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Environmental Impact Assessment (EIA) for the Proposed Township Establishment on Portion A of the Remainder of Farm 38, Walvis Bay, Erongo Region

Environmental Scoping Report

Version – Final

MEFT APP-002892

14 November 2021

Municipality of Walvis Bay

GCS Project Number: 21-0304

Client Reference: EIA Farm 38

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Proponent	Municipality of Walvis Bay Private Bag 5017 Walvis Bay Contact Person: Kristofina Asino Email address: kasino@walvisbaycc.org.na
Environmental Assessment Practitioner	GCS Water Environmental Engineering Namibia (Pty) Ltd PO Box 81808 Windhoek Contact person: Stephanie Strauss Email: stephanies@gcs-na.biz

EXECUTIVE SUMMARY

Introduction

The Municipality of Walvis Bay (The Proponent) proposes to establish a township on Portion A of the Remainder of Farm 38, Walvis Bay. The proposed development includes the creation of predominantly industrial erven, streets and the installation of bulk services within the proposed township.

Need and Desirability

Walvis Bay is an important port town which operates an extensive fishing industry, and which is an important import and export point for many landlocked SADC countries. In terms of the Integrated Urban Spatial Development Framework for Walvis Bay (IUSDF) the town is expected to become a primary industrial city by 2030.

As such the Municipality of Walvis Bay has identified a need to develop an industrial township in order to meet the demands for industrial erven within the town.

Project Description

The Proponent proposes to establish a township on Portion A of the Remainder of Farm 38, Walvis Bay.

The proposed township will provide predominantly industrial and light industrial erven, with three public open spaces additionally provided in the township. The total number of erven to be created within the township are approximately 100 erven and the Remainder (to be reserved as Street).

The primary activities that may be undertaken on an Industrial erf range from industrial buildings, panel beating, scrap yard, service and light industry, service station, warehouse, storage and building yard as per the Walvis Bay Town Planning Amendment Scheme No 35. Light Industrial land uses are reserved for industry activities which are not noxious and may include accommodation for a caretaker on the premises or the selling of goods manufactured or processed on the premises.

It should be noted that separate EIAs will be conducted by the developers for the activities intended on the individual erven should they trigger listed activities as per the Environmental Management Act and its EIA regulations.

Public Consultation

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 township activities was compiled (**Appendix D**) and sent out to all identified and registered I&APs by email dated 9 August 2021;
- Notices were placed in *The Namib Times* on 6 August and 13 August 2021 as well as in *The Sun, Republikein* and *Algemeine Zeitung* newspapers dated 9 and 16 August 2021, 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 F**);
- Notices regarding the intended development and scheduled public meeting was placed on the Municipality of Walvis Bay website and Facebook page (**Appendix D**);
- A public meeting was held on 21 August 2021 at 10h00 at the Town Hall, Civic Centre. (**Appendix H**).

The comments received during the notification period and the public meeting are presented in the Issues and Response Trail (**Appendix I**).

The scoping report was made available to all I&APs for public review from **28th October 2021 until 11th November 2021.** I&APs had until **11th November 2021** to submit their comments on the project. The comment period will remain open until the final scoping report is submitted to MEFT.

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-operational phase and construction):** There is the possibility of loss of vegetation during the site clearing and construction for the proposed activity. The site is sparsely vegetated as such the impact can be adequately addressed by the recommendations given under subchapter 7.2.1, 7.3.1 and management actions given in the EMP (Chapter 3).
- **Impacts on soil, surface and groundwater (during construction and operational phases):** Improper handling, storage and disposal of hydrocarbon products and hazardous materials at the site, such as spills and leakages, may lead to soil and groundwater contamination. The impact can be adequately addressed by the recommendations given under subchapters 7.3.2, 7.4.2 and management actions given in the EMP (Chapter 3).

- **Impacts of erosion (during construction 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 and management actions given in the EMP (Chapter 3).
- **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 the EMP (Chapter 3).
- **Impacts on health and safety (during construction phase):** Construction 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 and management actions given in the EMP (Chapter 3).
- **Impacts on dust and noise (during construction phase):** Construction 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, 7.4.3, 7.4.6 and management actions given in the EMP (Chapter 3).
- **Impacts on waste (during construction and operation 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 7.4.4, 7.3.8 and management actions given in the EMP (Chapter 3).
- **Impact on social environment (during construction and operational phase):** The proposed activity may provide employment opportunities for the local people. The impact can be adequately addressed by the recommendations given under subchapter 7.3.9**,** 7.4.9 and management actions given in the EMP (Chapter 3).
- **Impact on traffic (during operational phase):** The intended development may have an impact on traffic in the subject area. Traffic is expected to increase within the area, as the area will become increasingly developed. The impact can be adequately addressed by the recommendations given under subchapter 7.4.1 and management actions given in the EMP (Chapter 3).

- **Visual Impact (during operational phase):** The subject site is currently mostly undeveloped with a few areas being developed. Once developed, there will be a change in the visual characteristics of the area. Individuals who frequent the area on a regular or infrequent basis will experience a change in their sense of place of the area. Particularly those who visit the nearby Dune 7 tourist site. The extent of this disturbance will depend on how highly they valued the initial aesthetic quality of the area. This impact would mostly affect the surrounding property owners within the neighbourhood and the people who frequently visit the area. The impact can be adequately addressed by the recommendations given under subchapter 7.4.1 and management actions given in the EMP (Chapter 3).

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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1 INTRODUCTION

Walvis Bay is an important port town which operates an extensive fishing industry, and which is an important import and export point for many landlocked SADC countries. In terms of the Integrated Urban Spatial Development Framework for Walvis Bay (IUSDF) the town is expected to become a primary industrial city by 2030.

As such the Municipality of Walvis Bay has identified a need to develop an industrial township in order to meet the demands for industrial erven within the town.

The Municipality of Walvis Bay (The Proponent) proposes to establish a township on Portion A of the Remainder of Farm 38, Walvis Bay. The proposed development includes the creation of predominantly industrial erven, creation of streets, and the installation of bulk services within the proposed township. The locality of the proposed township is shown in **Figure 1-1** below.

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:

- *Activity 10.1 (a) Infrastructure - The construction of oil, water, gas and petrochemical and other bulk supply pipelines* (The proposed development includes the installation of bulk services);
- *Activity 10.1 (b) Infrastructure - The construction of public roads* (The proposed project includes the construction of roads);
- *Activity 10.2 (a) Infrastructure - The route determination of roads and design of associated physical infrastructure where – it is a public road* (The proposed project includes the route determination of roads).

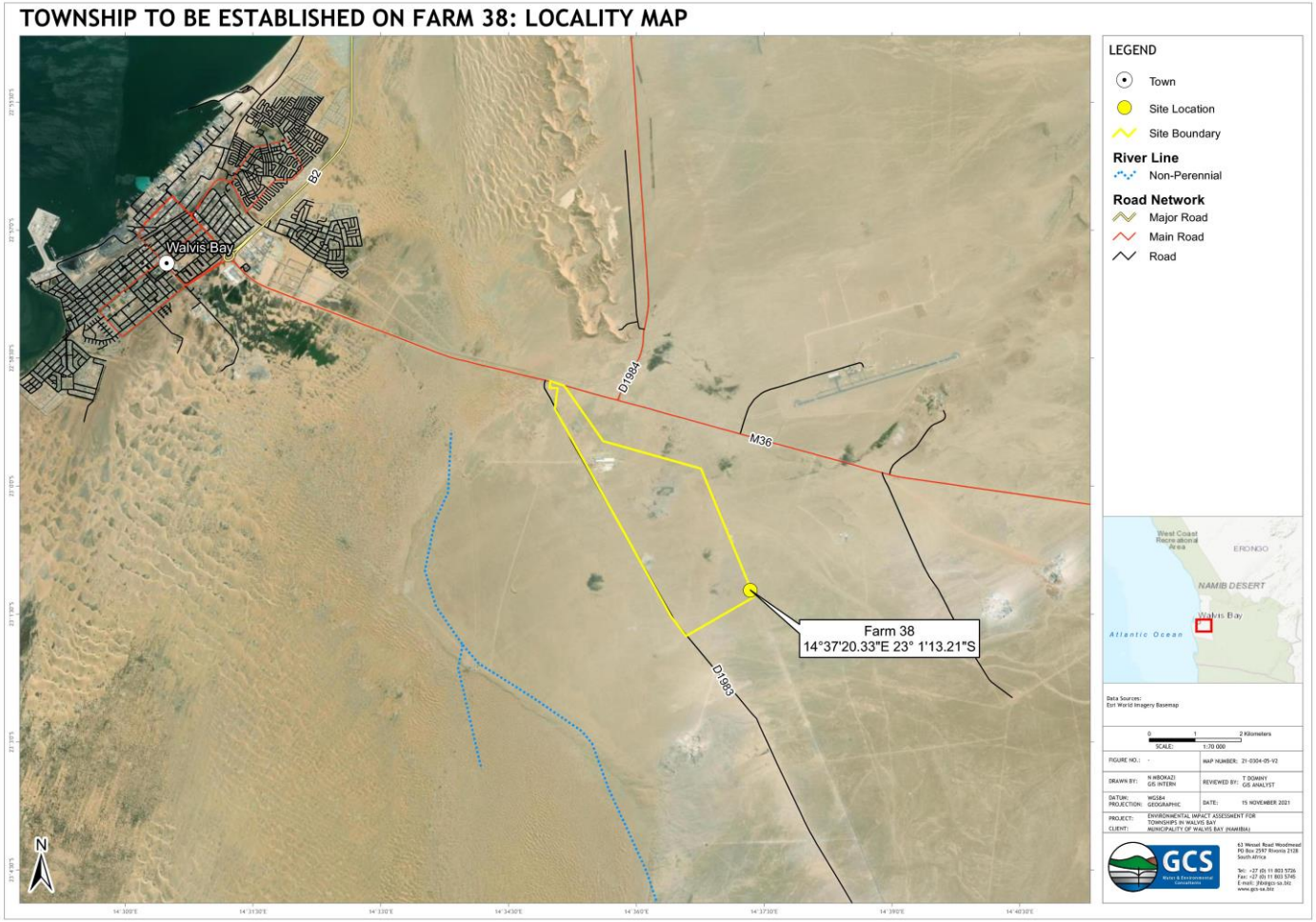


Figure 1-1: Locality map of proposed township to be established on Farm 38

In order to fulfil the requirements of the EMA and its 2012 EIA Regulations, the Municipality of Walvis Bay 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 township establishment in Walvis Bay. 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 draft 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 (DEA), Ministry of Environment, Forestry and Tourism (MEFT).

Stephanie Strauss, a qualified Environmental Assessment Practitioner (EAP) conducted this EA process under the supervision of Gerda Bothma, a qualified and experienced Senior Environmental Scientist. The team was assisted by Victoria Shikwaya, a Junior 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

Walvis Bay is an important port town which operates an extensive fishing industry, and which is an important import and export point for many landlocked SADC countries. In terms of the Integrated Urban Spatial Development Framework for Walvis Bay (IUSDF) the town is expected to become a primary industrial city by 2030.

As such the Municipality of Walvis Bay has identified a need to develop an industrial township in order to meet the demands for industrial erven within the town.

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 DEA, the first stage in the EA process is to submit a scoping report. This report provides the following:

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 no-go option, and services infrastructure	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

Description	Section of the Report
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 establish a township on Portion A of the Remainder of Farm 38, Walvis Bay.

2.1 Description of Activity

2.1.1 Site Location

The proposed township is located in the eastern part of Walvis Bay adjacent to the M36 and D1983 roads. Please refer to **Figure 1-1** for the locality map and **Table 2-1** for the approximate size of the proposed site.

Table 2-1: Approximate size of the site

Location	Walvis Bay
Area size	794 Hectares

2.1.2 Proposed Development

The proposed township will provide predominantly industrial and light industrial erven, with three public open spaces additionally provided in the township. The total number of erven to be created within the township are approximately 100 erven and the Remainder (to be reserved as Street).

The subject site currently has tenants that are leasing portions of land from the Walvis Bay Municipality for their activities such as King Charcoal and BC Stone (**Figure 2-1),** Tesla Energy, Desert Raceway, Tracking and Spraypave Trading and Moni-ric Cement Works. The development will aim to accommodate these existing industries within the proposed layout.

Figure 2-1: King Charcoal and BC Stone on Farm 38

The primary activities that may be undertaken on an Industrial erf range from industrial buildings, panel beating, scrap yard, service and light industry, service station, warehouse, storage and building yard as per the Walvis Bay Town Planning Amendment Scheme No 35. Light Industrial land uses are reserved for industry activities which are not noxious and may include accommodation for a caretaker on the premises or the selling of goods manufactured or processed on the premises. It should be noted that separate EIAs will be conducted by the developers for the activities intended on the individual erven should they trigger listed activities as per the Environmental Management Act and its EIA regulations. Please refer to **Figure 2-2** for the proposed layout plan for the proposed township.

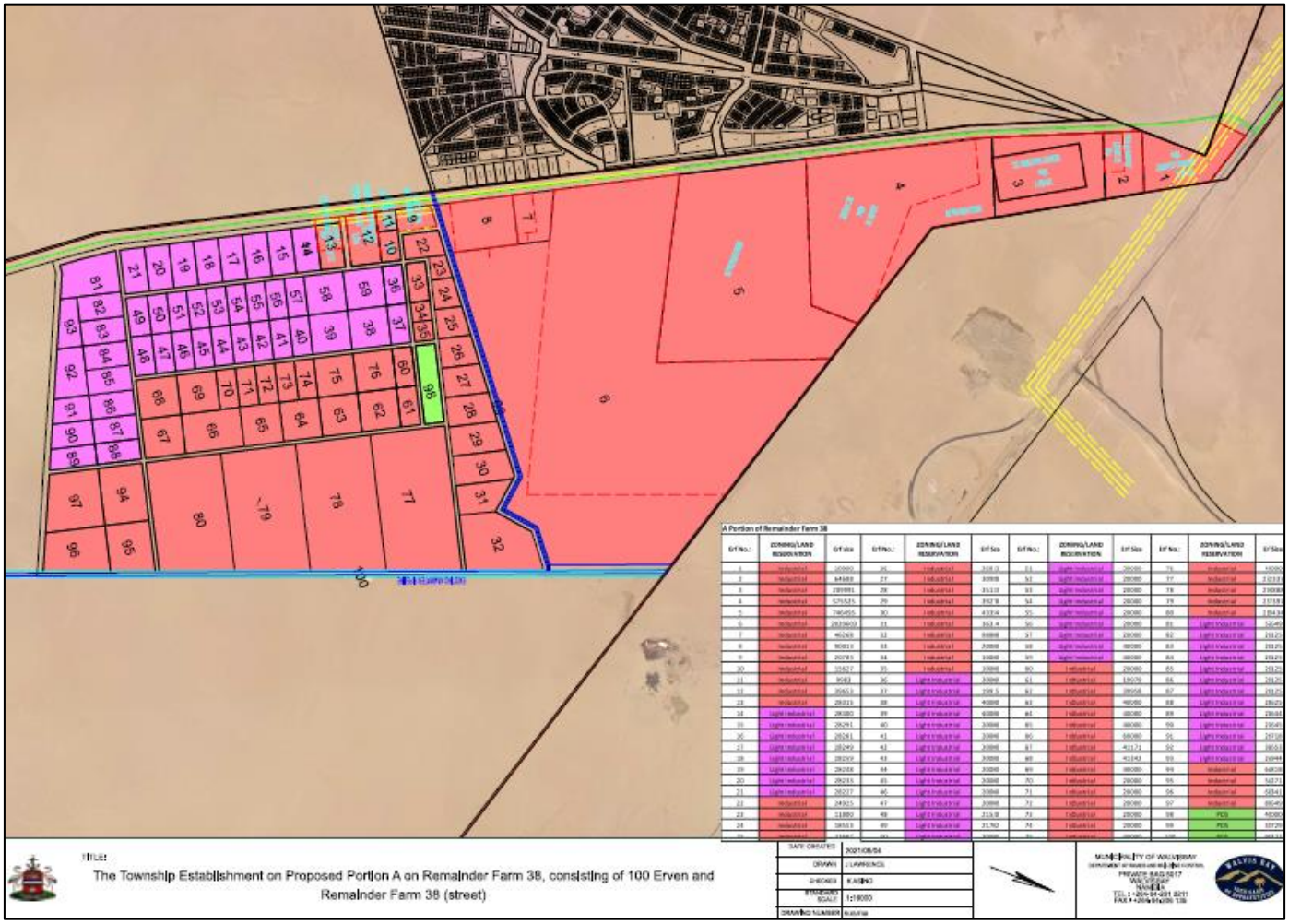


Figure 2-2: Layout Map for proposed township on Farm 38

2.1.3 Municipal Service Delivery

2.1.3.1 Water

Bulk water is supplied to the Municipality of Walvis Bay by Namwater. Water is abstracted from the Kuiseb Aquifer and is then pumped to the Mile 7 reservoir which is then pumped to the Municipality of Walvis Bay for distribution to customers. The town additionally pumps water from the Omdel aquifer.

2.1.3.2 Sewage

Sewage in Walvis Bay is channeled through a sewage network to the Wastewater Treatment Plant. The treated water is used to irrigate sports fields and parks. Some of it is stored in a reservoir in the south-east of the town.

2.1.3.3 Electricity

Bulk electricity supply to Walvis Bay is via Paratus Power Station and Kuiseb Substation outside Walvis Bay. Two 66kV overhead lines connects Kuiseb Substation to Paratus. At Paratus Power Station an adjacent Substation, Paratus Substation, is equipped with 2 x 30MVA 66/ 11kV transformers. Paratus Substation is the main in-feed substation to Walvis Bay. The responsibility of the Walvis Bay internal electricity network and electrical services provision vests with Erongo RED.

Due to increase in demand of services that may result from the increased number of erven to be created the proponent is to appoint an engineer to prepare a master plan for the municipal service delivery to the proposed areas. The master plan is to investigate issues such as water pressure and bulk water storage capacity, sewage treatment, and stormwater management.

2.1.3.4 Solid Waste Disposal

The Municipality of Walvis Bay supplies residents with a wheely bin for waste disposal which is collected weekly for disposal at the landfill site in Walvis Bay. The existing facility is believed to have sufficient capacity to the year 2040, and no expansion will be required to accommodate the 2030 growth projections. Provision is made, however for the area to be extended further east in the long-term (Urban Dynamics, 2014).

2.1.4 Site Access

Access to the proposed development is to be obtained via the D1983 road adjacent to the proposed site.

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.

Various alternatives have been identified in terms of the proposed townships and its related activities. The most significant alternatives considered are; no-go option and services infrastructure.

The above-mentioned alternatives considered for the proposed activity are discussed in the following subchapters.

3.1 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 township establishment not commence, none of the potential impacts (positive and negative) identified would occur. Furthermore, the subject areas will remain undeveloped. This would also mean that the potential availability of residential erven and other land uses would not be realized, and the housing shortage not addressed.

Should the proposed township establishments be discontinued, the current land use for the proposed site will remain unchanged.

3.2 Services Infrastructure

In terms of the services that may be required during construction and operation for the proposed township, their alternatives are presented in **Table 3-1** below.

Table 3-1: Alternatives considered in terms of services infrastructure

Services	Proposed source	Alternative source
Construction Phase		
Power for cooking	Gas stoves	Electric drives or generators
Worker's accommodation	Accommodation in the nearest accommodation facility in Walvis Bay.	None
Sewage	Portable toilet – these are easily transportable and have no direct impact on the environment and ecology (if properly disposed).	Ventilated improved pit (VIP) latrine. This would be best suited at the contractors' camp.

Services	Proposed source	Alternative source
Domestic waste	Onsite waste bins, regularly emptied at the nearest landfill.	Driving waste daily to the nearest landfill.
Operational Phase		
Water	Existing water reticulation of the town	Augmenting the supply with additional boreholes- the availability of water would need to be confirmed.
Power (electricity)	Existing electricity reticulation of the town	Solar power
Sewage	Existing sewage reticulation of the town	Portable decentralised sewage treatment facility

3.3 Conclusions on the Considered Alternatives

The alternatives considered for the project are summarized as follow:

- **No-go vs. continuation of the proposed project**: The no-go alternative is not considered to be the preferred option. Should the proposed township establishment be discontinued, none of the potential impacts (positive and negative) identified would occur. Furthermore, the current land use for the proposed site will remain unchanged and the housing shortage will not be addressed.
- **Services Infrastructure during the construction phase**: Water and electricity from the existing municipal services connections can be used to supply water and electricity during construction. Workers are to be accommodated in the nearest accommodation facility in Walvis Bay. Portable toilets are to be used on site, these are easily transportable and have no direct impact on the environment and ecology (if properly disposed). Onsite waste bins, regularly emptied at the nearest landfill or alternatively driving waste daily to the nearest landfill.
- **Services Infrastructure during the operational phase**: Water, electricity and sewage for the proposed activity is to be sourced connected to the existing municipal reticulation of the town. However, should it be found that there is not sufficient supply for the increased number of erven then alternative sources such as solar power and a decentralised sewage treatment facility should be explored.

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 (Municipality of Walvis Bay), Interested and Affected Parties and the decision makers at the DEA 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.

4.2 Namibia Urban and Regional Planning Act No 5 of 2018

The act aims 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 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.

The applications related to the proposed townships are to be compiled and submitted in accordance with the provisions of the act.

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 is presently without regulations; 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
	• Prohibits the pollution of water and implements the principle that a person disposing of effluent or waste has a duly of care to prevent pollution (S3 (k)). • Provides for control and protection of groundwater (S66 (1), (d (ii)). Liability of clean-up costs after closure/abandonment of an activity (S3 (l)).	
Water Resources Management Act No.11 of 2013	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: 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).	
Soil Conservation Act No. 76 of 1969	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.	Duty of care must be applied to soil conservation and management measures must be included in the EMP.

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 Walvis Bay.
Atmospheric Pollution Prevention Ordinance No. 11 of 1976	This ordinance provides for the prevention of air pollution.	Measures should be instituted to ensure that dust emanating from construction activities is kept at acceptable levels.
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.	

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
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.
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.
National Heritage Act No. 27 of 2004	The Act is aimed at protecting, conserving and registering places and objects of heritage significance.	Should any protected heritage resources (e.g. human remains etc.) be discovered, it must 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	• Section 3.1 deals with width of proclaimed roads and road reserve boundaries • Section 27.1 is concerned with the control of traffic on urban trunk and main roads • Section 36.1 regulates rails, tracks, bridges, wires, cables, subways or culverts across or under proclaimed roads Section 37.1 deals with Infringements and obstructions on and interference with proclaimed roads.	Adhere to all applicable provisions of the Roads Ordinance.

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
Nature Conservation Ordinance no. 4 of 1975	• Chapter 6 provides for legislation regarding the protection of indigenous plants	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 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.	Adhere to all applicable provisions of the Act.
The Aviation Act, Act 74 of 1962 and Namibian Civil Aviation Regulations, 2001	Section 139.01.34 outlines the obstacle limitations and marking outside aerodromes	The proposed project should adhere to the limitations outlined in the act.

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

5 ENVIRONMENTAL AND SOCIAL BASELINE

The proposed activities will be undertaken in an environment with specific conditions. Prior to any development in an area and as part of an environmental assessment process, it is vital to firstly understand the pre-project/development conditions. This is also important to form a baseline understanding of the area and make reasonable conclusions on certain issues that may arise years later during or after the project's operations. The environmental and social baseline for the project area is presented under the subchapters below.

5.1 Biophysical Environment

5.1.1 Climate

The climate of the Erongo Region can be described as semi-arid. Annual temperatures range between less than 16-20 °C with the maximum temperatures ranging between less than 20-28 °C and the minimum temperatures between 8-12 °C (Mendelsohn, et al., 2002). Within the coastal belt temperatures are usually above 10 °C due to the coastal winds.

Rainfall is recorded to fall mostly in the summer months of January, February and March with the average annual rainfall recorded to be between 100 mm to 150 mm for the subject area (Mendelsohn, et al., 2002).

5.1.2 Topography, Soils and Geology

The subject site is predominantly characterised by consolidated dune sands that are mostly undeveloped (GCS Water and Environment, 2021). The proposed development area is relatively flat with the odd elevation increase and decreases associated with aeolian deposited dune sands.

The geology underlying the Namib Desert consists of a Precambrian basement with granite, gneiss and shale. The oldest Tertiary rocks are part of the Tsondab-Sandstone-Formation, which underlies most of the central Namib south of the Kuiseb. North of the Kuiseb a flat gravel plain on a crystalline basement is found. The underlying rocks consist of calcareous and gypsum metamorphic bedrock or granite (GCS Water and Environment, 2021).

According to the 1: 250 000 geological series for Namibia the surface geology of the project area is characterized by sand, gravel and calcrete as well as minor occurrences of Syntectonic Salem granites (GCS Water and Environment, 2021). The dominant soils found within the development area consist of Dune Sands as depicted in **Figure 5-1** below with the soil changing to more competent gypsisols (soils with a substantial secondary accumulation of calcite sulfate) surrounding Farm 38 (GCS Water and Environment, 2021).

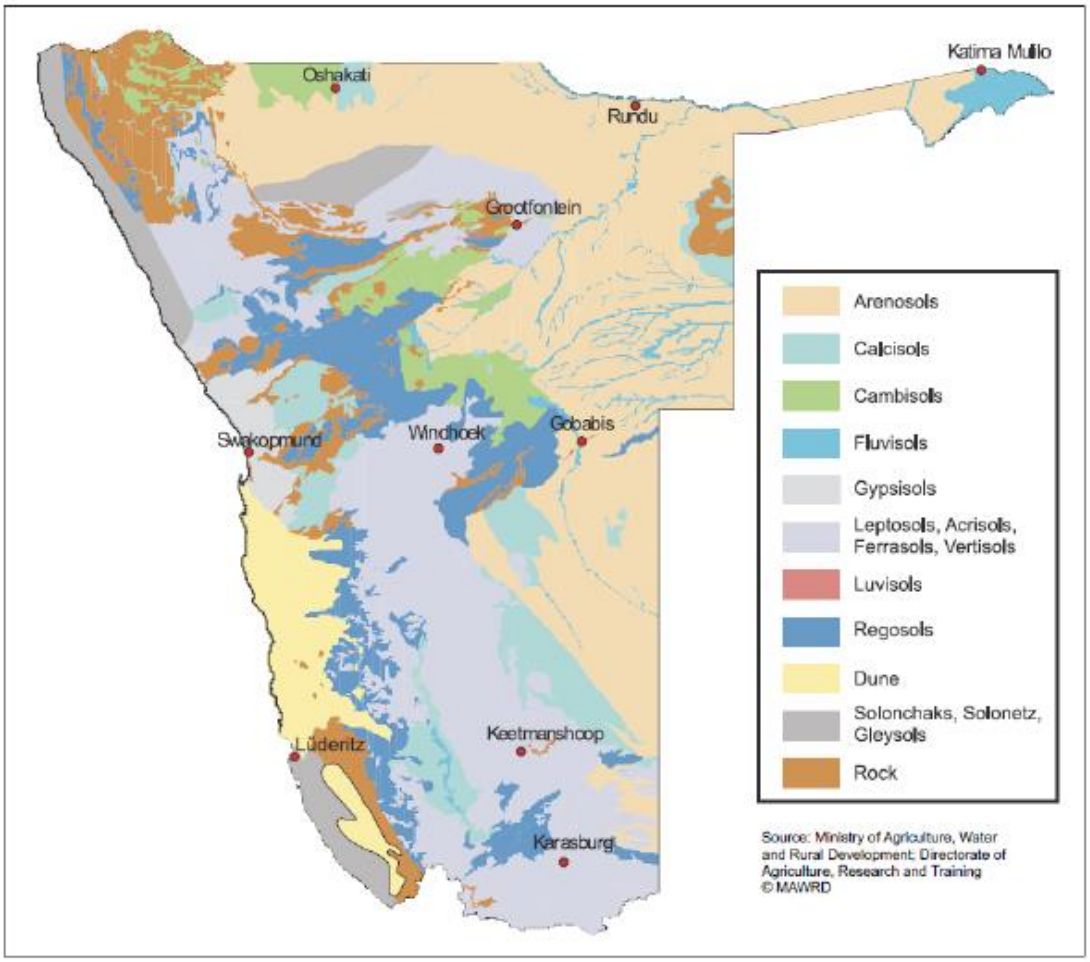


Figure 5-1: Soils of Namibia (Ministry of Agriculture, Water and Rural Development, 2011)

5.1.3 Landscape

In the Erongo Region the land rises steadily from sea level to about 1000 meters across the breadth of the Namib. Namibia's highest mountain, Brandberg (2,579 m), lies in the far northern part of the Erongo Region (Geological Survey of Namibia, 2012).

5.1.4 Water Resources: Surface and Groundwater

The Namib plain is incised by a few main ephemeral rivers that run seawards from wetter parts of their catchments further inland. The four main rivers in the Erongo Region include the Swakop, Omaruru, Kuiseb and Ugab rivers (Geological Survey of Namibia, 2012).

The study area falls within the Central Namib – Windhoek hydrogeological basin as depicted in **Figure 5-2**. The Central Namib -Windhoek region extends from Windhoek in the east to the Atlantic Ocean in the west (near Walvis Bay). The Ugab and Kuiseb rivers form the northern and southern boundaries of this hydrogeological basin.

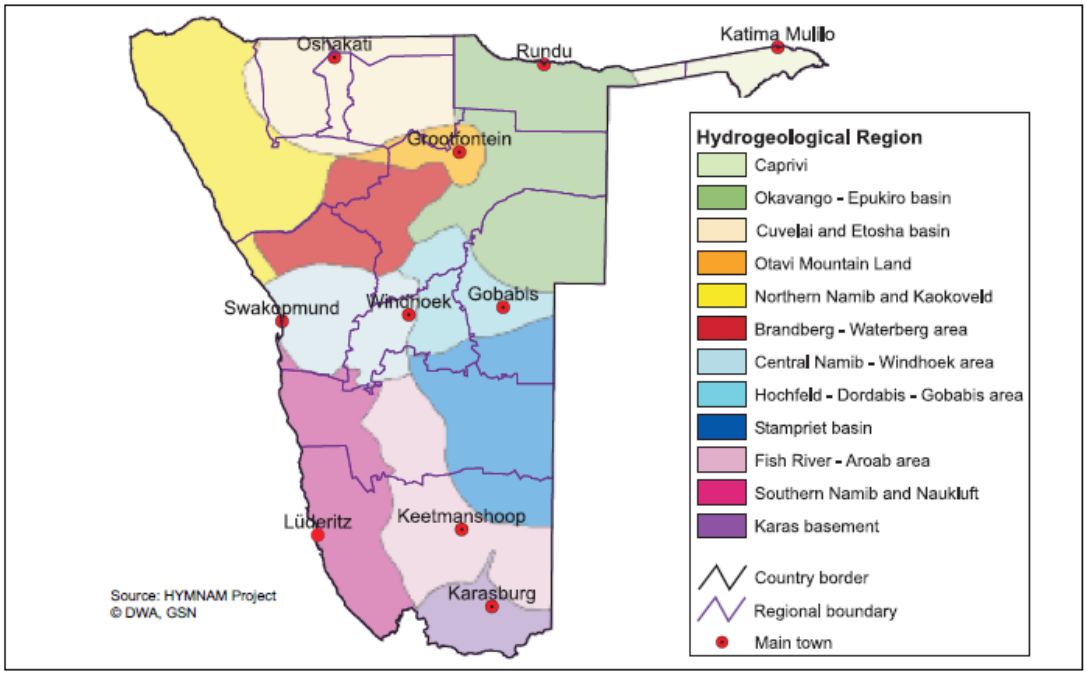


Figure 5-2: Groundwater basins and hydrogeological regions in Namibia (Ministry of Agriculture Water and Rural Development, 2011)

Farm 38 is situated on a more competent rock of the Salem and Donkerhoek granites, forming a fractured aquifer network, with the unconsolidated/aeolian deposits forming unconfined weathered aquifer zones. Water within the weathered zone is limited, but perched groundwater tables can occur. Groundwater is typically found within fractures/fissures associated with the granite and have a very low and limited potential. This aquifer is a 2-layer system with both shallow Kalahari unconsolidated sedimentary grains of sand, and deeper Karoo consolidated sedimentary rocks, which may hold some potential for increased amounts of water, although this is still uncertain. The presence of a paleochannel that contains abundant groundwater within a largely surrounding water-scarce area is an example of groundwater potential. The average aquifer thickness is around 130 m. The aquifer is mainly confined. The average transmissivity (T) values are 150 m^2/day for successful boreholes drilled, with T values going down to 10 to 20 m^2/day for lower-yielding boreholes. Typical borehole depths are between 120 and 180 m (GCS Water and Environment, 2021).

The proposed developments will be situated on weathered material (sand, gravel, calcrete), as well as some aeolian sands, underlain by Salem/Donkerhoek granite or occurrences of weathered Salem/Donkerhoek granite that outcrops to the surface. More competent rock of the Salem and Donkerhoek granites, forming a fractured aquifer network, with the unconsolidated/aeolian deposits forming unconfined weathered aquifer zones. Water within the weathered zone is limited, but perched groundwater tables can occur. Groundwater is typically found within fractures/fissures associated with the granite and have a very low and limited potential. Available data suggest that the groundwater table is situated between 17 to 20 mbgl. Infiltration water will predominantly percolate vertically into the groundwater table, while the water table (saturated zone) mimics the general topography. Groundwater moves from higher to lower gradients(GCS Water and Environment, 2021).

Based on the Source-Pathway-Receptor (SPR) principle, the following geohydrological risk was identified:

1. Source(s):
    a. Construction activities and land preparation activities, general waste, storm water infrastructure, leakages sewer infrastructure.
    b. The industrial areas are considered a higher risk in terms of potentially poor-quality seepage potential (i.e., from industrial wastes, heavy wastes, automotive wastes etc.). These facilities should be concrete-lined and should apply housekeeping to reduce contaminant seepage and runoff into the environment and clean storm water drains.
2. Pathway(s):
    a. Vadose Zone, and runoff.
3. Receptor(s):
    a. Groundwater table.

The proposed industrial development is situated in an area with an overall moderate susceptibility to pollution. Care should be taken to ensure that areas designated for waste handling/storage are properly lined, and routine inspections of all sewer and storm water systems should be undertaken. Controlling the potential sources of pollution associated with the site will determine the scale of impact on the underlaying aquifers (GCS Water and Environment, 2021).

In the Kuiseb, there are water supply schemes at Gobabeb, Swartbank and Rooibank, the latter two forming part of the Central Namib Water Supply Scheme (Geological Survey of Namibia, 2012). The Central Namib Water Supply Scheme is based in Swakopmund and is operated by NamWater. The scheme draws groundwater from the wellfields in the Omaruru and Kuiseb rivers (Ministry of Agriculture Water and Rural Development, 2011).

5.1.5 Fauna and Flora

The subject area falls within the Namib Desert Biome (Mendelsohn, Javis, Roberts, & Robertson, 2002). All endemic plant species found within the area are considered to be drought tolerant, drought resistant or succulent. Short lived annuals, which occur after local rainfalls and floods, provide a vital source of food for game grazing within the Namib plains. The subject site is sparsely vegetated as depicted in **Figure 5-3** below.

Figure 5-3: Site photos

5.1.6 Archaeological and Anthropological Resources

No archaeological and heritage sites are known to be located within the proposed development area.

5.2 Social Environment

5.2.1 Social Demographics

According to Namibia Statistics Agency (2011), the population of the Erongo Region is 150 809 people with the population of Walvis Bay being 62 096 people.

5.2.2 Economy

Farming is the main source of income in the Erongo region, while other income sources include wages and salaries, business etc. Similarly, in the Walvis Bay Rural Constituency wages and salaries is the main source of income (Namibia Statistics Agency, 2011).

5.2.3 Land Use

The subject area and its surroundings are generally undeveloped. The Dune 7 tourist site is located in proximity to the proposed site as well as the Walvis Bay airport.

6 PUBLIC CONSULTATION

6.1 Objective:

Public consultation forms an important component of an Environmental Assessment (EA) process by providing 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 mitigations 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

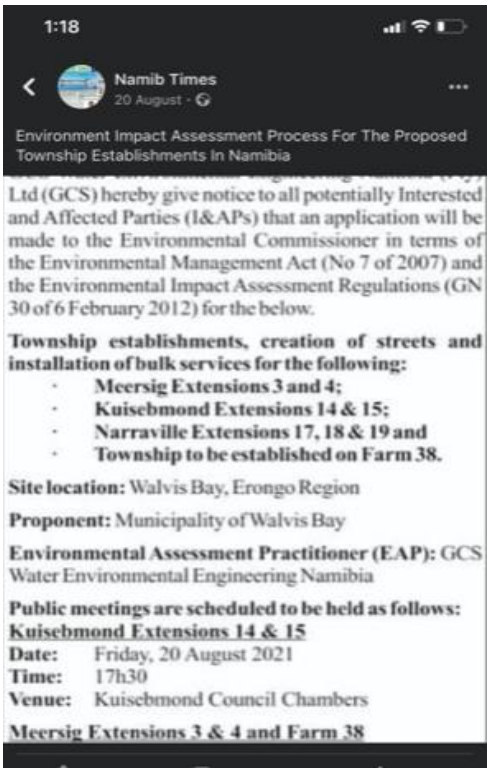
	Description
List of IAPs	Ministry of Environment, Forestry and Tourism
	Ministry of Urban and Rural Development
	Walvis Bay Municipality
	NamWater
	Roads Authority
	National Heritage Council of Namibia (NHCN)
	National Botanical Research Institute (NBRI)

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 township activities was compiled (**Appendix D**) and sent out to all identified and registered I&APs per email dated 9 August 2021;
- Notices were placed in *The Namib Times* on 6 August and 13 August 2021 as well as in *The Sun, Republikein* and *Algemeine Zeitung* newspapers dated 9 and 16 August 2021, 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 F**);
- Notices regarding the intended development and scheduled public meeting was placed on the Municipality of Walvis Bay website and Facebook page, as well as the Namib Times Facebook page as indicated in **Figure 6-1** overleaf;
- A public meeting was held on 21 August 2021 at 10h00 at the Town Hall, Civic Centre. (**Appendix H**).



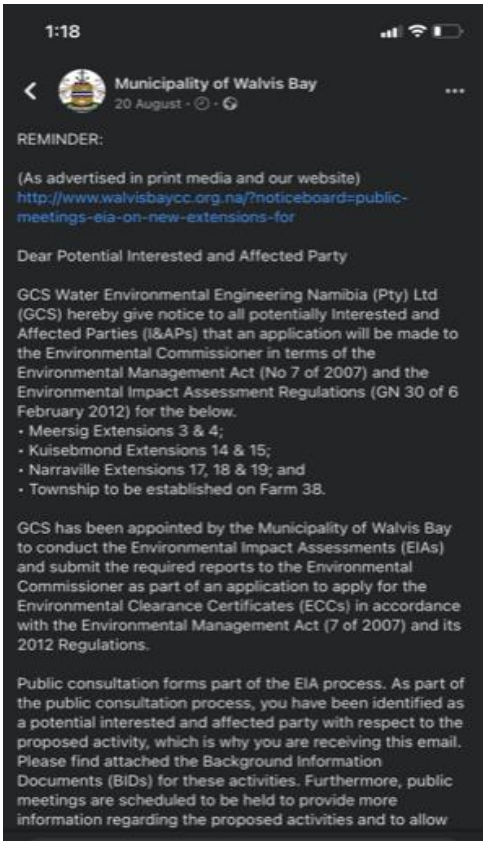


Figure 6-1: Facebook notices

The comments received during the notification period and the public meeting are presented in the Issues and Response Trail (**Appendix I**).

The scoping report was made available to all I&APs for public review from **28th October 2021 until 11th November 2021**. I&APs had until **11th November 2021** to submit their comments on the project. The comment period will remain open until the final scoping report is submitted to MEFT.

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 = (magnitude + duration + scale) x 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

SIGNIFICANCE	*ENVIRONMENTAL SIGNIFICANCE POINTS*	*COLOUR CODE*
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 **7.2, 7.3, 7.4** and **7.5**.

7.2 Pre-operational Phase Impact Assessment

The pre-operational phase is mostly concerned with the preparation of the site for the proposed township and associated services and roads installations. The potential impacts during this phase include biodiversity impacts.

7.2.1 Impact Assessment of Biodiversity Loss

The preparation of the site for the proposed townships usually involves clearing of certain areas on site. This may impact the existing biodiversity in the area. The construction of access roads within the townships may further impact biodiversity in the area. The subject site is sparsely vegetated as such, 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/M - 2	M - 2	M - 6	M - 3	**M - 30**
Post-mitigation	L - 1	L- 1	M/L- 4	M/L - 2	L - 16

7.2.1.1 Mitigations and recommendation to mitigate biodiversity loss

- Vegetation should be cleared only where absolutely necessary and if cleared, numbers of protected, endemic and near endemic species removed should be documented.
- Trees with a trunk size of 150 mm and bigger should be surveyed, marked with paint (readily visible) and protected.
- 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 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 the construction phase the existing biodiversity in the area may be impacted. The construction of access roads and installation of services within the townships may further impact biodiversity in the area. The subject site is sparsely vegetated as such the envisaged impact on biodiversity at the project site, 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 7-7.**

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

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

7.3.1.1 Mitigations and recommendations to address biodiversity loss

- Vegetation should be cleared only where absolutely necessary and if cleared, numbers of protected, endemic and near endemic species removed should be documented.
- Trees with a trunk size of 150 mm and bigger should be surveyed, marked with paint (readily visible) and protected.
- 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. 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 7-8.**

Table 7-8: 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	L- 1	L- 2	M/L - 1	L - 4

7.3.2.1 Mitigations and recommendations to address surface and groundwater impacts

- Careful storage and handling of hydrocarbons on site is essential.

- 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. A waste manifest with proof of disposal must be kept.
- An emergency plan should be available for major / minor spills at the site during operation activities (with consideration of air, groundwater, soil and surface water) and during the transportation of the product(s) to the site.

7.3.3 Impact Assessment of Soil Erosion Impacts

Soil erosion is likely to occur on site given the characteristics of the site and the fact that the site is sparsely vegetated. 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 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 recommendations to address soil erosion impacts

- Erosion control measures 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.
- 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 rehabilitation 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 "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 Archaeological and Heritage Impacts

	Extent	Duration	Intensity	Probability	Significance
Pre-mitigation	L/M - 1	L/M – 4	M - 6	M - 1	**M - 11**
Post-mitigation	L - 1	L- 1	L- 2	L - 1	L - 4

7.3.4.1 Mitigations and recommendations to address 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 7-11.**

Table 7-11: 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 - 6	M - 1	**L - 11**
Post-mitigation	L - 1	L- 1	L- 2	L - 1	L - 4

7.3.5.1 Mitigations and recommendations to address health and safety impacts

- 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 7-12.**

Table 7-12: Assessment of the impacts of the proposed activities on noise generation

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

7.3.6.1 Mitigations and recommendations to address noise generation impacts

- 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 7-13.**

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

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

7.3.7.1 Mitigations and recommendations to address dust generation impacts

- 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 "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 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 recommendations to address waste generation impacts

- The construction site should be kept tidy at all times.

- All domestic and general construction waste produced on a daily basis should be cleaned 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 "low-positive" significance. The assessment of this impact is presented in **Table 7-15**.

Table 7-15: Assessment of the impacts of the proposed activities on temporary employment creation

	Extent	Duration	Intensity	Probability	Significance
Pre-mitigation	L/M + 1	L/M + 2	M + 2	M + 3	**M + 15**
Post-mitigation	L + 4	L+ 3	L+ 2	L + 3	L + 27

7.3.9.1 Mitigations and recommendations to address 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, and waste. Temporary potential impacts identified include dust and noise impacts.

7.4.1 Impact Assessment of Traffic Impacts

The intended development may have an impact on traffic in the subject area. The traffic is not expected to increase significantly as the erven are located in close proximity to an already developed area within the town. 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 7-16.**

Table 7-16: Assessment of the impacts of the activities on traffic

	Extent	Duration	Intensity	Probability	Significance
Pre-mitigation	M - 3	M - 3	M - 6	M - 3	**M - 36**
Post-mitigation	L/M - 2	L/M- 2	L/M- 4	L/M - 2	L - 16

7.4.1.1 Mitigations and recommendation to traffic

- Ensure that road junctions have good sightlines.
- Provide formal road crossings at relevant areas.
- Provide for speed reducing interventions such as speed bumps at relevant road sections

7.4.2 Impact Assessment of Soil, Surface and Groundwater

Surface and groundwater impacts may be encountered during the operation phase, especially if development takes place within the rainy season. The operational activities on site should be conducted in a manner to avoid the contamination of surface and groundwater. 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 7-17**.

Table 7-17: Assessment of the impacts of the activities on soil, surface, and groundwater

	Extent	Duration	Intensity	Probability	Significance
Pre-mitigation	M/H - 4	M/H - 4	M/H - 8	M - 3	**M - 48**
Post-mitigation	M - 3	L/M- 2	M- 6	L/M - 2	L - 22

7.4.2.1 Mitigations and recommendations to address soil, surface, and groundwater impacts

- Contaminated runoff from the various operational activities should be prevented from entering any surface or ground water bodies.

- Ensure that surface water accumulating on-site are channelled and captured through a proper storm water management system to be treated in an appropriate manner before disposal into the environment.
- Disposal of waste from the various activities should be properly managed.

7.4.3 Impact Assessment of Noise

The operational activities may result in associated noise impacts, depending on the exact type of activities taking place on the properties. However due to the nature of the land uses proposed for the subject erven, which is predominantly Residential, it is not expected that the noise levels will be significant if managed well. 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/H - 4	M/H - 4	M/H - 8	M - 3	**M - 48**
Post-mitigation	M - 3	L/M- 2	M- 6	L/M - 2	L - 22

7.4.3.1 Mitigations and recommendations to address noise impacts

- Do not allow commercial activities that generate excessive noise levels.
- No activity having a potential noise impact should be allowed to operate after 18h00 if possible.

7.4.4 Impact Assessment of Waste

Improper disposal of waste materials at the township may lead to pollution of the neighbourhood and resultant environmental degradation. The pre-mitigation impact is assessed to be "low" 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 waste

	Extent	Duration	Intensity	Probability	Significance
Pre-mitigation	M/L - 2	M/L - 2	M/L - 4	M - 3	**L - 24**
Post-mitigation	L - 1	L- 1	L- 2	M/L - 2	L - 8

7.4.4.1 Mitigations and recommendations to address waste impacts

- Waste generated on site is to be collected and disposed of weekly at the nearest licenced landfill.
- Households are to adhere to the municipal regulations with regards to waste disposal.
- No waste may be buried or burned on site or anywhere else.

7.4.5 Impact Assessment of Hazardous Waste

Improper disposal of hazardous waste materials at the township may lead to pollution of the soils, surface and groundwater resources and resultant environmental degradation. The pre-mitigation impact is assessed to be "low" 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 hazardous waste

	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

7.4.5.1 Mitigations and recommendation to hazardous waste

- Prevent the uncontrolled release of hazardous materials to the environment.
- Engineering management controls to be implemented to minimise the risk.
- Implement prevention and control measures for the use, handling, and storage of hazardous materials.
- Ensure the active use and provision of PPE to employees on site.

7.4.6 Impact Assessment of Dust

Dust generation may occur during operational activities. 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 7-21**.

Table 7-21: Assessment of the impacts of the activities on dust generation

	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

7.4.6.1 Mitigations and recommendation to dust generation

- If dust levels become excessive dust abatement techniques should be implemented e.g., spraying of water. However, caution should be taken during times of low water availability then waterless dust suppression means should be considered.
- Consider the tarring of the internal street network.

7.4.7 Impact Assessment of Emissions

Varying activities on site may result in the emission of various types depending on the type of activities present on site. Emissions may impact the air quality within the 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 7-22**.

Table 7-22: Assessment of the impacts of the activities on emissions

	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

7.4.7.1 Mitigations and recommendation to emissions

- Implement measures to reduce emissions that may be harmful or cause pollution.

7.4.8 Impact Assessment of Visual Impacts

The subject site is currently mostly undeveloped with a few areas being developed. Once developed, there will be a change in the visual characteristics of the area. Individuals who frequent the area on a regular or infrequent basis will experience a change in their sense of place of the area. Particularly those who visit the nearby Dune 7 tourist site. The extent of this disturbance will depend on how highly they valued the initial aesthetic quality of the area. This impact would mostly affect the surrounding property owners within the neighbourhood and the people who frequently visit the 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 7-23**.

Table 7-23: Assessment of the impacts of the activities on visual

	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

7.4.8.1 Mitigations and recommendation to visual

- It is recommended that more 'green' technologies be implemented within the architectural designs and building materials of the development where possible in order to minimise the visual prominence of such a development within the more natural surrounding landscape.
- Natural colours and building materials such as wood and stone should be incorporated as well as the use of indigenous vegetation in order to help beautify the development.
- Visual pollutants can further be prevented through mitigations (i.e., keep structures unpainted and minimising large advertising billboards).

7.4.9 Impact Assessment of Social Environment

Some activities within the proposed township may provide employment opportunities for the local people. The assessment of this impact is presented in **Table 7-24.**

Table 7-24: Assessment of the impacts of the activities on social environment

	Extent	Duration	Intensity	Probability	Significance
Pre-mitigation	L - 1	L/M - 2	L - 2	M - 3	**L - 15**
Post-mitigation	L - 2	M- 3	M- 6	M/H - 4	M - 44

7.4.9.1 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

The proposed activities are expected to be a permanent activity and is thus not anticipated to be decommissioned in future. As such the decommissioning impacts for the proposed activity is not discussed.

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-operational phase and construction):** There is the possibility of loss of vegetation during the site clearing and construction for the proposed activity. However, the site is sparsely vegetated and thus the impact can be adequately addressed by the recommendations given under subchapter 7.2.1, 7.3.1 and management actions given in the EMP (Chapter 3).
- **Impacts on soil, surface and groundwater (during construction and operational phases):** 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, 7.4.2 and management actions given in the EMP (Chapter 3).
- **Impacts of erosion (during construction 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 and management actions given in the EMP (Chapter 3).
- **Impacts on archeological and heritage resources (during construction phase):** The proposed activity is not taking place in an area that has significant archaeological or heritage resources. However, should these be encountered during the rehabilitation 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 the EMP (Chapter 3).
- **Impacts on health and safety (during construction phase):** Construction 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 and management actions given in the EMP (Chapter 3).

- **Impacts on dust and noise (during construction phase):** Construction 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, 7.4.3, 7.4.6 and management actions given in the EMP (Chapter 3).
- **Impacts on waste (during construction and operation 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 7.4.4, 7.3.8 and management actions given in the EMP (Chapter 3).
- **Impact on social environment (during construction and operational phase):** The proposed activity may provide employment opportunities for the local people. The impact can be adequately addressed by the recommendations given under subchapter 7.3.9, 7.4.9 and management actions given in the EMP (Chapter 3).
- **Impact on traffic (during operational phase):** The intended development may have an impact on traffic in the subject area. Traffic is expected to increase within the area, as the area will become increasingly developed. The impact can be adequately addressed by the recommendations given under subchapter 7.4.1 and management actions given in the EMP (Chapter 3).
- **Visual Impact (during operational phase):** The subject site is currently mostly undeveloped with a few areas being developed. Once developed, there will be a change in the visual characteristics of the area. Individuals who frequent the area on a regular or infrequent basis will experience a change in their sense of place of the area. Particularly those who visit the nearby Dune 7 tourist site. The extent of this disturbance will depend on how highly they valued the initial aesthetic quality of the area. This impact would mostly affect the surrounding property owners within the neighbourhood and the people who frequently visit the area. The impact can be adequately addressed by the recommendations given under subchapter 7.4.1 and management actions given in the EMP (Chapter 3).

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

GCS Water and Environment. 2021. *Geohydrological Assessment for the Proposed Establishment of Townships in Walvis Bay Municipality Area*.

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