

Application No. **APP-002323**

# **ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP) FOR THE OPERATIONS OF THE EXISTING KETU BRICKS PROJECT AT OGONGO, OMUSATI REGION**



Prepared for  
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# LIST OF ACRONYMS

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a.s.l:	above sea level
DEA:	Department of Environmental Affairs
EAP:	Environmental Assessment Practitioner
ECC:	Environmental Clearance Certificate
ECO:	Environmental Control Officer
EIA:	Environmental Impact Assessment
EMA:	Environmental Management Act
ESMP:	Environmental and Social Management Plan
GN:	Government Notice
I&APs:	Interested and Affected Parties
KDP:	Discontinuous Perched Aquifer
MEFT:	Ministry of Environment, Forestry and Tourism
NSA:	Namibia Statistics Agency

# 1. INTRODUCTION AND BACKGROUND

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## 1.1 Introduction

Ketu Kiiyela Trading cc, here referred to as the proponent, operate a brick making project located at Omugongo settlement in the Ogongo Constituency in Omusati region. The proponent aims to manufacture block bricks from sand and cement mixture. The project has been in existence for more than 20 years and it is in a communal area under the Uukambi Traditional Authority. The bricks from the project are mainly used in construction work. The site is approximately 5,000 m<sup>2</sup> and it is located at a safe distance from the main road reserve and other services.

Although the brick manufacturing activities have been carried out for several years, no Environmental Impact Assessment (EIA) nor an Environmental Management Plan (EMP) has been prepared for this site. According to the Environmental Management Act (EMA), Act No.07 of 2007 and the EIA Regulations (GN. No. 30 of 2012), an EMP is required to obtain an Environmental Clearance Certificate (ECC) from the Ministry of Environment, Forestry and Tourism (MEFT) for this type of operations to continue. Hence, Green Gain Environmental Consultants cc has been appointed to prepare an Environmental and Social Management Plan (ESMP) and apply for the ECC for their existing brick manufacturing activities.

This document presents the Environmental and Social Management Plan to operate the brick making project and activities at the site. This ESMP is to be implemented to mitigate the potential impacts. The contents of this ESMP will be binding on all parties for their roles and responsibilities concerning the site operations and the environmental management of the brick manufacturing activities.

## **1.2 Objectives of the ESMP**

The ESMP has the following objectives:

- To provide information on the potential negative impacts associated with the present and future brick manufacturing activities.
- Present mitigation measures for the identified negative impacts and enhancement measures for the positives impacts.
- To provide guidelines for the management and monitoring of the identified environmental issues.
- To provide guidelines to the responsible persons to follow appropriate contingency plans in the case of various possible impacts.



## 2. DESCRIPTION OF THE ACTIVITIES

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### 2.1 Locality

Ketu Bricks project is located at Omugoungo settlement in the Ogongo Constituency in Omusati region (see locality map below). It is easily accessible from the C46 road (Oshakati-Outapi road). The site is approximately 5, 000 m<sup>2</sup> and its coordinate are -17.65056" South, 15.29000" East.



Figure 1: Project locality, map marked in red (Source: Google Earth, 2021).

## 2.2 Site Accessibility

The site is easily accessible from the C46 road (Oshakati-Outapi road). It is located a safe distance from the main road reserve and other services.



Figure 2: Access to the site (Source: Google Earth, 2021).

## 2.3 Site surroundings

The site is located at Ketu Kiiyela business complex and is properly secured with a boundary wall on the sides, except the front side. The Omugungo settlement in which the site is located is characterised by a mixed development consisting mainly of businesses, houses and institutional.



Figure 3: Area surroundings (Source: Google Earth, 2021)

## 2.4 Brick making process.

Ketu bricks project has been in existence for more than 20 years. The aim of the business is to manufacture block bricks from sand and cement mixture. Bricks are made by means of a semi-mechanize method which include mixing sand and cement with a concrete mixture and moulding of bricks by means of a hand operated moulding machine. The bricks making floor is covered with a concrete block. Bricks from the project are mainly used in construction work. Customers are the residents of Omugongo settlement as well as from the neighboring villages such as Omaandi, Oshindete, Oshitutuma. The site is located a safe distance from the main road reserve and other services.

Figure 4 (A-D) below illustrates the overview of the existing situation of the brick making activities.





Figure 4 Overview of the brick making activities (A-D)

The associated infrastructure onsite includes:

- An ablution facility for workers and customers,
- Freshwater tap,
- A boundary wall, and
- A security room.
- Storeroom



Boundary wall onsite



Ablution facilities for employees & customers

**Figure 5: Site facilities**

### **Source of Sand and Water**

Sand is sourced from a gravel burrow pit belonging to the Uukwambi Traditional Authority and is located at Oneeya village about 6km from the site. Alternatively, sand is bought from local dealers.

Water use in the manufacturing of bricks is sourced from the Ruacana-Oshakati canal and is transported in water tanks and drums.

### **Resource Consumption**

- Sand:  $\pm 6 \text{ cm}^3$  per 100 bricks
- Water: 200l for 100 bricks
- About 10,000 bricks a month are produced
- Employment: 4 permanent employees and 4 temporary truck crew

## **2.5 Environmental vs Socio-economic demands**

Namibia's economy is highly dependent on a healthy environment however, striking a balance in meeting economic development demands whilst maintaining biological and social wellbeing is a challenge. The increase in infrastructure development in northern Namibia has resulted in high demand for construction material, especially bricks. Environmentalists and development sectors should work together and identify synergies to ensure that natural resources are utilised sustainably.

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

## 3. DESCRIPTION OF THE AFFECTED ENVIRONMENT

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### 3.1 Socio-economic of the area

#### 3.1.1 Location, History and Demographic

Omusati Region is situated in the north central part of Namibia, bordering Angola in the north, Oshana Region in the north-east, Oshana Region in the east and Kunene Region in the south-west. The word 'omusati' is an Oshiwambo word which means a mopani tree. The Region has a total land surface area of 26 551 km<sup>2</sup> with a population of 243 166 (NSA, 2011). The Region consists of twelve (12) Constituencies, namely Anamulenge, Elim, Etayi, Ogongo, Okahao, Okalongo, Onesi, Oshikuku, Outapi, Ruacana, Tsandi and Otamanzi, three (3) Settlements i.e., Okalongo, Onesi and Ogongo and five (5) Local Authorities namely Outapi, Ruacana, Okahao, Oshikuku and Tsandi Village Council. Outapi Town is the capital of the Region.

Ogongo Settlement is the District Capital of Ogongo Constituency. It is situated about 40 km east of Outapi Town and about 50 km west of Oshakati. The name Ogongo (Omugongo) is an indigenous fruit tree called marura which commonly occurs in the area. It was declared a Settlement in 2003 according to Section 31 (1) of the Regional Council Act (Act No. 22 of 1992).



Figure 6: Ogongo Settlement (Source: Google Earth, 2021)



The Ogongo Constituency has a population of 27,311 and it covers an area of 806.8 km<sup>2</sup>. Its population density stands at 24.2/km<sup>2</sup> with most of the people living in rural areas. It is located approximately 30 km from Outapi, and it shares borders with Okahao Constituency in the south west, Oshikuku Constituency in the north east, Otamanzi Constituency in the south east, Tsandi Constituency in the west, Elim Constituency in the east, Outapi Constituency in the north west and Anamulenge in the south.

### **3.1.2 Social and Economic Development**

The northern part of Omusati is far more densely populated than the south, where the grazing is of poor quality and the water is generally saline. This is predominantly an agricultural region in which mahangu is cultivated successfully. A canal carries water from the Ruacana river to Oshakati, passing through Outapi. Water from this canal has been used to irrigate a large, government-run farm at Etunda where crops from maize, vegetables and fruits are grown. The electrical network covers towns including Outapi, Ruacana, Tsandi, Oshikuku, and Okahao.

The region is traversed by a high standard trunk road which provides a direct link to adjacent regions and the rest of the country. Although passenger and freight transport along this route is easy, the rest of this road network, in common with all the communal areas of northern Namibia, is of poor quality. Okahao and Outapi both have District hospitals, and a network of clinics provides basic services. Only 17% of households in Omusati have access to improved sanitation (toilet facilities). According to the 2012 Namibia Labour Force Survey, unemployment in the Region is 28.9%. Omusati has 274 schools with a total of 86,365 pupils. Common sources of income include sale of livestock, weaving traditional handcrafts, selling grass, roots, tubers and fruits from the veldt, sale of amarula oils, brewing local beer, and trading. Pensions, salaries, and government grants are also sources of incomes for some categories of people. Unemployment in Omusati was estimated at 35.6 %, which implies that the dependency ratio is relatively high.

Most of the population in the Ogongo Constituency are engaging in livestock farming, especially cattle, goats, and sheep. This is attributable to the fact that the area consists of forestry. However, most of the people are involved in crop farming, particularly producing mahangu. Most parts of the Constituency are covered by trees which are usually used for constructing cultural household infrastructure.

There are few shops and cuca shops which provide essential goods and services to residents. About 50 percent of the Constituency is electrified, mostly at schools and health facilities as well as private facilities. The NamWater and Rural Water Supply pipelines supply water in the Constituency. The public institutions and households in the radius of 10 km are connected to these pipes. Other inhabitants are using wells and earth dams as the only sources of potable water. The water canal is available for livestock and irrigation, especially for small gardening. There is a District Hospital and 5 clinics which serve the communities within and around the Constituency. There are 9 combined schools and 1 primary school, as well as 2 tertiary institutions, namely the University of Namibia Ogongo Campus and Marcopolo Vocational Training. There is 1 sub–Police Station and a MTC’s network coverage in the Constituency.

There are two gravel roads in the Constituency, namely the Outapi-Okahao and Ogongo Olundjinda roads. The only financial services available are those rendered by Nampost. Hence, residents travel to neighbouring Constituencies to get access to financial services from the First National Bank (FNB), Bank Windhoek and Standard Bank. There is also an Ogongo Game Park, which is part of Ogongo Campus of the University of Namibia. It consists of 1000 hectares. The Camp has variety of bird species, including ostriches and other games such as zebras, giraffes, springboks and oryx etc.

## **3.2 Description of the surrounding biophysical environment**

### **3.2.1 Climate**

The Omusati Region is described as a semi-arid and characterized by the high temperature ranging between 25°C and 37°C. The average rainfall per year is about 350-500 mm between November to April. The rainfall decreases from 600 mm in the north east to 300 mm in the west. The Region falls under the very flat hydrogeological Cuvelai Basin dipping from some 1150 m above sea level (asl) in the north east to 1080 m asl in Etosha Pan. The relatively high and reliable average rainfall allows for crop farming. After rain season, innovative irrigation systems are utilized by locals to produce agricultural products. The ground water in the west and south of the Region is sweet and shallow i.e., 10-20 meters from the surface. During droughts, pits are dug and serve as reliable sources of water. The rest of water sources in the Region is predominantly saline.

### **3.2.2 Topography and Drainage**

The Region's elevation is 1150 m above sea level (asl) in the north east to 1080 m asl in Etosha Pan. The topography of the Region is mostly flat (with the exemption of the Ruacana area towards the Angolan border that is punctuated by mountains and rolling hills). According to Omusati Regional Council (2016), the landscape of the Region is made up of a successive series of sand dunes of varying depths, separated by waterways. The topography of the area is characterised by a combination of high and low-lying areas intersected by shallow water courses. The flat shallow depressions or Oshanas fills up with surface water during the rainy season. The Oshanas also receive and keep water from heavy rainfalls that are occasionally experienced in this part of the country.

### **3.2.3 Geology and Soil**

Namibia has a unique and ancient geological history with great rock formation. The geology of the territory is characterized by sandstone and calcrete (Mendelssohn, 2002). No hard-geological rocks are exposed at the site. The soil of the northern Namibia is dominated by deep Kalahari and Namib sand that mostly occur in the formation of sands and other sedimentary materials, while the clay sodic sands dominate in the Oshanas. The soil type classification is termed to be favorable for crop cultivation and plant growth. This is determined by its physical properties to the

nature of water retention, lower salinity, and high nutrient level. In principle, the soil comprises of mosaic soil type such as clay and average salty clay. This determines that the main soil dominance is Eutric Cambisols that characterized by its definition on consistency, colour and structure. On extent, it is found in the depression of low-lying areas of the landscape, and typically contain accumulations of calcium carbonate. These soils are potentially fertile, but iron and zinc occurrence might be at lower-level concentration sometimes (Mendelsohn, 2002).

### **3.2.4 Surface water**

The Cuvelai Basin which hosts the project area consists of thousands of drainage channels or oshanas which are filled during the rainy season. These oshanas are shallow, often vegetated and poorly defined, interconnected flood channels and pans through which surface water flows slowly or may form pools depending on the intensity of the floods (“efundja”) (GCS Water and Environmental Consultants, 2019). There are no natural surface water bodies on site.

### **3.2.5 Fauna and Flora**

The landscape of the Region is made up of mopane trees which is a dominant species and spreads across the Region on shallow sand. The sandy parts of the Region bear abundant makalani palms ‘omilunga’, fig trees ‘omikwiyu’, baobab trees ‘omikwa’ and marula trees ‘omigongo’, especially in the eastern part.

Vegetation in Omusati region is largely influenced by soils and water. However, the region has a large variety of vegetation type. Vegetation in the Cuvelai part of the region ranges from mopane (fruit tree) to mopane shrub and low trees on oshanas and limited Cuvelai palms and fruit trees on loamy sands. In the remainder of the Region, the western sand plains are found interspersed with mopane " Combretum savanna, western mopane " pan mosaic and mixed broadleaf woodlands on red dolomite sands at the edges in the Ruacana area and at the extreme south western corner of the region.

Omusati Region is a home to 332 584 cattle and 295 780 goats (Namibian Sun Newspaper, 2018) and different species of domestic animals. Further domestic animals kept by the locals in the area include donkeys, sheep’s, and pigs. There is not much of wildlife occurring within the area as most wildlife is located within the Etosha National Park.

### 3.2.6 Groundwater potential

The country has been divided into twelve hydrogeological regions based mainly on geological structure and groundwater flow and according to the national hydrogeological map, the project area is part of the Cuvelai-Etoshia groundwater Basin. According to the hydrogeological map of Namibia (Christelis and Struckmeier, 2011), the regional groundwater potential is moderate. The Kalahari aquifers are subdivided into five major units and named after the region or locality where they occur or where they were first described. The Discontinuous Perched Aquifer (KDP) represents a series of shallow, only locally occurring aquifers of limited extent. This aquifer type is present mainly in the Niipele Sub-Basin where recent dune sand covers the underlying sediments of the Kalahari Sequence. The KDP is recharged by direct infiltration of rainwater and exploited by means of traditional funnel-shaped hand dug wells called omifima (perched aquifer). Although the yield is generally limited by the size of the aquifers, they provide easily accessible and good quality drinking water to the scattered villages in the northern regions.

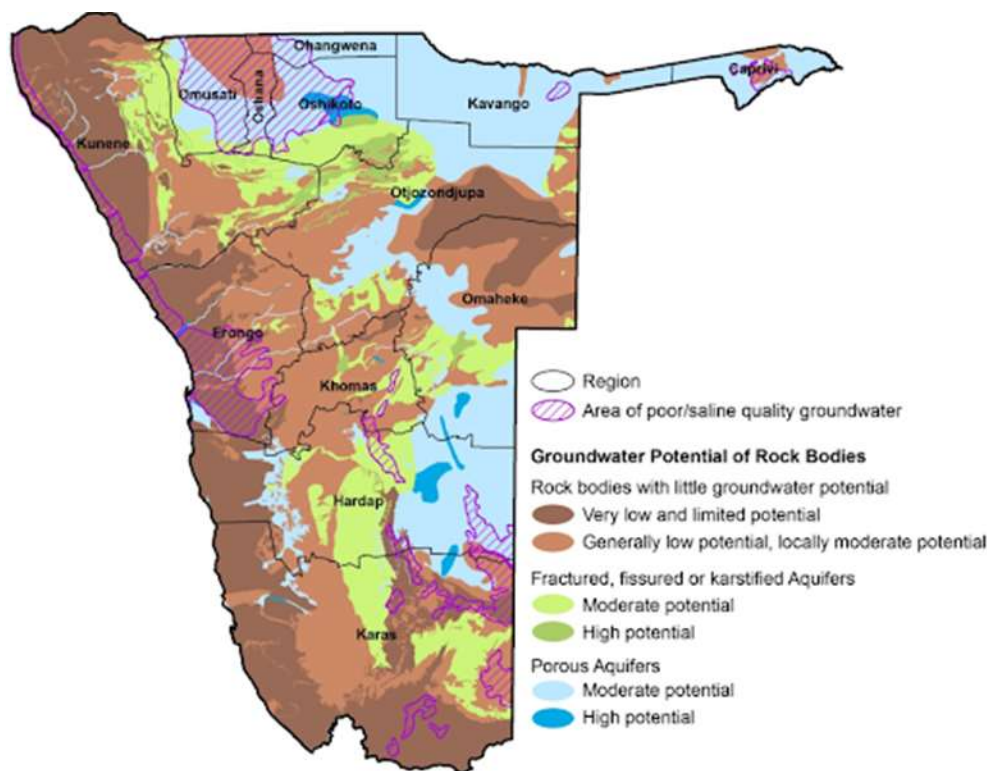


Figure 7: Hydrogeological map of Namibia (Christelis & Struckmeier 2001 (2011))

The region is a semi-arid, flat area, with one permanent river, the Kunene, on its north western border with Angola. The groundwater of the Cuvelai-Iishana Sub-Basin previously known as Ovambo basin is relatively shallow but mostly brackish or saline. The ground water in the basin is found in shallow discontinuous aquifers (Perched Aquifers). The area is characterized by

thousands of shallow drainage channels or oshanas which funnel from Cuvelai basin in Angola towards the Etosha Pan. The Cuvelai system is characterized by shallow depressions or oshanas which fill up with surface water during the rainy season. The Cuvelai originates in Angola with its catchments falling between the Kunene and the Kavango " Okavango drainage, system. The system is fed by several rivers, some of which have their headwaters as far north as the Encoco highlands in Angola, which receive on average over 800 mm of rain a year. As these seasonal waters move southward, the land becomes flatter and the rivers and channels meandering towards the Namibia border feed into each other at some places and part ways at others, forming a massive inland delta. These seasonal flows provide fishing grounds, renew pasture and recharge ground water supplies. The oshanas in the Omusati region are much boarder and flatter than in the Oshana and Oshikoto regions, where the channels are much closer to each other. Most channels come together further south in a few main watercourses and eventually flow into the Etosha Pan via the Ekuma River, because the pan is the deepest point, and it is the base level of the groundwater flow system.

## 4. LEGAL FRAMEWORK

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### 4.1 Environmental Management Requirements

The operations of Ketu Bricks Project will trigger activities listed under the Environmental Management Act No. 7 of 2007 as activities which cannot be undertaken without an Environmental Clearance Certificate as noted below.

#### ❖ MINING AND QUARRYING ACTIVITIES

3.2 Other forms of mining or extraction of any natural resources whether regulated by the law or not.

### 4.2 Environmental Management Requirements

There are several international, national legislations which provide a broad range of principles that should be used as guiding tools for the gravel mining activities operations and management. These are tabled below.

Table 1: Applicable national legislations

LEGISLATION	PROVISION AND REQUIREMENTS
The Constitution of the Republic of Namibia as Amended	Article 91 (c) provides for duty to guard against “the degradation and destruction of ecosystems and failure to protect the beauty and character of Namibia.” Article 95(l) deals with the “maintenance of ecosystems, essential ecological processes and biological diversity” and sustainable use of the country’s natural resources. <b>Sustainable development should be the priority for this development.</b>
Environmental Management Act, No.07 of 2007	Ensuring that the significant effects of activities on the environment are considered carefully and in time. To promote the sustainable management of the environment and the use of natural resources by establishing principles for decision making on matters affecting the environment. <b>Further it states that; all activities of mining and quarrying activities require an Environmental Clearance Certificate. Once granted, the ECC for this project should be renewed after three years.</b>

<p>Traditional Authorities Act, 25 of 2000</p>	<p>Provides for the establishment of traditional authorities and defines their powers, duties and functions of traditional authorities and traditional leaders.</p> <p><b>Land acquisition for the activities performed by the proponent.</b></p>
<p><b>Communal Land Reform Act, 5 of 2002</b></p>	<p>Provides for the allocation of rights in respect of communal land. Establishes Communal Land Boards and provides for the powers of Chiefs and Traditional Authorities and boards in relation to communal land; and to make provision for incidental matters.</p> <p><b>The project site is in a communal area, the Proponent should ensure proper consultations with the relevant authorities and that the that the project activities comply with the regulations provided in the Act.</b></p>
<p>Pollution Control and Waste Management Bill</p>	<p>This Bill serves to regulate and prevent the discharge of pollutants to air and water as well as providing for general waste management. The Bill will repeal the Atmospheric Pollution Prevention Ordinance (11 of 1976) (below) when it comes into force.</p> <p><b>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) 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.</b></p>
<p>Atmospheric Pollution Prevention Ordinance, no. 11 of 1976</p>	<p>To provide for the prevention of the pollution of the atmosphere, and for matters incidental thereto. The Ordinance deals with administrative appointments and their functions; the control of noxious or offensive gases; atmospheric pollution by smoke, dust control, motor vehicle emissions; and general provisions.</p> <p><b>Although the activities will likely not generate excessive dust particles, the proponent should implement the necessary mitigation measures to limit dust emissions into air.</b></p>
<p>Water Act 54 of 1956</p>	<p>Prohibits the pollution of underground and surface water bodies.</p> <p><b>Avoid any activity which could lead to soil and underground water contamination hence the need to implement the suggested mitigation measures.</b></p>



<p>Water Resources Management Act (Act No. 11 of 2013)</p>	<p>This Act provides a framework for managing water resources based on the principles of integrated water resources management. It provides for the management, development, protection, conservation, and use of water resources. Furthermore, any watercourse on/or in proximity to the site and associated ecosystems should be protected in alignment with the listed principles.</p> <p><b>The associated activities may pose danger to surface and underground water resources through the inappropriate use of fuels and lubricants. The proponent shall ensure adequate handling of hazardous substances that could pollute water sources.</b></p>
<p>Public Health Act (Act No. 36 of 1919)</p>	<p>The Act serves to protect the public from nuisance and states that no person shall cause a nuisance or shall suffer to exist on any land or premises owned or occupied by him or of which he is in charge any nuisance or other condition liable to be injurious or dangerous to health.</p> <p><b>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 public and that any emissions which could be considered a nuisance remain at acceptable levels.</b></p>
<p>Public Health and Environmental Act, 2015</p>	<p>The objectives of the PHE Act are to.</p> <ul style="list-style-type: none"> <li>• Promote public health and wellbeing.</li> <li>• Prevent injuries, diseases, and disabilities.</li> <li>• Protect individuals and communities from public health risks.</li> <li>• Encourage community participation to create a healthy environment.</li> <li>• Provide for early detection of diseases and public health risks.</li> <li>• Promotes proper waste management.t</li> </ul> <p><b>Section 2 requires that a) “Every local authority must take necessary reasonably and applicably measures to maintain its local authority area at all times in a hygienic and clean condition” b) Prevent occurrence of a health nuisance, unhygienic condition, an offensive condition or any condition which could be harmful or dangerous to the health of a person within its local authority or the local authority area of another local authority”</b></p>

<p>The Soil Conservation Act No.76 of 1969</p>	<p>This Act provides for the prevention and combating soil erosion, the conservation, improvement, and manner of use of the soil and vegetation and the protection of water sources.</p>
<p>Labour Act (No 11 of 2007)</p>	<p>To establish a comprehensive labour law for all employers and employees; to entrench fundamental labour rights and protections. Regulate basic terms and conditions of employment; ensure the health, safety, and welfare of employees; to protect employees from unfair labour practices; to regulate the registration of trade unions and employers' organisations; to regulate collective labour relations; to provide or the systematic prevention and resolution of labour disputes.</p> <p><b>Adhere to all applicable provisions of the Labour Act and the Health and Safety Regulations. The Proponent will be obliged to create a safe working environment.</b></p>

## 5. ROLES AND RESPONSIBILITIES

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It is the core responsibility of the Ketu Bricks Project to ensure the successful implementation of this EMP and any conditions to be imposed by the Ministry of Environment, Forestry and Tourism (MEFT). However, the implementation of this EMP also requires the involvement of various role players, each with specific responsibilities to ensure that the project is operated in an environmentally sensible manner.

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

- Environmental Compliance Officer (ECO) representing MEFT for auditing and monitoring compliance to the EMP.
- Site Manager (or assigned representation by Ketu Bricks Project)

### 5.1 Role Players and Responsibilities

#### 5.1.1 Site Manager

The Site Manager will be responsible for the overall daily operations onsite and shall be responsible for 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.

- a) Implement the final EMP after approval by DEA and ensure the project comply with the EMP and conditions therein.
- b) Ensure that the work onsite is 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.
- c) Ensure that all site staff are adequately informed of the requirements of the EMP pertaining to their site role and provide environmental training and awareness on the contents of the EMP to all employees involved in brick making operations. Environmental awareness training should take place in the language understood by the employees.
- d) Ensure the review/update of this ESMP as required and renewal of the ECC.
- e) Enforce all environmental regulations, ESMP compliance, and conduct regular inspections as well as review project environmental and incident reports.

### **5.1.2 Environmental Assessment Practitioner (EAP)**

The Environmental Assessment Practitioner (EAP) shall be an independent consultant appointed by the Proponent. The responsibility of the EAP are as follows:

- a) Conduct renewals of the ECC application,
- b) Conduct inspections of the rehabilitation area and give guidance regarding rehabilitation measures.

### **5.1.3 Competent Authority**

The competent authority is the Ministry of Environment, Forestry and Tourism (MEFT) – Department of Environmental Affairs (DEA). They are responsible for reviewing and the approval of this EMP document. DEA is also responsible for conducting environmental compliance monitoring should any instances of non-compliance be found, this must be brought to the attention of the Proponent, along with recommended measures for rectifying the non-compliance.

## **5.2 Disciplinary Action**

### **5.2.1 Proponent**

The ESMP is a legally binding document, non-compliance to the ESMP is punishable upon conviction under EMA.

### **5.2.2 Employees**

Employees found contravening the ESMP must be disciplined by the proponent.

## 6. PROPOSED MITIGATION MEASURES DURING OPERATIONAL PHASE

This section will focus on the proposed mitigation measures which should be implemented to prevent environmental degradation. The following mitigation measures must be enforced to prevent, avoid, and lessen negative environmental and public health risks that are associated with the brick making operations.

**Table 2: Proposed mitigation measures during the operational phase**

Nature of Environmental Impact/ Aspect/Risk	Mitigation/Enhancement Measures	Monitoring	Responsibility
<p><b>Sand utilization</b> The bricks making project require a substantial amount of sand.</p>	<ul style="list-style-type: none"> <li>Sand should be strictly sourced from locally approved sand burrow pits or purchased from authorized dealers.</li> <li>Alternatively, a separate EIA should be conducted for any possible sand mining site (if available)</li> <li>Unauthorized mining of sand in river streams (oshanas) is prohibited.</li> </ul>		Manager
<p><b>Water usage</b> The bricks making project also require water for operation.</p>	<ul style="list-style-type: none"> <li>Implement water saving techniques i.e., re-use,</li> <li></li> </ul>		
<p><b>Visual impacts</b> To prevent eyesore from ongoing activities.</p>	<ul style="list-style-type: none"> <li>Sand stockpiles must be well protected and protected from wind and water erosion by covering and/or spraying with water.</li> <li>Activities shall avoid causing unnecessary disruption and nuisance.</li> <li>Tidiness should be maintained onsite and take cognition when parking vehicles and placing equipment.</li> <li>No waste should be buried onsite.</li> </ul>	Regular inspections. Site neatly kept.	Site Manager
<p><b>Noise Impacts</b> To prevent excessive noise and vibrations. Noise generated might</p>	<ul style="list-style-type: none"> <li>Activities should only be allowed between 07:00 to 17:00 from Monday to Saturday and no work should be done in the evening.</li> </ul>	Regular Inspection. Strict operational	Site Manager

<p>affect employees working at the site and surrounding areas hence posing health and creating a nuisance, respectively.</p>	<ul style="list-style-type: none"> <li>• Proper and timely maintenance of vehicles.</li> <li>• Sensitize drivers operating at the site to switch off engines of vehicles not in use and drivers must maintain low speed.</li> <li>• Operators working on the site to be equipped with ear protection equipment, where necessary.</li> <li>• Loud music should not be allowed onsite.</li> <li>• Record all complaints regarding noise and take corrective measures for continuous improvement.</li> <li>• Do not hooter unnecessarily.</li> </ul>	<p>times and record all noise complaints</p>	
<p><b>Air Quality &amp; Dust Impacts</b> To prevent dust nuisance during operational activities.</p>	<ul style="list-style-type: none"> <li>• Apply dust suppression measures such as water sprays when deemed necessary.</li> <li>• Personnel are to be issued with adequate Personal Protective Equipment when necessary.</li> <li>• Handling activities must be avoided during high windy conditions.</li> <li>• Ensure that all vehicles and machinery entering the site are in good working condition to prevent unnecessary emissions.</li> </ul>	<p>Regular visual inspection</p>	<p>Site Manager</p>
<p><b>Waste Management</b> Solid and liquid waste might be produced during the operational phase. Waste which includes papers, plastics, food leftovers, empty containers etc., will be produced during the operational phase. Hazardous waste like oils, fuel, greases etc. might be produced in instances of spillages/leakages.</p>	<ul style="list-style-type: none"> <li>• Waste should be collected at the end of each working day and disposed of in the bins provided.</li> <li>• The proponent must adhere to all the relevant laws and regulations applicable to the disposal of waste.</li> <li>• Strictly, no burying, dumping, or burning of waste onsite is allowed as it is an environmental and public health hazard.</li> <li>• Place weather and vermin proof bins/containers around the site for disposal of solid waste.</li> <li>• Waste must be appropriately collected and disposed of at an approved waste disposal site.</li> <li>• The site is to be always kept clean.</li> <li>• The ablution facilities available onsite should be kept clean. Waste should be properly contained to avoid</li> </ul>	<p>Regular inspections.</p>	<p>Site Manager</p>

	<p>any leakages and spillages and should be regularly disposed of at the sewage disposal site.</p> <ul style="list-style-type: none"> <li>Contaminated soil wastes must be disposed of at an approved hazardous waste disposal site.</li> <li>Separate hazardous waste from general waste, clearly marked and stored in appropriate containers.</li> <li>Awareness of the hazardous nature of the various types of waste should be enforced.</li> <li>Fuel shall not be stored onsite.</li> <li>Regular servicing and maintenance of vehicles and machinery to avoid leakages of oil and lubricates.</li> </ul>		
<p><b>Traffic Impacts</b> Movement and presence of vehicles on and from the C46 and other access roads presents risks of accidents. This poses a risk to personal safety and asset security.</p>	<ul style="list-style-type: none"> <li>Obey traffic regulations in terms of speed limits, etc.</li> <li>Coordinate movement of vehicles and maintain the vehicles.</li> <li>Strictly no overloading during transportation.</li> <li>The site manager must ensure that all drivers employed have valid driver's licenses of vehicle types they drive, and that they have experience in driving those vehicles.</li> <li>Ensure that no driver is under the influence of alcohol or narcotics is driving onsite.</li> <li>Proper parking area should be made available onsite.</li> <li>Clearly mark the site access points and routes onsite to be used by the vehicles, employees, and pedestrian.</li> </ul>	Observation of traffic along the C46 other road and access road which leads to the site.	Site Manager
<p><b>Surface and Groundwater Impacts</b> There are no surface water bodies in proximity to the site. Groundwater and soil contamination might happen in an event that, there are leakages and spillages of petroleum products from vehicles and equipment.</p>	<ul style="list-style-type: none"> <li>Spillages of hazardous substance including oils, hydrocarbon fuel and lubricants must be cleaned up and disposed of at the designated disposal facility.</li> <li>Servicing and maintenance of vehicles and machinery onsite shall not be allowed.</li> <li>Drip trays should be used to contain any leaks emanating from vehicles and equipment used onsite.</li> </ul>	Regular visual inspection	Site Manager

	<ul style="list-style-type: none"> <li>• Washing of vehicles and equipment and discharge of contaminated wastewater onsite shall not be allowed.</li> <li>• Fuel shall not be stored onsite and refueling of vehicles onsite shall not be allowed.</li> <li>• Equipment and materials to deal with spill clean-up must be readily available onsite and staff must be trained as to how to use the equipment and briefed about reporting procedures. Spillage control procedures must be in place according to relevant SANS standards.</li> <li>• Place a portable ablution facility with suitable containment systems for use onsite.</li> <li>• Proper environmental awareness and remedial response training of employees must be conducted on a regular basis.</li> </ul>		
<p><b>Health and Safety</b> Risks to the health and safety of employees during operations.</p>	<ul style="list-style-type: none"> <li>• Conduct safety training on the use the protective clothing and the correct handling of material and the safe use of all equipment.</li> <li>• First aid treatment and emergency medical assistance must be available.</li> <li>• A register for all the training offered and of all the incidents must be kept.</li> <li>• Comply with all Health and Safety standards as specified in the Labour Act.</li> <li>• Ensure that all personnel onsite have protective equipment and clothing (helmets, gloves, respirators, work suits, earplugs, goggles, and safety shoes where applicable).</li> <li>• Use of dust suppression measures.</li> <li>• Reduce noise exposure by isolating noisy equipment.</li> </ul>	<p>Site inspection, Conducting Hazard and Risk Assessments and Conduct Health and safety incident monitoring</p>	<p>Site Manager/Ministry of Labor</p>



	<ul style="list-style-type: none"> <li>• Safety Posters and slogans should be exhibited at conspicuous/dangerous places.</li> <li>• No go and sensitive areas must be clearly marked and avoided.</li> </ul>		
<p><b>Decommissioning and Site Rehabilitation</b></p> <p>End of the brick making project lifespan.</p>	<ul style="list-style-type: none"> <li>• Filing of all reports (including photographic documentation of successful rehabilitation initiatives).</li> <li>• A final site inspection to be conducted and documented 3 months after all activities associated with the brick making project initiative have been completed.</li> <li>• Allocate appropriate budgetary allowances for all possible rehabilitation activities and initiatives.</li> <li>• On completion of all operations, the Proponent must rehabilitate and stabilize the area as best as possible to prevent and control surface erosion.</li> <li>• Rehabilitation of the site shall be completed within a specific period and to the satisfaction of the MEFT.</li> </ul>	Inspection carried out.	Site Manager
<p><b>Employment opportunities</b></p> <p>Positive impact of short- and long-term employment for locals</p>	<ul style="list-style-type: none"> <li>• Local labour (male and female, skilled and unskilled) should be employed as a priority</li> </ul>		Proponent
<p><b>Development</b></p> <p>The project contributes immensely to the local development by ensuring a good supply of building materials to local people.</p>	<ul style="list-style-type: none"> <li>• Products should meet local specifications and requirements to ensure its success.</li> </ul>		Proponent

## 7. COMPLIANCE MONITORING

To ensure continual improvement in environmental performance and reduce adversity of potential negative impacts, it is advisable to keep monitoring the identified environmental receptors. The compliance monitoring is the ultimate responsibility of the respective regulatory authorities. Monitoring activities should be done at different intervals as indicated in the table below and should be done throughout the mining life span.

**Table 3: Compliance Monitoring Procedures**

Issue to be monitored	Monitoring objectives	What needs to be monitored	Frequency and Monitoring	Responsibility
<b>Pollution</b>	-Avoid littering, pollution etc.	-litter, spillage, and leakages	Daily	Proponent
<b>Soil /sand</b>	-Ensure soil conservation	-Quantity of sand used monthly	Monthly	Proponent
<b>Water</b>	-monitor water utilization	-Monthly water usage	Monthly	Proponent
<b>Air quality</b>	-Ensure air quality	-Dust emission	Daily	Proponent
<b>Noise level</b>	-Ensure noise level is at the required standard (85dB)	-Ambient noise level at mining site	Daily	Proponent
<b>Implementation of the EMP</b>	-Ensure compliance to this EMP and adherence to the regulative measures	-Adherence to the EMP and legal requirements	Quarterly reports	Proponent

## **8. MITIGATION MEASURES AT THE DECOMMISSIONING**

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Socio-economic development is very important to 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 an environmentally friendly manner. Developmental activities should consider the environmental and social wellbeing of the specific activity even beyond the end of the project lifespan. Therefore, site operations should be conducted in a sustainable manner throughout the project lifespan.

### **8.1 Recommended Rehabilitation Actions**

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 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). The following actions should be implemented.

- All structures constructed and that will no longer be required shall be removed and the area should be rehabilitated to the satisfaction of MEFT.
- The areas shall be cleared of any contaminated soil and any other type of waste, which must be disposed of properly at a designated disposal site.

The project is not envisioned to be decommissioned soon. However, during the time at which the project shall be decommissioned, a closure and decommission plan must be development and approved by the competent authority.

## **9. CONCLUSION AND RECOMMENDATION**

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### **9.1 Conclusion**

The consultant concludes that the project, as described in this EMP Report, is environmentally acceptable. If all mitigation measures are implemented according to the recommendations given in the Environmental and Social Management Plan, it is anticipated that the consequences and/or probability of the predicted negative impacts will be managed/reduced. The ESMP should be used as an on-site reference document for the operations of the brick making project. Parties responsible for transgressing of the EMP should be held responsible for any rehabilitation that may need to be undertaken. Monitoring reports must be kept available for possible submissions to the Ministry of Environment, Forestry and Tourism for future ECC renewal application.

### **9.2 EAP Recommendations**

It is recommended to the approving authority that this project is approved and be issued with the Environmental Clearance Certificate.

## 10. REFERENCES

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