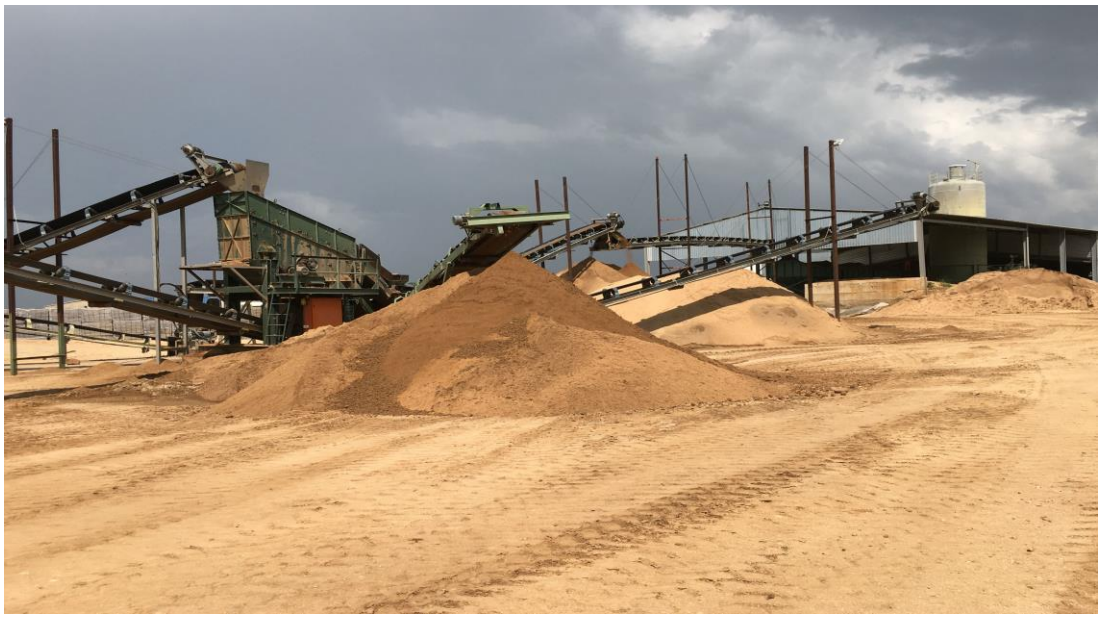
ENVIRONMENTAL MANAGEMENT PLAN



OTJI - BRICKS & PAVING, OTJIWARONGO
OTJOZONDJUPA REGION

2019

DOCUMENT INFORMATION	
Title	Environmental Management Plan (EMP) for a brick and paving factory
Activity	Brick making
Location	Otji - Bricks, Otjiwarongo in Otjozondjupa Region
Proponent	Mr Herbert Henle P. O. Box 72 Otjiwarongo Tel: +264 811270462 E-mail: sales@otjibricks.com

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ABBREVIATIONS

OB	Otji - Brick and Paving
DEA	Department of Environmental Affairs
EAP	Environmental Assessment Practitioner
EC	Environmental Commissioner
ECC	Environmental Clearance Certificate
ECO	Environmental Control Officer
EO	Environmental Officer
EIA	Environmental Impact Assessment
EMA	Environmental Management Act (No. 7 of 2007)
MAWF	Ministry of Agriculture, Water and Forestry
MET	Ministry of Environment and Tourism
TEC	Tortoise Environmental Consultants

1 INTRODUCTION

This document presents the Environmental Management Plan (EMP) to manage activities at a factory that produces bricks and paving. Otji - Bricks & Paving (Herein referred to as OBP) has established a brick manufacturing and paving factory in Otjiwarongo.

According to the Namibian environmental legislation (Environmental Management Act (No. 7 of 2007)) (EMA) and the EIA Regulations (GN. No. 30 of 2012), an EIA is required in order to obtain an Environmental Clearance Certificate (ECC) from the Ministry of Environment and Tourism (MET) for this type of operation to continue.

Moringa Environmental Consultants (MEC) has been appointed to develop an Environmental Management Plan (EMP) as part of the application for an ECC. The EMP is to be implemented to mitigate potential impacts. The contents of this EMP will be binding on all parties who will have a role to play in the factory operations as stipulated in *Section 3* and will be liable for the rehabilitation measures recommended in *Section 4.*

1.1 PURPOSE OF THE EMP

The aim of the EMP is to ensure that the operations at the brick and paving factory are conducted as per the requirements of the Namibian Environmental Management Act (No. 7 of 2007) and EIA regulations of 2012. The EMP provides a guideline on how the daily activities should be conducted and also provides a monitoring framework to ensure compliance against the recommended mitigation measures to avert any possible negative impacts.

The 2012 EIA Regulations defines a '*management plan*' as:
"…a plan that describes how activities that may have significant environments effects on the environment are to be mitigated controlled and monitored."

1.1.1 EMP Requirements

Table 1.1: EMP Requirements as outlined in Section 8 of the EIA Regulations

Requirement
(j) a draft management plan, which includes – *(aa) information on any proposed management, mitigation, protection or remedial measures to be undertaken to address the effects on the environment that have been identified including objectives in respect of the rehabilitation of the environment and closure;* *(bb) as far as is reasonably practicable, measures to rehabilitate the environment affected by the undertaking of the activity or specified activity to its natural or predetermined state or to a land use which conforms to the generally accepted principle of sustainable development; and* *(cc) a description of the manner in which the applicant intends to modify, remedy, control or stop*

any action, activity or process which causes pollution or environmental degradation remedy the cause of pollution or degradation and migration of pollutants.

1.1.2 Compliance to the EMP

Contents of this EMP are tailored in accordance with the prevailing EMA Act and the EIA Regulations. The aim is to provide appropriate management measures that would address the identified impacts that the project could bring about. The remedial and mitigation measures recommended for rehabilitation (section 4) remain binding to the Factory Manager and all employees. Adherence to the specifications identified herein is highly recommended throughout the lifespan of the factory.

It should be noted that the EMP shall not only be limited to the factory operations, but it encompasses the bigger picture. The document serves as the guiding tool to protecting the overall natural, bio-physical and socio-economic environment at large.

1.1.3 Proponent's Responsibility to the EMP

As the proponent, Otji - Bricks shall assume overall responsibility and implementation of the EMP. The Factory Manager holds the mandate and sole responsibility of managing the daily operations and shall ensure that any other person (e.g. Casual Workers) is conversant with the contents of the EMP and adhere to the requirements. A copy of the EMP shall be kept at the factory premises and an induction should be conducted with all new employees prior to commencement of their responsibilities.

1.1.4 Possible adjustments to the EMP

The EMP is an open ended document that can be considered inconclusive and should allow for amendments. This is to allow for adjustments in the document as new information is made available and new mitigations where unforeseen environmental impacts arise.

1.1.5 Legal frameworks that are of relevance to this EMP

In addition to the EMA and the Environmental Assessment Policy, there exists a host of legal and policy documents and guidelines that govern environmental management as indicated in Table 1-2. Otji - Bricks and Paving has the responsibility to ensure that the sand mining activities conforms to all the legal guidelines that are associated with such operations.

Table 1-2: Relevant legislation and the applicability thereof

Legal Requirements		
Legislation considered	***Relevant Organ of State / authority***	***Aspect of Project***
Regional Councils Act, 1992 (Act No. 22 of 1992)	**Ministry of Regional and Local Government, Housing and Rural Development**	The Regional Councils Act legislates the establishment of Regional Councils that are responsible for the planning and coordination of regional policies and development. The main objective of this Act is to initiate, supervise, manage and evaluate development in Otjozondjupa Region. Otjozondjupa Regional Council is considered to be an I&AP and rights shall be reserved to them should they wish to review the EMP.
Water Resources Management Act (Act No. 11 of 2013)	**Ministry of Agriculture, Water and Forestry**	This Act provides a framework for managing water resources based on the principles of integrated water resources management. It provides for the management, development, protection, conservation, and use of water resources. Furthermore, any watercourse on/or in close proximity to the site and associated ecosystems should be protected in alignment with the listed principles.
Pollution Control and Waste Management Bill *(in preparation)*	**MET, MHSS and others**	This Bill serves to regulate and prevent the discharge of pollutants to air and water as well as providing for general waste management. The Bill will repeal the Atmospheric Pollution Prevention Ordinance (11 of 1976) (below) when it comes into force. The Bill also provides for noise, dust or odour control that may be considered a nuisance. The Bill would repeal the Atmospheric Pollution Prevention Ordinance (11 of 1976) (below) when it comes into force. Furthermore, the Bill advocates for duty of care with respect to waste management affecting humans and the environment and calls for a waste management licence for any activity relating to waste or hazardous waste management.
Atmospheric Pollution Prevention Ordinance (Act No.11 of	**Ministry of Health and Social Services**	This Ordinance serves to control air pollution from point sources, but it does not consider ambient air quality. Any person carrying out a 'scheduled process' which are processes resulting in noxious or offensive gases typically pertaining to point source emissions have to obtain a registration certificate from the

1976)		Department of Health. Although we do not anticipate the mining activities to generate excessive dust particles, the proponent should implement the necessary mitigation measures set out in this EMP in order to limit dust emissions to air.
Public Health Act (Act No. 36 of 1919)	**Ministry of Health and Social Services**	The Act serves to protect the public from nuisance and states that no person shall cause a nuisance or shall suffer to exist on any land or premises owned or occupied by him or of which he is in charge any nuisance or other condition liable to be injurious or dangerous to health. The proponent should ensure that the site workers are provided with protective gear to safeguard their wellbeing. The activities should also be conducted in a manner that does not pose any danger to the general public and that any emissions which could be considered a nuisance remain at acceptable levels.
Labour Act (Act No. 6 of 2007)	**Ministry of Labour and Social Welfare**	The 1997 Regulations relating to the Health and Safety of employees at work sets out the duties of the employer, welfare and facilities at the workplace, safety of machinery, hazardous substances, physical hazards, medical provisions, construction safety and electrical safety. Specifically, no employer shall require or permit an employee to work in an environment that is deemed unfit without protective measures in place. The proponent as the employer should adhere with all the requirements of the Act and the associated Regulations. Schedule 135 of the Act states that appropriate measures shall be maintained to ensure that noise levels do not increase by more than 7 dB (A) Leq above residual background sound levels. Similarly in habituated areas adjacent to access roads maximum noise levels shall not exceed 85 dB (A).

2 PROJECT DESCRIPTION

2.1 PROJECT LOCALITY

Otji - Bricks and Paving factory is located on No. Industrial area, Otjiwarongo town within Otjozondjupa Region. The factory covers an area of approximately 19513 $m^{2,}$ on four respective erf; 1800 and the factory is accessible via a normal road that branches from the industrial street in Otjiwarongo. Otji - Bricks and Paving factory was established in 2012 and has been operational since Oct 2013.

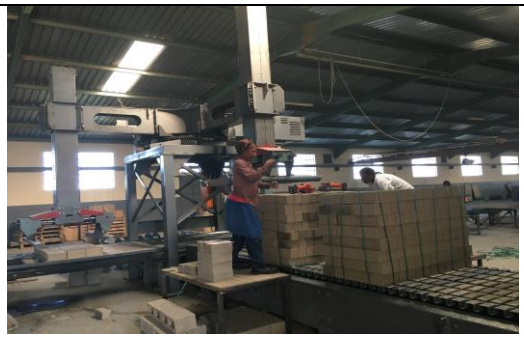
2.2 INDUSTRIAL PROCESS

The factory is composed of high tech machinery i.e. an automated brick & paver electric vibrated process. Up to 60 000 bricks and pavers are produced daily and these are supplied to local market. Raw materials used are sand, concrete, cement and water.

2.2.1 Infrastructure

A corrugated iron shed ranging between 5 - 7 meters high is used to house all the machineries and Operations that are carried out there. A transformer is installed on site for power supply. There is an office for a Security control room as well as ablution facilities. A Fuel tank of 14 000 liters is installed on site. The site parameter fence is cordoned off with fencing materials. Vehicles include 4 pick ups and 49 of both macheneries, delivery and tipper trucks, and a minibus for staff transport.

2.1 Snapshots from the factory site

<table>
<tr>
<td> 
Loading raw material into the automated brick and paver producers</td>
<td> 
Newly produced bricks from the automated machine</td>
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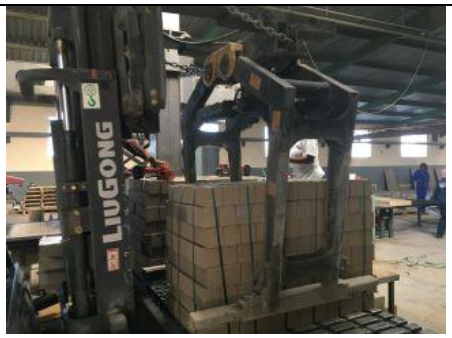
<tr>
<td> 
Employees at work</td>
<td> 
Work in progress</td>
</tr>
</table>

2.2.2 Environmental vs Socio-economic demands

Namibia's economy is highly dependent on a healthy environment however, striking a balance in meeting demands for economic development while maintaining biological and social well being may be a challenge. The current increase in infrastructure development in Namibia has resulted in the high demand for construction material. Environmentalists and development sectors should work together and identify synergies in order to ensure that natural resources are utilised sustainably.

Development takes place on land (in the environment) and hence the quest for economic development requires a trade-off with certain parts of the environment in-order for the development to be realized. Meaning, for development to take place, some part of the environment and or he surrounding communities could be affected. However, it is of utmost importance that such impacts are mitigated through effective implementation of the EMP.

2.3 IMPACTS ASSOCIATED WITH THE FACTORY

2.3.1 Noise pollution

Otji - bricks factory is in the neighborhood where there are no school within the immediate surrounding. Otjiwarongo high School and Vooruit Primary school which are a boarding school are very far from the plant. The noise generated from the processing plant could be a potential nuisance to the school if the schools were in the close approximate to the plant, which could create an unsuitable learning environment for the learners and teachers as well but in this particular scenario is not the case.

However it is highly recommended that the noise levels generated from the factory be measured and established. This could be done with assistance from the Ministry of Health and Social Services. The following measures could also be explored as intermediate mitigations to counter the impacts of noise;

2.3.2 Dust pollution

The handling of raw materials that are used in the production of bricks and pavers is a dusty process. Dust can pose health risks to not on employees alone but to the surrounding community as well.

It is recommended that the Ministry of Health and Social Services assess the potential health risks that can emanate from the dust generated at the factory. This is of more concern noting that there are many more people leaving within the area.

2.3.1 Water Consumption

There factory is using municipal portable water channeled for consumer usage, however water usage at such a big plant should be controlled for at all times.

2.3.2 Oil Spills

fuel storage tank with a capacity of 14 000 litters is on site, however the previous set up of the storage area posed a risk of oil spills. As a result the storage tank was upgraded to a suitable standard so as to prevent oil leaks and or spills.

A newly upgraded fuel storage facility with no oil spills from the tank

3 ROLE PLAYERS & RESPONSIBILITIES

This section outlines the roles and responsibilities of the respective key personnel that would be responsible for effective implementation of the EMP.

3.1 Roles and Responsibilities

Assigning responsibilities is necessary to ensure that key procedures are followed. The overall responsibility to ensure that the EMP is implemented rests with the Factory Manager, who shall appoint a team of workers to undertake the actual work.

The key role-players for project implementation are;

a) An Environmental Compliance Officer (ECO) representing MET for environmental auditing and monitoring;

b) The Factory Manager (or assigned representation by Otji - Bricks and Paving)

All instructions and official communications regarding environmental matters shall follow the organisational structure as determined by Otji - Bricks and Paving. The only exception to this rule would be in an emergency (defined as a situation requiring immediate action and where failure to intervene timeously would, result in unacceptable environmental degradation), where instructions may be given directly to any other factory personnel.

Otji - Bricks and Paving / Factory Manager:

The Factory Manager will be responsible for the overall daily operations at the factory and shall be responsible to adherence to the EMP throughout the project span. All team members shall be well-versed with the contents of this document. The following are some key responsibilities;

- Ensure that the works on-site are conducted in an environmentally sensitive manner and in accordance with the requirements of the EMP at all times. Special care shall be taken to prevent irreversible damage to the environment.
- Ensure that all site staff are adequately informed of the requirements of the EMP pertaining to their site role, and that they have attended an environmental induction session (this session must be in the form of a talk and/or a written code of conduct that is clearly explained and understood by the team).

The Environmental Compliance Officer (ECO):

The ECO in the context of this document refers to the party responsible for the environmental compliance and auditing activities required by the EMP for the lifecycle of the factory. The ECO shall be an independent environmental manager.

The ECO shall have adequate environmental knowledge to understand the detailed environmental issues associated with the project, and is to be well versed in the contents of the EMP:

- The ECO shall undertake all monitoring and auditing activities to ensure compliance with the EMP.
- The ECO shall inspect the farm at any suitable time during operation.
- The ECO shall compile Progress Reports following any site inspections, Compliance Reports following any non-compliance, and a Closure Report following the conclusion of mining activities.
- The ECO shall liaise closely with the Factory Manager and shall provide guidance on any environmental management issues, incidents or emergencies that are brought to their attention.
- The ECO shall assist in providing recommendations for remedial action in the event of any non-compliances.

3.2 Compliance with Rrequirements

Environmental management is not only concerned with the impacts on the environment, but also with how such operations are carried out. Tolerance with respect to environmental matters applies not only to the finished product but also to the standard of the day-to-day operations as well as the wellbeing of the immediate communities (i.e. Aris Primary School).

The development of an EMP for a project is therefore an important and necessary task that is aimed at assigning responsibilities and mitigation options to a variety of activities. However, it can also be an ineffective tool in the absence of auditing or monitoring activities. Auditing or monitoring activities involve the structured observation, measurement, and evaluation of environmental data over a period of time.

3.2.1 Disciplinary Action

The EMP is a legally binding document. Non-compliance with the EMP shall result in disciplinary action being taken against the perpetrator/s. Such action may take the form of (but is not limited to) financial penalties, legal action, fines and/or suspension of work.

The disciplinary action shall be determined according to the nature of the non-compliance or crime, and exact penalties are to the discretion of MET according to the severity of the incident.

Measures to be implemented by Otji - Brick and Paving with assistance of monitoring by the ECO are outlined in the Table 3-1 overleaf:

Table 3.1: Management activities to be implemented for operations at the factory

Aspect	Management Objective	Management Action	Indicator	Party responsible for implementation
Communication with staff	To ensure effective and formal communication throughout the project lifespan.	The contact details of the Factory Manager must be available to all relevant parties. All employees etc. must be fully aware of the environmental management requirements detailed in this EMP.	Records of correspondence No avoidable environmental impacts occurring due to miscommunication	All
		The Factory Manager and ECO must be informed immediately should environmental or safety issues arise.		
		A copy of the EMP and ECC (when issued) must be readily available for ease of reference to all requirements.		
Staff induction training and code of conduct	To ensure that staff are familiar with the management requirements for the factory and conform to the prescribed EIA Regulations	All workers must undergo induction training. The induction training must cover environmental awareness and safety at work.	Signed induction attendance register	Factory Manager
		Staff operating equipment (such as loaders, trucks etc.) shall be adequately trained and sensitised to any potential hazards associated with their tasks.		
	Punitive measures and incentives for site staff	Adopt a disciplinary system to address common, minor health and safety misdemeanours of individual staff.	A reduction in the number of fines issued daily	Factory Manager/ ECO
Vehicle Emissions	Reduce unnecessary greenhouse gas (GHG) emissions from poorly maintained or malfunctioning equipment	All vehicles and equipment shall be kept in good working order and serviced as required. Ensure that vehicles do not leak oil.	Physical verification and routine monitoring, record of non-compliance	Factory Manager

Aspect	Management Objective	Management Action	Indicator	Party responsible for implementation
Ablution facilities	Reduce health risks and environmental pollution arising from a concentration of human excreta in the environment	Ensure adequate ablution facilities for site staff. Acts of excretion and urination, other than at the facilities provided, shall be strictly prohibited.	Physical verification and routine monitoring	Factory Manager
	Verification of adherence to specified requirements	All ablution facilities are to be inspected on a regular basis to ensure the above requirements are being met.		
Noise Pollution	Reduce the impacts of noise to the surrounding communities.	Obtain assistance from Ministry of Health and Social Services to determine the level of noise generated at the factory. Ensure that operations at the factory do not exceed the allowed working hours 07H00 to 18H00 Implement measures to reduce excessive noise and keep levels within the maximum allowed decibels	Determination of noise levels	Factory Manager
Dust Pollution	Reduce the impacts of dust to employees and the surrounding communities.	Provide dust masks to all affected employees Implement measures to reduce the dust during handling of raw materials. Liaise with Ministry of Health and Social Services on the best approach to reduce dust.	Physical verification	Factory Manager / ECO

4 MITIGATION AND REHABILITATION

Socio-economic development is very important for our livelihood and provides services, income and employment opportunities, and hence activities such as brick production are vital and necessary for development. However, such developmental activities should be conducted in a thoughtful and forward looking manner. In other words, developmental activities should consider the environmental and social wellbeing of such activity even beyond the end of the project lifespan. Therefore operations at the factory should be conducted in a sustainable manner throughout the project lifespan.

Rehabilitation is the process of repairing and taking all necessary actions to limit the damage caused by the developmental activity, to minimise potential danger to employees and the ensure that land is suitable for other uses or simply to beautify the affected area (so that it does not become an eyesore). Rehabilitation can also be referred to as the measures taken to repair damaged environments (example re-vegetating, removal of unwanted infrastructure, cleaning up pollution etc).

4.1 Designing a Rehabilitation Plan

A rehabilitation plan refers to a set of steps or measures to be taken in-order to ensure that negative impacts associated with the development at hand are mitigated. This however requires prior planning and integration of rehabilitation activities throughout the project lifespan. Meaning, rehabilitation measures should be taken right from the beginning of the project.

The environmental characteristics of an area where a project is located plays a vital role in designing a rehabilitation plan.

5 CONCLUSION

The EMP has identified and recommended measures to be adopted by Otji - Bricks and Paving to manage their factory operations at Otjiwarongo. It is imperative that a factory of such caliber should conform to the Environmental Management Act of 2007 and EIA regulations of 2012.

It is recommended that communication be made to Ministry of Health and Social Services to help in determining the noise levels generated at the factory. This will assist in identifying suitable mitigation measures to reduce such noise levels.

Furthermore, the Ministry of health and Social Services must be request to assist in determining the health risks that could emanate from the dust generated from handling the raw material on site.