud-drying ponds</p> | <ul style="list-style-type: none"> - Industrial slurry/ water pumps and industrial PVC pipes - Front end loader or excavator to - Power supply to power water & mud/ slurry pumps - Concrete water drainage trenches & water collection/ recovery dams - Water to drain suspended mud to water recovery dam. | <ul style="list-style-type: none"> - Recovered moist marble/ granite mud which is then discharged to the mud-drying ponds - Recovered relatively clear water with low solids content ready to be re-used in the factory for cutting & polishing operations - Marble/ granite dust upon drying of the |

| | | |
|---|--|--|
|  | <p>- Mud-drying ponds with engineered impoundment walls (e.g., wall height of about 3m with crest width of at least 1.5m to permit easy maintenance and shirting of slurry discharge pipes), access ramps which are well compacted and surfaced with crushed stone off-cuts to prevent excess dust generation during entry by front-end loaders. At the time of this assessment, the mud-drying ponds were not well engineered nor well managed as impoundment walls were irregular, and access ramps did not have crushed stone cover for dust suppression.</p> | |
| <p>Factory support activities & services (e.g., office work, cleaning, civil & mechanical maintenance, accommodation)</p> | <ul style="list-style-type: none"> - Office & cleaning personnel - Technical personnel for civil & mechanical maintenance - Containerized and corrugated sheet structure mechanical workshop equipment & machinery - Plastic water tanks for water supply to mechanical workshop area | <ul style="list-style-type: none"> - Office & cleaning litter - Scrap metals, used tyres, used oils & construction waste from civil & mechanical maintenance works - Domestic waste from on-site workers accommodation - Waste water from cleaning |

| | | |
|--|--|--|
|  | <ul style="list-style-type: none"> - Civil, mechanical (grease, oils) and cleaning chemicals | |
| <p>Generation of various other forms of waste in the form of, in addition to marble/ granite dust & mud:</p> <ul style="list-style-type: none"> - office/ domestic litter - Used oils, grease, other lubricants - Scrap metals - Waste wood - Waste plastic & polyester - Waste resin & web mesh - Construction rubble - Cleaning waste such as waste water - Used tyres, batteries & empty containers <div data-bbox="206 898 714 1283">  </div> | <ul style="list-style-type: none"> - Office, domestic, workshop and factory supplies - Diesel, oils & grease for operating and maintaining mobile machinery - Mechanical workshops for maintenance purposes - Store rooms for safe storage of cleaning and block processing chemicals (e.g., rust removers and resin) - Civil renovations & maintenance works | <ul style="list-style-type: none"> - Various forms of waste as listed in column 1 Scrap metals from replacement of vehicle & various parts in the processing facility - Waste wood, plastic & polyester from product packaging activities - Waste resin & web-mesh from polishing & meshing activities - Used grease, resin & web mesh containers |

| | | | |
|---|--|--|--|
|  | | | |
|---|--|--|--|



3 APPLICABLE REGULATORY FRAMEWORK

3.1 National Legislation

A review of local legislations, policies and guidelines which are applicable to the safe and sustainable operation of the existing natural stone processing factory is provided in this chapter. This review serves to inform the project Proponent, Interested and Affected Parties and the decision makers at the Competent Authority (i.e., the Ministry of Mines and Energy) and DEAF of the legal requirements and expectations, as laid out in terms of these instruments, to be fulfilled during the operation of the facility. It is worth noting that aspects of these laws are legally binding to the proponent, and therefore make the EMP a legally binding document which may be utilized in court and in any other form of legal proceedings in cases of non-compliance. The applicable local (national) and where necessary regional/ international legislation, policies and guidelines are given in Table 3-1.

Table 3-1. Applicable legislation (laws and regulations), policies and guidelines to the current operations of the natural stone processing factory

| LEGISLATION CONSIDERED | CUSTODIAN ORGAN OF STATE | ASPECT OF PROJECT |
|---|--|---|
| Relevant Acts | | |
| Environmental Management Act No. 7 of 2007 and its 2012 EIA Regulations Government Notice 28-30 (Government Gazette 4878) | MEFT: DEAF | The proponent has the responsibility to ensure that ongoing and possible future activities, as well as the proposed impact management measures, conform to the principles of this Act. In developing this EMP, OGGC has been cognizant of these requirements, and accordingly the scoping assessment process adopted has been undertaken in conformance with this Act and the EIA Regulations (2012). Several listed activities in terms of the Act, are triggered by the ongoing activities as set out in subsequent tables. |
| Mineral Prospecting & Mining Act (Act no. 33 of 1992) | MME (Mining/ Mines Directorate) | Sections 50, 52, 54, 57 and 130 of this Act sets out provisions for environmental management during activities arising from mineral exploration, quarrying/ mining and beneficiation. These provisions were considered during the ESSA as well as in the drafting of this EMP. |
| Charter for Sustainable and Broad-Based Economic and Social Transformation in the Namibian Mining Sector | The Namibian Chamber of Mines of Namibia | This charter aims to facilitate meaningful participation of historically deprived Namibians in the mining and mineral beneficiation industry. It has effectively been developed as an instrument to effect transformation and sets specific targets for mineral license holders and Operators of mineral processing facilities active in Namibia This charter has relevance to this project as it advocates for previously disadvantaged Namibians to actively participate in the mineral resources beneficiation processes; whether it be through direct involvement in |

| LEGISLATION CONSIDERED | CUSTODIAN ORGAN OF STATE | ASPECT OF PROJECT |
|---|---|---|
| Relevant Acts | | |
| 2014 – 2020 (The Namibian Mining charter) | | mineral beneficiation or through the provision of support services and goods during the beneficiation of mineral resources. |
| The Minerals Policy of Namibia, 2003 | MME | This policy sets out guiding principles and directions while communicating the values of the Namibian people in pursuit of the development of the mining and mineral resources beneficiation sector. |
| Pollution Control & Waste Management Bill | MEFT and MAWLR (Department of Water Affairs) | This Bill serves to regulate and prevent the discharge of pollutants to air and water as well as providing for general waste management. The ongoing beneficiation of dimension stone entails some degree of discharging gaseous pollutants into air from emissions from mobile machinery, as well as generation of dust from the mud-drying ponds and unpaved access roads. The ongoing activities at the mechanical maintenance workshop and usage plus storage of oils on site also entail possible contaminants to runoff and any groundwater due to oil spillages which may occur during such operations. |
| Water Act (No. 54 of 1956) | MAWLR: Department of Water Affairs | Makes provision for several functions pertaining to the management, control and use of water resources, water supply and the protection of water resources. This has relevance to this operation as the proponent is mandated to prevent any potential pollution of groundwater and surface water, and to ensure that water is used in a sustainable way through practices of minimizing primary water inputs, and optimizing water recycling, etc. |
| Water Resources Management Act (Act No. 11 of 2013) | | This Act provides a framework for managing water resources based on the principles of integrated water resources management. It provides for the management, development, protection, conservation, and use of water resources. Should the proponent wish to undertake activities involving water abstraction and/or effluent discharge, the relevant permits will have to be applied for through the Department of Water Affairs. Primary water for the beneficiation facility is directly sourced from the NAMWATER line. The current modus operandi of the factory places emphasis on water conservation by ensuring that process is recycle and re-used as much as practically possible to minimize primary water intakes. |
| | | The Regional Councils Act legislates the establishment of Regional Councils that are responsible for the planning |

| LEGISLATION CONSIDERED | CUSTODIAN ORGAN OF STATE | ASPECT OF PROJECT |
|--|--------------------------------------|--|
| Relevant Acts | | |
| Regional Councils Act (Act No. 22 of 1992) | MURD | <p>and coordination of regional development policies, and for the overall creation of enabling environment for the effective implementation of developmental projects within the regions. The main objective of this Act is to initiate, supervise, manage, and evaluate development in the regions.</p> <p>The relevant Regional Council for this project is the Erongo Regional Council which is an I&AP and has been provided with the opportunity to provide inputs into this study. This Act is particularly also relevant to this project because the concerned land belongs to the state, under the management of the Walvis Bay Municipality and the Walvis Bay Rural Constituency.</p> |
| Public Health Act (Act No. 36 of 1919) | MoHSS: Occupational Health | <p>This Act serves to protect the public from nuisance and states that no person shall cause a nuisance or shall suffer to exist on any land or premises owned or occupied by him or of which he is in charge any nuisance or other condition liable to be injurious or dangerous to health.</p> <p>The proponent must ensure that the facility continues to be operated in a way that is safe and healthy for both the employees, visitors and the general public. Noise and dust emissions which could be considered a nuisance and/ or a health risk ought to be kept to acceptable levels. This is applicable during the ongoing processing activities of block lifting, cutting, sawing, polishing and packaging which entail usage of dangerous machinery that could cause severe injuries or even fatalities. Exposure to dust is also considered a health hazard</p> |
| Labour Act, 2007 | MLIEC | <p>Sections 3, 4, 5, 11, 16, 23-27, 44 and 135 of this Act make provision for a number of key labour related practices and requirements for all persons employed within the Republic of Namibia. Collectively, these sections regulate safety, health, hygiene, sanitation, and welfare of persons employed.</p> <p>The proponent is expected to comply with the above provisions and as such the above provisions were accounted for in this report and the accompanying ESSA.</p> |
| Relevant Guidelines, Policies and Regulations | | |
| Mine Health & Safety | MME: Mine Safety & Services Division | These set of regulations are aimed at ensuring that mines and any related mineral beneficiation facilities are |

| LEGISLATION CONSIDERED | CUSTODIAN ORGAN OF STATE | ASPECT OF PROJECT |
|---|--|---|
| Relevant Acts | | |
| <p>Regulations (under section 138A of the Mining Act, 1992)</p> | <p>MoHSS: Occupational Health Division</p> | <p>operated in a safe manner to prevent fatalities, injuries, and long-term safety & health hazards. The regulations make provision for:</p> <ul style="list-style-type: none"> • Employee's right to leave unsafe working places • Obligation of a mine/ process facility manager to provide for all safety measures in a mine or processing facility • Reporting of accidents to the chief inspector and keeping a record of such accidents • Requirements for the mine/ process facility manager to provide occupational health services at area of mining activity • Ensure that the mine/ process facility manager provides first aid and firefighting equipment and procedures where exploration/ quarrying activities are being conducted <p>All the above-mentioned provisions are relevant to this project and were thus considered in the EMP.</p> |
| <p>Hazardous Substance Ordinance, No. 14 of 1974</p> | <p>MoHSS</p> | <p>The ordinance provides for the control of toxic substances. It covers manufacture, sale, use, disposal and dumping as well as import and export. Although the environmental aspects are not explicitly stated, the ordinance provides for the importing, storage, and handling.</p> <p>This Ordinance is relevant to the project under review as potentially hazardous substances such as stone polishing resin, rust removal chemicals, oils and other lubricants are stored and utilized on the processing facility site.</p> |
| <p>National Solid Waste Management Strategy of Namibia</p> | <p>MEFT and Local Municipalities</p> | <p>The Vision of this Strategy is for Namibia to become the leading country in Africa in terms of standards of solid waste management by 2028.</p> <p>The Specific Objectives of the Strategy are:</p> <ol style="list-style-type: none"> 1. To strengthen the institutional, organisational and legal framework for solid waste management, including capacity development. 2. To install a widespread culture of waste minimisation and to expand recycling systems. 3. To implement formalised solid waste collection and management systems in all populated areas, including under the administration of Regional Councils. 4. To enforce improvements in municipal waste disposal standards. |

| LEGISLATION CONSIDERED | CUSTODIAN ORGAN OF STATE | ASPECT OF PROJECT |
|--|---|---|
| Relevant Acts | | |
| | | <p>5. To plan and implement feasible options for hazardous waste management including healthcare waste management</p> <p>According to the management of BC Stone Products the current processing of dimension stone blocks results in approximately 20 – 30% waste as stone break-offs and about 10 – 20% as dust or mud. Hence, in total the percentage of solid waste produced from the cutting, sawing, shaping, and sizing operations of the natural stones is approximately 50%. This is a significant quantity of solid natural stone waste, in addition to other forms of solid wastes such as office/ domestic litter, waste wood from packaging operations, scrap metals, used tyres, etc.</p> |
| The Mineral Beneficiation Strategy of Namibia | <p>MME</p> <p>Ministry of Industrialization and Trade (MIT)</p> <p>Namibia investment promotion and development board</p> | <p>This national strategy was developed and launched in 2021 through collaboration between Ministry of Mines and Energy and the German Corporation for International Cooperation (GIZ), and aims to facilitate the realisation of full social and economic potential that can be derived from Namibia's minerals and to promote investment, trade and industrial development.</p> <p>This strategy provisionally identifies a selection from diamonds, coloured gemstones, zinc, industrial minerals (gypsum, limestone), dimension stone, iron and steel foundry products, battery minerals (lithium and graphite) and salt as pilot projects for mineral beneficiation in Namibia. The BC Stone Products dimension stone processing factory in Walvis Bay has thus far proven to be a flagship project in regard to local beneficiation of dimension stone.</p> |
| Phase 3 to 5 – Best Practice Guide - Environmental Principles for Mining in Namibia during construction, operation and closure | MEFT and MME | This best practice guide provides guidelines on integrated waste management for mining related processes during the construction, operation, maintenance of mining support infrastructure. The guidelines further consider closure and rehabilitation of mining and mineral beneficiation projects, which are equally relevant to this project. |
| Mine Residue – Code of | MME and MEFT | Provides guidelines on the deposition and management of mine and beneficiation process residue in South Africa. In the absence of a local standard, this standard therefore becomes relevant to some extent as a guide for the design, construction, and operation of new and |

| LEGISLATION CONSIDERED | CUSTODIAN ORGAN OF STATE | ASPECT OF PROJECT |
|-----------------------------|--------------------------|--|
| Relevant Acts | | |
| Practice (SANS 10286:1998). | | existing mine/ mineral processing residue facilities in Namibia. |

The current and future activities associated with this project are expected to trigger the listed activities summarised in Table 3-2.

Table 3-2. Summary of listed activities triggered or likely to be trigger by current and future process at the Walvis Bay Stone Processing Factory

| DESCRIPTION OF LISTED ACTIVITY | RELEVANCE OF LISTED ACTIVITY |
|--|---|
| The construction and operation of facilities for waste sites, treatment of waste and disposal of waste | <p>The recommendation to extend and connect the site's sewage system to that of the proposed Green Valley suburb once municipal services have been fully installed and commissioned at the latter suburb would trigger earthworks and construction activities.</p> <p>The operation of the factory for natural stone beneficiation purposes as well as the associated generation of granite/ marble dust or mud waste bears relevance.</p> |
| The construction of facilities for any process or activities which requires a license, right or other form of authorization, and the renewal of a license, right or other form of authorization, in terms of the Minerals (Prospecting & Mining Act), 1992 | The current activities require environmental clearance to allow the continuation of the factory's operation. |
| The storage and handling of a dangerous goods, including petrol, diesel, liquid petroleum gas or paraffin, in containers with a combined capacity of more than 30 m ³ (30 000L) at any one location | <p>Significant quantities of resin are stored on site in sealed containers to be used in the polishing of slabs, table tops, cladding stone and tiles. Resin is also used together with a spider-type mesh to improve the structural integrity of finished products.</p> <p>Some amount of new and used diesel and grease plus other lubricants are also stored on site. Some quantities, although not too significant, is stored on site for some time prior to its offtake by designated offtakes</p> |
| Land use and development activities: The rezoning of land from open space to any other land use | Before construction of the factory, the project site was vacant and open space. Since the commissioning of the factory, the land use has changed to a heavy-duty industrial land use |

| DESCRIPTION OF LISTED ACTIVITY | RELEVANCE OF LISTED ACTIVITY |
|--|--|
| Water resource developments: Construction and operation of any industrial and domestic wastewater treatment plants and related pipelines | The current facility operates 14 concrete lined dams for continuous process water recycling. This practice is expected to continue over the operational lifespan of the factory. |

4 EMP IMPLEMENTATION STRATEGY AND RESPONSIBILITIES OF KEY PLAYERS

The Environmental Assessment Practitioner (EAP) has identified the Plant/ Factory Manager; the Safety, Health and Environment (SHE) Officer; and Public Relation Officer (PRO) or Human Resources Manager (HRM) as key role players in the implementation of the environmental management plan for the stone processing factory and associated infrastructure. At the time of compiling this report, the positions for Public Relation Officer (PRO) or Human Resources Manager (HRM) were occupied by one person, which is acceptable practice in industry.

A list of specific responsibilities to be carried out under each position are provided below. It should also be noted that the above-mentioned roles are delegated roles and therefore BC Stone Products as an entity is ultimately responsible and legally compelled for implementing the EMP. Responsibilities of other role players and stakeholders who are deemed pertinent to the effective implementation of the EMP are also listed below.

4.1 Factory Manager

This Factory Manager is and will be responsible for the following:

- Managing/overseeing the implementation of this EMP and ensuring that the EMP is reviewed bi-annually or as and when changes happen to the scope of operations, and where necessary is updated as more or new data and information is collected or becomes available.
- Issuing fines to or formally disciplining employees who contravene EMP requirements and if necessary, removing such individuals from site completely where necessary.
- Setting up and managing the schedule for the day-to-day activities; ensuring that standard operating procedures such as daily safety talks and briefs are held and that such practice is consistently enforced, and recommendations implemented.
- Liaison with different stakeholders such as government inspectors, neighbouring property owners, regulators, etc to help nurture positive and good working/ business relationships.
- Ensuring all incidents are recorded, documented, and reported to the relevant regulating authorities, and that resources to correct or rectify such incidences are availed timeously .
- Developing safe work and waste disposal procedures and schedules.

- Ensuring that all compliance permits required for the operation are obtained timeously, are valid and are always available on site for inspection. Such permits include the ECC, SHE related files, Oil storage certificate, and Export Permits for blocks and semi-processed products.
- Dispute resolutions with various stakeholders
- Ensure that budgets are allocated every quarter or annually for:
 - personnel training on various aspects (safety, environmental, teamwork, community relations and job-specific trainings) of the factory's operation
 - procuring appropriate and adequate PPE and machinery

4.2 Safety, Health and Environmental (SHE) Officer

The SHE Officer will be responsible for the following:

- Planning, conducting and signing off site inductions to the workers on-site and visitors to the worksite(s).
- Developing area-specific safety, health and environmental work procedures and manuals for all active work sites, as well as quick SHE-related checklists that workers and visitors/ contractors may use for specific job risk assessments.
- Recording and reporting all SHE related incidences on site together with the assistance of the Factory Manager.
- Availing adequate budgets for the implementation of the EMP, annually.
- Always ensure availability of all required PPE for employees and visitors
- Ensuring that the requirements of the EMP are adhered to during the various listed activities throughout the operational life span of the facility.
- Continuously implement and refining of the monitoring programs outlined in the EMP and regularly giving feedback on these to in-house management and regulators for key decisions to be made.
- Ensure that trucks for delivering waste, final products or blocks are not overloaded.
- Keeping records of the type and volume of waste collected for recycling purposes.
- Conducting, organizing and coordinating in-house environmental awareness and environmental best practice trainings
- Management of emergency situations
- Ensuring all relevant personnel have received training on environmental related issues prior to commencement of employment, and that they are given refresher courses regularly on such aspects
- Undertake site audits on SHE related aspects on a regular basis
- Ensure that bi-annual compliance audits are undertaken by an independent EAP and that findings from such audits are compiled into a compliance audit report which must subsequently be availed to the DEAF.
- Ensure that contracts entered into with contractors include the EMP requirements as key and integral components.
- Introduce, maintain and manage compliance-incentives for employees and contractors

4.3 Public Relations/ Human Resources Officer (PRO/ HRM)

The Public Relation Officer is and will be responsible for the following tasks:

- Undertakes full accountability for all official communications on behalf of BC Stone Products.
- Managing relationships and dispute issues with the general public and different stakeholders.
- Preparing, presenting and submitting public relations reports, if required, to Management and the board.
- Ensuring that an in-house and external complains log book is kept and that issues raised internally are rectified and attended to
- Collaborating with in-house personnel and maintaining project-related open communication among personnel.
- Ensuring timely communication or notices of any special planned activities (e.g., any major upcoming construction works) to interested and affected parties, including neighbours and regulating authorities
- Management of personnel professional development, including budgeting for such
- Community consultations and complaints handling

4.4 Walvis Bay Municipality and Walvis Bay Rural Constituency Office

These organs of state are and will be responsible for the following:

- Ensure that all waste management measures are being exercised correctly, and where necessary provide guidance on corrective actions required
- Monitor, on a quarterly basis, the overall implementation of the EMP. Highlight shortfalls where such are identified and recommend corrective measures
- Actively participate in stakeholder forums concerning the factory
- Make use of the grievances mechanisms (e.g., complains book) to communicate issues of non-compliance or shortcomings to the Proponent and/ or to relevant authorities
- Monitor legal compliance.
- Review environmental performance and compliance audit reports submitted to the regulators
- Sanction poor performance and non-compliance where appropriate through directives, penalties and fines
- Provide necessary administrative and permitting support to the project proponent where necessary in a timeously manner so as not to hinder production.

4.5 Ministry of Mines & Energy (MME); Ministry of Environment, Forestry & Tourism (MEFT)

The Competent Authority (MME) and the MEFT have key responsibilities to enforce compliance to the requirements of the EMP by:

- Ensure that annual inspections of the facility are held, and that any significant and relevant impact prevention, corrective or enhancement measures are strictly enforced.
- Raise awareness and share any changes in policies and regulations through various media platforms, awareness raising forums, and written communications to industry players.
- Regulation and management pollution control measures through the enforcement of non-compliance fines for the dimension stone industry, setting and enforcing legal limits to pollution based on industry standards, and similar practices elsewhere.
- Timeously formulating and enforcing regulations which would-drive research and cross-cutting industry sector collaborations (such as between cement & brick/ concrete/ pavers manufactures and the dimension stone processors) to explore and facilitate possible off-take and re-use of natural stone dust from dimension stone processing facilities. In New Delhi – India, for instance, the government has made it mandatory for the following practices as pragmatic measures to improve management of natural stone dust:
 - All ordinary portland cement manufacturing unit utilize about 10-12% marble slurry from local dimension stone processing facilities. This had in turn reduced the quantities of marble dust disposed off.
 - All the Ordinary Portland Cement manufacturer have replaced OPC clinker with 3 to 5% of marble slurry during clinker grinding as a performance enhancer after reduction in moisture to the requirement of cement manufacturers and Indian Standards IS: 8112:1989 as amended.
 - Marble slurry as binder: sand ratio (1:3) shall be utilized as building material as per IS: 3466-1988 specifications. The marble slurry as low cost binder (Indian patent no. 189030) shall be utilized for non-load bearing structures as per Public Work Department (PWD) specifications. Technical work carried out by Shri Sampat Lal Surana on "Binder made from Marble Slurry: a solution to the problem" justified this practice.
 - Assures that any entrepreneur who wishes to manufacture Calcium Nitrate fertilizer from marble slurry waste may approach the concerned State Pollution Control Board (SPCB)/Pollution Control Committee (PCC) for obtaining consents as required for establishment of such recycling industry. SPCB/PCC considers the application on priority basis.

4.6 Contractors and sub-contractors

- Implement and monitor various technical parameters related to soil preservation/ protection/ pollution; contractor employee health; water resources management; waste management; mechanical designs and maintenance of various equipment used on site.
- Implement safe working procedures and risk assessment procedures prior undertaking any work on the BC Stone premises.
- Record and report all incidences and near-miss incidence to the Factory's SHE officer.
- Ensure that all their employees have been given training on the EMP requirements.
- Abid to all contractual requirements pertaining to SHE-related components as stipulated in their scope of work contracts entered into with BC Stone Products

5 ENVIRONMENTAL AND SOCIAL MANAGEMENT ACTION PLANS

The environmental management plan actions for the enhancement of potential benefits and mitigation of potential adverse impacts are presented in the table below. The Table contains the following aspects:

- Project-related aspects, issues or activities for which management actions are required. Note that these are not listed in any particular order of importance or priority;
- Proposed impact enhancement/ mitigation measures;
- Key performance indicators for monitoring success levels of management actions;
- Responsible person(s) for implementing the proposed impact management actions;
- Resources (physical, knowledge/ skills as well as time) required for effectively implementing management actions and monitoring and;
- Implementation timeframes for the proposed management actions.





Table 5-1. Impact Management Plan Actions for the BC Stone Products Dimension Stone factory in Walvis Bay

| Aspect | Impact | Mitigation / Enhancement Measure(s) | Key Performance Indicator (KPI) | Responsible Party | Resources Required | Timeframe of management action(s) |
|------------------------|--|---|--|--|--|---|
| ADVERSE IMPACTS | | | | | | |
| Soils | <ul style="list-style-type: none"> - Topsoil has been and continues to be lost during occasional backfilling works with natural stone off-cuts if top - The natural soil structure has been damaged from excavation works, compaction works & traffic compaction over driveways, near the mud-drying ponds where frequent movement of front-end loader occurs, and around the block storage yard and final product loading bays due to frequent movement of trucks inside the factory site - Potential calcification of | <ul style="list-style-type: none"> - To prevent the increase in footprint of disturbed area use only existing access roads within and around the site's boundary - Areas with natural soils which require backfilling with stone off-cuts must first be stripped of top-soil. Such top-soil should be stockpiled and preserved in a designated and protected area within the site for possible later usage in site rehabilitation works. This practice must be adopted going forward especially in areas where natural soils still exists. - Where soils are contaminated from oil spillages such soils should be periodically (monthly) scooped away and disposed off in the correct cells at the Walvis Bay landfill | <ul style="list-style-type: none"> -Record any evidence of new traffic tracks outside of designated access roads by means of photographs -Record evidence of new erosion gullies or channels next to access roads or excavated or backfilled areas (photographs) -Record evidence of soil contamination and pollution - Monitor depth of soil profile and contamination levels every 6 months (i.e. during the bi-annual compliance audits) & submit such with bi-annual | <ul style="list-style-type: none"> -SHE Officer (to seek input from Consultants with Soil Conservation knowledge) -Hired soil conservation scientist to develop a site-specific soil preservation and soil recovery plan | <ul style="list-style-type: none"> -Technical Staff (Soil Conservation Scientist to offer training and monitor depth profiles of soils as well as contamination levels) - Budgets and buy-in from management to seek services of such specialists & effect monitoring. | <ul style="list-style-type: none"> -Throughout the operational lifespan of the factory -Once every 6 months for monitoring depth of soil profile and contamination levels |

| Aspect | Impact | Mitigation / Enhancement Measure(s) | Key Performance Indicator (KPI) | Responsible Party | Resources Required | Timeframe management action(s) of |
|----------|--|---|---|---|---|---|
| | <p>natural soils due to ingress of CaCO₃-rich mud. This will alter both the composition and physical (e.g., lowers the hydraulic conductivities) properties of the soil</p> <p>Possible soil contamination from hydrocarbon and resin spillages</p> | | environmental reports | | | |
| Land Use | <p>- Since the construction and commissioning of the factory the landuse of the site has changed from an open public space to an industrial use. Hence, this impact has already occurred. No significant land uses are anticipated within the factory site going forward over the envisioned</p> | <p>- Implement regular civil maintenance of all current infrastructure on the site coupled with optimal usage of available space and infrastructure to avoid need for rebuilding or extending any of the existing structures</p> <p>- Potential increases in the footprint of the site can be avoided through the following: embracing new technologies to make the stone beneficiation process compact and more efficient; stringent regular maintenance of existing infrastructure; limit production levels to capacity of the existing infrastructure; and ensuring that</p> | -Annual servitude surveys and site photographs of infrastructures on site depict no overall increase in footprint of disturbed ground | <p>-Factory Manager (holds overall responsibility)</p> <p>- Walvis Bay municipality</p> | <p>-Funds to acquire maintain existing infrastructure</p> <p>- Technical and strategy (or management) personnel to optimize production with current infrastructure</p> <p>- Land surveyors (independently contracted) to survey the site annually</p> | -Throughout the operational lifespan of the factory |

| Aspect | Impact | Mitigation / Enhancement Measure(s) | Key Performance Indicator (KPI) | Responsible Party | Resources Required | Timeframe management of action(s) |
|--|--|--|--|---|---|---|
| | operational life of the factory | any additional or new infrastructure required is erected within the same footprint | | | | |
| Landscape, Topography & Sense of Place | <p>- The generation of white mud/dust from the processing of marble stone has inflicted a white scar within the proximity of the site. This scar is visible from the sky and therefore has transformed the sense of visual sense of the site and its immediate surrounds</p> <p>- The physical landscape and topography of the factory area has changed since the construction and establishment of the factory's structures and their associated operational and maintenance activities. Activities which has and</p> | <p>- Ensure that going forward all on-site operational and maintenance activities are confined to the footprint of the existing factory site</p> <p>- To the extent practical maintain the natural topography and landscape of undisturbed areas within the factory site</p> <p>- During closure (if closure does occur, for instance, during) and site rehabilitation the site should be landscaped to blend in with the surrounding landscape</p> | <p>- Annual digital terrain modelling (based on site specific topographic survey data) of the site and reconciliation of cut and fills to help evaluate changes to the site's landscape/topography</p> <p>- Evidence for surface exposure of any white dust at the proposed dust disposal site after placement & levelling of topsoil over the site; by means of photographs</p> | <p>- Factory Manager (holds overall responsibility)</p> <p>- Walvis Bay municipality – Environmental Management Section</p> | <p>- Funds for annual topographic surveying and digital terrain modelling</p> <p>-Earthmoving plant for regular reshaping of the site</p> | -Ongoing throughout the operational lifespan of the factory |

| Aspect | Impact | Mitigation / Enhancement Measure(s) | Key Performance Indicator (KPI) | Responsible Party | Resources Required | Timeframe management action(s) of |
|--------|--|-------------------------------------|---------------------------------|-------------------|--------------------|-----------------------------------|
| | <p>may contribute to changes in the landscape of the area include: regular backfilling of depressions on site, movement of material around the mud-drying ponds, changes in layout and positions of the block/ final product/ bagged stone off-cuts/ solid waste storage yards, and possible additions or extensions to existing factory infrastructure.</p> <p>- There is risk of permanent change to the natural landscape around the project site if post closure of the factory some blocks are left on-site un-processed and no rehabilitation earthworks or landscaping is</p> | | | | | |

| Aspect | Impact | Mitigation / Enhancement Measure(s) | Key Performance Indicator (KPI) | Responsible Party | Resources Required | Timeframe management of action(s) |
|-------------------------|---|---|--|--|---|---|
| | carried out to reclaim the area to more or less the same land form and topography as the surrounding areas | | | | | |
| Vegetation and habitats | - There is very little to virtually no natural vegetation within the site's premises due to the disturbed nature of the site and its immediate surroundings. As such impacts on vegetation within the factory's premises are virtually close to zero. However, the presence of scattered desert shrubs within the broader area surrounding the site implies that impacts on general habitats and vegetation cannot be completely ignored. | -Restrict movement of vehicle and machinery to existing roads and tracks to prevent unnecessary damage to vegetation -Draft a vegetation restoration plan for the factory's site, with input from a botanist who is familiar with the vegetation landscape of the area | -Monitor the following parameters during operations: vegetation densities; % vegetative cover; vertical structure of vegetation; plant health; richness and abundance of indicator species; type and extent of erosion; presence and extent of invasive alien plants within a 5 to 10km radius from the site to help establish trends over time and to establish the degree of possible damage to vegetation or habitats | -Factory Manager (mainly to avail budgets) -Environmental Health and Safety Officer - Walvis Bay municipality – Environmental Management Section | -Funds for monitoring program implementation and for developing flora restoration program -Technical Consultants to help with monitoring and restoration efforts | -Ongoing throughout the operational lifespan of the factory |

| Aspect | Impact | Mitigation / Enhancement Measure(s) | Key Performance Indicator (KPI) | Responsible Party | Resources Required | Timeframe of management action(s) |
|--------|---|---|---|--|--|---|
| | <p>- Possible limited disturbance of vegetation/ habitats by ingress of excess dust during earthworks which may blind plant leaves and limit natural processes such as sun-rays adsorption from occurring efficiently to stimulate natural plant growth. Impact is likely small as any construction or operations related earthworks occurs rarely.</p> | | | | | |
| | <p>- Solid waste pollution due to littering and storage of domestic and industrial (scrap metal, empty containers, waste wood, used tyres, waste concrete, natural stone mud and off-cuts, and</p> | <p>- Office & domestic waste is currently collected by the Town council & disposed off at the municipal dump site. This practice will continue</p> <p>- Scrap metals, used tyres, used containers & used oils/ grease & lubricants are currently collected from the stone processing facility</p> | <p>- Site wide evaluation of the general condition of all waste storage sites must be conducted as part of the bi-annual environmental audits</p> | <p>- Factory Manager</p> <p>- Environmental Health and Safety Officer</p> <p>- Walvis Bay municipality – Environmental</p> | <p>-Funds to acquire waste storage bins/ drums; move & store waste; to acquire and maintain waste moving machinery including filter press</p> <p>-Funds to hire an independent</p> | <p>Ongoing throughout the life of the processing facility</p> |

| Aspect | Impact | Mitigation / Enhancement Measure(s) | Key Performance Indicator (KPI) | Responsible Party | Resources Required | Timeframe management action(s) of |
|------------------|--|--|---|--|--|-----------------------------------|
| Waste Management | <p>construction waste) waste at the stone processing factory</p> <ul style="list-style-type: none"> - Waste pollution due to usage & on-site storage of used oils, grease, lubricants, resin, & process water which may cause soil pollution, come into contact with personnel & animals, etc. - A large proportion of the stone break-offs are bagged in 1 ton bags & exported to overseas markets where they are re-processed to produce artificial slabs. A significant quantity of these 1ton bags is sometimes stored and kept on-site for prolonged periods prior to | <p>by a local contractor/ off-taker. This practice will continue</p> <ul style="list-style-type: none"> - Office & domestic waste is currently collected from site & disposed off at the municipal landfill site. This practice will continue - Scrap metals, used tyres, used containers & used oils/ grease & lubricants are currently collected from the stone processing facility by local off-take contractors for recycling and re-use purposes. This practice will continue - Waste wood is currently stockpiled and is either burned in trenches on site or auctioned off at very low prices in the low - income suburbs of Walvis Bay. This practice will continue. - Process water from the factory is recycled & reused in the stone cutting & polishing sections. This practice will continue. - Wet and moist marble/ granite mud is disposed off and stored on-site in designated mud-drying ponds. No bucket compaction of the mud currently happens in these ponds but it is highly | <ul style="list-style-type: none"> - A register of all waste generated on site is kept on site - All signed waste collection and disposal agreements are available on site - Monitor soil chemistry & quality once a year around the site to assess if the chemistry changes through time - Monitor process water quality - All access roads have a surfacing layer of aggregates from crushing of marble/ granite offcuts | <p>Management Section</p> <ul style="list-style-type: none"> - MEFT | <p>environmental consultant to conduct bi-annual environmental audits</p> <ul style="list-style-type: none"> - Funds to crush stone breakoffs and spread those over all access roads - Funds for researching and running trials for economic and social viability of other marble/ dust waste management options | |

| Aspect | Impact | Mitigation / Enhancement Measure(s) | Key Performance Indicator (KPI) | Responsible Party | Resources Required | Timeframe management action(s) of |
|--------|--|---|---------------------------------|-------------------|--------------------|-----------------------------------|
| | shipping, thus turning into solid waste at times | <p>recommended that this be implemented going forward.</p> <ul style="list-style-type: none"> - It is recommended that stone off-cuts must be crushed into aggregates which can then be utilized on site for various beneficial uses such as placement of wearing coarse on access roads to help suppress dust generation, and for layering purposes in the mud-drying ponds to enhance the geotechnical stability of the resultant landform. The broken marble/ granite slabs and break-offs that do not qualify to be bagged and exported, & once all requirements for placement of a marble/ granite aggregate wearing course on all access roads have been met, should be collected by the municipality & provided at subsidized rates to dedicated locals (appointed through a transparent bid process) who specialise in tiling works to further beneficiate such breakoffs into usable tiling products - Some of the used tyres may be painted in reflective colours & used to mark the edges of roads, bends on site. | | | | |

| Aspect | Impact | Mitigation / Enhancement Measure(s) | Key Performance Indicator (KPI) | Responsible Party | Resources Required | Timeframe management of action(s) |
|-------------|--|---|--|---|---|---|
| | | <p>- Waste separation at source will be enforced by availing clearly labelled or differently coloured general waste (paper, plastic, organic waste) rubbish bins or skips. These must be emptied weekly at the municipal landfill.</p> <p>All hazardous waste such as oil drums, resin and resin containers, and grease should be stored in sealed containers/ skips which must be placed on concrete-lined floors for spillage containment purposes.</p> | | | | |
| Air Quality | <p>- Detriments to air quality around the site will largely result from mobilization of dust particles and the emission of gaseous substances from machines</p> <p>- The site lies in a desert environment where winds prevail and any loose fine-grained soils can easily be mobilized into air</p> | <p>- Poor quality marble/ granite slab and block off-cuts which do not qualify to be bagged for export markets should be run through primary crushers on site to generate 13mm to 19mm crushed aggregates. Thereafter consider applying a thin (150 mm thickness) layer of crushed marble/ granite aggregates as cover on access roads to minimize dust generation</p> <p>- Strictly enforce speed limits to between 30 – 40 km/hr on site to minimize the creation of fugitive dust within the project area</p> <p>- Avoid vehicles from idling and keep vehicles well maintained to</p> | <p>-Monthly dust level monitoring by installing dust buckets around the stone processing facility, especially in the down-wind direction</p> <p>- Continuous monitoring for ambient dust/ particulate (PM10 and PM2.5), bi-annually</p> <p>-All employees must do a mandatory health check every</p> | <p>- Environmental Health and Safety Officer</p> <p>- MEFT (ensure these aspects are covered during bi-annual monitoring and compliance auditing</p> <p>- Contractors</p> | <p>-Funds to implement the dust and air quality monitoring program, including the bi-annual personnel health checks</p> <p>-Technical Specialists (Air quality)</p> | Ongoing throughout the life of the operations |

| Aspect | Impact | Mitigation / Enhancement Measure(s) | Key Performance Indicator (KPI) | Responsible Party | Resources Required | Timeframe management action(s) of |
|--------|--|--|---|-------------------|--------------------|-----------------------------------|
| | <p>when dry and loose thus generating dust which can be a hazard to human health, animal health, and traffic. Thus generation of dust can be expected on site especially from access roads as well as from roads leading into and out of the mud-drying ponds</p> <p>- Limited production of gaseous substances can be expected from the burning of waste wood and diesel from running/ idling mobile machinery (e.g., delivery trucks, folk lifts, front-end loaders, etc)</p> <p>The continued intake of grid electricity from the Annixas power</p> | <p>minimize particulate and gaseous emissions</p> <ul style="list-style-type: none"> - As is the current practice continue using a wet cutting and polishing process in the stone processing plant to minimize dust generation in the factory - Where drilling of blocks is required to downsize blocks at the processing site, the drill must be fitted with dust capture equipment - Maintain a low volume of traffic on site at any given point in time by controlling the movement of vehicles and trucks in the factory area - Deposit the marble/ granite mud in alternating layers with natural stone off-cuts to prevent prolonged surface exposure of dust. - All personnel onsite to wear appropriate dust and gaseous substance protection PPE | <p>6 months to monitor impact on their respiratory systems. Keep statistics of such results</p> | | | |

| Aspect | Impact | Mitigation / Enhancement Measure(s) | Key Performance Indicator (KPI) | Responsible Party | Resources Required | Timeframe of management action(s) |
|-------------------------|--|---|--|---|---|---|
| | station which is diesel powered can be expected to contribute towards carbon high emissions in the broader harbour of Walvis Bay and surrounding areas | | | | | |
| | | | | | | |
| Surface Water Resources | Although the project area and surrounds are generally dry and there is no surface water for most of the year, some runoff may occur from time to time. Hence, the below potential impacts exist: | <ul style="list-style-type: none"> - Install and maintain efficient oil and grease traps or sumps at refuelling above-ground fuel storage tank, workshops, and containment areas, and make emergency spillage containment kits available - Maintain all concrete floors where refuelling and/ or usage of | -Monitor quality of runoff upstream and downstream of the factory, and evaluate differences in both physical and chemical attributes | - Environmental Health and Safety Officer | <ul style="list-style-type: none"> -Funds to implement monitoring program -Technical Specialists (Water Specialist) | Ongoing throughout the life of the operations |

| Aspect | Impact | Mitigation / Enhancement Measure(s) | Key Performance Indicator (KPI) | Responsible Party | Resources Required | Timeframe management action(s) of |
|--------|--|--|---------------------------------|-------------------|--------------------|-----------------------------------|
| | <p>- Possible pollution of occasional runoff water from hydrocarbon spillages in areas close to workshops, access roads and product loading bays, thus resulting in reduced water quality</p> <p>- Possible compromise in the physical quality (e.g., turbidity) of runoff in the vicinity of mud-drying ponds and filter press area due to erosion and suspension of the marble/ granite mud</p> <p>- Pollution of water due to ingress and suspension of marble/ granite fine particles in process water during the cutting/</p> | <p>resin or grease takes place. It is to be ensured that such floors remain concrete lined, free of cracks in the concrete, and that they drain to dedicated sumps</p> <p>- Excavate diversion ditches around the mud-drying ponds to prevent runoff from getting into contact with the marble/ granite mud</p> <p>- Maintain current practice of clearly labelling taps of process and drinking water to avoid accidental drinking of process water</p> | | | | |

| Aspect | Impact | Mitigation / Enhancement Measure(s) | Key Performance Indicator (KPI) | Responsible Party | Resources Required | Timeframe of management action(s) |
|--------|--|--|--|--|---|---|
| | <p>polishing processes</p> <p>- Possible health risk to personnel in factory due to accidental drinking of un-purified water</p> <p>- Due to the high-water consumption of the factory, the current and future operation of the facility has had and would have a net adverse impact on the primary water abstraction from source boreholes and / or the Swakopmund desalination plant</p> | | | | | |
| | <p>- The main risk to ground water is the possible increase in turbidity, suspended solids, hardness, salinity and sulphate</p> | <p>- Implement quarterly (3-months) groundwater monitoring by sampling water for standards quality control testing from existing boreholes located within a 2km radius of the stone processing facility. This will help to</p> | <p>-Implement monthly surface water quality monitoring in boreholes within a 5km radius. Target levels to comply</p> | <p>- Environmental Health and Safety Officer</p> <p>- MEFT</p> | <p>-Funds to implement monitoring program</p> | <p>Ongoing throughout the life of the operation</p> |

| Aspect | Impact | Mitigation / Enhancement Measure(s) | Key Performance Indicator (KPI) | Responsible Party | Resources Required | Timeframe of management action(s) |
|-------------------------------|--|---|---------------------------------|---------------------------|---|-----------------------------------|
| Groundwater Resources and use | <p>content of the Kuiseb Aquifer system which is likely to result from seepage of residual process water from the mud-drying ponds. The hydrochemical test results revealed that the process water from the factory contains elevated levels of Total Dissolved Solids (TDS), Total Suspended Solids (TSS), chlorides, sulphates and sodium. This implies that if the marble/ granite mud which is recovered and subsequently pumped from the water recovery dams is not filter pressed prior to disposal, the aquifer may become contaminated</p> | <p>establish and monitor water quality levels of the aquifer.</p> <ul style="list-style-type: none"> - Ensure that the filter press plant is fully functional whenever wet mud is being recovered from the water recovery dams. This will ensure that wet mud is filter pressed to remove as much of the process water as possible to minimize and/ or eliminate seepage into groundwater. - Re-engineer the base and upstream slope of the mud-drying ponds by ripping and recompacting to hydraulic conductivities in the order of 10^{-08} m/s to 10^{-07} m/s to minimize seepage. - Any waste water (effluent) to be discharged into the environment would require an Article 21 Permit from the Minister of Agriculture, Water and Land Reform, and such effluent shall comply with the following minimum standards before being released into the environment | with baseline water quality | - Walvis Bay municipality | -Technical Specialists (Water Specialist) | |

| Aspect | Impact | Mitigation / Enhancement Measure(s) | Key Performance Indicator (KPI) | Responsible Party | Resources Required | Timeframe management of action(s) |
|--------|---|---|---|---|--|--|
| | <p>over time, especially considering the envisaged long-term to permanent operation of the factory.</p> <p>- Because some of the water supply boreholes are drilled into this aquifer, potential contamination of this aquifer would likely result in higher water purification costs</p> <p>- Possible contamination of groundwater by hydrocarbons during seepage of occasional runoff near the workshop area</p> | | | | | |
| | <p>- The factory comprises substantial quantities of machinery which</p> | <p>- Get into the routine of daily safety/ health talks before commencement of any work. This must be enforced by SHE</p> | <p>-Periodic (twice a year) health screening of workers</p> | <p>- Factory Manager (holds overall responsibility)</p> | <p>-Funds to acquire health and safety related equipment; and to</p> | <p>Ongoing throughout the life of the operations</p> |

| Aspect | Impact | Mitigation / Enhancement Measure(s) | Key Performance Indicator (KPI) | Responsible Party | Resources Required | Timeframe management action(s) of |
|--------------------------------|--|---|--|---|--|-----------------------------------|
| Occupational Health and Safety | <p>present a number of health and safety hazards such as trips and falls, fire, flooding, cuts, excess noise, lock out errors and accidents, gaseous substances, loss time injuries and possibly even fatalities.</p> <p>- Risk of workers and neighbours developing health risks such as chest pains, coughing, wheezing and shortness of breath due to exposure to dust</p> <p>- Interruptions in production due to stoppages and workforce reduction arising from effects of covid-19</p> | <p>officer.</p> <p>- Get into the routine of doing a safety risk assessment prior to work.</p> <p>- Ensure all factory machine operators are well trained to operate such machines/ plants as safely, effectively and efficiently as possibly.</p> <p>- The proponent must avail adequate and appropriate PPE to all workers and visitors.</p> <p>- Timeously recording and reporting of all health and safety incidences, together with actions taken & recommendations on mitigation measures going forward</p> <p>- Develop an MOU with the Local Healthcare Centres in Walvis Bay for medical services provision to employees.</p> <p>- Enforcement of speed limits</p> | <p>-Bi-annual health and safety audits completed</p> | <p>-Environmental Health and Safety Officer</p> <p>- PRO</p> <p>- MME</p> | <p>pay for employee medical services</p> <p>-First Aid training for at least 2 personnel</p> | |

| Aspect | Impact | Mitigation / Enhancement Measure(s) | Key Performance Indicator (KPI) | Responsible Party | Resources Required | Timeframe of management action(s) |
|--------|--|--|---------------------------------|-------------------|--------------------|-----------------------------------|
| | <ul style="list-style-type: none"> - Possible compromise on personnel security - Possible loss of revenue due to production disruptions arising from lost-time injuries, and/ or from reduction or loss of sales arising from loss of major customers triggered by unsafe production practices | <p>and sanctions for any personnel found in violation of speed limits, including senior staff and contractors' and sub-contractors' employees.</p> <ul style="list-style-type: none"> - All machine operators and drivers to be given safety awareness prior to employment and during employment. - Proper screening of appointed security personnel to ensure they were not implicated in human rights abuses in the past. - Enforce controlled access to the proposed marble/ granite waste disposal site to minimize public exposure to dust, safety risks, etc. - Procedures and manuals for dealing with injuries or accidents must be reviewed and updated every quarter and be communicated effectively to all workers. Such procedures must include all contact details for emergency personnel available. | | | | |

| Aspect | Impact | Mitigation / Enhancement Measure(s) | Key Performance Indicator (KPI) | Responsible Party | Resources Required | Timeframe management of action(s) |
|---|---|---|---|--|---|--|
| | | <p>Such manuals must be developed based on statutory requirements stipulated under the Labour Act.</p> <p>- As per the Labour Act (Act 6 of 1992) and SABS 10083 (2004) workers must be protected against dust and noise in the work place</p> | | | | |
| Security of the site (for both personnel and equipment) | <p>- Security threats to personnel at the stone processing factory due to presence of valuable goods on site</p> <p>- Security threats to proponent's management due to labour/compensation disputes with employees and/or contractors</p> <p>- Risk of theft of equipment and products, especially considering the</p> | <p>- Maintain the appointment of a dedicated and well-equipped security company to safeguard the premises, and make it a condition of such appointment contract that employees are rotated regularly to prevent possibility and temptations of inside theft.</p> <p>- Ensure that flood lights are installed at and around all key structures of the factory to facilitate visibility during the night.</p> <p>- Management must resolve any disputes with contractors and employees through diplomatic negotiations as opposed to legal courses. This is current practice as</p> | -Record and report (timeously) all theft, injury related incidences | <p>-Factory Manager (holds overall responsibility)</p> <p>- SHE officer</p> <p>- PRO</p> | -Funds to procure security services & equipment | Ongoing throughout the life of the operation |

| Aspect | Impact | Mitigation / Enhancement Measure(s) | Key Performance Indicator (KPI) | Responsible Party | Resources Required | Timeframe of management action(s) |
|-----------------------------|---|---|--|--|--------------------|--|
| | fact that security measures at the factory site appears to be focussed on the front and office areas mostly. | <p>was the case during the 2020/2021 strike.</p> <ul style="list-style-type: none"> - The factory manager must ensure that all equipment and products used and produced at the factory are tagged with some form of identity number to discourage attempts of theft, and an inventory of such equipment/ products must be kept onsite as is the case. - Make compliance to the company's security and no theft tolerance policy a condition of employment - Enforce stringent measures/ actions for non-compliance | | | | |
| Public Disputes/ Grievances | - Possible future disputes and grievances between the proponent and current + future neighbouring land users, road users, and the public arising from various factors | -Have an internal and external complaints logbook. Monitor community grievances and provide feedback timeously to various stakeholders. | Record of community complaints. Monitor community grievances and provide feedback. | <ul style="list-style-type: none"> -Plant Site Manager (holds overall responsibility) - SHE Officer - PRO | - | Ongoing throughout the life of the operation |

| Aspect | Impact | Mitigation / Enhancement Measure(s) | Key Performance Indicator (KPI) | Responsible Party | Resources Required | Timeframe management action(s) of |
|--------|--|---|---------------------------------|-------------------|--------------------|-------------------------------------|
| | <p>such as generation of fumes and smoke during burning of some waste wood; generation of dust from the mud-drying ponds when levelling and bucket compaction earthworks is being carried out; damage to roads due to overloaded trucks; etc.</p> <p>- Risk of riots and strikes due to persistent disputes between proponent and employees/ contractor</p> <p>- Risk of producing off-spec and sub-standard products due to unhappy workers</p> | | | | | |
| | - Traffic on roads used by trucks which transport | - No major corrective actions required currently as none of the possible risks/ impacts have ever | - | - Factory Manager | - | Throughout the operational lifespan |

| Aspect | Impact | Mitigation / Enhancement Measure(s) | Key Performance Indicator (KPI) | Responsible Party | Resources Required | Timeframe management action(s) of |
|---------|---|--|---------------------------------|---|--------------------|-----------------------------------|
| Traffic | <p>blocks and supplies to the factory and from the factory may be adversely affected due to overall increased presence and count of trucks on the road</p> <p>- Risk of possible damage to roads due to overloading of trucks, especially because there are no weighbridges in the area. This will result in increased costs for maintenance of roads used by such trucks, which in turn will hinder delivery of some social services by central government.</p> <p>- The ongoing operation has resulted in increased traffic of both light and</p> | <p>been reported to have occurred in relation to the operation of the factory.</p> <p>- Preventive measures to be implemented to ensure that the status quo remains include: adherence to recommended speed limits on public and site roads; ensuring that only competent in-house and contracted truck and light vehicle drivers are recruited and allowed to drive; sending drivers for regular health and medical checks to ensure that they are fit-to-work; ensuring that all vehicles, trucks and mobile plant are inspected and regularly checked prior to their usage.</p> | | <p>- SHE officer</p> <p>- Contractors</p> | | |

| Aspect | Impact | Mitigation / Enhancement Measure(s) | Key Performance Indicator (KPI) | Responsible Party | Resources Required | Timeframe management of action(s) |
|------------------------------|--|---|---|--|---|---|
| | <p>heavy vehicles within the area of Farm no. 38</p> <p>- Risk of collisions on national, district and site access roads due to frequent movement of vehicles and production plant</p> | | | | | |
| Impacts on nearby properties | <p>- Typically due to issues of dust generated and frequent of trucks there is a strong relationship between property distance from natural stone processing factory and property sale price. The proximity of the proposed Green Valley suburb to the factory could have an adverse impact on the market prices of future properties in this new suburb</p> | <p>- Because these impacts are primarily linked to noise and dust generation, possible adverse impacts on property can be reduced and mitigated through proper implementation of noise and dust control measures such as restricting movement of trucks to and from the factory to day hours, implementing all dust control measures suggested above, regular maintenance of the main salt road (D1983) connecting the factory to the M36</p> <p>- Dust buckets should immediately be installed at the following locations to help monitor and assess likely quantify of dust and noise generated from the factory: (1) at the mud-drying</p> | <p>- Monthly dust measurement data shows that dust levels are below accepted threshold values</p> <p>- Noise level measurements taken during the bi-annual and annual environmental & occupational health compliance monitoring programs at various distances from the factory within the proposed Green Valley development are</p> | <p>- SHE Officer</p> <p>- Municipality of Walvis Bay (Environmental Department and Property Management division)</p> | <p>- Funds for dust and noise monitoring programs</p> | <p>- Throughout operational lifespan of the factory</p> |

| Aspect | Impact | Mitigation / Enhancement Measure(s) | Key Performance Indicator (KPI) | Responsible Party | Resources Required | Timeframe management action(s) of |
|---------------------------------|--|--|--|--|---|--|
| | | ponds, (2) near the on-site office block, (3) west of the factory site at the proposed site for the Green Valley development. The dust buckets must be maintained, and dust measurements taken once every month by the SHE officer | within acceptable levels | | | |
| EMP implementation and training | - Lack of awareness of the requirements of the EMP, limited understanding of the measures set out in the EMP, and implications thereof | An EMP non-compliance penalty system should be developed & implemented on site. Awareness of this must be made to all employees & must form part of induction process - The Proponent should appoint an SHE Officer to be responsible for managing the EMP implementation and monitoring. - The competent authorities (MME and MEFT) are to enforce the implementation of the EMP through site audits and inspections on a regular basis | All required Plans or Procedures and systems are developed and are in place Safety, Health and Environmental (SHE) Officer is appointed & held accountable for any oversight of key measures presented in the EMP | - Factory Manager - SHE & PRO - Walvis Bay municipality (Environmental Department) - The general public | Records of EMP implementation Plans and Systems Allocation of annual budget, time and other resources to support implementation of the EMP | Throughout the life span of the operation |
| POSITIVE IMPACTS | | | | | | |
| | -The operation of the stone processing factory provides employment opportunities for both non-skilled | -Regular and accessible (transparent) dissemination of the human resources and employment policy to interested and affected communities | -For every key job occupied by a foreign national evaluate skills learned by local under-study at the | -Factory Manager (holds overall responsibility) - MME | -On the job training resources - Budget for personnel training and continuous | Ongoing throughout the life of the operation |

| Aspect | Impact | Mitigation / Enhancement Measure(s) | Key Performance Indicator (KPI) | Responsible Party | Resources Required | Timeframe management action(s) of |
|--|--|--|--|-------------------|-----------------------|-----------------------------------|
| Continuation of Employment and acquisition of technical skills | <p>and skilled workers, both directly (i.e., through employment in the factory) and indirectly (through employment at the source quarries and downstream industries such as final product showrooms). For this reason, it is clear that the operation of a factory such as this has significant bearing on availing sustainable Employment opportunities for youth from Walvis Bay & surrounding areas</p> <p>-Transfer of technical and administrative skills in natural stone processing, packaging, sale and distribution</p> | <p>-Complaints of inequality and discrimination in job selection and in jobs are recorded and resolved promptly and effectively in a just manner</p> <p>- The proponent should give market competitive salaries and opportunities for personnel growth through various ranks to stimulate personnel growth.</p> <p>-Ensure that every job occupied by a foreign national has a local under-study to ensure on the job training of the under-study</p> <p>- Employment preference should be given to Namibians as a first price, and preferably to residents of Walvis Bay. This has to a large extent already been implemented</p> | <p>end of each production year</p> <p>- Record of discriminatory acts relating to recruitment and how they were resolved within the company</p> <p>- Reconciliation of employment statistics during the bi-annual monitoring reporting to evaluate extent to which the factory is making an impact in terms of employing the youth and Namibians</p> | -PRO | personnel development | |

| Aspect | Impact | Mitigation / Enhancement Measure(s) | Key Performance Indicator (KPI) | Responsible Party | Resources Required | Timeframe management of action(s) |
|---|--|---|---|---|--|--|
| Local Empowerment and Procurement Opportunities | <p>- Continuation & possible new opportunities for empowerment of local s and local SME contractors through sub-contract work relating to security services, cleaning services, block & final product transportation, sourcing of diesel, off take agreements for some waste (e.g., waste wood, used oil/ grease/ lubricants, scrap metals and used tyres)</p> <p>- Operation of the factory will nearly guarantee sustained operation of dimension stone source quarries.</p> | <p>-Procure support services (cleaning, machinery maintenance, security, customs clearance and product transportation services) from local previously disadvantaged contractors</p> <p>- allocate portion of annual procurement budget to work reserved for local contractors, SMEs or local businesses</p> <p>- Every 6 months reconcile proportion of annual procurement budget spent on contract works and supply of goods by local SMEs or local businesses</p> | <p>-Every 6 months review contracts awarded for support services to assess extent of local previously disadvantaged contractors</p> | <p>-Factory Manager (holds overall responsibility)</p> <p>-PRO</p> <p>- MME</p> | <p>- Annual procurement budget that is reserved for local businesses</p> | <p>Ongoing throughout the life of the operations</p> |

| Aspect | Impact | Mitigation / Enhancement Measure(s) | Key Performance Indicator (KPI) | Responsible Party | Resources Required | Timeframe management action(s) of |
|--|--|--|---|--|---|-----------------------------------|
| | <ul style="list-style-type: none"> - Empowerment of local SME businesses through preferential opportunities to local companies to procure support services such as cleaning, marketing, cooking, canteen services, and supply of spares | | | | | |
| Revenue for and Parastatals Central Government | <ul style="list-style-type: none"> - Revenue collection for government through various forms of taxes and export duties from sale of blocks and finished products - Financial benefits to organs of state such as Walvis Bay municipality, Namwater, Nampower/ Erongo and Namport and municipality of walvis bay through payment of water, electricity, land | <ul style="list-style-type: none"> - Nearly 90% of all products produced from the factory are sold to overseas markets such as the USA, China, Europe and India. Since the products have Namibian Trademark this helps to put Namibia on the global market, thus promoting the country's mineral resources and capabilities to potential overseas investors. - Shipment and sale of products to overseas markets generates foreign currency for the country -The proponent must pay all relevant taxes applicable under | <ul style="list-style-type: none"> -Evaluate proportion of annual budgets spent on supporting municipal developmental initiatives when conducting bi-annual environmental audits - Evaluate amounts of taxes & other fees paid to government, as well as the punctuality of such payments when conducting the bi-annual | <ul style="list-style-type: none"> -Factory Manager (holds overall responsibility) - MME | <ul style="list-style-type: none"> - Annual budget to support socio-economic initiatives | Annually |

| Aspect | Impact | Mitigation / Enhancement Measure(s) | Key Performance Indicator (KPI) | Responsible Party | Resources Required | Timeframe management action(s) of |
|--------|--|---|---------------------------------|-------------------|--------------------|-----------------------------------|
| | lease levies, port product storage & handling services | the constitution of the Republic of Namibia - The proponent must pay their water & electricity bills | environmental audits | | | |



6 QUICK GUIDE ON EMP IMPLEMENTATION MONITORING

To ensure that the proposed impact management measures are effective throughout the project's life cycle, a monitoring plan must be implemented alongside the impact mitigation/ management/ enhancement plan. The environmental monitoring program will also ensure compliance to the recommended impact management measures and best practice environmental standards. Collectively, the environmental monitoring plan/ program will serve the following objectives:

- To develop and continuously establish an inventory of baseline environmental data, which is geared towards establishing information on the conditions of the project area.
- To establish long term trends in disturbance.
- To estimate inherent variations within the environment.
- To make comparisons against a recognized standard or threshold.

The following monitoring tools/ techniques are recommended for this project:

- **PHOTOGRAPHS** must be used to provide evidence and verify compliance with respect to the following aspects:
 - Re-engineering and re-construction of the mud-drying ponds.
 - Installation of dust collection buckets at the sites recommended.
 - Re-organization for the storage of rejected final products.
 - Provision of site signboards and demarcations that are erected to indicate areas of unauthorized or controlled entry.
 - Changes to the landscape and topography of the area.
 - Proper waste management practice onsite, e.g. provision for waste collection bins, general site conditions at the working areas, site office, storage yard, workshop, mud drying ponds, stone off-cuts, sewage facilities, and others;
 - Controlled transportation management including compliance to allowable vehicle load and other traffic regulations.
 - Evidence for the installation of concrete bunds and floors around sites where hydrocarbons are used.

Additionally, when photographs are submitted for compliance auditing and monitoring, they should be geo-referenced or their exact location should be clearly marked on a map together with GPS coordinates, as well as the date and time they were taken.

- **PERIODIC FIELD CHECKS** must be done to ensure compliance with the following mitigation measures:
 - Conditions of cutting and lifting machinery to ensure safe working conditions.
 - Validity of all operating permits such as the ECC, product export permits, etc.
 - Improvements in safe work procedures within the factory site.
 - Landscaping work within the factory site.
 - Compliance to provision of appropriate and adequate PPE.
 - Compliance to recommended safe practices such as holding daily safety talks, reporting of all incidences, and conducting daily inspections on vehicles and machinery prior to their use;

- Compliance to reporting of all safety, health and environmental incidences through inspection of safety books.
- Provision of adequate and appropriate waste management skips and drums at various locations within the factory.
- Visual inspection for general hygiene and good management practices within the factory.
- Effectiveness of dust and noise suppression systems inside the factory.
- **RECORDS** of operational activities to ensure compliance with the following mitigation measures:
 - Record of all safety, health and environmental incidences.
 - Daily working hours.
 - Monthly production figures with respect to volume of input raw materials and output product so that waste volumes can be well quantified.
 - Daily inspection logs for all vehicles and other machinery.
 - Records of any complains launched to BC Stone Products or any public relations issues concerning the stone processing and product handling activities.
 - Record any HR related issues.
 - Whether data records being collected for monitoring purposes are actually being utilized by the proponent to evaluate trends and continuously improve on the recommended impact management/ mitigation/ enhancement measures.

7 CONCLUSIONS AND RECOMMENDATIONS

This report complements the environmental and social scoping impact assessment report which was prepared to review the current and potential future impacts from the operational activities of the BC Stone Products marble/ granite stone processing factory in Walvis Bay. Collectively, these reports are aimed at providing the office of the Environmental Commissioner with project/ site-specific information and observations regarding the operations' activities, and the various impacts which have either already occurred or are likely to occur in future. This will, in turn, provide the office of the Environmental Commissioner an opportunity to make an informed decision on the issuance of an environmental clearance certificate (ECC) for the existing Walvis Bay Dimension Stone Processing Factory.

Overall, due to the already highly disturbed nature of the project site, even pre the construction and establishment of the current stone processing factory, coupled with the fact that the factory has been in operation and existence for nearly 9-years to date, this EMP focused more on understanding and establishing how adverse impacts can be corrected and how positive impacts can be maintained and/ or enhanced going forward. Several impact corrective and enhancement measures and controls have been proposed herein, with guidance on how those controls can be implemented and monitored. A list of key parties responsible for the successful implementation and enforcement of these measures and controls is also provided herein.

Based on the impact assessment carried out for this site and project, the residual environmental and social risks of significance include:

- Risks of contamination and pollution to on-site soils, as well as alteration of soil structure. This arises from possible spillage of hydrocarbons, ingress of calcium carbonate rich dust which could lead to calcification after repeated cycles of drying or wetting, and movement of traffic on site.
- Loss in aesthetic value of the concerned area due to changes in the landscape caused by storage of blocks, various solid wastes; construction of mud-drying ponds; creation of access tracks; landscaping through backfilling of natural depressions with natural stone off-cuts.
- Security threats to on-site personnel and equipment triggered by the presence of valuable goods and equipment on site.
- Downstream adverse impacts such as increased burden on national public roads as the haulage of blocks from source quarries has resulted in increased movement of trucks on these roads.
- Risks of injuries to personnel at the factory from cutting and lifting machineries.
- Potential grievances and disputes from neighbouring land owners from the upcoming Green Valley suburb, which may arise if noise and dust levels from the factory are not adequately managed as recommended herein.
- Continuation of pressure exerted on various natural resources such as rock formations (which are continuously being depleted) and water resources.

Simultaneously, numerous opportunities have been identified from the current and future operations of the factory, which have had and/ or are anticipated to contribute positively and have positive residual impacts. These include:

- Sustainability of direct jobs at the factory and indirect jobs associated with source quarries, customs and port handling, and various waste recycling companies
- Sustainability of revenues to government and organs of state (including parastatals) from various forms of taxes, port handling levies, surface lease fees, and fees associated with various utility services.
- Acquisition and local development of skills specific to dimension stone industry, thus ensuring local capacity building.
- Sustainability of business and economic empowerment opportunities arising from revolving tender allocated to local entities.

- Indirect marketing of the country as a significant player in the sourcing of dimension stone quality rocks, and the availability of local technical capacity in so far as the dimension stone industry is concerned.
- Sustained earning of foreign currency since the bulk of the market for Namibian dimension stone products is largely overseas based.
- Sustained access for locals to dimension stone products produced.

In light of these findings, it is apparent that the operation of this factory has brought about some adverse impacts although the impact assessment suggests that most of these impacts are currently being effectively managed and controlled with current practices, especially with regards to the management of waste (such as waste wood, used oils, scrap metals, stone off-cuts and process water); personnel health and safety; optimization of water usage and recycling; management of sewer; and power demands. It is however important to acknowledge that there is significant room for improvement which needs to be actioned in areas pertaining to the disposal and management of marble/ granite mud; hydrocarbons spillage controls at the workshop area; security of personnel and equipment on site; storage of rejected final products which are currently being stored on site; and environmental and social monitoring. The various impact management measures proposed in this report can be adopted to correct the significant negative impacts, and to maintain or enhance the various current and possible future positive impacts associated with the operation of the factory.

On this basis, it is recommended that an Environmental Clearance Certificate can be issued to BC Stone Products Namibia; subject to the implementation of the impact management and monitoring measures outlined in this report.