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Environmental Impact Assessment (EIA) for the Proposed Township Establishment, creation of street and installation of bulk services for Omadhiya Proper and Omadhiya Extension 1, Omuthiya

Environmental Scoping Report

Version – Final

2 September 2021

Omuthiya Town Council

GCS Project Number: 21-0257

Client Reference: Omadhiya Proper and Extension 1

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Proponent	Omuthiya Town Council P.O. Box 19262 Omuthiya Contact Person: Ruusa Matheus Email address: rmatheus@omuthiyatc.org.na
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EXECUTIVE SUMMARY

Introduction

The Omuthiya Town Council (The Proponent) proposes to formalize the Township Establishment, creating of street infrastructure and installation of bulk services for Omadhiya Proper and Omadhiya Extension 1, Omuthiya to be located on Portions A and B of the Farm Omuthiya Townlands No 1013, respectively.

Need and Desirability

Namibia continuously experiences pressure in urban areas due to increased urbanisation. As such, the demand for affordable housing and serviced land within urban localities continues to outweigh the supply (Remmert & Ndhlovu, 2018). Local Authorities often find it challenging to meet these demands which results in the growth of informal settlements.

Omuthiya is known as the capital of the Oshikoto Region and thus serves not only its residents, but those people settled within its surroundings. Increased development within the town results in an influx of people which in turn results in an increased need for affordable housing and serviced land.

The proposed development aims to make available a total of 689 erven of which approximately 556 will be residential erven. The development thus aims to aid in addressing the need for residential erven within the town. Furthermore, it provides for the creation of business erven which could attract investors to the town. Additional land uses to be catered for in the development include institutional, local authority, government, hospitality, private and public open spaces which will provide much needed mixed land uses thus increasing the likelihood of future developments in the town.

Project Description

The Proponent proposes to formalize the township establishment, creating of street infrastructure and installation of bulk services for Omadhiya Proper and Omadhiya Extension 1, Omuthiya to be located on Portions A and B of the Farm Omuthiya Townlands No 1013, respectively by undertaking the following activities:

- **Subdivision of the Remainder of the Farm Omuthiya Townlands No 1013 into Portions A, B and the Remainder;**
- **Township Establishment of Omadhiya Proper on Portion A of the Farm Omuthiya Townlands No. 1013;**
- **Township Establishment of Omadhiya Extension 1 on Portion B of the Farm Omuthiya Townlands No. 1013.**

The Omadhiya township development is located adjacent north-west of the existing Omuthiya Extensions 6 and 7. The area is located within the NamPower line and the railway line, this stretching up to the northern Townlands boundary. The area falls onto the Remainder of the Omuthiya Townlands No 1013.

The Omuthiya Town Council intends to subdivide the Remainder of the Farm Omuthiya Townlands No 1013 into Portion A and B and the Remainder. The proponent further intends to establish the townships on the Portions A and B of the Remainder of the Farm Omuthiya Townlands No 1013, to be known as Omadhiya Proper and Omadhiya Extension 1 respectively. The area is zoned as "Undetermined", as such, the site is suitable for township establishment purpose.

The layout design for the Omadhiya area was undertaken in totality and the subdivision line between the two township areas was determined after the design concept was completed. The urban area located adjacent to the existing town is to become known as Omadhiya Proper, and the area further to the north-west will become Omadhiya Extension 1.

Public Consultation

Communication with I&APs about the proposed development was facilitated 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 14 June 2021;
- Notices were placed in *The New Era and The Sun* newspapers dated 14th and 21st June 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 (**see Appendix F**);
- A meeting was scheduled to be held on the 25th of June 2021 in Omuthiya, however due to the COVID-19 restrictions the meeting was cancelled. All registered I&APs were informed of the cancellation of the meeting.

The scoping report was made available to all I&APs for public review from the 2nd August 2021 until the 16th August 2021. I&APs had until 16th August 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. However, 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 existing homesteads (during pre-operational phase):** The subject site accommodates a few homesteads. These will be relocated to an alternative area and compensated accordingly once the townships become developed. 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 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 also 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 also management actions given in the EMP (Chapter 3).
- **Impacts on archeological and heritage resources (during construction phase):** The proposed activities may impact areas that could potentially house archeological and heritage resources. 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 7.3.4and 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 also 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, 7.4.5 and also 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 also 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, 7.4.6 and also 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. The traffic is not expected to increase significantly as the erven are located in close proximity to an already developed area within the town. The impact can be adequately addressed by the recommendations given under subchapter 7.4.1 and also 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

Namibia continuously experiences pressure in urban areas due to increased urbanisation. As such, the demand for affordable housing and serviced stands within urban localities continues to outweigh the supply (Remmert & Ndhlovu, 2018). Local Authorities often find it challenging to meet these demands which results in the growth of informal settlements.

Omuthiya is known as the capital of the Oshikoto Region and thus serves not only its residents, but those people settled within its surroundings. Increased development within the town results in an influx of people which in turn results in an increased need for affordable housing and serviced land.

The Omuthiya Town Council (The Proponent) proposes to formalize the Township Establishment, creating of street infrastructure and installation of bulk services for Omadhiya Proper and Omadhiya Extension 1, Omuthiya to be located on Portions A and B of the Farm Omuthiya Townlands No 1013, respectively.

The locality of the proposed townships 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).

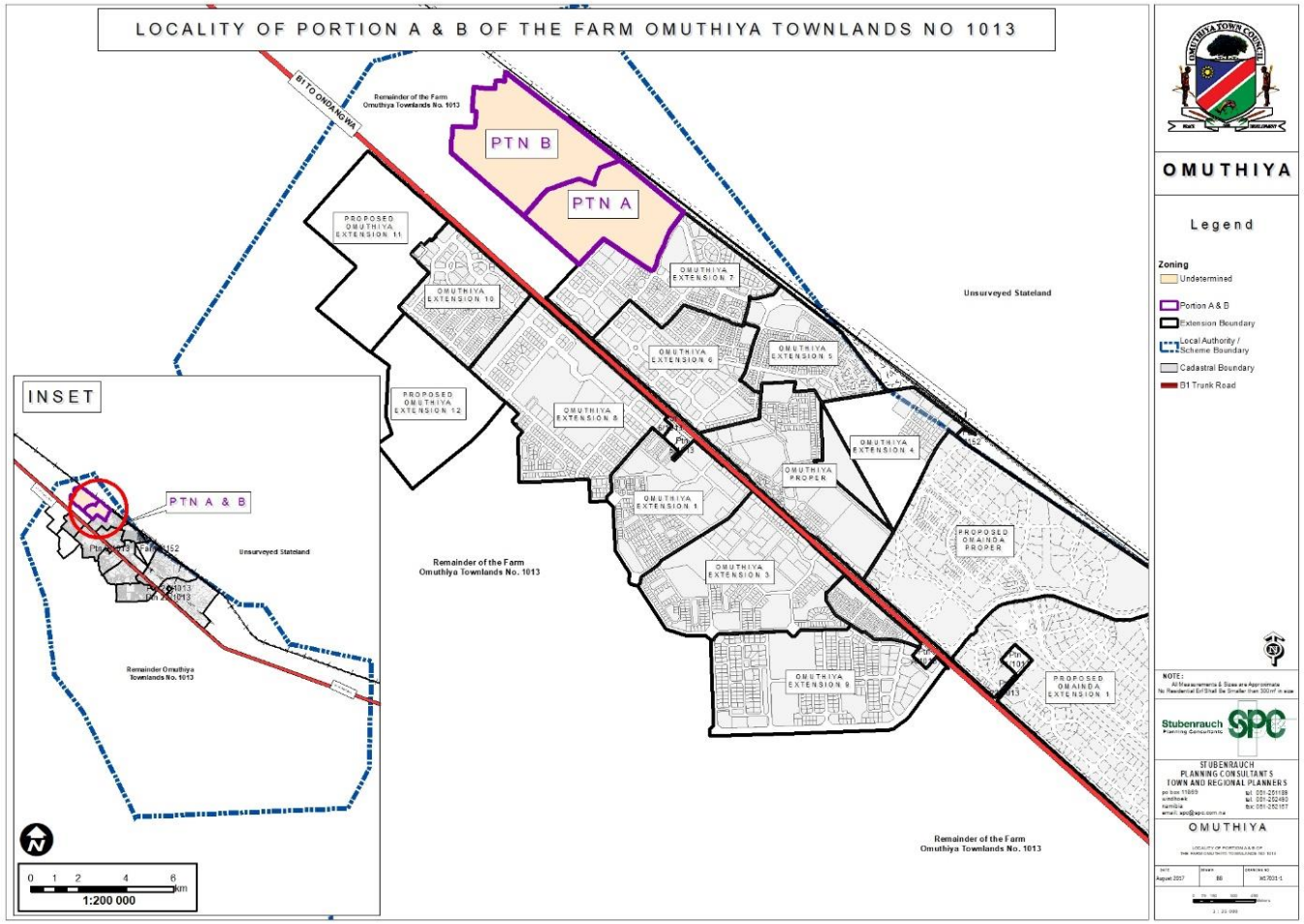

Figure 1-1: Locality map of Portion A and B of the Farm Omuthiya Townlands No 1013 (Stubenrauch Planning Consultants, 2017)

In order to fulfil the requirements of the EMA and its 2012 EIA Regulations, the Omuthiya Town Council 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 townships establishments in Omuthiya. 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

Namibia continuously experiences pressure in urban areas due to increased urbanisation. As such, the demand for affordable housing and serviced land within urban localities continues to outweigh the supply (Remmert & Ndhlovu, 2018). Local Authorities often find it challenging to meet these demands which results in the growth of informal settlements.

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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
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 formalize the Township Establishment, creating of street infrastructure and installation of bulk services for Omadhiya Proper and Omadhiya Extension 1, Omuthiya to be located on Portions A and B of the Farm Omuthiya Townlands No 1013, respectively by undertaking the following activities:

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- **Township Establishment of Omadhiya Extension 1 on Portion B of the Farm Omuthiya Townlands No. 1013.**

2.1 Description of Activity

2.1.1 Site Location

The Omadhiya township development is located adjacent and to the north-west of the existing Omuthiya Extensions 6 and 7. The area is located within the NamPower line and the railway line, this stretching up to the northern Townlands boundary. The area falls onto the Remainder of the Omuthiya Townlands No 1013. The site accommodates a few homesteads which will be relocated by the Town Council once the townships are developed. Please refer to **Figure 1-1** for the locality map and **Table 1** for the site location details.

Table 1: Site location details

Location	Omuthiya
Area size	Omadhiya Proper, 53.39 hectares Omadhiya Extension 1, 65.98 hectares
Constituency	Omuthiyagwiipundi Constituency
Regional Administration:	Oshikoto Regional Council

2.1.2 Proposed Development

The Omuthiya Town Council intends to subdivide the Remainder of the Farm Omuthiya Townlands No 1013 into Portion A, B and the Remainder. The proponent further intends to establish the townships on the Portions A, B of the Remainder of the Farm Omuthiya Townlands No 1013, to be known as Omadhiya Proper and Omadhiya Extension 1 respectively. The area is zoned as "Undetermined", as such the site is suitable for township establishment purpose. Please refer to **Figure 2-1** for the proposed subdivision plan.

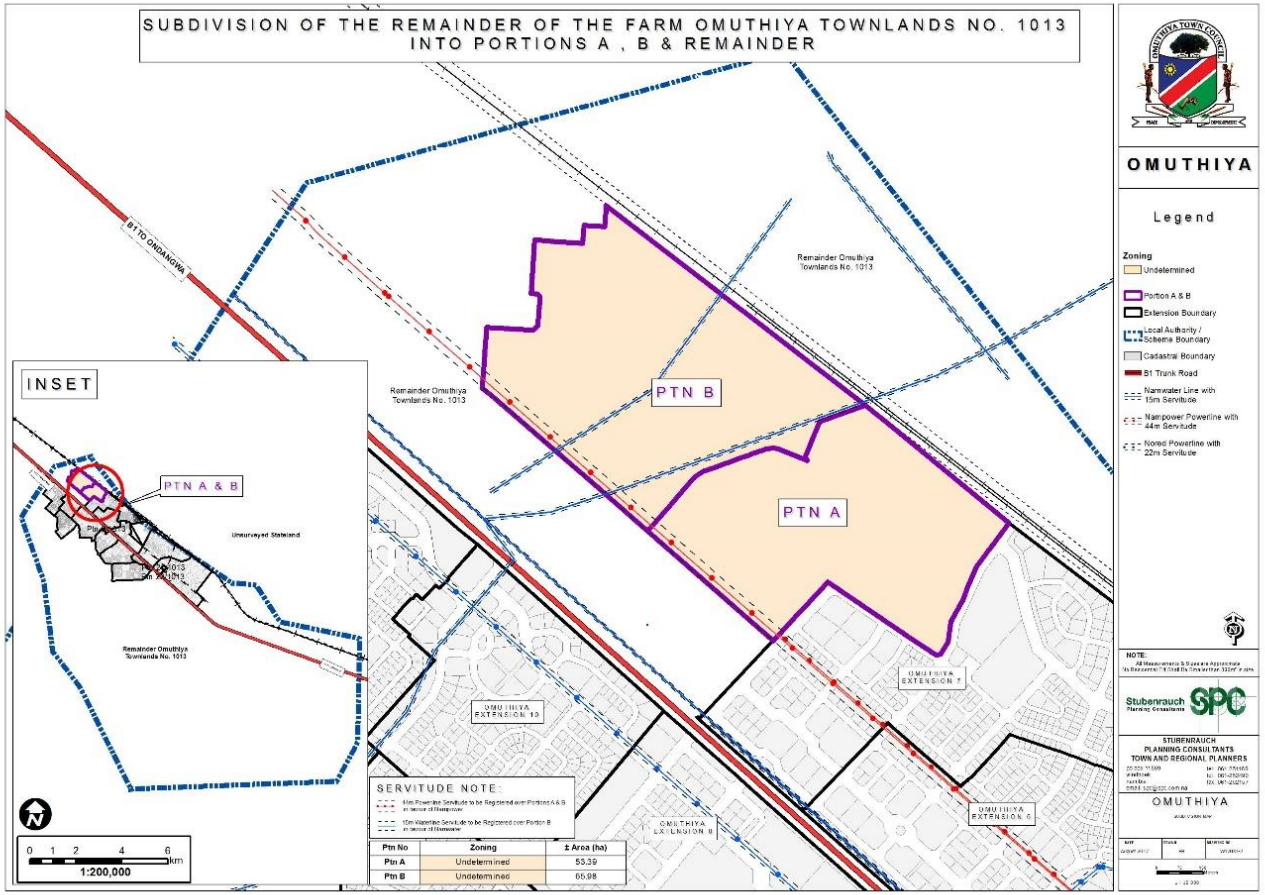

Figure 2-1: Subdivision Map of The Remainder of The Farm Omuthiya Townlands No 1013 Into Portion A, B and The Remainder (Stubenrauch Planning Consultants, 2017)

The layout design for the Omadhiya area was undertaken in totality and the subdivision line between the two township areas was determined after the design concept was completed. The urban area located adjacent to the existing town is to become known as Omadhiya Proper, the area further to the north-west will become Omadhiya Extension 1.

The major roads (with 30 metre and 40 metre road reserves) within proximity to the development are planned to be developed into dual roads in future and have the function to accommodate increasing traffic movements as the town expands. As the traffic flow along these roads should generally not be slowed down unnecessarily, no direct access from these roads onto the abutting properties should be permitted. As such, a system of open spaces is introduced within the development along these roads, and these strips are to be developed into landscaped green areas where pedestrian and cycle lanes can be established over time.

Central to the design of both Omadhiya Proper and Omadhiya Extension 1 is the concept of reserving a strip of land for future development for a public rail or bus system. Care has been taken in the layout design to limit the number of street crossing over a (potential) railway or dedicated bus lane.

A number of public spaces are introduced in both township extensions. These spaces are to be developed as town squares, i.e., public interaction spaces where occasional markets can be hosted or simply as "space making" spaces giving identity to the areas where they are introduced.

While the NamPower line and major water pipelines are accommodated in the layout design the rural water lines were not considered in the layout as it is accepted that these pipelines and cattle drinking places will be removed once the township services are installed.

The layout design for both extensions make use of the acceptance to develop a higher density single residential area on the higher lying areas while the lower lying area is reserved for public open spaces and for a sport field. Furthermore, the layouts prepared for Omadhiya Proper, and Extension 1 are based on the planning concept of walkable neighbourhoods where amenities are within a 5min walk from residential components.

2.1.3 Omadhiya Proper

Omadhiya Proper will comprise of 344 erven and remainder (street) as depicted in **Figure 2-2** and outlined in **Table 2**.

The residential component of the extension is supported by some commercial and higher density (General Residential) erven which are strategically positioned along major roads and within easy walking distance from the majority of residential erven.

Central to the residential neighbourhood a number of "Neighbourhood parks" are provided, these to be developed into play parks or green areas.

A defined activity node comprising of some "Business", "General Residential", "Institutional" and "Municipal" erven are provided for within the eastern corner of proposed Omadhiya proper where major streets merge and where good accessibility by means of public or private transport is possible. The land uses within this node have the aim to complement one another. The "Municipal" property is to form a central taxi and market space (public area) which is surrounded by retail and residential activities. The shops and market area is also to support the activities taking place on the sport field which is located to the west of the activity node.

A linear "Agriculture" zoned property is provided for along the north-eastern part of the township extension as this area is to form a buffer area between the internal relief road and the railway line where the Town Council can allocate areas to individuals or community groups interested to practice some urban farming.

Table 2: Summary table of land uses provided within Omadhiya Proper (Stubenrauch Planning Consultants, 2017)

Zoning	No of Erven	± Total Area(ha)	% of Total Area
Residential	303	13.68	25.61
General Residential	8	1.23	2.30
Business	15	1.94	3.64
Institutional	2	6.29	11.78
Local Authority	2	0.43	0.80
Special	4	0.77	1.44
Agriculture	1	3.95	7.40
Private Open Space	1	6.80	12.74
Public Open Space	8	4.61	8.64
Street	Remainder	13.69	25.65
TOTAL	**344 & Remainder**	**53.39**	**100.00**

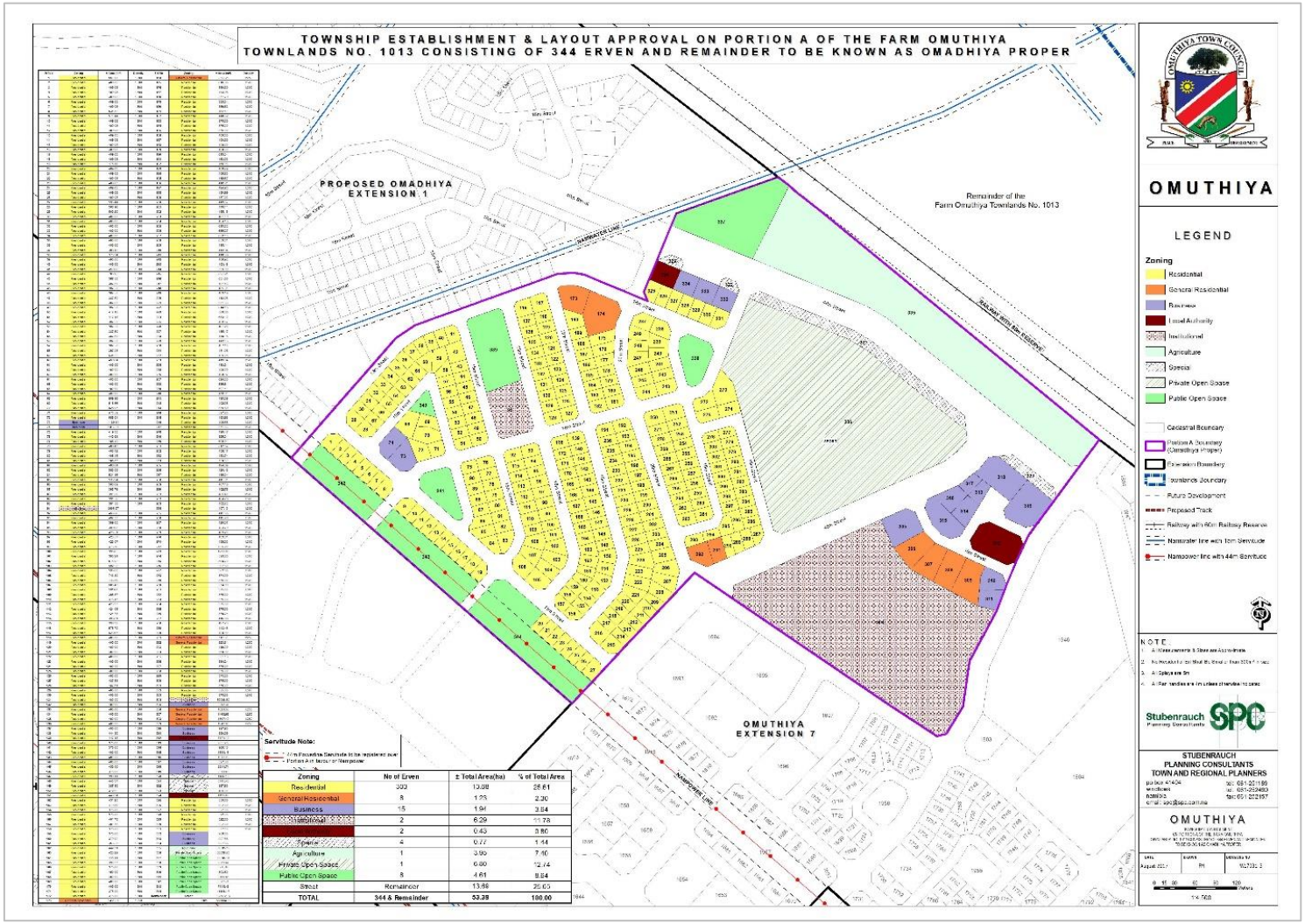

Figure 2-2: Layout Map of proposed Omadhiya Proper (Stubenrauch Planning Consultants, 2017)

2.1.4 Omadhiya Extension 1

Omadhiya Extension 1 is a natural extension of Omadhiya Proper and is also to be developed into a residential dominated area. Omadhiya Extension 1 will comprise of 345 erven and Remainder (street) as depicted in **Figure 2-3** and outlined in **Table 3**.

Central to this township extension is the provision of a larger "Institutional" site which is located within the southern area of Omadhiya Extension 1, and which is to be developed in support of the urban area generally located to the north of the B1 National Road. Here a private hospital, old age home and a "Special School" can be erected.

The smaller school site within the residential pocket is to be reserved for the development of a primary school or any community facility in support of the larger area.

The pocket of "Local Business" erven provided for between the relief road and the railway line has the purpose to accommodate shebeens, smaller retail outlets or home-based businesses. By concentrating these activities, a vibrant activity node will be created, effectively enabling the Town Council to allocate night life activities or any other retail activities within a node catering for such activities, which may cause nuisance if developed within residential areas.

A larger "Government" property is provided for which should be reserved for the development of a clinic or health centre in support of the larger neighbourhood area.

The larger "Hospitality" property is to cater for the development of a guest house, hotel or a social club.

A "Local Authority" property for the development of a small market, taxi rank and some "Business" erven are provided for within the northern residential pocket. These properties are strategically positioned around a larger public open space which is to be developed into a park and central space area in support to the residential pocket located to the north of the relief road.

The road reserve widening (80 meter) has the aim to cater for the construction of a Road over Rail Bridge sometime in the future when the traffic volumes justify such costs.

Central to the residential neighbourhood a number of "Neighbourhood parks" are provided for, these are to be developed into play parks or green areas. The existing water pipelines and the NamPower line have also been included within public open spaces. It will be required from NamPower and NamWater to register servitudes along these corridors in favour of the respective utility provider.

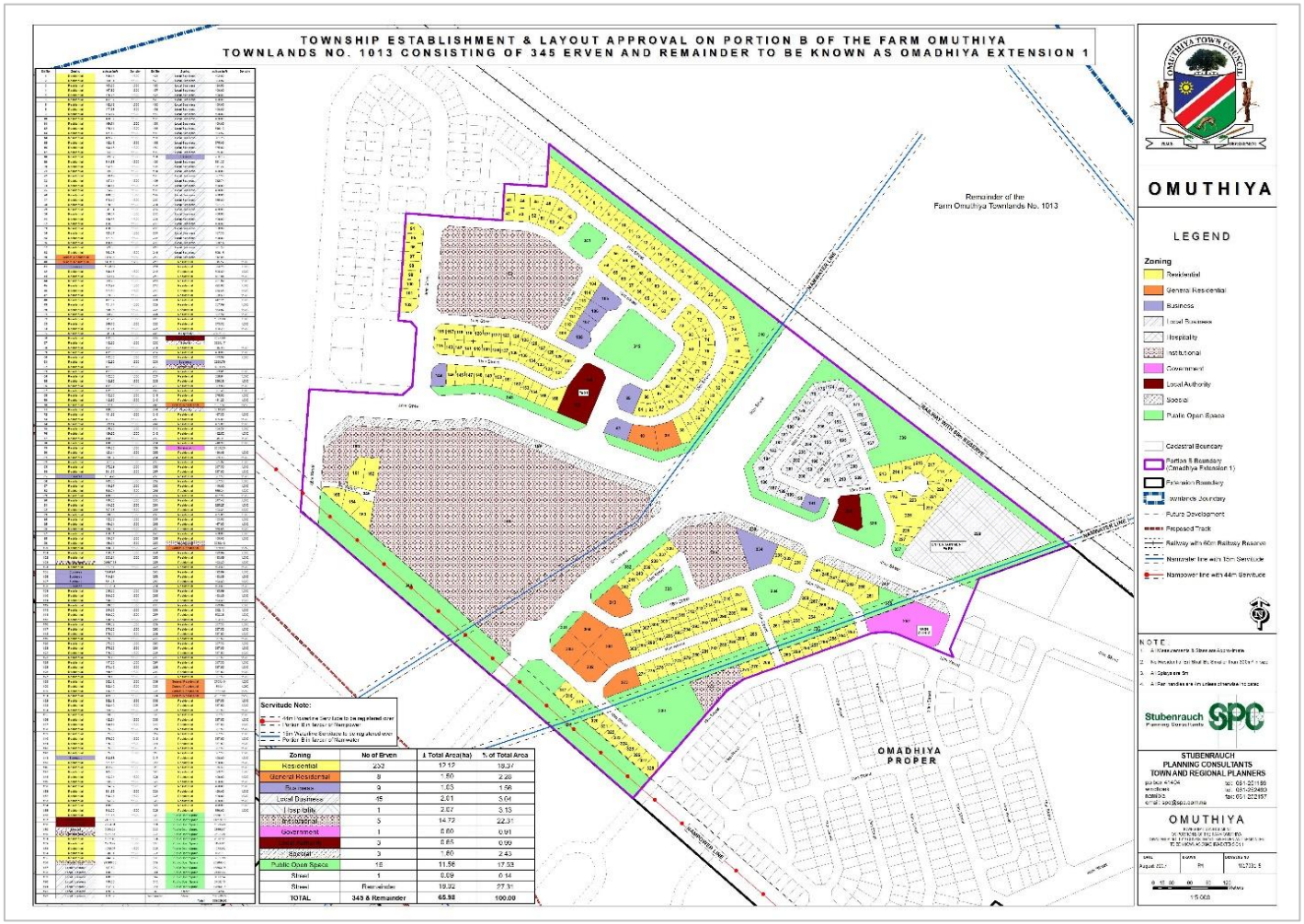

Figure 2-3: Layout Map of proposed Omadhiya Extension 1 (Stubenrauch Planning Consultants, 2017)

Table 3: Summary table of land uses provided within Omadhiya Extension 1 (Stubenrauch Planning Consultants, 2017)

Zoning	No of Erven	± Total Area(ha)	% of Total Area
Residential	253	12.12	18.37
General Residential	8	1.50	2.28
Business	9	1.03	1.56
Local Business	45	2.01	3.04
Hospitality	1	2.07	3.13
Institutional	5	14.72	22.31
Government	1	0.60	0.91
Local Authority	3	0.65	0.99
Special	3	1.60	2.43
Public Open Space	16	11.56	17.53
Street	1	0.09	0.14
Street	Remainder	18.02	27.31
TOTAL	**345 & Remainder**	**65.98**	**100.00**

2.1.5 Municipal Service Delivery

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, electricity supply and stormwater management.

The existing NamWater and NamPower infrastructure lines have been accommodated within the layouts. However, the rural water lines have not been considered as it is assumed that these pipelines will be removed once the townships are serviced.

2.1.6 Site Access

Access to the proposed development is to be obtained via the internal street network. The building restriction line of 45 meters from the road center line is to be respected within the layout. Accesses positioned onto the B1 road should not be closer than 600 meters from each other.

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 establishments 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.

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 townships, their alternatives are presented in **Table 3-1** below.

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

Services	Proposed source	Alternative source
Operational Phase		
Water	Existing water reticulation of the town	Additional sources would need to be investigated as groundwater in the area has previously been found to be saline and suitable for irrigation only
Power (electricity)	Existing electricity reticulation of the town	Solar power
Sewage	Existing sewage reticulation of the town – oxidation ponds	Portable decentralised sewage treatment facility

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 Omuthiya.	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.
Domestic waste	Onsite waste bins, regularly emptied at the nearest landfill.	Driving waste daily to the nearest landfill.

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 establishments 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.
- **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.
- **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 Omuthiya. 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.

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 (Omuthiya Town Council), 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.	There are shrubs and trees within the proposed sites to be developed. A permit to remove protected species will need to be obtained from the Forestry office in Omuthiya.
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.	All protected heritage resources (e.g. human remains etc.) 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	• 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 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

The Oshikoto Region is largely characterized by semi-arid conditions with the area experiencing more than the countries average rainfall annually. Its landscape is characterized by open grassland and shrubland. The area experiences high temperatures in the summer and relatively low temperatures in the winter. The biophysical environment will be described below for the subject area.

5.1.1 Climate

The climate of the Oshikoto Region can be described as hot semi-arid. Average annual temperatures are usually more than 20°C, with average maximum temperatures between 32°C and 34 °C and average minimum temperatures between 20°C and 22°C (Mendelsohn, et al., 2002).

The subject area generally experiences more rainfall than the south and west of the country. Rainfall is recorded to fall mostly in the summer months of January, February and March with the average annual rainfall recorded to be between 550 mm to 600 mm for the subject area (Mendelsohn, et al., 2002).

5.1.2 Topography, Soils and Geology

The area forms part of the Cuvelai-Etosha Basin, and it includes the Etosha Pan. It contains a very thick series of rocks of various ages. The basin floor consists of gneissic and granitic basement (Geological Survey of Namibia, 2012). The Kalahari Sequence comprises the Ombalantu, Beisib, Olukonda and Andoni formations. It is entirely of continental, aeolian to fluvial origin. The aeolian material consists of fine-grained, well-sorted sand, while the material deposited in a fluvial environment ranges from gravel to clay and often represents braided stream conditions, resulting in very variable lithologies both vertically and horizontally.

The subject area is characteristic of a slight and gentle undulation where sandy soil conditions are found. The area has some local depressions as well as a natural drainage system that accommodates stormwater run-off in a southerly direction (Stubenrauch Planning Consultants, 2017).

5.1.3 Water Resources: Surface and Groundwater

In terms of groundwater, the area falls within the Cuvelai-Etosha groundwater basin as depicted in **Figure 5-1** below. The hydrogeological Cuvelai Basin comprises the Omusati, Oshana, Ohangwena, and Oshikoto Regions and parts of the Kunene Region. The Cuvelai Basin is the most densely populated areas in the country with most communities living in rural areas largely dependent on agriculture. The villages and towns located within the Cuvelai Basin are supplied with water from the Calueque Dam, north of the Angolan border, via an extensive system of canals and pipelines (Ministry of Agriculture Water and Rural Development, 2011). Because surface water is only available during the rainy season, people rely on other water sources during the dry season. As such groundwater is sourced in the region through dug wells and boreholes.

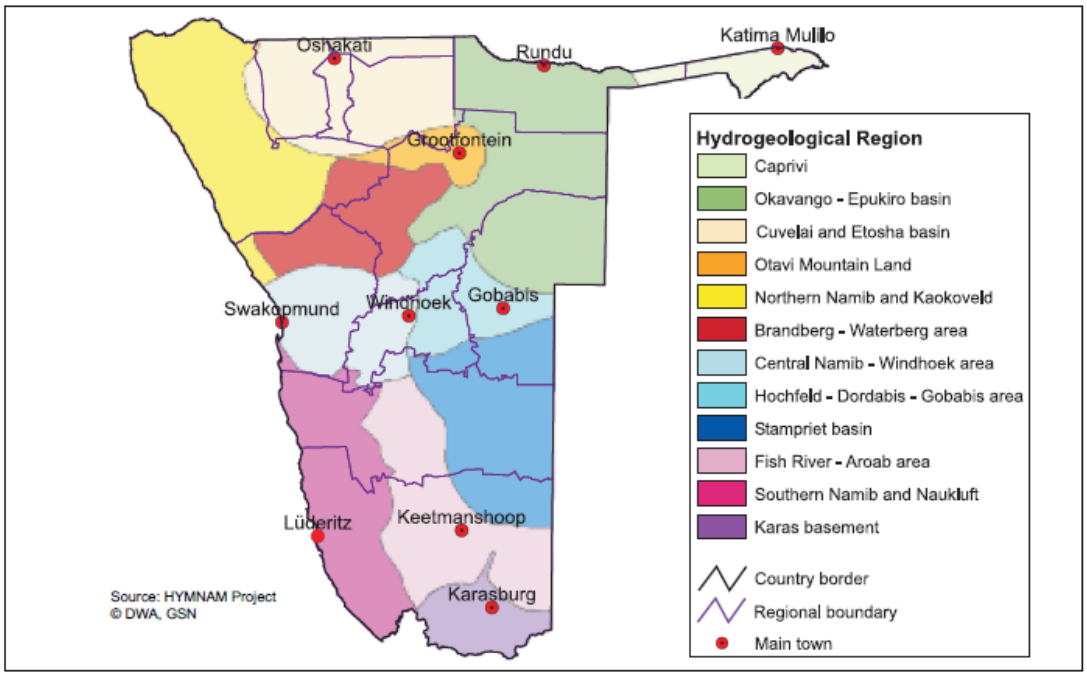

Figure 5-1: Groundwater basins and hydrogeological regions in Namibia (Ministry of Agriculture Water and Rural Development, 2011)

The most important features in the region are the Otjikoto lake and the Etosha Pan. Groundwater within the basin flows towards the Etosha Pan, due to the structure of the basin and because the pan, as the deepest point, is the base level of the groundwater flow system. The Namib plain is incised by a few main ephemeral rivers that run seawards from wetter parts of their catchments further inland (Ministry of Agriculture Water and Rural Development, 2011).

5.1.4 Fauna and Flora

The area is dominated by indigenous trees, such as Jackal berry, Marula, Makalani Palm, thorn trees and grass species. The good rainfalls result in a rich biodiversity, especially regarding the flora. More than 500 different plant species are found within the Oshikoto Region. The low-laying area are occupied by few shrubs, grass and herbs species, *Eragrostis* and *Schmidtia* species. The local occurring fauna that are expected or known to occur at the site includes domestic animals (cattle, sheep and goats), small ground burrowing animals, reptiles, and local bird's species (Mendelsohn, et al., 2002). The vegetation on site has largely been disturbed by human activity and can thus not be considered to be pristine.

5.1.5 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 Oshikoto Region is 181 973 people with the population of the Omuthiyagwiipundi Constituency being 26 183 people.

5.2.2 Economy

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

5.2.3 Land Use

The Oshikoto Region is characterized by crop and livestock farming.

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 mitigations measures.

6.2 Approach:

6.2.1 Interested and Affected Parties (I&APs)

GCS identified specific I&APs, whom 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
	Omuthiya 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 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 14 June 2021;
- Notices were placed in *The New Era and The Sun* newspapers dated 14th and 21st June 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 (**see Appendix F**);
- A meeting was scheduled to be held on the 25th June 2021 in Omuthiya, however due to the COVID-19 restrictions the meeting as cancelled. All registered I&APs were informed of the cancellation of the meeting.

The scoping report was made available to all I&APs for public review from 2nd August 2021 until 16th August 2021. I&APs had until 16th August 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, 7.4**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 may involve 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. Care should be taken during the removal of vegetation for site preparation to ensure minimal disturbance in the area. 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 7-6.**

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 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.

7.2.2 Impact Assessment of Existing Homesteads

The subject site accommodates a few homesteads. These will be relocated to an alternative area and compensated accordingly once the townships become developed. The assessment of this impact is presented in **Table 7-7.**

Table 7-7: Assessment of the impacts of the proposed activities on existing homesteads

	Extent	Duration	Intensity	Probability	Significance
Pre-mitigation	L/M - 2	L/M - 2	M - 6	H - 5	**M - 50**
Post-mitigation	L - 1	L- 1	M/L- 4	M/H - 4	L - 24

7.2.2.1 Mitigations and recommendation to existing homesteads

- The proponent must consult with the affected households prior to commencing with the development to come to an agreement regarding relocation and compensation.
- Appropriate compensation is to be provided to the households to be relocated.

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. Care should be taken during the removal of vegetation for site preparation to ensure minimal disturbance in the area. 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 7-8.**

Table 7-8: 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 recommendation to 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 7-9.**

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	L- 1	L- 2	M/L - 1	L - 4

7.3.2.1 Mitigations and recommendation to surface and groundwater

- 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 hydrocarbons and 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.
- 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. 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 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 7-11.**

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

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

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 communities negatively, if not properly handled. This may pose a disturbance on the surrounding communities. 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 - 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 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 communities 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 - 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 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.
- Community members 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 7-15.**

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 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 7-16**.

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

	Extent	Duration	Intensity	Probability	Significance
Pre-mitigation	L/M + 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 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, 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. 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	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 7-18**.

Table 7-18: 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 recommendation to soil, surface and groundwater

- 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. The assessment of this impact is presented in **Table 7-19**.

Table 7-19: 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 recommendation to noise

- 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 townships 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 7-20**.

Table 7-20: 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 recommendation to waste

- 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 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

7.4.5.1 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.

7.4.6 Impact Assessment of Social Environment

Some activities within the proposed townships may provide employment opportunities for the local people. The assessment of this impact is presented in **Table 7-22.**

Table 7-22: 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

7.4.6.1 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 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 existing homesteads (during pre-operational phase):** The subject site accommodates a few homesteads. These will be relocated to an alternative area and compensated accordingly once the townships become developed. 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 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 also 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 also management actions given in the EMP (Chapter 3).
- **Impacts on archeological and heritage resources (during construction phase):** The proposed activities may impact areas that could potentially house archeological and heritage resources. 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 also 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 also 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, 7.4.5 and also 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 also 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, 7.4.6 and also 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. The traffic is not expected to increase significantly as the erven are located in close proximity to an already developed area within the town. The impact can be adequately addressed by the recommendations given under subchapter 7.4.1 and also 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

Mendelsohn, J., Jarvis, A., Roberts, C. & Robertson, T., 2002. *Atlas of Namibia,* Cape Town: David Phillips Publishers.

Ministry of Agriculture Water and Rural Development. 2011. *Groundwater in Namibia an explanation to the Hydrogeological Map*.

Namibia Statistics Agency, 2011. *Namibia National Census Data.* [Online]
Available at: https://nsa.org.na/

Remmert, D. & Ndhlovu, P. 2018. Housing in Namibia: Rights, Challenges and Opportunities. *Institute for Public Policy Research*. 84. [Online], Available: http://www.ippr.org.na.

Stubenrauch Planning Consultants. 2017. *NAMPAB application for the Subdivision of the Remainder of the Farm Omuthiya Townlands No 1013 into Portions 25, 26 and Remainder*.

Geological Survey of Namibia, 2012. *The Geology of Namibia,* s.l.: s.n.