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# Environmental Impact Assessment (EIA) for the proposed construction and operation of a brick factory in Oshakati, Oshana Region

## Environmental Scoping Report

Version - Final

25 October 2022

Oshana Crusher Trading CC

GCS Project Number: 22-0163

MEFT Reference: **APP-00177**



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**22-0163**

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## EXECUTIVE SUMMARY

### Introduction

Oshana Crusher Trading CC (The Proponent) proposes to construct and operate a brickmaking factory in Oshakati.

### Need and Desirability

Oshakati is a fast-growing town in the Oshana Region. Due to the increase in development activities, there is an increase in construction activities. As such, there is an ever-growing demand for bricks within the subject area. The proposed brickmaking factory will assist in making available different kinds of bricks for purchase for construction purposes to Oshakati Town and its surrounding areas.

### Project Description

The Proponent proposes to construct and operate a brick making factory in Oshakati. The Oshakati Town Council allocated Portion D and E of the Remainder of the Oshakati Town and Townlands No 880 for lease to the proponent (under the company name Oshana Crusher Trading CC) for the construction and operation of the proposed brick factory.

### Public Consultation

Communication with Interested and Affected Parties (I&APs) about the proposed development was facilitated in English through the following means and in this order:

- A Background Information Document (BID) containing descriptive information about the proposed activities was compiled (**Appendix D**) and sent out to all identified and registered I&APs per email dated 1 April 2022;
- Notices were placed in *The New Era* and *Confidente* newspapers dated 1 and 8 April 2022, briefly explaining the activity and its locality, and inviting members of the public to register as I&APs (**Appendix E**);
- A site notice was fixed at the site (**Appendix G**).
- A meeting with the Town Council as well as a public meeting was held on 6 July 2022 in Oshakati (**Appendix I**).

The Draft Scoping Report was circulated from the 5<sup>th</sup> of October until the 14<sup>th</sup> of October 2022 for public review and comment.

### Conclusions and Recommendations

The key potential biophysical impacts related to the pre-operational, construction, operational and maintenance and decommissioning phases of the proposed project were identified and assessed. Suitable mitigation measures (where required and possible) were recommended, and the impacts can be summarised as follows:

- **Impacts on biodiversity loss (during pre-construction and construction phase):** The preparation of the site involves clearing of certain areas on site. This may impact the existing biodiversity in the area. The subject site does accommodate some vegetation and possibly some fauna. During site preparation it should be ensured that only the areas applicable to the project site area cleared. The layout of the proposed plant should incorporate existing protected trees which may not be removed without a valid permit from the local department of Forestry. However, the impact can be adequately addressed by the recommendations given under subchapter 7.2.1, and management actions given in the EMP (Chapter 3).
- **Impacts on soil, surface and groundwater (during construction and decommissioning phase):** Improper handling, storage and disposal of hydrocarbon products and hazardous materials at the site may lead to soil and groundwater contamination, in case of spills and leakages. The impact can be adequately addressed by the recommendations given under subchapters 7.3.2, 7.5.6 and management actions given in Chapter 3 of the EMP.
- **Impacts of erosion (during construction and decommissioning phase):** Soil erosion is likely to occur on site given the characteristics of the site and the fact that the site is sparsely vegetated. The impact can be adequately addressed by the recommendations given under subchapters 7.3.3, 7.5.7 and management actions given in Chapter 3 of the EMP.
- **Impacts on archeological and heritage resources (during construction phase):** There are no archeological and heritage resources known to be located on the sites. However, should these be encountered during the construction activities mitigation measures need to be in place to ensure that these resources are not harmed. The impact can be adequately addressed by the recommendations given under subchapter 7.3.4 and management actions given in Chapter 3 of the EMP.

- **Impacts on health and safety (during construction, operation and decommissioning phase):** Construction, operation and decommissioning activities may cause health and safety risks to people operating on the site. The impact can be adequately addressed by the recommendations given under subchapter 7.3.5, 7.4.6, 7.5.3 and management actions given in Chapter 3 of the EMP.
- **Impacts on dust and noise (during construction, operation and decommissioning phase):** Construction, operational and decommissioning activities may increase dust and noise generated around the site area. The impact can be adequately addressed by the recommendations given under subchapter 7.3.6, 7.3.7, 7.4.2, 7.4.3, 7.5.5 and management actions given in Chapter 3 of the EMP.
- **Impacts on air quality (during operation phase):** Operational activities may result in emissions generated around the site area. The impact can be adequately addressed by the recommendations given under subchapter 7.4.4 and management actions given in Chapter 3 of the EMP.
- **Impacts on waste (during construction, operation and decommissioning phase):** Improper disposal of waste materials at the site may lead to pollution of the site and resultant environmental degradation. The impact can be adequately addressed by the recommendations given under subchapters 7.3.8, 7.4.5, 7.5.4 and management actions given in Chapter 3 of the EMP.
- **Impact on social environment (during construction, operation and decommissioning phase):** The proposed activity may provide employment opportunities for the local people during construction and operation of the proposed factory. The impact can be adequately addressed by the recommendations given under subchapter 7.3.9, 7.4.7, 7.5.1 and management actions given in Chapter 3 of the EMP.
- **Impact on traffic (during pre-construction, construction, operation and decommissioning phase):** Traffic is expected to increase during the construction and operational activities on the site. The impact can be adequately addressed by the recommendations given under subchapter 7.2.2, 7.4.1, 7.5.8 and management actions given in Chapter 3 of the EMP.

Based on the information provided in this report, GCS is confident the identified risks associated with the proposed development can be reduced to acceptable levels, should the measures recommended in the EMP be implemented and monitored effectively. It is therefore recommended that the project receive Environmental Clearance, provided that the EMP be implemented.

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**ACRONYMS AND ABBREVIATIONS**

CV	Curriculum Vitae
DEAF	Department of Environmental Affairs and Forestry
EA	Environmental Assessment
EAP	Environmental Assessment Practitioner
ECC	Environmental Clearance Certificate
EIA	Environmental Impact Assessment
EMA	Environmental Management Act No 7 of 2007
EMP	Environmental Management Plan
GCS	GCS Water and Environmental Engineering Namibia (Pty) Ltd
GG	Government Gazette
GN	Government Notice
I&APs	Interested and Affected Parties
LAC	Legal Assistance Centre
MEFT	Ministry of Environment, Forestry and Tourism
MOL	Ministry of Labour
OWW	Oshakati Water Works

## 1 INTRODUCTION

Oshana Crusher Trading CC (The Proponent) proposes to construct and operate a brickmaking factory in Oshakati. The factory is proposed to be located within the northwestern townlands of Oshakati in proximity to the Omugongo Estate and the C46 road. The locality of the proposed development is shown in **Figure 1-1** overleaf.

Oshakati is a fast-growing town in the Oshana Region. Increased development activities result in increased construction activities. As such there is an ever-growing demand for bricks within the subject area. The proposed brick making factory will assist in making available different kinds of bricks for purchase for construction purposes to Oshakati Town and its surrounding areas.

### 1.1 The Need for an Environmental Assessment (EA)

Under the 2012 Environmental Impact Assessment (EIA) Regulations of the Environmental Management Act (EMA) No. 7 of 2007, the proposed development is a listed activity that may not be undertaken without an Environmental Clearance Certificate (ECC). This activity is listed under the following relevant sections:

- **HAZARDOUS SUBSTANCE TREATMENT, HANDLING AND STORAGE**
  - *Activity 9.2 Any process or activity which requires a permit, license or other form of authorisation, or the modification of or changes to existing facilities for any process or activity which requires an amendment of an existing permit, license or authorisation or which requires a new permit, license or authorisation in terms of a law governing the generation or release of emissions, pollution, effluent or waste.*



Figure 1-1: Locality map of proposed site

In order to fulfil the requirements of the EMA and its 2012 EIA Regulations, Oshana Crusher Trading CC appointed GCS Water and Environmental Engineering Namibia (Pty) Ltd (GCS hereafter), an independent Environmental Consultant, to conduct an Environmental Assessment (EA) inclusive of public consultation for the proposed project in Oshakati. The required documents will be submitted as part of an application for an ECC in terms of the EMA and its EIA Regulations. The findings of the EA process are incorporated into an Environmental Scoping Report (this report) and together with the Environmental Management Plan (EMP) will be submitted as part of an application for an ECC to the Environmental Commissioner at the Department of Environmental Affairs and Forestry (DEAF), Ministry of Environment, Forestry and Tourism (MEFT).

Stephanie Strauss, a qualified Environmental Assessment Practitioner (EAP) conducted this EA process. The team was assisted by Victoria Shikwaya, an Environmental Scientist. The CV's of the consultants are attached as **Appendix A** at the end of this report.

## 1.2 Need and Desirability of the Project

Oshakati is a fast-growing town in the Oshana Region. Increased development activities result in increased construction activities. As such there is an ever-growing demand for bricks within the subject area. The proposed brick making factory will assist in making available different kinds of bricks for purchase for construction purposes to Oshakati Town and its surrounding areas.

## 1.3 Scope of Work

This scoping study was carried out in accordance with the Environmental Management Act (EMA) (7 of 2007) and its 2012 EIA Regulations (GG No. 4878 GN No. 30). After submitting an application for ECC to the DEAF, the first stage in the EA process is to submit a scoping report. **Table 1-1** details the report requirements and relevant sections in this report.

**Table 1-1: Report contents based on the 2012 EIA Requirements**

Description	Section of the Report
The need and desirability of the proposed project	Subchapter 1.2
Project description and the need for it	Chapter 2
Alternatives considered for the proposed project in terms of the no-go option.	Chapter 3
The relevant laws and guidelines pertaining to the proposed project	Chapter 4
Baseline environment in which the proposed activity will be undertaken	Chapter 5
The public consultation process followed (as described in Regulation 7 of the EMA Act) whereby interested and affected parties (I&APs) and relevant authorities are identified, informed of the proposed activity and provided with a reasonable opportunity to give their concerns and opinions on the project	Chapter 6
The identification of potential impacts, impacts description, assessment, mitigation measures and recommendations	Chapter 7
Recommendations and Conclusions to the report	Chapter 8

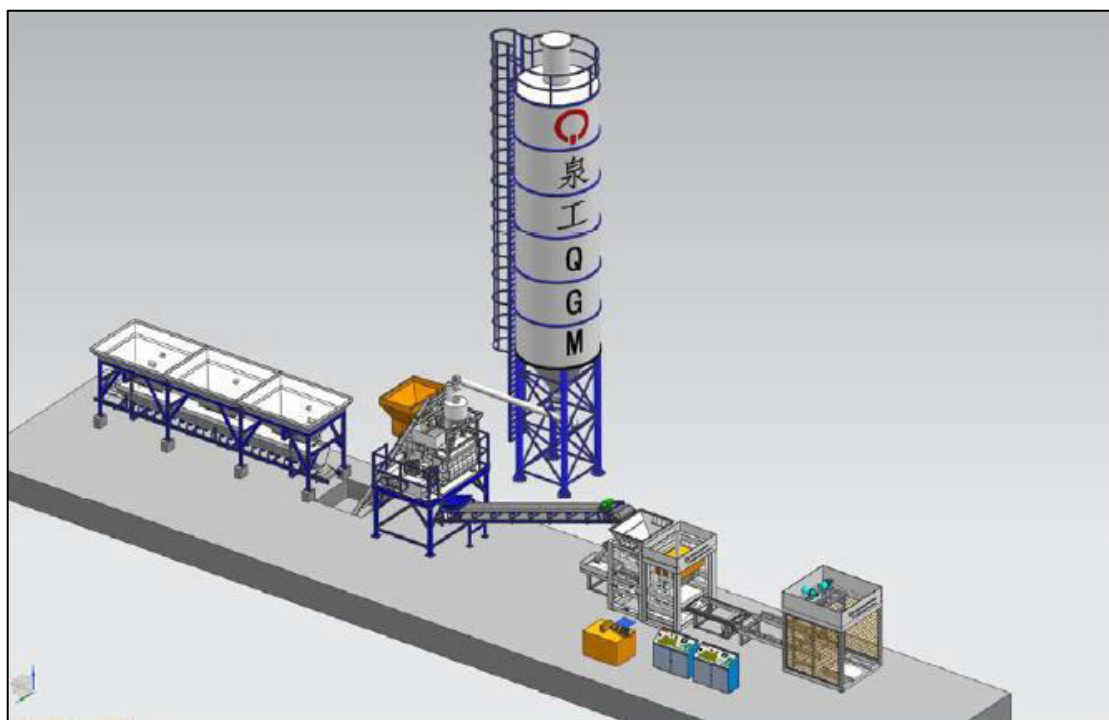
The next chapter will be focusing on the description of the proposed project and its associated activities.

## 2 PROJECT DESCRIPTION

The Proponent proposes to construct and operate a brick making factory in Oshakati. The proponent submitted an application to the Oshakati Town Council to request for land for the development of the proposed brickmaking factory. The Oshakati Town Council as per Council Resolution dated 16 December 2021 (**Appendix H**) allocated Portion D and E of the Remainder of the Oshakati Town and Townlands No 880 for a 15 year lease to the proponent for the construction and operation of the proposed brick factory. Please refer to **Figure 1-1** for the locality of the proposed brick factory.

### 2.1 Description of Activity

The proponent intends to use a QGM QT10 automatic block making machine (**Figure 2-1**) which has a production output of 15 000 bricks per day. The bricks are made by mixing water, cement, sand and stone in a machine which is then transferred to the automatic block making machine to make the mould. The machine is capable of producing different types of blocks/bricks such as super brick, standing brick, interlock and paving, kerb. The machine dimensions are 7568x2060x2968mm and weighs approximately 15 tonnes. The bricks produced from the machine are widely used for construction of buildings, road paving, gardens and landscaping.



**Figure 2-1:** QT10 Automatic Block Making Machine (QGM Quangong Machinery Co. Ltd, 2021)

The volume of water required for the factory operations are approximately 50 m<sup>3</sup> per month.

The raw materials to be utilised in the factory are to be sourced from local suppliers. The proponent intends to buy the sand and cement from a local supplier such as Kambwa Trading CC or similar found within the area. The proponent intends to source the stone from a local dimension stone mine site. The proponent has submitted an application for an Exclusive Prospecting Licence (EPL), EPL 8437 located within the Omusati Region. An EIA is currently underway for the EPL. The proponent is only to make use of mining sites that have a valid Environmental Clearance Certificate (ECC) for the sourcing of raw materials.

## **2.2 Engineering Services**

The subject sites will be connected to the internal reticulation network of the Oshakati Town Council in terms of water, sewage and electricity.

### Water

The subject site is located adjacent to the NamWater canal. The proponent is to apply to NamWater for use of this water for construction and brick making purposes. Potable water for domestic purposes is to be supplied from the existing NamWater supply.

### Electricity

The proponent is to apply to Oshakati Premium Electric for three phase power connection which is required for industrial buildings.

### Sewage

The site is to be connected to a sewage network of the town.

The proponent is required to apply to the Oshakati Town Council for the necessary municipal connections with regards to the required engineering services.

### 3 PROJECT ALTERNATIVES CONSIDERED

Alternatives are defined as: “different means of meeting the general purpose and requirements of the activity” (Environmental Management Act (2007) of Namibia [and its regulations (2012)]). This chapter will highlight the different ways in which the project can be undertaken and to identify the alternative that will be the most practical but least damaging to the environment. The above-mentioned alternatives considered for the proposed activity are discussed in the following subchapters.

Development alternatives are defined in relation to a proposed activity as different means of meeting the general purposes and requirements of the activity, which may include alternatives to -

- The property on which, or location where it is proposed to undertake the activity;
- The type of activity to be undertaken;
- The design or layout of the activity;
- The technology to be used in the activity;
- The operational aspects of the activity; and
- The option of not implementing the activity.

#### 3.1 Potential Alternatives

No alternate development types, layouts or technologies have been considered, as the proposed technology was deemed to be the best for producing the desired output of bricks. The only possible alternatives discussed are location and the no-go option.

##### 3.1.1 No-Go Option

The “No-Go” alternative is the option of not proceeding with the activity, which typically implies a continuation of the status quo. Should the proposed brick making factory not be developed, none of the potential impacts (positive and negative) identified would occur. Furthermore, the proposed site will remain undeveloped. The residents of the town will additionally not be able to benefit from possible job opportunities.

##### 3.1.2 Location

No alternative sites were considered during the site selection process. The subject site was the only site available which met the desired criteria. The following conditions deemed the site suitable for the proposed development:

- The site is located on an erf that is appropriately zoned and sized for the intended development.
- The site is relatively flat and not environmentally sensitive as it is located in a developed area and as such is clear of any sensitive fauna or flora.



- The site is easily accessible via an approved access point along the C46 road.

## **4 LEGAL FRAMEWORK**

A review of applicable and relevant Namibian legislation, policies and guidelines to the proposed development are given in this chapter. This review serves to inform the Proponent, Interested and Affected Parties and the decision makers at the DEAF of the requirements and expectations, as laid out in terms of these instruments, to be fulfilled in order to undertake the proposed activities.

### **4.1 The Environmental Management Act No. 7 of 2007**

This scoping assessment was carried out according to the Environmental Management Act (EMA) and its Environmental Impact Assessment (EIA) Regulations (GG No. 4878 GN No. 30). The EMA has stipulated requirements to complete the required documentation in order to obtain an Environmental Clearance Certificate (ECC) for permission to undertake certain listed activities.

The full list of all applicable legislation identified and conducted during the EA process are presented in **Table 4-1** below.

**Table 4-1: Applicable and relevant Namibian and international legislations, policies and guidelines conducted during the EA process**

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
Environmental Management Act (EMA) No. 7 of 2007	Requires that projects with significant environmental impacts are subject to an environmental assessment process (Section 27).  Details principles which are to guide all EAs.	The EMA and its regulations should inform and guide this EA process.
Environmental Impact Assessment (EIA) Regulations GN 28-30 (GG 4878)	Details requirements for public consultation within a given environmental assessment process (GN 30 S21).  Details the requirements for what should be included in a Scoping Report (GN 30 S8) and an Assessment Report (GN 30 S15).	
The Constitution of Namibia Act No. 1 of 1990	According to Legal Assistance Centre (LAC), there is no clear right to health in the Namibian Constitution. But under the Article 95 of the Namibian Constitution that deals with Principles of State Policy, the Namibian Constitution states, “the state shall enact legislation to ensure consistent planning to raise and maintain an acceptable standard of living for the country’s people” and to improve public health.	The Proponent should ensure compliance with the conditions set in the Act.
Water Act No. 54 of 1956	The Water Resources Management Act 11 of 2013 regulations has not been promulgated; therefore, the Water Act No 54 of 1956 is still in force:	The protection of ground and surface water resources should be a priority during the proposed activities.

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
	<ul style="list-style-type: none"> <li>• Prohibits the pollution of water and implements the principle that a person disposing of effluent or waste has a duty of care to prevent pollution (S3 (k)).</li> <li>• Provides for control and protection of groundwater (S66 (1), (d (ii))).</li> </ul> <p>Liability of clean-up costs after closure/abandonment of an activity (S3 (l)).</p>	
Water Resources Management Act No.11 of 2013	<p>The act provides for the management, protection, development, use and conservation of water resources; and provides for the regulation and monitoring of water services and to provide for incidental matters. The objects of this Act are to:</p> <p>Ensure that the water resources of Namibia are managed, developed, used, conserved and protected in a manner consistent with, or conducive to, the fundamental principles set out in Section 66 - protection of aquifers, Subsection 1 (d) (iii) provide for preventing the contamination of the aquifer and water pollution control (Section 68).</p>	
Soil Conservation Act No. 76 of 1969	<p>The Act makes provision for the prevention and control of soil erosion and the protection, improvement and conservation of soil, vegetation and water supply sources and resources, through directives declared by the Minister.</p>	<p>Duty of care must be applied to soil conservation and management measures must be included in the EMP.</p>

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
Nature Conservation Ordinance No.4 of 1975	To consolidate and amend the laws relating to the conservation of nature; the establishment of game parks and nature reserves; the control of problem animals; and to provide for matters incidental thereto.	The Proponent should ensure that their activities do not in any way compromise the wildlife in the area of operations and the ordinance requirements are adhered to.
Forestry Act No. 12 of 2001	The Act provides for the management and use of forests and related products / resources. It offers protection to any living tree, bush or shrub growing within 100 metres of a river, stream or watercourse on land that is not a surveyed erven of a local authority area. In such instances, a licence would be required to cut and remove any such vegetation.  These provisions are only guidelines.	Should there be a need to remove vegetation on site, a permit to remove protected species will need to be obtained from the Forestry office in Oshakati.
Public Health Act No. 36 of 1919	Section 119 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 and all its employees / contractors should ensure compliance with the provisions of these legal instruments.
Health and Safety Regulations GN 156/1997 (GG 1617)	Details various requirements regarding health and safety of labourers.	
Labour Act No. 6 of 1992	Ministry of Labour (MOL) is aimed at ensuring harmonious labour relations through promoting social justice, occupational health and safety and enhanced labour market services for the benefit of all Namibians. This ministry insures effective implementation of the Labour Act no. 6 of 1992.	The Proponent should ensure that the proposed activity does not compromise the safety and welfare of workers.

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
Local Authorities Act No. 23 of 1992	The Local Authorities Act prescribes the manner in which a town or municipality should be managed by the Town or Municipal Council.	The development must comply with provisions of the Local Authorities Act and the local regulation of the Oshakati Town Council.
National Heritage Act No. 27 of 2004	The Act is aimed at protecting, conserving and registering places and objects of heritage significance.	All protected heritage resources (e.g., human remains etc.) that may be discovered, need to be reported immediately to the National Heritage Council (NHC) and require a permit from the NHC before they may be relocated.
Roads Ordinance 17 of 1972	<ul style="list-style-type: none"> <li>• Section 3.1 deals with width of proclaimed roads and road reserve boundaries</li> <li>• Section 27.1 is concerned with the control of traffic on urban trunk and main roads</li> <li>• Section 36.1 regulates rails, tracks, bridges, wires, cables, subways or culverts across or under proclaimed roads</li> </ul> <p>Section 37.1 deals with Infringements and obstructions on and interference with proclaimed roads.</p>	Adhere to all applicable provisions of the Roads Ordinance.
Nature Conservation Ordinance no. 4 of 1975	<ul style="list-style-type: none"> <li>• Chapter 6 provides for legislation regarding the protection of indigenous plants</li> </ul>	Indigenous and protected plants must be managed within the legal confines.
Namibia Urban and Regional Planning Act No 5 of 2018	To consolidate the laws relating to urban and regional planning; to provide for a legal framework for spatial planning in Namibia; to provide for principles and standards of spatial planning; to establish the urban and regional planning board; to decentralise certain matters relating to spatial planning; to provide for the	Adhere to all applicable provisions of the Act.

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
	<p>preparation, approval and review of the national spatial development framework, regional structure plans and urban structure plans; to provide for the preparation, approval, review and amendment of zoning schemes; to provide for the establishment of townships; to provide for the alteration of boundaries of approved townships, to provide for the disestablishment of approved townships; to provide for the change of name of approved townships; to provide for the subdivision and consolidation of land; to provide for the alteration, suspension and deletion of conditions relating to land; and to provide for incidental matters.</p>	
<p>Atmospheric Pollution Prevention Ordinance (No. 11 of 1976)</p>	<p>Part II - control of noxious or offensive gases,                      Part III - atmospheric pollution by smoke,                      Part IV - dust control, and                      Part V - air pollution by fumes emitted by vehicles.                      The Ordinance provision on air pollution is administered by the Namibian Ministry of Health. In terms of Section 5 any person carrying on a “scheduled process” within a “controlled area” has to obtain a registration certificate from the administering authority, in this case the Department of Health. The Act lists 72 processes in Schedule 2 which must be registered and a registration certificate (air pollution permit) obtained.</p>	<p>The development should consider the provisions outlined in the act. The proponent should apply for an Air Emissions permit from the Ministry of Health and Social Services (if needed).</p>

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
Public and Environmental Health Act of 2015	This Act (GG 5740) provides a framework for a structured uniform public and environmental health system in Namibia. It covers notification, prevention and control of diseases and sexually transmitted infections; maternal, ante-natal and neo-natal care; water and food supplies; infant nutrition; waste management; health nuisances; public and environmental health planning and reporting. It repeals the Public Health Act 36 of 1919 (SA GG 979).	Contractors and users of the proposed development are to comply with these legal requirements.
Hazardous Substance Ordinance 14 of 1974	To provide for the control of substances which may cause injury or ill-health to or death of human beings by reason of their toxic, corrosive, irritant, strongly sensitizing or flammable nature or the generation of pressure thereby in certain circumstances; to provide for the division of such substances into groups in relation to the degree of danger; to provide for the prohibition and control of the importation, manufacture, sale, use, operation, application, modification, disposal or dumping of such substances; and to provide for matters connected therewith.	The handling, usage and storage of hazardous substances on site should be carefully controlled according to this Ordinance.

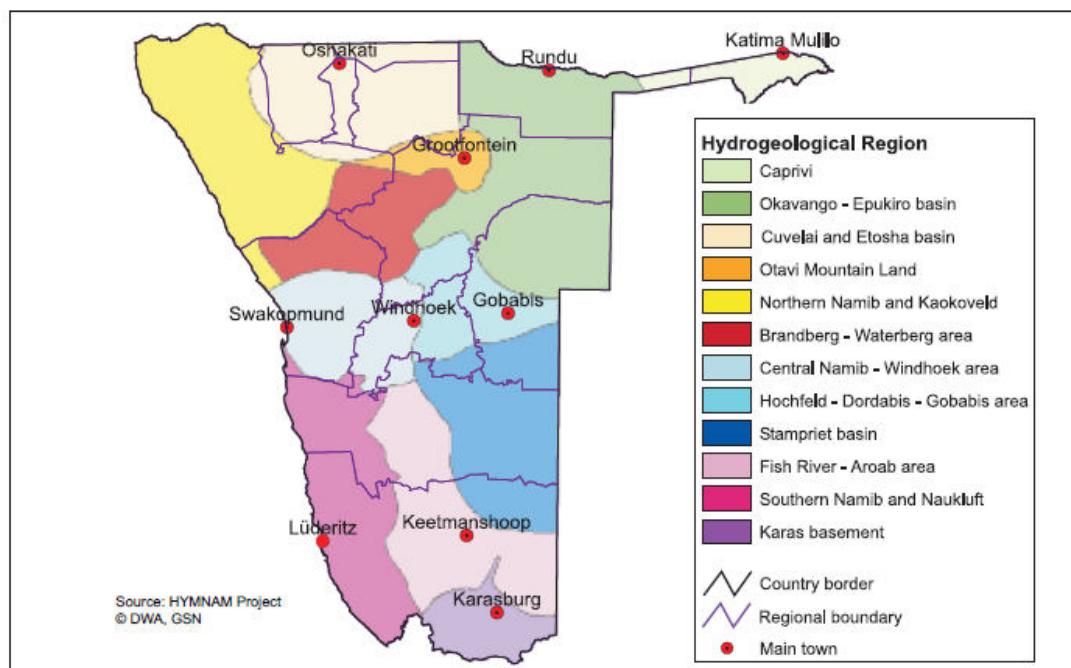
The environmental baseline (features) of the project area and the surrounding areas are presented and discussed in the following chapter.





### 5.1.3 Water Resources: Surface and Groundwater

In terms of groundwater, the area falls within the Cuvelai-Etосha groundwater basin as depicted in Figure 5-2. The hydrogeological Cuvelai Basin comprises the Omusati, Oshana, Ohangwena, and Oshikoto Regions and parts of the Kunene Region (Ministry of Agriculture Water and Rural Development, 2011).



**Figure 5-2: Groundwater basins and hydrogeological regions in Namibia (Ministry of Agriculture Water and Rural Development, 2011)**

Water supply to the town is supplied by NamWater from the Oshakati Water Works (OWW) which has a capacity of 40 000m<sup>3</sup> per day. The OWW receives its raw water from the Calueque Dam, built in the Cunene River in Angola, by means of the Calueque-Ogongo-Oshakati Canal. The canal discharges into a fore dam at the OWW and it is from this fore dam that the existing plant abstracts its raw water. The water is then distributed by the Town Council through municipal water pipelines to the public.

As part of the Namibian Water Sector Support Program, NamWater is in the process of designing and eventually constructing a water purification plant in Oshakati with a production capacity of approximately 50 000 m<sup>3</sup> per day.

### 5.1.4 Fauna and Flora

The Oshana Region falls within the broader Tree-and-Shrub Savanna biome and forms part of the Acacia Tree-and-shrub Savanna sub-biome. The Acacia Tree-and-shrub Savanna sub-biome is characterized by large, open expanses of grasslands dotted with Acacia trees

(Mendelsohn, Jarvis, Roberts, *et al.*, 2002). The trees within this biome are tallest in the east where they grow in deeper sands and become more shrub-like to the west where they grow in shallower soils. The proposed site does accommodate a few large trees scattered throughout the site.

The region falls within the Cuvelai Drainage vegetation type. Within north-central Namibia, Mopane is a very common tree species in the Cuvelai Drainage where grassy channels of oshana carry floodwater during heavy rains from the higher areas in the north of Angola (Mendelsohn & el Obeid, 2005). The indigenous trees found within the region include the Makalani Palm Trees (*Hyphaene petersiana*) and Mopane Trees (*Colophospermum mopane*), which may be found to occur on the subject site. If removal of protected tree species is required a permit needs to be obtained from the Oshakati Department of Forestry prior to removal. Trees protected under the Forestry Act 12 of 2001 should be protected within the layout of the proposed development.

Most wildlife is located within the Etosha National Park and thus it is mostly animals such as cattle, donkeys and goats which are dominant within the subject area.

#### **5.1.5 Archaeological and Anthropological Resources**

No archaeological and heritage sites are known to be located within the proposed development area. A chance find procedure has been outlined in the EMP should these sites be encountered during development of the site.

## **5.2 Social Environment**

### **5.2.1 Social Demographics**

According to Namibia Statistics Agency (2011), the population of the Oshana Region is 176 674 people with the population of Oshakati being 36 541 people.

### **5.2.2 Economy**

Wages and salaries (40%) is the main source of income in this region, while other income sources include farming (13%), business (17%), pension (19%) and cash remittance (5%) (Namibia Statistics Agency, 2011).

## 6 PUBLIC CONSULTATION

### 6.1 Objective:

Public consultation forms an important component of an Environmental Assessment (EA) process. Public consultation provides potential Interested and Affected Parties (I&APs) with an opportunity to comment on and raise any issues relevant to the project for consideration as part of the assessment process. Public consultation has been done in accordance with both the EMA and its EIA Regulations.

The public consultation process assists the Environmental Assessment Practitioner (EAP) in identifying all potential impacts and to what extent further investigations are needed. Public consultation can also aid in the process of identifying possible mitigation measures.

### 6.2 Approach:

#### 6.2.1 Interested and Affected Parties (I&APs)

GCS identified specific I&APs, who were considered interested in and/or affected by the proposed activities. The I&APs identified include applicable organs of state (national, regional, and local) and other interested members of the public. These I&APs were contacted directly and registered as I&APs. In addition, notices regarding the project were placed in widely circulated national newspapers for two consecutive weeks inviting members of the public to register as I&APs. The detailed steps regarding the notification of I&APs are presented in Section 6.2.2. A summary of the I&APs identified are presented in Table 6-1. The complete list of I&APs is provided in Appendix C.

**Table 6-1: Summary of Pre-Identified IAPs**

List of IAPs	Description
	Ministry of Environment, Forestry and Tourism
	Oshakati Town Council
	NamWater
	Roads Authority
	National Heritage Council of Namibia (NHCN)
	National Botanical Research Institute (NBRI)

#### 6.2.2 Communication with I&APs

Regulation 21 of the EIA Regulations details steps to be taken during a given public consultation process and these have been used in guiding this process.

Communication with I&APs about the proposed development was facilitated in English through the following means and in this order:

- A Background Information Document (BID) containing descriptive information about the proposed activities was compiled (**Appendix D**) and sent out to all identified and registered I&APs per email dated 1 April 2022;
- Notices were placed in *The New Era* and *Confidente* newspapers dated 1 and 8 April 2022, briefly explaining the activity and its locality, inviting members of the public to register as I&APs (**Appendix E**);
- A site notice was fixed at the site (**Appendix G**);
- A meeting with the Town Council as well as a public meeting was held on 6 July 2022 in Oshakati (**Appendix I**).

The scoping report will be made available to all I&APs for public review from **5 October 2022 until 14 October 2022**. I&APs have until **14 October 2022** to submit their comments on the project. All comments received on the scoping report will be compiled in a Comments and Response Report to be included in the final scoping report.

## 7 IMPACTS IDENTIFICATION, DESCRIPTION AND ASSESSMENT

### 7.1 Impact Assessment Methodology

The proposed activities have impacts on certain biophysical and social features. The identified impacts were assessed in terms of probability (likelihood of occurring), scale/extent (spatial scale), magnitude (severity) and duration (temporal scale) as presented in **Table 7-1**, **Table 7-2**, **Table 7-3** and **Table 7-4**. To enable a scientific approach to the determination of the environmental significance, a numerical value is linked to each rating scale. This methodology ensures uniformity and that potential impacts can be addressed in a standard manner so that a wide range of impacts are comparable.

It is assumed that an assessment of the significance of a potential impact is a good indicator of the risk associated with such an impact. The following process will be applied to each potential impact:

- Provision of a brief explanation of the impact;
- Assessment of the pre-mitigation significance of the impact; and
- Description of recommended mitigation measures.

The recommended mitigation measures prescribed for each of the potential impacts contribute towards the attainment of environmentally sustainable operational conditions of the project for various features of the biophysical and social environment.

The following criteria were applied in this impact assessment:

#### 7.1.1 Extent (spatial scale)

Extent is an indication of the physical and spatial scale of the impact. **Table 7-1** shows rating of impact in terms of extent of spatial scale.

**Table 7-1: Extent or spatial impact rating**

Low (1)	Low/Medium (2)	Medium (3)	Medium/High (4)	High (5)
Impact is localised within the site boundary: Site only	Impact is beyond the site boundary: Local	Impacts felt within adjacent biophysical and social environments: Regional	Impact widespread far beyond site boundary: Regional	Impact extend National or over international boundaries

#### 7.1.2 Duration

Duration refers to the timeframe over which the impact is expected to occur, measured in relation to the lifetime of the project. **Table 7-2** shows the rating of impact in terms of duration.

**Table 7-2: Duration impact rating**

Low (1)	Low/Medium (2)	Medium (3)	Medium/High (4)	High (5)
Immediate mitigating measures, immediate progress	Impact is quickly reversible, short term impacts (0-5 years)	Reversible over time; medium term (5-15 years)	Impact is long-term	Long term; beyond closure; permanent; irreplaceable or irretrievable commitment of resources

### 7.1.3 Intensity, Magnitude / severity

Intensity refers to the degree or magnitude to which the impact alters the functioning of an element of the environment. The magnitude of alteration can either be positive or negative. These were also taken into consideration during the assessment of severity. Table 7-3 shows the rating of impact in terms of intensity, magnitude or severity.

**Table 7-3: Intensity, magnitude or severity impact rating**

Type of criteria	Negative				
	H-(10)	M/H-(8)	M-(6)	M/L-(4)	L-(2)
Qualitative	Very high deterioration, high quantity of deaths, injury of illness / total loss of habitat, total alteration of ecological processes, extinction of rare species	Substantial deterioration, death, illness or injury, loss of habitat / diversity or resource, severe alteration or disturbance of important processes	Moderate deterioration, discomfort, partial loss of habitat / biodiversity or resource, moderate alteration	Low deterioration, slight noticeable alteration in habitat and biodiversity. Little loss in species numbers	Minor deterioration, nuisance or irritation, minor change in species / habitat / diversity or resource, no or very little quality deterioration.

### 7.1.4 Probability of occurrence

Probability describes the likelihood of the impacts occurring. This determination is based on previous experience with similar projects and/or based on professional judgment. See Table 7-4 for impact rating in terms of probability of occurrence.

**Table 7-4: Probability of occurrence impact rating**

Low (1)	Medium/Low (2)	Medium (3)	Medium/High (4)	High (5)
Improbable; low likelihood; seldom. No known risk or vulnerability to natural or induced hazards.	Likely to occur from time to time. Low risk or vulnerability to natural or induced hazards	Possible, distinct possibility, frequent. Low to medium risk or vulnerability to natural or induced hazards.	Probable if mitigating measures are not implemented. Medium risk of vulnerability to natural or induced hazards.	Definite (regardless of preventative measures), highly likely, continuous. High risk or vulnerability to natural or induced hazards.

### 7.1.5 Significance

Impact significance is determined through a synthesis of the above impact characteristics. The significance of the impact “without mitigation” is the main determinant of the nature and degree of mitigation required. As stated in the introduction to this chapter, for this assessment, the significance of the impact without prescribed mitigation actions was measured.

Once the above factors (Table 7-1, Table 7-2, Table 7-3 and Table 7-4) have been ranked for each potential impact, the impact significance of each is assessed using the following formula:

$$SP = (\text{magnitude} + \text{duration} + \text{scale}) \times \text{probability}$$

The maximum value per potential impact is 100 significance points (SP). Potential impacts were rated as high, moderate or low significance, based on the following significance rating scale (Table 7-5).

**Table 7-5: Significance rating scale**

<i>SIGNIFICANCE</i>	<i>ENVIRONMENTAL SIGNIFICANCE POINTS</i>	<i>COLOUR CODE</i>
High (positive)	>60	H
Medium (positive)	30 to 60	M
Low (positive)	<30	L
Neutral	0	N
Low (negative)	>-30	L
Medium (negative)	-30 to -60	M
High (negative)	>-60	H

For an impact with a significance rating of high, mitigation measures are recommended to reduce the impact to a low or medium significance rating, provided that the impact with a medium significance rating can be sufficiently controlled with the recommended mitigation measures. To maintain a low or medium significance rating, monitoring is recommended for a period of time to enable the confirmation of the significance of the impact as low or medium and under control.

The impact assessment for the proposed activities is given in subchapter 7.3, 7.4, 7.4 and 7.5.

## 7.2 Pre-construction Phase Impact Assessment

The pre-construction phase is mostly concerned with the preparation of the site for the proposed brickmaking factory. The potential impacts during this phase include biodiversity and traffic impacts.

### 7.2.1 Impact Assessment of Biodiversity Loss

The preparation of the site for the proposed development involves clearing of certain areas on site. This may impact the existing biodiversity in the area. The subject site does accommodate some vegetation and possibly some fauna. During site preparation it should be ensured that only the areas applicable to the project site area are cleared. The layout of the proposed factory should incorporate existing protected trees as far as practically possible. Should protected tree species need to be removed a valid permit from the local department of Forestry should be obtained. The impact is not expected to be of such a magnitude and/or significance that it will have irreversible impacts on the biodiversity and endemism of the area and Namibia at large. The assessment of this impact is presented in **Table 7-6**.

**Table 7-6: Assessment of the impacts of the proposed activities on biodiversity loss**

	Extent	Duration	Intensity	Probability	Significance
Pre-mitigation	L - 1	M - 1	M - 6	M - 3	L - 24
Post-mitigation	L - 1	L - 1	M/L - 4	M/L - 2	L - 12

#### 7.2.1.1 Mitigations and recommendation to biodiversity loss

- Vegetation should be cleared only where absolutely necessary and the layout of the proposed factory should incorporate protected, endemic and near endemic tree/plant species as far as practicably possible.
- Should protected, endemic and near endemic tree/plant species need to be cleared, numbers and location of trees and plants to be removed should be documented by the proponent in collaboration with the local Department of Forestry prior to removal.
- Trees and plants protected under the Forest Act No 12 of 2001 are not to be removed without a valid permit from the local Department of Forestry.

### 7.2.2 Impact Assessment of Traffic

During site clearance traffic is expected to increase as a result of the trucks and construction vehicles that will be moving to and from the site. Without any mitigation measures implemented, the impact can be rated as of a “low” significance. After the implementation of the mitigations, the impact will be significantly reduced to “low” rating. The assessment of this impact is presented in **Table 7-7**.



**Table 7-7: Assessment of the impacts of the proposed activities on traffic**

	Extent	Duration	Intensity	Probability	Significance
Pre-mitigation	L - 2	M - 2	M - 6	M - 3	L - 27
Post-mitigation	L - 2	L - 1	M/L - 4	M/L - 2	L - 16

*7.2.2.1 Mitigations and recommendation to traffic*

- Vehicles are to make use of the approved access point.
- Obey speed restrictions and traffic rules

**7.3 Construction Phase Impact Assessment**

The construction phase is mostly concerned with the impacts on the biophysical and socio-economic environment that is likely to occur during the construction phase of the development. These potential impacts are likely to be temporary in duration but may have longer lasting effects.

*7.3.1 Impact Assessment of Biodiversity Loss*

During construction the potential loss of biodiversity may be experienced as a result of construction activities taking place on site. The impact is not expected to be of such a magnitude and/ or significance that it will have irreversible impacts on the biodiversity and endemism of the area and Namibia at large. The assessment of this impact is presented in Table 7-8.

**Table 7-8: Assessment of the impacts of the proposed activities on biodiversity loss**

	Extent	Duration	Intensity	Probability	Significance
Pre-mitigation	L - 1	L - 1	M - 6	M - 3	L - 24
Post-mitigation	L - 1	L - 1	M/L - 4	M/L - 2	L - 12

*7.3.1.1 Mitigations and recommendation to biodiversity loss*

- Vegetation should be cleared only where absolutely necessary and the layout of the proposed factory should incorporate protected, endemic and near endemic tree/plant species as far as practicably possible.
- Should protected, endemic and near endemic tree/plant species need to be cleared, numbers and location of trees and plants to be removed should be documented by the proponent in collaboration with the local Department of Forestry prior to removal.
- Trees and plants protected under the Forest Act No 12 of 2001 are not to be removed without a valid permit from the local Department of Forestry

### 7.3.2 Impact Assessment of Surface and Groundwater Impacts

Improper handling, storage and disposal of hydrocarbon products and hazardous materials at the site may lead to soil and groundwater contamination, in case of spills and leakages. Leakages from vehicles and machines during construction may also contribute to soil and groundwater contamination. Without any mitigation measures implemented, the impact can be rated as of a “medium” significance. After the implementation of the mitigations, the impact will be significantly reduced to “low” rating. The assessment of this impact is presented in **Table 7-9**.

**Table 7-9: Assessment of the impacts of the proposed activities on surface and groundwater**

	Extent	Duration	Intensity	Probability	Significance
Pre-mitigation	L/M - 3	M - 2	M - 6	M - 4	M - 44
Post-mitigation	L - 1	M- 2	M/L- 4	M/L - 2	L - 14

#### 7.3.2.1 Mitigations and recommendation to surface and groundwater

- Workers responsible for the storage and handling of hydrocarbons should be suitably trained to do so and trained on spill prevention (e.g., the use of drip trays) and the handling of potential spills should they occur to be able to ensure implementation on site.
- Potential contaminants such as wastewater should be contained on site and disposed of in accordance with municipal wastewater discharge standards so that they do not contaminate surrounding soils and eventually groundwater.
- Contaminants such as hydrocarbons should be stored, handled, and managed appropriately. These must be collected on site and disposed at an appropriate facility that is licenced to receive such waste.
- Observation of soil on site for signs of contamination at the vehicle holding, parking and activity areas.
- Place oil drip trays under parked vehicles and hydraulic equipment at the site.
- All heavy vehicles and equipment on site should be provided with a drip tray.
- All heavy construction vehicles should be maintained regularly to prevent oil leakages.
- Maintenance and washing of vehicles should take place only at a designated workshop area which surface is impermeable.
- Spill kits should be available at the workshop areas in case of spills.

### 7.3.3 Impact Assessment of Soil Erosion Impacts

Soil erosion is likely to occur on site given the characteristics of the site. Without any mitigation measures implemented, the impact can be rated as of a “medium” significance. After the implementation of the mitigations, the impact will be significantly reduced to “low” rating. The assessment of this impact is presented in **Table 7-10**.

**Table 7-10: Assessment of the impacts of the proposed activities on soil erosion**

	Extent	Duration	Intensity	Probability	Significance
Pre-mitigation	L/M - 2	M - 2	M - 6	M - 3	M - 30
Post-mitigation	L - 1	L - 1	M/L - 4	M/L - 2	L - 12

#### 7.3.3.1 Mitigations and recommendation to soil erosion

- Erosion control measures (such as barriers) should be implemented to ensure that the topsoil is not washed away.
- Checks must be carried out at regular intervals to identify areas where erosion is occurring.
- Where possible, it is recommended that construction activities take place during the dry season/winter months to reduce erosion and sedimentation risks associated with summer rainfall in this region;
- Appropriate remedial actions are to be undertaken wherever erosion is evident.

### 7.3.4 Impact Assessment of Archaeological and Heritage Impacts

The proposed activity is not taking place in an area that has significant archaeological or heritage resources. However, should these be encountered during the construction activities, mitigation measures need to be in place to ensure that these resources are not harmed. Without any mitigation measures implemented, the impact can be rated as of a “low” significance. After the implementation of the mitigations, the impact will be significantly reduced to “low” rating. The assessment of this impact is presented in **Table 7-11**.

**Table 7-11: Assessment of the impacts of the proposed activities on Archaeological and Heritage Impacts**

	Extent	Duration	Intensity	Probability	Significance
Pre-mitigation	L - 1	L/M - 2	M/L - 4	L - 1	L - 7
Post-mitigation	L - 1	L - 1	L - 2	L - 1	L - 4

#### 7.3.4.1 Mitigations and recommendation to Archaeological and Heritage Impacts

- All works are to be immediately ceased in an affected area should an archaeological or heritage resource be discovered.
- The National Heritage Council of Namibia (NHCN) should advise with regards to the removal, packaging, and transfer of the potential resource.

#### 7.3.5 Impact Assessment of Health and Safety

Construction activities may cause health and safety risks to people operating on the site. Without any mitigation measures implemented, the impact can be rated as of a “medium” significance. After the implementation of the mitigations, the impact will be significantly reduced to “low” rating. The assessment of this impact is presented in **Table 7-12**.

**Table 7-12: Assessment of the impacts of the proposed activities on health and safety**

	Extent	Duration	Intensity	Probability	Significance
Pre-mitigation	L/M - 1	L/M - 4	M/H - 8	M/H - 4	M - 52
Post-mitigation	L - 1	L/M - 4	M/L - 4	L - 2	L - 18

#### 7.3.5.1 Mitigations and recommendation to health and safety

- Construction workers should be provided with awareness training about the risks associated with the proposed construction work such as hydrocarbon handling and storage, the handling of heavy machinery etc.
- During the works conducted, workers should be properly equipped with personal protective equipment (PPE) such as coveralls, gloves, safety boots, safety glasses etc.
- The contractors should comply with the provisions with regards to health and safety as outlined in the Labour Act (No. 6 of 1992).

#### 7.3.6 Impact Assessment of Noise Generation Impacts

Construction activities and the presence of construction vehicles may lead to the generation of noise which could impact the local surrounding residents negatively, if not properly handled. This may pose a disturbance on the surrounding residents. Without any mitigation measures implemented, the impact can be rated as of a “medium” significance. After the implementation of the mitigations, the impact will be significantly reduced to “low” rating. The assessment of this impact is presented in **Table 7-13**.

**Table 7-13: Assessment of the impacts of the proposed activities on noise generation**

	Extent	Duration	Intensity	Probability	Significance
Pre-mitigation	L/M - 2	M - 2	M - 6	M - 3	M - 30
Post-mitigation	L - 1	L - 1	L - 2	L - 2	L - 6

#### 7.3.6.1 Mitigations and recommendation to noise generation

- Construction activities should be limited to daytime hours (between 08h00 and 17h00) unless otherwise arranged with community members and businesses in the area.
- No amplified music should be allowed on site.
- Technology such as silencers should be installed on construction machinery.
- The use of horns as a general communication tool should not be allowed, they should only be used when necessary, as a safety measure.

#### 7.3.7 Impact Assessment of Dust Generation Impacts

Construction activities and the presence of construction vehicles may lead to the generation of dust which could impact the local residents and businesses negatively, if not properly handled. Without any mitigation measures implemented, the impact can be rated as of a “medium” significance. After the implementation of the mitigations, the impact will be significantly reduced to “low” rating. The assessment of this impact is presented in **Table 7-14**.

**Table 7-14: Assessment of the impacts of the proposed activities on dust generation**

	Extent	Duration	Intensity	Probability	Significance
Pre-mitigation	L/M - 2	L/M - 2	M - 6	M/H - 4	M - 40
Post-mitigation	L - 1	L - 1	L - 2	M/L - 2	L - 8

#### 7.3.7.1 Mitigations and recommendation to dust generation

- Dust abatement techniques should be implemented e.g., spraying of water on site to reduce dust levels to an acceptable standard.
- The local community and surrounding businesses should be continuously consulted to ensure that the dust levels are acceptable.
- Residents and businesses should be informed prior to construction commencing so that they are aware of the planned construction.
- During high wind conditions the contractor must make the decision to cease works until the wind has settled.
- Stockpiles and sand being transported should be covered with plastic to reduce windblown dust.

- Workers should be provided with dust masks.

### 7.3.8 Impact Assessment of Waste Generation Impacts

Construction activities usually generate wastes which leads to environmental pollution, if not properly handled. This may result in blocked waterways should waste be blown into water pipelines; animals may choke on waste when ingested and additionally it may pose a negative visual impact on the surrounding environment. Without any mitigation measures implemented, the impact can be rated as of a “low” significance. After the implementation of the mitigations, the impact will be significantly reduced to low rating. The assessment of this impact is presented in Table 7-15.

**Table 7-15: Assessment of the impacts of the proposed activities on waste generation**

	Extent	Duration	Intensity	Probability	Significance
Pre-mitigation	L - 1	L/M - 2	M/L - 4	M - 4	L - 28
Post-mitigation	L - 1	L - 1	L - 2	L - 1	L - 4

#### 7.3.8.1 Mitigations and recommendation to waste generation

- The construction site should be kept tidy at all times.
- All domestic and general construction waste produced on a daily basis should be cleared and contained.
- No waste may be buried or burned on site or anywhere else.
- Waste containers (bins) should be emptied during and after the construction and the waste removed from site to the municipal waste disposal site.
- Separate waste containers (bins) for hazardous and domestic / general waste must be provided on site.
- Construction labourers should be sensitised to dispose of waste in a responsible manner and not to litter.
- No waste may remain on site after the completion of the project.
- The recycling of waste should be considered and implemented as far as possible.

### 7.3.9 Impact Assessment of Temporary Employment Creation

The proposed activity may provide employment opportunities for the local people during construction. The impact can be rated as of a “medium” significance. The assessment of this impact is presented in Table 7-16.

**Table 7-16: Assessment of the impacts of the proposed activities on temporary employment creation**

	Extent	Duration	Intensity	Probability	Significance
Pre-mitigation	L/M + 2	L/M + 2	M + 6	M + 3	M + 30

### 7.3.9.1 Mitigations and recommendation to temporary employment creation

- Should any job opportunities result, they should be made available to the local people in the area as far as reasonably possible.

## 7.4 Operational Phase Impact Assessment

The potential impacts associated with the operational phase of the activities have been identified and assessed in this subchapter. The main impacts identified are traffic, surface and groundwater, noise, air quality and waste.

### 7.4.1 Impact Assessment of Traffic Impacts

Traffic is expected to be impacted due to the operational activities at the site due to the presence of large vehicles/trucks which will transport the raw material and bricks to and from the site. Without any mitigation measures implemented, the impact can be rated as of a “medium” significance. After the implementation of the mitigations, the impact will be significantly reduced to “low” rating. The assessment of this impact is presented in **Table 7-17**.

**Table 7-17: Assessment of the impacts of the activities on traffic**

	Extent	Duration	Intensity	Probability	Significance
Pre-mitigation	M - 3	L/M - 3	M - 6	L/M - 4	M - 48
Post-mitigation	L/M - 2	L/M - 3	L/M - 4	L/M - 2	L - 18

#### 7.4.1.1 Mitigations and recommendation to traffic

- Vehicles are to make use of the approved access point.
- Vehicles to make use of existing access roads no off-road driving should be permitted.
- Obey speed restrictions and traffic rules.

### 7.4.2 Impact Assessment of Noise

The operational activities may result in associated noise impacts. Without any mitigation measures implemented, the impact can be rated as of a “medium” significance. After the implementation of the mitigations, the impact will be significantly reduced to “low” rating. The assessment of this impact is presented in **Table 7-18**.

**Table 7-18: Assessment of the impacts of the activities on noise**

	Extent	Duration	Intensity	Probability	Significance
Pre-mitigation	M - 3	M/H - 4	M - 6	M - 3	M - 39
Post-mitigation	L/M - 2	M/H - 4	L/M - 4	L/M - 2	L - 20

#### 7.4.2.1 Mitigations and recommendation to noise

- No activity having a potential noise impact should be allowed to operate after 18h00 if possible.
- Operating hours should be restricted between 08h00 and 17h00.

#### 7.4.3 Impact Assessment of Dust

Dust generation may occur during operational activities which include fugitive dust from the cement storage silo. The pre-mitigation impact is assessed to be “medium” in significance and after mitigation the impact is assessed to have a “low” significance. The assessment of this impact is presented in **Table 7-19**.

**Table 7-19: Assessment of the impacts of the activities on dust generation**

	Extent	Duration	Intensity	Probability	Significance
Pre-mitigation	M - 3	M/H - 4	M- 6	M - 3	M - 39
Post-mitigation	L/M - 2	M/H - 4	L/M- 4	L/M - 2	L - 20

#### 7.4.3.1 Mitigations and recommendation to dust generation

- If dust levels become excessive dust abatement techniques should be implemented e.g., spraying of water.
- The use of water less dust suppression means (such as lignosulphonate products such as Dustex) should be considered during periods of water scarcity.
- Covers should be placed on trucks bringing in raw materials such as sand to ensure dust levels are kept minimal.
- Fitting the silo with dust-restraining bag filters.

#### 7.4.4 Impact Assessment of Air Quality

Emissions may occur during operational activities from the facility. These may impact air quality within the subject area. The pre-mitigation impact is assessed to be “medium” in significance and after mitigation the impact is assessed to have a “low” significance. The assessment of this impact is presented in **Table 7-20**.

**Table 7-20: Assessment of the impacts of the activities on air quality**

	Extent	Duration	Intensity	Probability	Significance
Pre-mitigation	L/M - 2	L/M - 2	M/H - 8	M - 3	M - 36
Post-mitigation	L - 1	L - 1	M- 6	M/L - 2	L - 16



#### 7.4.4.1 Mitigations and recommendation to air quality

- Emissions from the plant are to be monitored to ensure that they are within acceptable levels (South African National Ambient Air Quality Standards).

#### 7.4.5 Impact Assessment of Waste Generation Impacts

Waste will be generated at the site as a result of the operational activities. Without any mitigation measures implemented, the impact can be rated as of a “low” significance. After the implementation of the mitigations, the impact will be significantly reduced to low rating. The assessment of this impact is presented in Table 7-21.

**Table 7-21: Assessment of the impacts of the proposed activities on waste generation**

	Extent	Duration	Intensity	Probability	Significance
Pre-mitigation	L - 1	L/M - 2	M/L - 4	M - 4	L - 28
Post-mitigation	L - 1	L - 1	L - 2	L - 1	L - 4

#### 7.4.5.1 Mitigations and recommendation to waste generation

- The site should be kept tidy at all times.
- All domestic and general construction waste produced on a daily basis should be cleared and contained.
- No waste may be buried or burned on site or anywhere else.
- Waste containers (bins) should be emptied weekly and the waste removed from site to the municipal waste disposal site.
- Separate waste containers (bins) for hazardous and domestic / general waste must be provided on site.
- Workers at the site should be sensitised to dispose of waste in a responsible manner and not to litter.
- No waste may remain on site after the completion of the project.
- The recycling of waste should be considered and implemented as far as possible.

#### 7.4.6 Impact Assessment of Health and Safety

Operational activities may cause health and safety risks to people operating on the site. Without any mitigation measures implemented, the impact can be rated as of a “low” significance. After the implementation of the mitigations, the impact will be significantly reduced to “low” rating. The assessment of this impact is presented in Table 7-22.

**Table 7-22: Assessment of the impacts of the proposed activities on health and safety**

	Extent	Duration	Intensity	Probability	Significance
Pre-mitigation	L - 1	L/M - 4	M/H - 8	M/H - 4	M - 52
Post-mitigation	L - 1	L/M - 4	M/L - 4	M/L - 2	L - 18

#### 7.4.6.1 Mitigations and recommendation to health and safety

- Workers should be provided with awareness training about the risks associated with the proposed work such as hydrocarbon handling and storage, the handling of heavy machinery etc.
- During the works conducted, workers should be properly equipped with personal protective equipment (PPE) such as coveralls, gloves, safety boots, safety glasses etc.
- The operations should comply with the provisions with regards to health and safety as outlined in the Labour Act (No. 6 of 1992).

#### 7.4.7 Impact Assessment of Social Environment

The operational activities may provide employment opportunities for the local people. The assessment of this impact is presented in **Table 7-23**.

**Table 7-23: Assessment of the impacts of the activities on social environment**

	Extent	Duration	Intensity	Probability	Significance
Pre-mitigation	L/M - 2	H/M - 4	M - 6	M - 3	M - 36

#### 7.4.7.1 Mitigations and recommendation to social environment

- Should any job opportunities result it should be made available to the local people in the area.

### 7.5 Decommissioning Phase

Should the proposed brick making factory be decommissioned, the impacts and mitigation measures discussed below apply.

#### 7.5.1 Impact of the Decommissioning on Employment Losses

The affected employees will no longer be employed at the factory. Pre-implementation of the necessary mitigation measures, this impact can be rated as “medium” and with the implementation of the necessary mitigation measures, the impact significance will be “low”. This impact is assessed in **Table 7-24** below.

**Table 7-24: Assessment of the impacts of the factory decommissioning**

	Extent	Duration	Intensity	Probability	Significance
Pre-mitigation	L/M - 2	L/M - 2	M - 6	M - 3	M - 30
Post-mitigation	L/M - 2	L - 1	L - 2	L - 1	L - 5

#### 7.5.1.1 Mitigations and recommendation to factory decommissioning impact

- Communicate intentions to decommission well in advance (6 months) to enable workers to seek alternate employment in the event that they seek to avoid formal retrenchment.

#### 7.5.2 Impact Assessment on Surrounding Property Owners

During the removal and destruction of the factory building and associated infrastructure, the presence of the construction team will disturb the surrounding property owners. The construction work is not expected to continue for an extended period. Therefore, the likelihood of this impact is low. The assessment of this impact is presented in **Table 7-25**.

**Table 7-25: Assessment of the impacts on surrounding property owners**

	Extent	Duration	Intensity	Probability	Significance
Pre-mitigation	L/M - 2	L - 1	M/L - 4	M - 3	M - 21
Post-mitigation	L - 1	L - 1	L - 2	L - 1	L - 4

#### 7.5.2.1 Mitigations and recommendation to disturbance of surrounding property owners

- Decommissioning work to take place during working hours only (08h00 - 17h00).
- Should work need to be done outside of working hours, neighbouring property owners need to be informed in writing prior to commencing.

#### 7.5.3 Impact Assessment on Health and Safety

Improper handling of construction materials and equipment may cause injuries. With no mitigation measures in place, this impact will receive a “medium” significance rating. However, the implementation of applicable safety measures, the impact can significantly be reduced to a “low” rating. The assessment of this impact is presented in **Table 7-26**.

**Table 7-26: Assessment of the impacts on health and safety**

	Extent	Duration	Intensity	Probability	Significance
Pre-mitigation	L/M - 1	L/M - 4	M/H - 8	M/H - 4	M - 52
Post-mitigation	L - 1	L/M - 4	M/L - 4	L - 2	L - 18

#### 7.5.3.1 Mitigations and recommendation to health and safety

- The contractor(s) should ensure that all personnel are provided with personal protective equipment (PPE), such as gloves, safety boots, safety glasses and hard hats etc at all times during construction hours on site.
- No workers should be allowed to drink alcohol during working hours.
- No workers should be allowed on site if under the influence of alcohol.

- Construction workers should be trained on how to handle materials and equipment on site (if they do not already know how to) in order to avoid injuries.

#### 7.5.4 Impact Assessment of Waste Generation

The demolition of buildings and infrastructure will result in the generation of waste which leads to environmental pollution, if not properly handled. This may pose a negative visual impact on the surrounding environment. Without any mitigation measures implemented, the impact can be rated as of a “medium” significance. After the implementation of the mitigations, the impact will be significantly reduced to “low” rating. The assessment of this impact is presented in **Table 7-27**.

**Table 7-27: Assessment of the impacts of waste generation**

	Extent	Duration	Intensity	Probability	Significance
Pre-mitigation	L - 1	L/M - 2	M/L - 4	M - 4	L - 28
Post-mitigation	L - 1	L - 1	L - 2	L - 1	L - 4

##### 7.5.4.1 Mitigations and recommendation to waste generation

- The site should be kept tidy at all times.
- All domestic and general waste produced on a daily basis should be cleaned and contained daily.
- No waste may be buried or burned on site or anywhere else.
- Waste containers (bins) should be emptied after the construction and removed from site to the municipal waste disposal site.
- Separate waste containers (bins) for hazardous and domestic / general waste must be provided on site.
- Construction labourers should be sensitised to dispose of waste in a responsible manner and not to litter.
- No waste may remain on site after the completion of the project.

#### 7.5.5 Impact Assessment of Dust and Noise Generation Impacts

Decommissioning activities and the presence of construction vehicles may lead to the generation of dust and noise which could impact the local residents and businesses negatively, if not properly handled. Without any mitigation measures implemented, the impact can be rated as of a “medium” significance. After the implementation of the mitigations, the impact will be significantly reduced to “low” rating. The assessment of this impact is presented in **Table 7-28**.

**Table 7-28: Assessment of the impacts of the proposed activities on dust and noise generation**

	Extent	Duration	Intensity	Probability	Significance
Pre-mitigation	L/M - 2	L/M - 2	M - 6	M/H - 4	M - 40
Post-mitigation	L - 1	L - 1	L - 2	M/L - 2	L - 8

#### 7.5.5.1 Mitigations and recommendation to dust and noise generation

- Dust abatement techniques should be implemented e.g., spraying of water on site to reduce dust levels to an acceptable standard.
- The local community and surrounding businesses should be continuously consulted to ensure that the dust levels are acceptable.
- Residents and businesses should be informed prior to construction commencing so that they are aware of the planned construction.
- During high wind conditions the contractor must make the decision to cease works until the wind has settled.
- Stockpiles and sand being transported should be covered with plastic to reduce windblown dust.
- Workers should be provided with dust masks.
- Decommissioning activities should be limited to daytime hours (between 08h00 and 17h00) unless otherwise arranged with community members and businesses in the area.
- No amplified music should be allowed on site.
- Technology such as silencers should be installed on machinery.
- The use of horns as a general communication tool should not be allowed, they should only be used when necessary, as a safety measure.

#### 7.5.6 Impact Assessment of Surface and Groundwater Impacts

Improper handling, storage and disposal of hydrocarbon products and hazardous materials at the site may lead to soil and groundwater contamination, in case of spills and leakages. Leakages from vehicles and machines during decommissioning activities may also contribute to soil and groundwater contamination. Without any mitigation measures implemented, the impact can be rated as of a “medium” significance. After the implementation of the mitigations, the impact will be significantly reduced to “low” rating. The assessment of this impact is presented in **Table 7-29**.

**Table 7-29: Assessment of the impacts of the proposed activities on surface and groundwater**

	Extent	Duration	Intensity	Probability	Significance
Pre-mitigation	L/M - 3	M - 2	M - 6	M - 4	M - 44
Post-mitigation	L - 1	M - 2	M/L - 4	M/L - 2	L - 14

#### 7.5.6.1 Mitigations and recommendation to surface and groundwater

- Workers responsible for the storage and handling of hydrocarbons should be suitably trained to do so and trained on spill prevention (e.g., the use of drip trays) and the handling of potential spills should they occur to be able to ensure implementation on site.
- Potential contaminants such as wastewater should be contained on site and disposed of in accordance with municipal wastewater discharge standards so that they do not contaminate surrounding soils and eventually groundwater.
- Contaminants such as hydrocarbons should be stored, handled, and managed appropriately. These must be collected on site and disposed at an appropriate facility that is licenced to receive such waste.
- Observation of soil on site for signs of contamination at the vehicle holding, parking and activity areas.
- Place oil drip trays under parked vehicles and hydraulic equipment at the site.
- All heavy vehicles and equipment on site should be provided with a drip tray.
- All heavy construction vehicles should be maintained regularly to prevent oil leakages.
- Maintenance and washing of vehicles should take place only at a designated workshop area which surface is impermeable.
- Spill kits should be available at the workshop areas in case of spills.

#### 7.5.7 Impact Assessment of Soil Erosion Impacts

Soil erosion is likely to occur on site during the deconstruction of the facility given the characteristics of the site. Without any mitigation measures implemented, the impact can be rated as of a “medium” significance. After the implementation of the mitigations, the impact will be significantly reduced to “low” rating. The assessment of this impact is presented in Table 7-30.

**Table 7-30: Assessment of the impacts of the proposed activities on soil erosion**

	Extent	Duration	Intensity	Probability	Significance
Pre-mitigation	L/M - 2	M - 2	M - 6	M - 3	M - 30
Post-mitigation	L - 1	L - 1	M/L - 4	M/L - 2	L - 12

#### 7.5.7.1 Mitigations and recommendation to soil erosion

- Erosion control measures (such as barriers) should be implemented to ensure that the topsoil is not washed away.
- Checks must be carried out at regular intervals to identify areas where erosion is occurring.
- Where possible, it is recommended that construction activities take place during the dry season/winter months to reduce erosion and sedimentation risks associated with summer rainfall in this region;
- Appropriate remedial actions are to be undertaken wherever erosion is evident.

#### 7.5.8 Impact Assessment of Traffic

During removal of materials and infrastructure from site traffic is expected to increase as a result of the trucks and vehicles that will be moving to and from the site. Without any mitigation measures implemented, the impact can be rated as of a “low” significance. After the implementation of the mitigations, the impact will be significantly reduced to “low” rating. The assessment of this impact is presented in Table 7-31.

**Table 7-31: Assessment of the impacts of the proposed activities on traffic**

	Extent	Duration	Intensity	Probability	Significance
Pre-mitigation	L - 2	M - 2	M - 6	M - 3	L - 27
Post-mitigation	L - 2	L - 1	M/L - 4	M/L - 2	L - 16

#### 7.5.8.1 Mitigations and recommendation to traffic

- Vehicles are to make use of the approved access point.
- Obey speed restrictions and traffic rules.

## 8 RECOMMENDATIONS AND CONCLUSION

### 8.1 Conclusion

The key potential biophysical impact related to the pre-operational, construction, operational and maintenance and decommissioning phases of the proposed project were identified and assessed. Suitable mitigation measures (where required and possible) were recommended, and the impacts can be summarised as follows:

- **Impacts on biodiversity loss (during pre-construction and construction phase):** The preparation of the site involves clearing of certain areas on site. This may impact the existing biodiversity in the area. The subject site does accommodate some vegetation and possibly some fauna. During site preparation it should be ensured that only the areas applicable to the project site area cleared. The layout of the proposed plant should incorporate existing protected trees which may not be removed without a valid permit from the local department of Forestry. However, the impact can be adequately addressed by the recommendations given under subchapter 7.2.1, and management actions given in the EMP (Chapter 3).
- **Impacts on soil, surface and groundwater (during construction and decommissioning phase):** Improper handling, storage and disposal of hydrocarbon products and hazardous materials at the site may lead to soil and groundwater contamination, in case of spills and leakages. The impact can be adequately addressed by the recommendations given under subchapters 7.3.2, 7.5.6 and management actions given in Chapter 3 of the EMP.
- **Impacts of erosion (during construction and decommissioning phase):** Soil erosion is likely to occur on site given the characteristics of the site and the fact that the site is sparsely vegetated. The impact can be adequately addressed by the recommendations given under subchapters 7.3.3, 7.5.7 and management actions given in Chapter 3 of the EMP.
- **Impacts on archeological and heritage resources (during construction phase):** There are no archeological and heritage resources known to be located on the sites. However, should these be encountered during the construction activities mitigation measures need to be in place to ensure that these resources are not harmed. The impact can be adequately addressed by the recommendations given under subchapter 7.3.4 and management actions given in Chapter 3 of the EMP.



- **Impacts on health and safety (during construction, operation and decommissioning phase):** Construction, operation and decommissioning activities may cause health and safety risks to people operating on the site. The impact can be adequately addressed by the recommendations given under subchapter 7.3.5, 7.4.6, 7.5.3 and management actions given in Chapter 3 of the EMP.
- **Impacts on dust and noise (during construction, operation and decommissioning phase):** Construction, operational and decommissioning activities may increase dust and noise generated around the site area. The impact can be adequately addressed by the recommendations given under subchapter 7.3.6, 7.3.7, 7.4.2, 7.4.3, 7.5.5 and management actions given in Chapter 3 of the EMP.
- **Impacts on air quality (during operation phase):** Operational activities may result in emissions generated around the site area. The impact can be adequately addressed by the recommendations given under subchapter 7.4.4 and management actions given in Chapter 3 of the EMP.
- **Impacts on waste (during construction, operation and decommissioning phase):** Improper disposal of waste materials at the site may lead to pollution of the site and resultant environmental degradation. The impact can be adequately addressed by the recommendations given under subchapters 7.3.8, 7.4.5, 7.5.4 and management actions given in Chapter 3 of the EMP.
- **Impact on social environment (during construction, operation and decommissioning phase):** The proposed activity may provide employment opportunities for the local people during construction and operation of the proposed factory. The impact can be adequately addressed by the recommendations given under subchapter 7.3.9, 7.4.7, 7.5.1 and management actions given in Chapter 3 of the EMP.
- **Impact on traffic (during pre-construction, construction, operation and decommissioning phase):** Traffic is expected to increase during the construction and operational activities on the site. The impact can be adequately addressed by the recommendations given under subchapter 7.2.2, 7.4.1, 7.5.8 and management actions given in Chapter 3 of the EMP.

## **8.2 Recommendation**

Based on the information provided in this report, GCS is confident the identified risks associated with the proposed development can be reduced to acceptable levels, should the measures recommended in the EMP be implemented and monitored effectively. It is therefore recommended that the project receive Environmental Clearance, provided that the EMP be implemented.

## 9 REFERENCES

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**APPENDIX A**

**CV'S OF ENVIRONMENTAL ASSESSMENT PRACTITIONER**

**APPENDIX B**

**ENVIRONMENTAL MANAGEMENT PLAN (EMP)**

## APPENDIX C

# LIST OF INTERESTED AND AFFECTED PARTIES

**APPENDIX D**

**BACKGROUND INFORMATION DOCUMENT**

## APPENDIX E

### NEWSPAPER ADVERTS



## **APPENDIX F**

# **NOTIFICATIONS OF INTERESTED AND AFFECTED PARTIES**

## APPENDIX G

### SITE NOTICE

**APPENDIX H**

**OSHAKATI TOWN COUNCIL APPROVAL**

**APPENDIX I**

**MEETING PRESENTATION, MINUTES AND ATTENDANCE REGISTER**

## APPENDIX J

### COMMENTS RECIEVED