ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED TOWNSHIP ESTABLISHMENT ON PORTIONS 15, 16 AND 17 OF FARM 37 (GREEN VALLEY) WALVIS BAY, ERONGO REGION

ENVIRONMENTAL SCOPING REPORT

Assessed by:

GEA SOURCE INVESTMENT CC

Assessed for:

SHACK DWELLERS FEDERATION OF NAMIIBA

APRIL 2025

DOCUMENT STATUS

Project:	Environmental Impact Assessment for the proposed township establishment on Portions 15, 16 and 17 of Farm 37 (Green Valley, Walvis Bay), Erongo Region
Report Version/Date	Scoping Report FINAL 6 May 2025
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Cite this document as:	Brinkman, F. 2025. Environmental impact assessment for the proposed township establishment on Portions 15, 16 and 17 of Farm 37 (Green Valley, Walvis Bay), Erongo Region
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EXECUTIVE SUMMARY

Gea Source Investment cc was appointed by Shack Dwellers Federation of Namibia to conduct an Environmental Impact Assessment (EIA) for the establishment of township on Portions 15, 16 and 17 of Farm 37 (Green Valley) in Walvis Bay. The assessment has been undertaken to determine the potential impact of construction and operations on the environment and to determine all safety, health and social impacts associated with these activities. This will enable decision makers and stakeholders to make informed decisions regarding the development from an environmental perspective.

The scope of the Environmental Impact Assessment (EIA) was to evaluate the potential environmental impacts associated with the construction and operation of the proposed township development on Portions 15, 16, and 17 of Farm 37 (Green Valley). This assessment was informed by both primary and secondary data sources, including a reconnaissance site visit and stakeholder consultations. The study identified and addressed key environmental and associated social impacts. An Environmental Management Plan (EMP) has been developed and is included in this report to guide mitigation and monitoring measures throughout the project lifecycle.

The proposed township on Portions 15, 16 and 17 of has location latitudinal and longitudinal coordinates S 23° 1′8.18″ E 14° 34′ 50.33″. The site is located within the Walvis Bay Townlands, Farm 37 (Green Valley) area. The Municipality of Walvis Bay has allocated Portions 15 to 17 of Farm No. 37 in Figure 1, to the Shack Dwellers Federation of Namibia (the Proponent) to develop low cost/affordable housing for its members.

The assessment was conducted to evaluate the potential environmental impacts associated with the construction and future operation of the proposed township development, as well as to identify any related safety, health, and social impacts. The outcomes of this assessment aim to equip decision-makers and stakeholders with the necessary information to make informed choices about the development, ensuring that environmental considerations are fully integrated into the planning and approval process.

The Shack Dwellers Federation of Namibia (Project Proponent) is a community-driven network of housing savings schemes dedicated to improving the living conditions of low-income individuals in both urban and rural areas, with a strong focus on promoting women's involvement. Membership is open to those who are unemployed or earning less than N$5,000 per month. Established in October 1998 by 30 grassroots housing groups active since the late 1980s, the Federation has grown significantly and now includes over 1,000 savings groups, representing more than 33,000 members across all 14 regions of Namibia. SDFN receives support from the Namibia Housing Action Group (NHAG), a non-governmental organisation founded in 1992, which serves as an umbrella body to assist the savings groups.

The potential environmental impacts from the proposed township development are related to a number of aspects like:

- General Socio-Economic impacts (Knowledge and skill transfer; Employment)

- Township establishment (Housing provision, Backyard squatting reduction)
- Physical disturbance of biodiversity during site clearance activities
- Biodiversity loss (Illegal harvesting of !Nara (*Acanthosicyos horridus*) melons, unauthorized collection of firewood from the riverine ecosystem; potential incidences of wildlife poaching in national parks).
- Health, Safety and Security
- Noise Pollution
- Dust
- Waste and Sewage management
- Soil and Groundwater Pollution
- Heritage Impacts (Archaeology)
- Visual Impacts

Impacts from the proposed development can generally be mitigated through standard environmental management practices. However, it is further recommended that the proponent take an active role in broader environmental stewardship by supporting the establishment of a biodiversity conservation task force for the entire Farm 37 area. This task force should focus on addressing critical environmental challenges, including the illegal harvesting of !Nara (*Acanthosicyos horridus*) melons, firewood collection, and wildlife poaching, while promoting sustainable practices and environmental education. Its activities should involve collaboration with key stakeholders such as the Ministry of Environment, Forestry and Tourism (Wildlife Parks Division) and the Environmental Section of the Municipality of Walvis Bay, to ensure the protection of both human and ecological well-being in the area.

Furthermore, the Proponent should ensure that all bulk services—such as access roads, water, electricity, and sewage—are in place prior to the commencement of housing construction, as this will help reduce biodiversity loss by minimizing the need for residents to collect firewood and other resources from sensitive ecosystems such as the riverine system. If it is not immediately feasible to provide all bulk services, the Proponent should make adequate provision for their phased implementation.

The Environmental Management Plan (EMP) should serve as an on-site reference document throughout all phases of the project, including construction, operation, and eventual decommissioning. Any party found to be in breach of the EMP must be held accountable for any necessary rehabilitation. The EMP should be implemented alongside a Health, Safety, Environment, and Quality (HSEQ) policy and a dedicated Environmental Policy to ensure comprehensive environmental governance. Contractors and all responsible personnel must be adequately trained on the contents and application of these documents, as relevant to their roles.

Provided that the recommended mitigation measures are effectively implemented, there are no environmental grounds to withhold the issuance of an Environmental Clearance Certificate for the proposed township establishment on Portion 15, 16 and 17 of Farm 37 (Green Valley).

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ACRONYMS AND ABBREVIATIONS

Acronyms / Abbreviations	Definition
BID	Background Information Document
ECC	Environmental Clearance Certificate
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EMS	Environmental Management System
IAP	Interested and Affected Party
HSEQ	Health, Safety, Environment and Quality
IBA	Important Bird Areas
Km	Kilometer
m	Metre
WHO	World Health Organisation
PPE	Personal Protective Equipment
SDFN	Shack Dwellers Federation of Namibia

1 INTRODUCTION

1.1 INTRODUCTION TO THE PROPOSED TOWNSHIP ESTABLISHMENT

The Municipality of Walvis Bay has allocated Portions 15, 16 and 17 of Farm No. 37 in Figure 1.1, to the Shack Dwellers Federation of Namibia (the Proponent) to develop low cost/affordable housing for its members. The Shack Dwellers Federation of Namibia (SDFN) is a community-based network of housing saving schemes aimed at improving the living conditions of the urban and rural poor while promoting women's participation.

The Shack Dwellers Federation of Namibia in Walvis Bay appointed Gea Source Investment cc to conduct an Environmental Impact Assessment (EIA) for the proposed township establishment on Portion 15, 16 and 17 on Farm 37 (also known as Green Valley) in Walvis Bay, Erongo Region (Figure 1.1). The proposed township establishment is a listed activity that may not be undertaken without an Environmental Clearance Certificate (ECC) in terms of Environmental Management Act No. 7 of 2007 and the Environmental Impact Assessment Regulations (2012) and is listed as follows:

• 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)

The scoping report will be submitted to the Environmental Commissioner to obtain an ECC for Portions 15, 16, and 17. Stewart Planning was responsible for the township layout designs and submitted the application for township establishment in accordance with the Urban and Regional Planning Act, 2018. A valid ECC is required by the Urban and Regional Planning Board before approval of the township establishment can be granted.

The proposed township is motivated by the growing need and demand for detached housing in Walvis Bay and the desirability of the project to help meet this market demand. The proposed development includes the creation of predominantly residential erven, but also land for businesses, clinics, churches and open spaces, streets and installation of bulk services within the proposed township.

The assessment has been undertaken to determine the potential impact of the township establishment during construction and operation activities, and to determine all safety, health and social impacts

associated with these activities. This will enable decision makers and stakeholders to make informed decisions regarding the development from an environmental perspective.

1.2 PROJECT JUSTIFICATION

The environmental impact assessment is motivated by the growing need and demand for detached housing in Walvis Bay and the desirability of the project to help meet this market demand.

Need and demand

The Shack Dwellers Federation of Namibia (SDFN) is a community-driven network of housing savings schemes dedicated to improving the living conditions of low-income individuals in both urban and rural areas, with a strong focus on promoting women's involvement. Membership is open to those who are unemployed or earning less than N$5,000 per month. Established in October 1998 by 30 grassroots housing groups active since the late 1980s, the Federation has grown significantly and now includes over 1,000 savings groups, representing more than 33,000 members across all 14 regions of Namibia. SDFN receives support from the Namibia Housing Action Group (NHAG), a non-governmental organisation founded in 1992, which serves as an umbrella body to assist the savings groups.

SDFN members in Walvis Bay are in urgent need of adequate housing. In response, SDFN submitted a land application to the Municipality of Walvis Bay to facilitate the development of homes. Due to the limited availability of serviced land in the area, the municipality allocated unserviced Portions 15 to 17 of Farm No. 37, located in Green Valley. Members of the savings schemes face difficult living conditions, often residing in cramped quarters behind formal housing structures, with minimal access to basic services and infrastructure. These circumstances result in densely populated settlements. The informal shelters are typically constructed from highly flammable materials such as cardboard, wood, plastic, and netting. Without access to electricity, residents rely on open fires for cooking, heating, and lighting, significantly increasing the risk of devastating fires that can destroy homes and endanger lives. Therefore, it is highly desirable for members to move to land they can own and where they can build permanent, safe housing. The vision is to transition from being shack dweller to a homeowner.

The urgency of improving living conditions is underscored by the frequent occurrence of shack fires, which pose a serious threat to residents' safety and well-being. On the evening of 4 October, a devastating shack fire broke out on the premises of the Namibia Housing Enterprise (NHE), destroying over 70 homes. The aftermath left approximately 200 families homeless, and tragically, resulted in the loss of one life. Such incidents highlight the critical need for secure, permanent housing for vulnerable communities.

According to census data from the Namibia Statistics Agency, the population of Walvis Bay has grown from approximately 62,100 in 2011 to around 103,100 in 2023, reflecting an average annual growth rate of 5.1%. In comparison, the Erongo Region experienced a growth rate of 4.6% per year, while the national average stands at 3% per year. This above-average growth in Walvis Bay is expected to continue over the next decade, driven by increasing migration to the coast in search of employment opportunities in the oil and gas, green hydrogen, tourism, harbour, and logistics sectors.

Figure 1.1. The location of the proposed township development on Portion 15, 16 and 17 of the Farm 37 (latitude and longitude coordinates: -23.018939 and 14.580647).

As a result, the demand for housing and essential services is projected to rise sharply, with an estimated need for between 1,000 and 2,000 new dwelling units each year. Moreover, Portions 15, 16, and 17 are projected to yield 471, 396, and 465 residential units, respectively—amounting to a total of 1,332 units. This development is expected to contribute significantly toward addressing the housing demand in the area.

According to the Walvis Bay Integrated Urban Spatial Development Framework (WBIUSDF) in 2014, the Walvis Bay Council estimated that 11 350 households were living in backyards of formal erven in Kuisebmond which amounts to 51% of residents in Kuisebmond. Kuisebmond gross residential densities was designed to be 15.2 du/ha with rentals the density increases to 42 du/ha excluding the backyard squatting. However, with backyard squatting the density raises to 64 du/ha according to the 2014 WBIUSDF that was approved by the Municipality of Walvis Bay. The Council of Walvis Bay strive to reduce the density of Kuisebmond. The Council of Walvis Bay strives to reduce the backyard squatting in Kuisebmond because the Council believes that backyard squatting requires urgent attention and is undesirable in terms of housing conditions, pressure on existing services and associated health and safety risks. Therefore, the Council embarked on a land development to resettle backyard squatters on properly planned land and in higher density residential development. Portions 15-17 of Farm 37 were identified as a higher density residential development aimed to reduce backyard squatting of the SDFN members.

In conclusion, given the substantial membership of the SDFN and the pressing demand for housing in Walvis Bay emanating from backyard squatting, the establishment of a new township is both necessary and highly desirable.

1.3 ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

The Environmental Impact Assessments procedure is regulated by the Ministry of Environment and Tourism (MET) in terms of the Environmental Management Act, 7 of 2007. This Act was gazetted on 27 December 2007 (Government Gazette No. 3966). The Environmental Impact Assessment Regulations: Environmental Management Act, 2007 (Government Gazette No. 4878) were promulgated on 6 February 2012.

The Shack Dwellers Federation of Namibia in Walvis Bay wishes to obtain an Environmental Clearance Certificate for the township establishment on Portions 15-17 of Farm 37 (Green Valley), Walvis Bay. Gea Source Investment cc conducted the EIA process in terms of the Environmental Management Act, 7 of 2007. This process includes: a screening phase and a scoping phase, which includes an impact assessment and development of an Environmental Management Plan (EMP). This report is the Scoping Report, the main purpose of which is to provide information relating to the proposed township such as to:

- Identify existing environmental (bio-physical and socio-economic) conditions of the area in order to determine the sensitivity of key environmental features;

- Consult all Interested and Affected Parties (I&AP's), with specific emphasis on the community closest to the affected area to ensure that their needs and concerns are taken into account;
- Comply with relevant Namibian legislation, policies and procedures and guidelines;
- Recommend methods to minimise the identified negative impacts (identified throughout the project life cycle) of the proposed project and its associated infrastructure and enhanced the positive ones;
- Recommend further investigations if some of the issues identified cannot be adequately addressed.

Information applicable to the site has been collated from the review of desktop information, satellite imagery, site visits by the EIA team and stakeholder consultation. The potential impacts of the proposed township establishment could therefore be assessed.

This document will be submitted to the Directorate of Environmental Affairs (DEA) along with the EMP. It is the opinion of the Consultant that sufficient information is available to address all impacts that have been identified thus far with a high level of confidence. Thus this Scoping Report will be submitted for immediate consideration for Environmental Clearance, without the need for further investigations.

Moreover, Stewart Planning conducted the township layouts and applied for township establishment approval in terms of the Urban and Regional Planning Act of 2018. Thus, Stewart Planning was responsible for conducting a portion of the public notification and consultation process. A valid ECC is required by the Urban and Regional Planning Board before approval of the township establishment can be granted.

1.4 EIA TEAM

Gea Source Investment cc is an independent firm of consultants who was appointed to undertake the environmental impact assessment processes. Faye Brinkman, the EIA Consultant has experience of over 20 years in managing, advising and compliance to environmental management, natural resource management and environmental impact assessment practices in the fishing, mining and construction sector. The relevant curriculum vitae documentation is attached in Appendices A. The environmental project team is outlined in Table 1.1 below.

Table 1.1: The Environmental Project Team

Team	Name	Designation	Tasks and Roles	Company/Organisation
Proponent	Rinade Kensley Uiras	SDFN committee member	Project Development	Shack Dwellers Federation of Namibia (Walvis Bay branch)
	Andre Shelikita	SDFN committee member	Responsible for the project implementation	Shack Dwellers Federation of Namibia (Walvis Bay branch)

EIA Management	Faye Brinkman	EIA Project Manager	Management of the process and stakeholders. Formulate Scoping report and EMP. Organise public participation process, stakeholder engagement, compilation of reports, etc.	Gea Source Investment
Town Planner	Johann Otto	Township layout and approval	Township layout and township establishment. Organise the public participation process, and stakeholder engagement.	Stewart Planning

1.5 Contact Details of the Shack Dwellers Federation of Namibia

The contact details of those responsible for the project at the Shack Dwellers Federation of Namibia in Walvis Bay are included in Table 1.2.

Table 1.2: Contact details of Shack Dwellers Federation of Namibia

Title	Shack Dwellers Federation of Namibia in Walvis Bay
Name	Rinade Kensley Uiras
Postal Address	P.O. Box 4725, Walvis Bay
Telephone	+264 816158907
Email	rinadekensley69@gmail.com

2 SCOPE

The scope of the EIA is to:-

- Provide sufficient information to determine whether the Development will result in significant adverse impacts;
- Identify a range of management actions which could mitigate the potential adverse impacts to acceptable levels;
- Comply with the Environmental Management Act; and
- Provide sufficient information to the Ministry of Environment and Tourism to make an informed decision regarding The Development.

3 METHODOLOGY

The following method was used to investigate the potential impacts of the proposed Development on the socio-economic and biophysical environment:

- ✓ Baseline information about the Farm 37 (Green Valley) area was obtained from existing secondary information such as Maps and documents, outlining the proposed township establishment, design drawings and other EIAs in the Walvis Bay area
- ✓ Site visits to the proposed project area by Gea Source Investment
- ✓ Consultation with the Shack Dwellers Federation of Namibia committee members in Walvis Bay
- ✓ The comments and questions of interested and affected parties (I&APs) were gathered throughout the pubic and stakeholder engagement process.

The main purpose of this Scoping Report is to indicate which environmental aspects relating to the proposed township establishment need to be considered and to provide an assessment and/or mitigation measures, where required. Furthermore, this Scoping Report has determined a number of potential environmental impacts and provides measures to mitigate any such impacts if they were to occur (see Section 10).

Table 3.1 outlines the Scoping Report requirements as set out in Section 8 of the Environmental Impact Assessment Regulations that were promulgated in February 2012 in terms of the Environmental Management Act, 7 of 2007.

Table 3.1 Scoping report requirements stipulated in the EIA regulation

REQUIREMENTS FOR A SCOPING REPORT IN TERMS OF THE FEBRUARY 2012 REGULATIONS	REFERENCE IN REPORT
(a) the curriculum vitae of the EAPs who prepared the report;	Section 1.4 and Appendix A
(b) a description of the proposed activity;	Section 5 Appendix E
(c) a description of the site on which the activity is to be undertaken and the location of the activity on the site;	Section 6 Appendix G & Appendix H
(d) a description of the environment that may be affected by the proposed activity and the manner in which the geographical, physical, biological, social, economic and cultural aspects of the environment may be affected by the proposed listed activity;	Section 6, Section 7 & Section 9
(e) an identification of laws and guidelines that have been considered in the preparation of the Scoping Report;	Section 4
(f) details of the public consultation process conducted in terms of regulation 7(1) in connection with the application, including - (i) the steps that were taken to notify potentially interested and affected parties of the proposed application;	Section 7, Appendix B, Appendix C & Appendix D

(ii) proof that notice boards, advertisements and notices notifying potentially interested and affected parties of the proposed application have been displayed, placed or given; (iii) a list of all persons, organisations and organs of state that were registered in terms of regulation 22 as interested and affected parties in relation to the application; and (iv) a summary of the issues raised by interested and affected parties, the date of receipt of and the response of the EAP to those issues;	
(g) a description of the need and desirability of the proposed listed activity and any identified alternatives to the proposed activity that are feasible and reasonable, including the advantages and disadvantages that the proposed activity or alternatives have on the environment and on the community that may be affected by the activity;	Section 5 & Section 6
(h) a description and assessment of the significance of any significant effects, including cumulative effects, that may occur as a result of the undertaking of the activity or identified alternatives or as a result of any construction, erection or decommissioning associated with the undertaking of the proposed listed activity;	Section 8 & Section 9 Appendix F
(i) terms of reference for the detailed assessment; and	Section 9 Appendix F
(j) a management plan, which includes - (i) information on any proposed management, mitigation, protection or remedial measures to be undertaken to address the effects on the environment that have been identified including objectives in respect of the rehabilitation of the environment and closure; (ii) as far as is reasonably practicable, measures to rehabilitate the environment affected by the undertaking of the activity or specified activity to its natural or predetermined state or to a land use which conforms to the generally accepted principle of sustainable development; and (iii) a description of the manner in which the applicant intends to modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation remedy the cause of pollution or degradation and migration of pollutants.	EMP

4 ADMINISTRATIVE, LEGAL AND POLICY REQUIREMENTS

This section aims to inform the Proponent (SDFN), Interested and Affected Parties, and the decision-makers at the DEA of the requirements and expectations set out by the relevant legislative instruments that must be met to proceed with the proposed activities.

To protect the environment and achieve sustainable development, all projects, plans, programmes and policies deemed to have adverse impacts on the environment require an EIA according to Namibian legislation. The following legislation pertaining to the Development and the proposed development governs the EIA process in Namibia.

The Republic of Namibia has five tiers of law and a number of policies relevant to township establishment namely:

- The Constitution
- Statutory law
- Common law
- Customary law

- International law

The Key Environmental Policies currently in force include:

- The EIA Policy (1995).
- Namibia's Environmental Assessment Policy for Sustainable Development and Environmental Conservation (1994).

As the main source of legislation, the Constitution of the Republic of Namibia (1990) makes provision for the creation and enforcement of applicable legislation. In this context and in accordance with its Constitution, Namibia has passed numerous laws intended to protect the natural environment and to mitigate against adverse environmental impacts.

The Environmental Management Act No. 7 of 2007

This scoping assessment was conducted in accordance with the Environmental Management Act (EMA) and its Environmental Impact Assessment (EIA) Regulations, as outlined in Government Gazette No. 4878, Notice No. 30. The EMA sets out specific requirements for the preparation of documentation necessary to obtain an Environmental Clearance Certificate (ECC), which grants approval to carry out certain listed activities.

Namibia Urban and Regional Planning Act No 5 of 2018

The Act seeks to consolidate legislation related to urban and regional planning and establish a comprehensive legal framework for spatial planning in Namibia. It outlines the principles and standards of spatial planning, provides for the establishment of the Urban and Regional Planning Board, and promotes the decentralisation of certain planning responsibilities. Additionally, the Act governs the preparation, approval, and review of the National Spatial Development Framework, regional structure plans, and urban structure plans. It also addresses the preparation, approval, and amendment of zoning schemes; the establishment and disestablishment of townships; changes to township boundaries and names; as well as the subdivision and consolidation of land. Furthermore, it regulates the alteration, suspension, and removal of conditions pertaining to land.

Applications related to the proposed townships must be prepared and submitted in accordance with the provisions of this Act.

In the EA context of the proposed township establishment, there are several laws and policies currently applicable. They are reflected in Table 4.1.

Table 4.1: Relevant legislations to the proposed township establishment on Portion 15-17 of Farm 37

Legislation/Policy/Guideline	Relevant Provisions	Implications for the project
The Constitution of the Republic of Namibia (1990)	Article 91 (c) and Article 95 (i)	The proponent should ensure that the proposed township coexist with the natural environment and most importantly, the well-being of the Namibian citizens in terms of facilities

Legislation/Policy/Guideline	Relevant Provisions	Implications for the project
		and services. The proponent should comply with the Act.
Environmental Management Act No. 7 of 2007	Section 58, Section 56, Section 27	The EMA and its regulations inform and guide the EA process.
Environmental Impact Assessment (EIA) Regulations of 2012 (GN 28-30)	GN 30 S21 Scoping Report (GN 30 S8) Assessment Report (GN 30 S15)	
Public Health Act No. 36 of 1919	Section 119	The proponent must ensure that all workers involved in the construction and maintenance of the township establishment comply with the provisions of the relevant legal instruments.
Health and Safety Regulations GN 156/1997 (GG 1617)	All regulations	The proponent should ensure that all workers involved in the construction and maintenance of the township establishment comply with this Act.
National Heritage Act 27 of 2004	Section 48	The proponent should immediately inform the National Heritage Council of Namibia should any archaeological material, e.g. graves be found during the construction phase.
Labour Act No. 6 of 1992	Chapter 2 outlines fundamental rights and protections, while Chapter 3 addresses the basic conditions of employment.	The proponent and its project operators should ensure that the safety and welfare of workers are not compromised during the construction, operation and maintenance of the township establishment.
Water Resources Management Act No. 11 of 2013	Section 38 Section 68 Section 92	The proponent should ensure that they comply with the Act's regulations as deemed necessary for the project.
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. Section 23 (1) deals with the prohibition of pollution of underground and surface water bodies	The protection of ground and surface water resources should be a priority during the proposed activities.
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	If vegetation removal is required on site, a permit must be obtained from the Forestry Office in Walvis Bay for the removal of any protected species.

Legislation/Policy/Guideline	Relevant Provisions	Implications for the project
	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.	
Nature conservation ordinance no 4 of 1975	Chapter 6 provides for legislation regarding the protection of indigenous plants.	Indigenous and protected plant species must be managed in accordance with applicable legislation. The Proponent must ensure that all activities do not compromise local wildlife and that all relevant ordinance requirements are strictly observed.
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.	A responsibility to safeguard soil resources and appropriate management measures should be incorporated into the Environmental Management Plan (EMP)
The Pollution Control and Waste Management Bill (in preparation)	The entire Bill	The proponent should apply emissions and management measures and acquire the necessary permits.
Atmospheric pollution prevention ordinance no 11 of 1976	The ordinance objective is to provide for the prevention of the air pollution.	Measures must be implemented to ensure that dust generated by construction activities remains within acceptable limits.
Local Authorities Act No. 23 of 1992	The Local Authorities Act outlines how a town or municipality should be governed by its respective council. Sections 34 to 47 specifically address provisions related to water supply and sewerage management.	The proponent has to comply with the provisions of the Local Authority Act.
Regional, Town and City Structure Plan (1996)	Entire Plan	The proposed sites must be constructed to fit into the town's vision or plans with the proposed land.
Walvis Bay Town Planning Scheme No. 40: Town Planning Ordinance 1954	Entire Plan	The proponent may need to apply to the Municipality of Walvis Bay for consent to use the site for the establishment of township.
Road's 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	The proponent must comply with all relevant provisions of the Roads Ordinance.

Legislation/Policy/Guideline	Relevant Provisions	Implications for the project
	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.	
Namibia Urban and Regional Planning Act No 5 of 2018	This legislation aims to consolidate laws on urban and regional planning in Namibia by establishing a legal framework for spatial planning. It sets out principles and standards for spatial development, establishes the Urban and Regional Planning Board, and decentralizes certain planning responsibilities. The Act provides for the preparation, approval, and review of the National Spatial Development Framework, regional and urban structure plans, and zoning schemes. It also governs the establishment, alteration, disestablishment, and renaming of townships, as well as the subdivision and consolidation of land and the amendment of land-related conditions. Additional incidental matters are also addressed.	The proponent should comply with all applicable provisions of the Act.

5 PROJECT DESCRIPTION

5.1 Proposed Development

The Proponent intends to develop Portions 15, 16 and 17 on Farm 37 (Green Valley) as townships within Walvis Bay, respectively. The Municipal Council of Walvis Bay is the owner of the land at Portion 15, 16 and 17 of Farm 37 (Green Valley). The Municipality of Walvis Bay has allocated Portion 15 of Farm No.37, subject to conditions, to the Shack Dwellers Federation of Namibia (the applicant) as per attached letter attached Annexure G.

5.2 Site Description

The development of Portions 15, 16 and 17 on Farm 37 (Green Valley) will be located at latitudinal and longitudinal coordinates S 23° 1′8.18″ E 14° 34′ 50.33″. Portion 15, 16 and 17 is located approximately 10 km east of Walvis Bay (refer to Table 5.1 for the site size details). Although Portions 15, 16 and 17 are situated far outside of town, the area has been identified as a residential extensions forming part of the greater Green Valley, which is planned to become a self-sustaining town in the future. While a site closer to town may be considered more desirable, the Proponent is aware of the location and is willing to settle on the land. The ongoing industrial development at Farm 38, along with potential future development at Farm 58, is expected to create employment opportunities in close proximity to Green Valley residents. The site has a gradual slope and does not contain any shifting sand dunes, which need to be levelled prior to development.

Table 5.1: Site size details

Location	**Walvis Bay**
Portion 15	32.6852 hectares
Portion 16	32.2652 hectares
Portion 17	34.4199 hectares

5.2.2 Portion 15 on Farm 37 (Green Valley)

Although Portion 15 is situated far outside of town, the area has been identified as a residential extension forming part of the greater Green Valley, which is planned to become a self-sustaining town in the future. Portion 15 is adjacent to Portion 3, Portion 16 and Farm 33 refer to Figure 5.1. Portion 15 on Farm 37 (Green Valley) will initially be a leapfrog development, but in the long term, it will be surrounded by other residential townships. Portion 15 has been surveyed and approved by the Surveyor General vide Diagram A586/2018.

Access and planned roads

Portion 15 is not currently accessible from any road but is situated east of the informal gravel road leading towards the Mile 7 Reservoir (refer to Figure 5.2). However, Portion 15 shares a common boundary with the Remainder of Portion 3 of Farm No. 37, which is a 40-meter wide distributor road, lending legal access to Portion 15 to/from the D1983 Road. Future access roads will be graded/constructed within the planned road reserves (refer to Figure 5.2).

Land use and zoning

Portion 15 is currently zoned "Undetermined" in terms of the Walvis Bay Zoning Scheme. The current "Undetermined" zoning does not permit any primary use or building(s) without the written consent of the Council or unless the zoning is changed. In the case of Portion 15, township establishment will result in different zoning allocations to the land portions. However, the current zoning does not restrict the development of the land as a township.

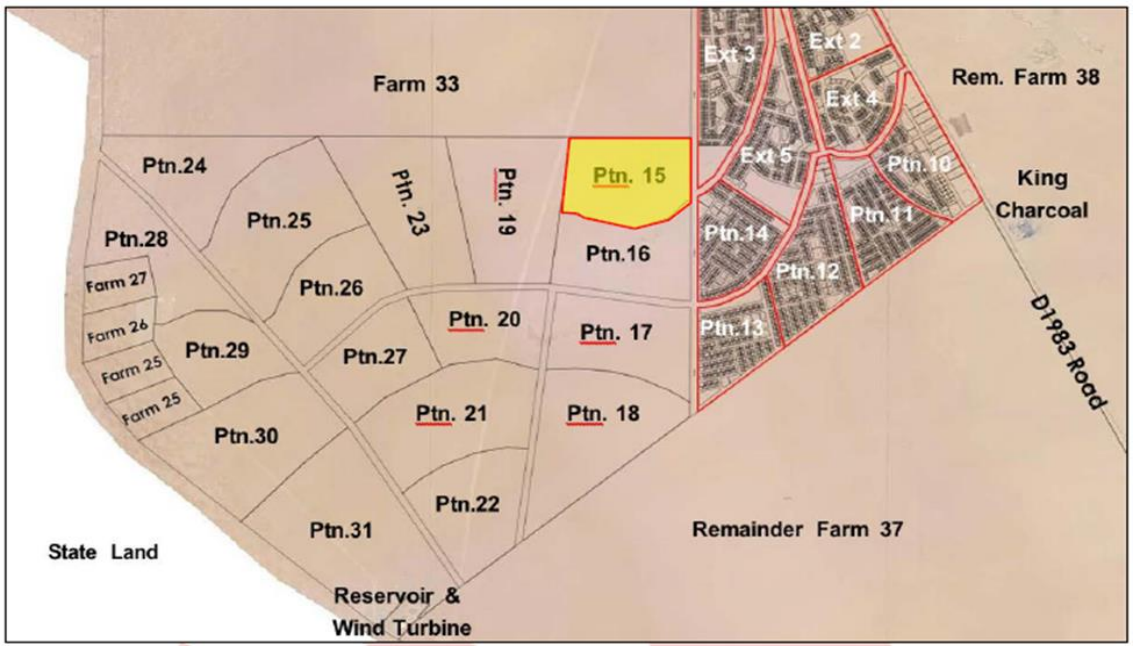


Figure 5.1. Description of land parcels surrounding Portion 15 of Farm No.37

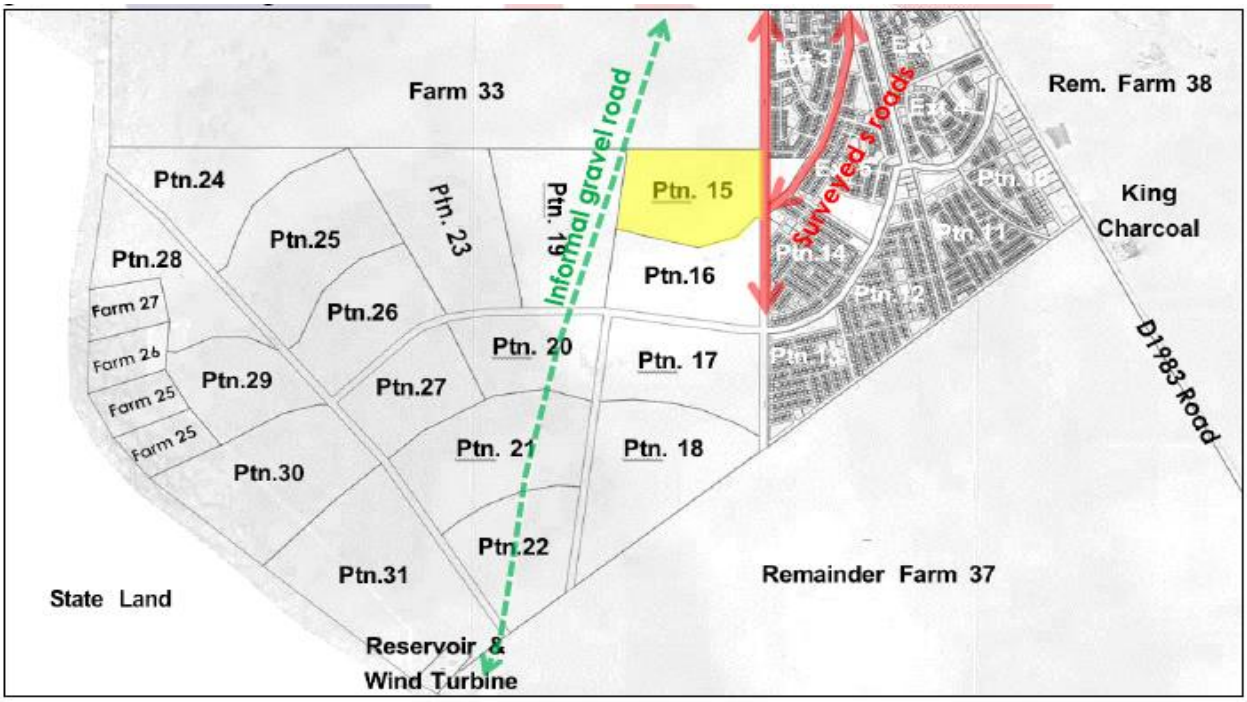


Figure 5.2. Access to Portion 15 of Farm No.37.

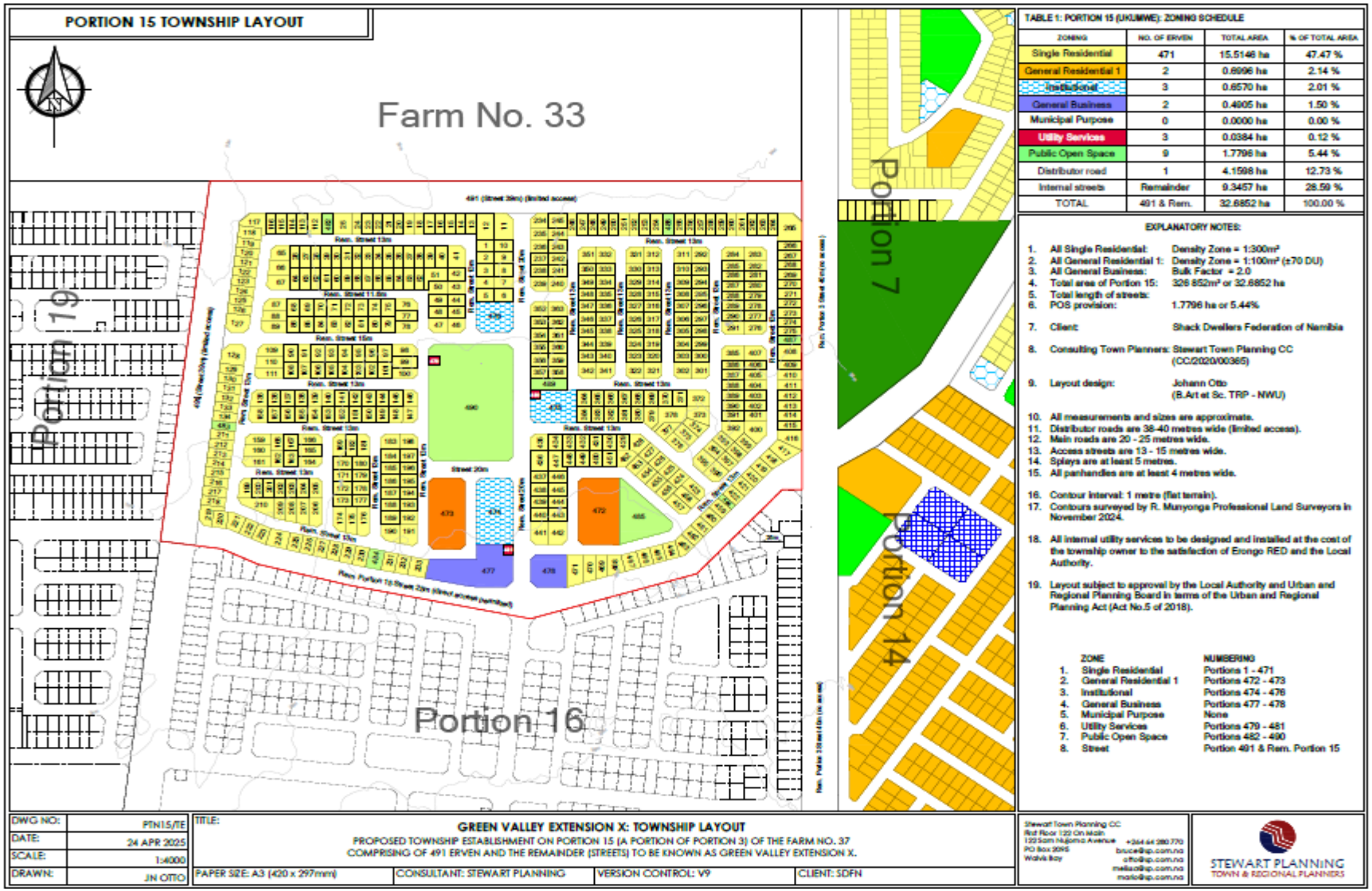


Figure 5.3. Proposed layout map for Portion 15 of Farm 37 (Green Valley)

Site Development Plan

The township layout will generate a total of 490 land portions, as set out in Table 5.2. The proposed township will provide predominantly residential erven which will be supported by additional land uses such as institutional (schools, clinics etc.), local business and public open spaces. Please refer to Figure 5.3 for the proposed layout plan for Portion 15 of Farm 37 (Green Valley).

Table 5.2: Number of erven per land use in Portion 15 of Farm 37

ZONING	NO. OF ERVEN	TOTAL AREA	% OF TOTAL AREA
Single Residential	471	15.4770 ha	47.35 %
General Residential 1	2	0.7023 ha	2.15 %
Institutional	3	0.6583 ha	2.01 %
General Business	2	0.4927 ha	1.51 %
Municipal Purpose	0	0.0000 ha	0.00 %
Utility Services	3	0.0384 ha	0.12 %
Public Open Space	9	1.8273 ha	5.59 %
Street	Remainder	13.4892 ha	41.27 %
TOTAL	490 & Rem.	32.6852 ha	100.00 %

The zoning and size of the land portions are described as follows:

Single Residential:
• A total of 471 (Portions 1 to 471) residential erven are provided in the layout with a density of 1 dwelling unit per 300m² (1:300).
• Actual erf sizes range between 300m² to 700m², which was a design requirement from the applicant. This is to account for a variety of affordability levels and housing typologies. The total size is 154,770m², which represents 47.35% of the developable land area.
• The applicant opted not to create erf sizes less than 300m².

General Residential 1:
• 2x Land portions (Portions 472 and 473) are provided for General Residential 1 purposes with a density of 1 dwelling unit per 100m² (1:100) for the development of apartments and a wide variety of accommodation establishments.
• Erf sizes are ±3500m² with a total size of 7,023m², which represents 2.15% of the developable land.
• With a density of 1:100, the GR1 plots can accommodate up to 70 dwelling units (DU) in the form of apartments/flats and is located close to a business plot and public open spaces.
• Additional GR1 portions were not provided in the layout as the applicant wishes to maximise the number of Single Residential erven for freehold title plots.

Institutional:
• 3x Land portions (Portions 474 to 476) are provided for Institutional purposes for the development of a church with a day care centre and/or clinic to serve the immediate neighbourhood, including other extensions.
• No provision is made for a large erf for a school as provision has made for sizeable schools on adjacent Portions 16, 17 and 19.
• Erf sizes range between 1400m² to 3200m² in extent with a total size of 6,583m² which represents 2.01% of the developable land area.

Public Open Space:
• 9x Land portions (Portions 482 to 490) are reserved as open space and for different functions. The total size is 18,273m², which represents 5.59% of the developable land area.
• Portions Portion 485 is reserved as a large play park (±2500m²) and next to a high density development/General Residential erf.
• Portion 490 is reserved as a large and central neighbourhood park (±13,400m²) servicing the immediate community and the wider neighbourhood.
• Portions 482 to 484 and 486 to 489 are reserved as pedestrian links, which will help improve walkability for residents and space for the provision of infrastructure/services.

General Business:
• 2x Land portions (Portions 477 and 478) are provided for General Business purposes with a bulk factor of 2.0.
• Business erven range from 1500m² to 3400m² to cater for medium to large enterprises, shops, and offices. If there is a future need, the business plots can be subdivided further in support of smaller businesses.

Utility Services:
• 3x Land portions (Portions 479 to 481) are provided for Utility Services for the development of electrical substations.
• Each erf measures a minimum of 10 x 12m = 120m², which meets the minimum size requirements of Erongo RED.
• Each erf has direct access to a street and will be reserved and transferred to Erongo RED.

Number of households

The township layout for Portion 15 will generate a total of 471 + 70 = 541 or, say 550 dwelling units/households. With a total land size of 32.6852 hectares, this generates a gross density of 16.8 dwelling units per hectare (du/ha), which is a low to medium residential density. Using the average household size of 4, it is expected to provide housing for 550 x 4 = ±2200 people.

Internal streets and widths

External distributor roads (40 metres wide) are provided on eastern boundary and adjacent to Portion 15; the land is known as the Remainder of Portion 3 of Farm No. 37. Provision is made for internal distributor roads (39m wide) on the northern and western boundary to facilitate higher order traffic. Internal main roads (20 -25 metres) through the middle township to facilitate through flow traffic. A

total of 4 vehicle entrances are provided for the township for a fair traffic distribution. Internal access streets vary in width from 11.6m to 13m, and 15m. No cul-de-sac streets are provided. The street widths are for the entire road reserve and not only for vehicle lanes. Included in the road reserve will be:

- Space for pedestrians (footways or sidewalks);
- Landscaping (trees and/or plants) and street furniture;
- Vehicle parking, loading bays, and drop-and-collect zone for scholars; and
- Essential services (water, sewerage, electricity, street lights, telecommunication lines).

The internal street constitutes 28.59% of the developable land, which falls within the 25% - 30% guideline. Street percentage was initially high (41.27%) because it included a 40m distributor road. However, note that:

- Wider streets allow for more hard open spaces for suitable vehicle and pedestrian movement.
- Hard open spaces can also be used as spaces to play and/or informal trade.
- The UN-Habitat recommends a minimum street percentage of 30% for township layouts.

Corner splays of 5m have been provided at for internal access streets, 7m for main roads, and 10m for distributor roads and all panhandles will be at least 4 metres wide. The provided road reserve minimums are fully in accordance with the Ministerial Town Planning Standards and Urban Design Guidelines for Principle Layout Plans and the Guidelines for Human Settlement Planning and Design (CSIR Redbook).

Existing servitudes

Portion 15 does not contain any water pipelines, powerlines or other servitudes which affect or influence the township layout.

Open spaces

Provision is made for one play park (Portion 485) and one neighbourhood park (Portion 490), which are within 500m walking distance of any single residential erf. Pedestrian links are also provided in the layout to improve pedestrian accessibility and walkability. The POS links are 6-17 metres wide and will enable pedestrians to easily enter and exit the neighbourhood on foot – improving walkability. The space can also be used as a corridor for services.

In total, Public Open Space (POS) constitutes 5.59% of the township area. The percentage of POS is within the Ministerial standards, which recommend between 5% - 10% for low to medium-density areas. A higher percentage of POS was not provided as the site is situated in a desert environment with limited water supply; therefore, it is not practical and sustainable to create and maintain large green parks.

5.2.3 Portion 16 on Farm 37 (Green Valley)

Portion 16 is adjacent to Portion 14, Portion 15, Portion 17 and Portion 19 refer to Figure 5.4. Portion 15 on Farm 37 (Green Valley) will initially be a leapfrog development, but in the long term,

it will be surrounded by other residential townships. Portion 16 has been surveyed and approved by the Surveyor General vide Diagram A587/2018.

Access and planned roads

Portion 16 is not currently accessible from any road but is situated east of the informal gravel road leading towards the Mile 7 Reservoir (refer to Figure 5.5). However, Portion 16 shares a common boundary with the Remainder of Portion 3 of Farm No. 37, which is a 40-meter wide distributor road, lending legal access to Portion 16 to/from the D1983 Road. Future access roads will be graded/constructed within the planned road reserves (refer to Figure 5.5).

Land use and zoning

Portion 16 is currently zoned "Undetermined" in terms of the Walvis Bay Zoning Scheme. The current "Undetermined" zoning does not permit any primary use or building(s) without the written consent of the Council or unless the zoning is changed. In the case of Portion 16, township establishment will result in different zoning allocations to the land portions. However, the current zoning does not restrict the development of the land as a township.

Existing servitudes

Portion 16 does not contain any water pipelines, powerlines or other servitudes which affect or influence the township layout.

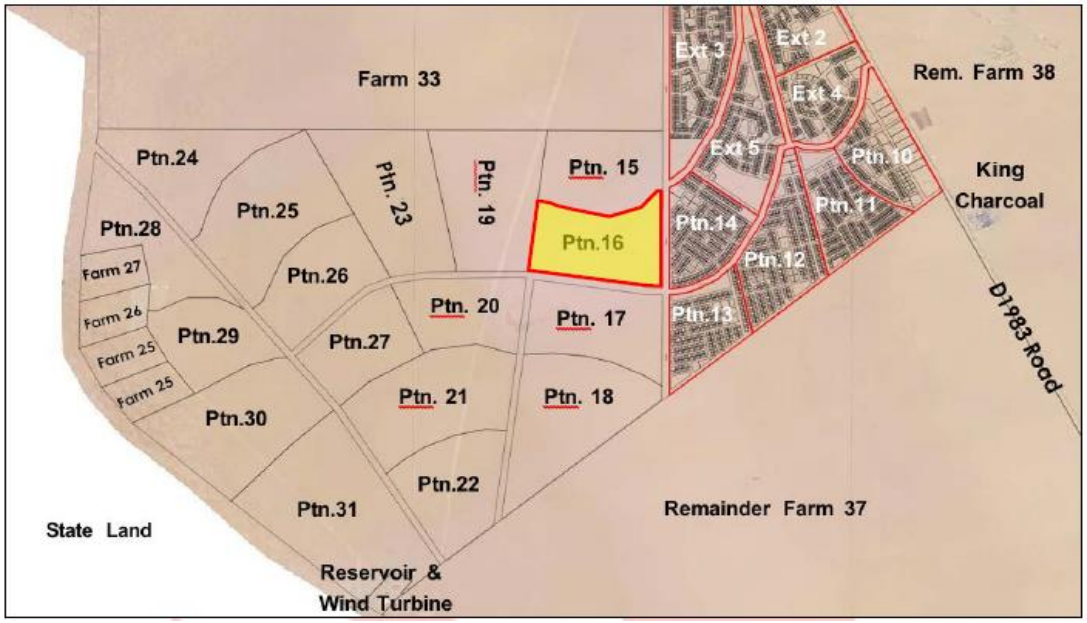


Figure 5.4. Description of land parcels surrounding Portion 16 of Farm No.37

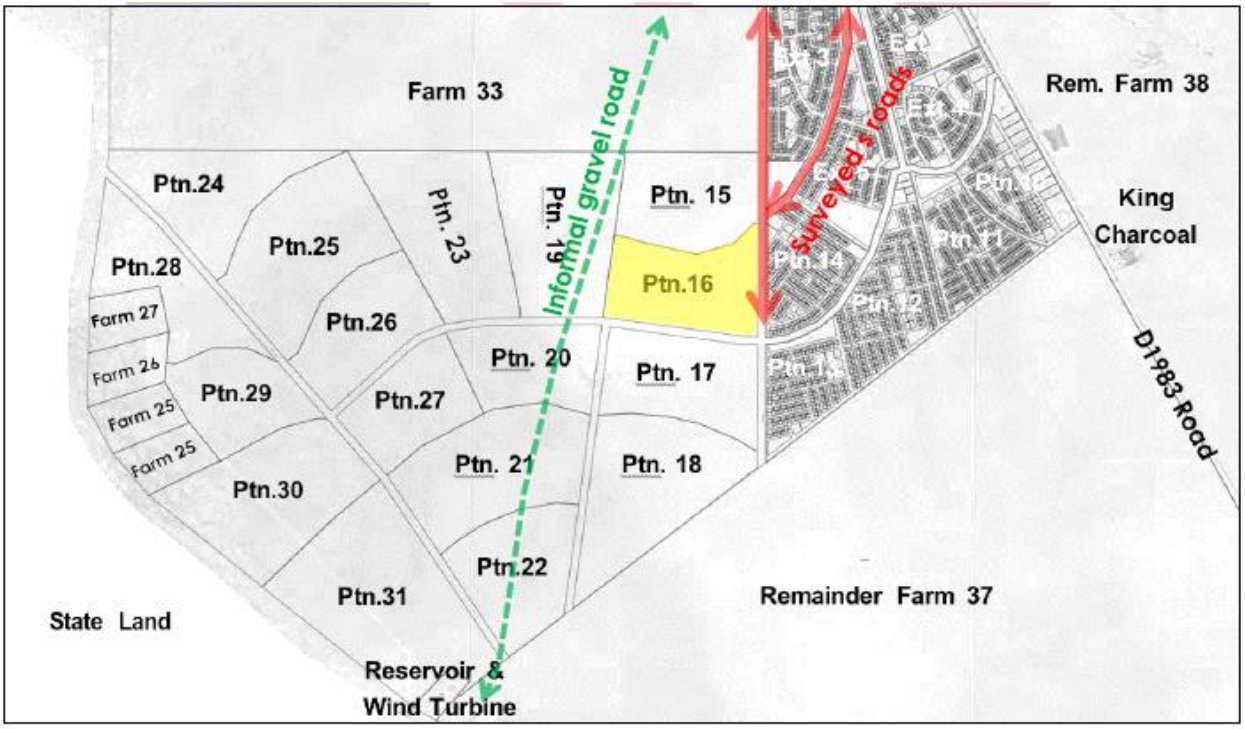


Figure 5.5 Access to Portion 16 of Farm No.37.

Site Development Plan

The township layout will generate a total of 421 land portions, as set out in Table 5.3. The proposed township will provide predominantly residential erven which will be supported by additional land uses such as institutional (schools, clinics etc.), local business and public open spaces. Please refer to Figure 5.6 for the proposed layout plan for Portion 16 of Farm 37 (Green Valley).

Table 5.3: Number of erven per land use in Portion 16 of Farm 37

ZONING	NO. OF ERVEN	TOTAL AREA	% OF TOTAL AREA
Single Residential	396	13.9871 ha	43.35 %
General Residential 1	2	0.8149 ha	2.53 %
Institutional	3	4.1677 ha	12.92 %
General Business	3	0.6246 ha	1.94 %
Municipal Purpose	0	0.0000 ha	0.00 %
Utility Services	3	0.0411 ha	0.13 %
Public Open Space	12	2.8727 ha	8.90 %
Street	2 & Remainder	9.7571 ha	30.24 %
TOTAL	421 & Rem.	32.2652 ha	100.00 %

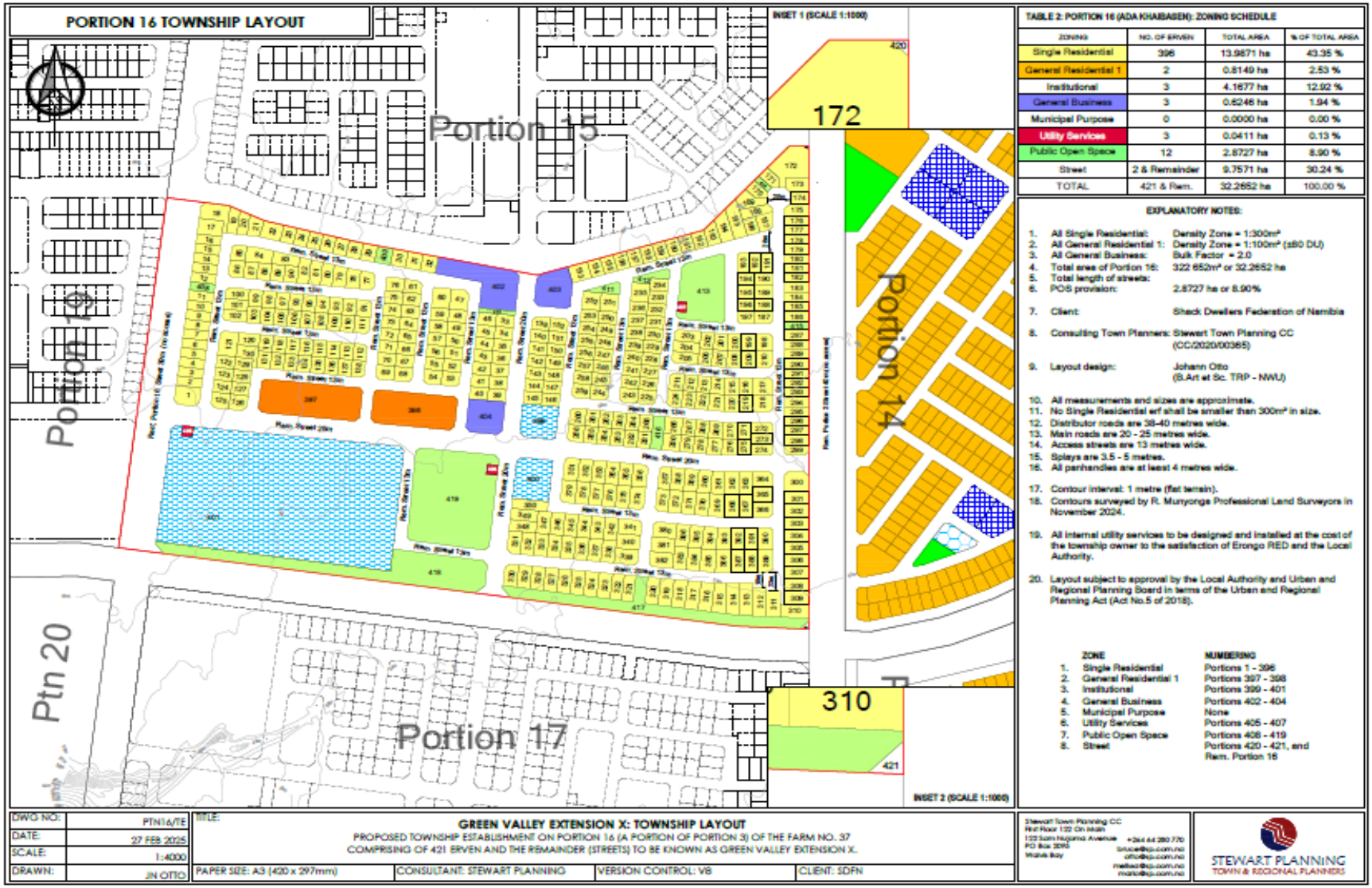


Figure 5.6. Proposed layout map for Portion 16 of Farm 37 (Green Valley)

The zoning and size of the land portions are described as follows:

Single Residential:
• A total of 396 (Portions 1 to 396) single residential erven are provided in the layout with a density of 1 dwelling unit per 300m² (1:300).
• Most erf sizes range between 300m² to 700m², which was a design requirement from the applicant. This is to account for a variety of affordability levels and housing typologies. The total size is 139,871m², which represents 43.35% of the developable land area.
• The applicant opted not to create erf sizes less than 300m².

General Residential 1:
• 2x Land portions (Portions 397 and 398) are provided for General Residential 1 purposes with a density of 1 dwelling unit per 100m² (1:100) for the development of apartments and a wide variety of accommodation establishments.
• Erf sizes range from ±3,600m² to 4,500m² with a total size of 8,149m², which represents 2.53% of the developable land.
• With a density of 1:100, the GR1 plots can accommodate up to 80 dwelling units (DU) in the form of apartments/flats and is located close to a business plot and public open spaces.
• Additional GR1 portions were not provided in the layout as the applicant wishes to maximise the number of Single Residential erven for freehold title plots.

Institutional:
• 3x Land portions (Portions 399 to 401) are provided for Institutional purposes for the development of a church with a day care centre and/or clinic and/or school to serve the immediate and wider neighbourhood.
• Portion 401 is a large ±38,000m² erf for the development of a sizeable school and sports fields.
• Small erf sizes range between 1,400m² to 2,000m² in extent with a total size of 41,677m² which represents 12.92% of the developable land area.

Public Open Space:
• 12x Land portions (Portions 408 to 419) are reserved as open space and for different functions. The total size is 28,727m², which represents 8.90% of the developable land area.
• Portions Portion 413 is reserved as a large play park (±3,600m²).
• Portion 419 is reserved as a large and central neighbourhood park (±10,000m²) servicing the immediate community and the wider neighbourhood, and situated next to a potential school, businesses, and institutional land uses.
• Portions 417 and 418 serve as 10-meter wide greenbelt to prevent direct access to a distributor road, provides pedestrian links, and space for services and landscaping purposes.
• Portions 408 to 410, 415, and 416 are reserved as pedestrian links, which will help improve walkability for residents and space for the provision of essential services.
• Portions 411 and 412 are reserved for landscaping purposes and to improve the view of moving traffic as the street intersects at an angle.

General Business:

• 3x Land portions (Portions 402 and 404) are provided for General Business purposes with a bulk factor of 2.0.
• Business erven range from ±1,500m² to 3000m² to cater for medium to large enterprises, shops, and offices. If there is a future need, the business plots can be subdivided further in support of smaller businesses.

Utility Services:

• 3x Land portions (Portions 405 to 407) are provided for Utility Services for the development of electrical substations.
• Each erf measures a minimum of 10 x 12m = 120m², which meets the minimum size requirements of Erongo RED.
• Each erf has direct access to a street and will be reserved and transferred to Erongo RED.

Number of households

The township layout for Portion 16 will generate a total of 396 + 80 = 476 or, say 500 dwelling units/households. With a total land size of 32.2652 hectares, this generates a gross density of 14.8 dwelling units per hectare (du/ha), which is a low to medium residential density. Using the average household size of 4, it is expected to provide housing for 500 x 4 = ±2000 people.

Internal streets and widths

External distributor roads (40 metres wide) are provided on eastern boundary and adjacent to Portion 16; the land is known as the Remainder of Portion 3 of Farm No. 37. Provision is made for internal distributor roads (39m wide) on the western boundary to facilitate higher order traffic. Internal main roads (20 -25 metres) are provided through the middle township to facilitate through flow traffic. A total of 4 vehicle entrances are provided for the township for a fair traffic distribution.

Internal access streets are 13 metres wide and one cul-de-sac street is provided, with a minimum turning radius of 25 metres. The street widths are for the entire road reserve and not only for vehicle lanes. Included in the road reserve will be:

• Space for pedestrians (footways or sidewalks);
• Landscaping (trees and/or plants) and street furniture;
• Vehicle parking, loading bays, and drop-and-collect zone for scholars; and
• Essential services (water, sewerage, electricity, street lights, telecommunication lines).

The internal street constitutes 30.24% of the developable land, which is above average due to the following reasons:

• Wider streets allow for more hard open spaces for suitable vehicle and pedestrian movement.
• Hard open spaces can also be used as spaces to play and/or informal trade.
• The UN-Habitat recommends a minimum street percentage of 30% for township layouts.

Corner splays of 3.5, 5m, and 10m have been provided at intersections, and all panhandles will be at least 4 metres wide.

The provided road reserve minimums are fully in accordance with the Ministerial Town Planning Standards and Urban Design Guidelines for Principle Layout Plans and the Guidelines for Human Settlement Planning and Design (CSIR Redbook).

Open spaces

Provision is made for one large play park (Portion 413) and one neighbourhood park (Portion 419), which are within 500m walking distance of any single residential erf. Pedestrian links are also provided in the layout to improve pedestrian accessibility and walkability. The POS links are 5-18 metres wide and will enable pedestrians to easily enter and exit the neighbourhood on foot – improving walkability. The space can also be used as a corridor for services. A more detailed evaluation is provided in Table 2 on page 12 and in Table 3 on page 16.

In total, Public Open Space (POS) constitutes 8.90% of the township area. The percentage of POS is within the Ministerial standards, which recommend between 5% to 10% for low to medium-density areas. A higher percentage of POS was not provided as the site is situated in a desert environment with limited water supply; therefore, it is not practical and sustainable to create and maintain large green parks.

5.2.4 Portion 17 on Farm 37 (Green Valley)

Portion 17 is adjacent to Portion 13, Portion 16, Portion 18 and Portion 20 refer to Figure 5.7. Portion 15 on Farm 37 (Green Valley) will initially be a leapfrog development, but in the long term, it will be surrounded by other residential townships. Portion 16 has been surveyed and approved by the Surveyor General vide Diagram A587/2018.

Access and planned roads

Portion 17 is not currently accessible from any road but is situated east of the informal gravel road leading towards the Mile 7 Reservoir (refer to Figure 5.8). However, Portion 17 shares a common boundary with the Remainder of Portion 3 of Farm No. 37, which is a 40-meter wide distributor road, lending legal access to Portion 17 to/from the D1983 Road. Future access roads will be graded/constructed within the planned road reserves (refer to Figure 5.8).

Land use and zoning

Portion 17 is currently zoned “Undetermined” in terms of the Walvis Bay Zoning Scheme. The current “Undetermined” zoning does not permit any primary use or building(s) without the written consent of the Council or unless the zoning is changed. In the case of Portion 17, township establishment will result in different zoning allocations to the land portions. However, the current zoning does not restrict the development of the land as a township.

Existing servitudes

Portion 17 does not contain any water pipelines, powerlines or other servitudes which affect or influence the township layout.

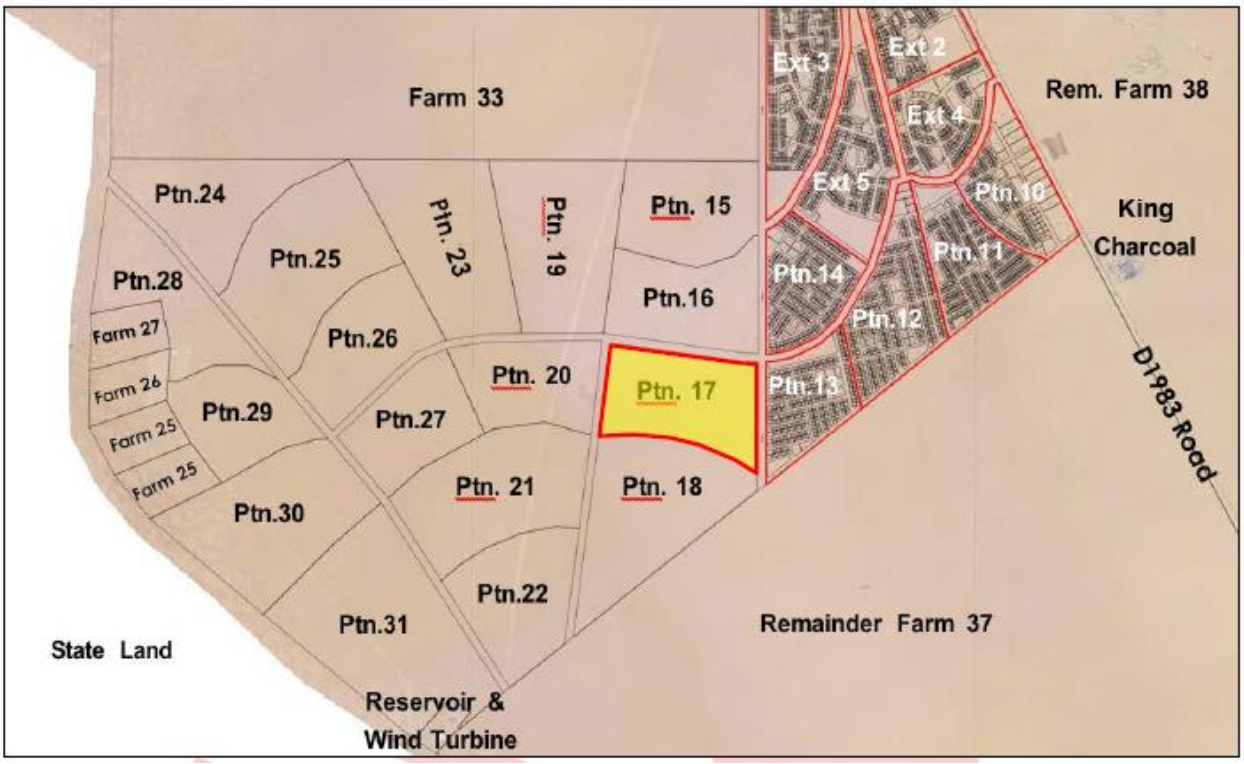


Figure 5.7. Description of land parcels surrounding Portion 17 of Farm No.37

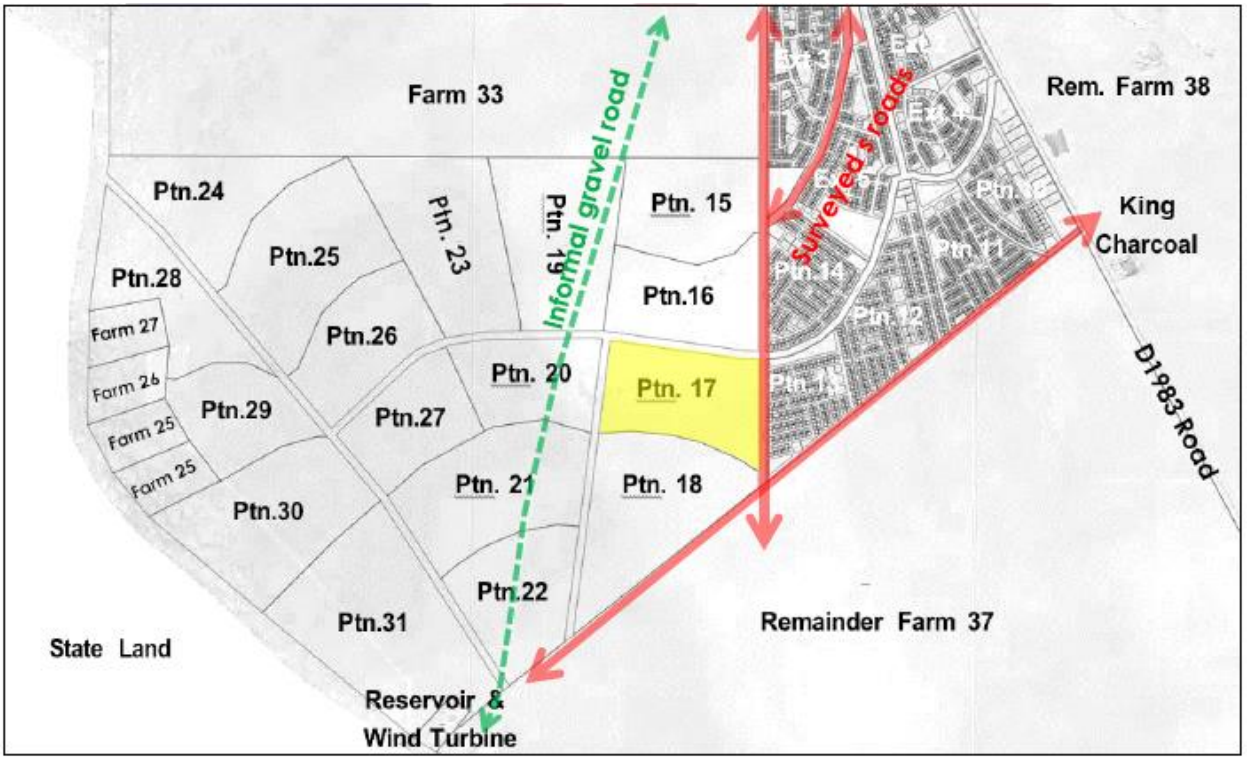


Figure 5.8. Description of land parcels surrounding Portion 17 of Farm No.37

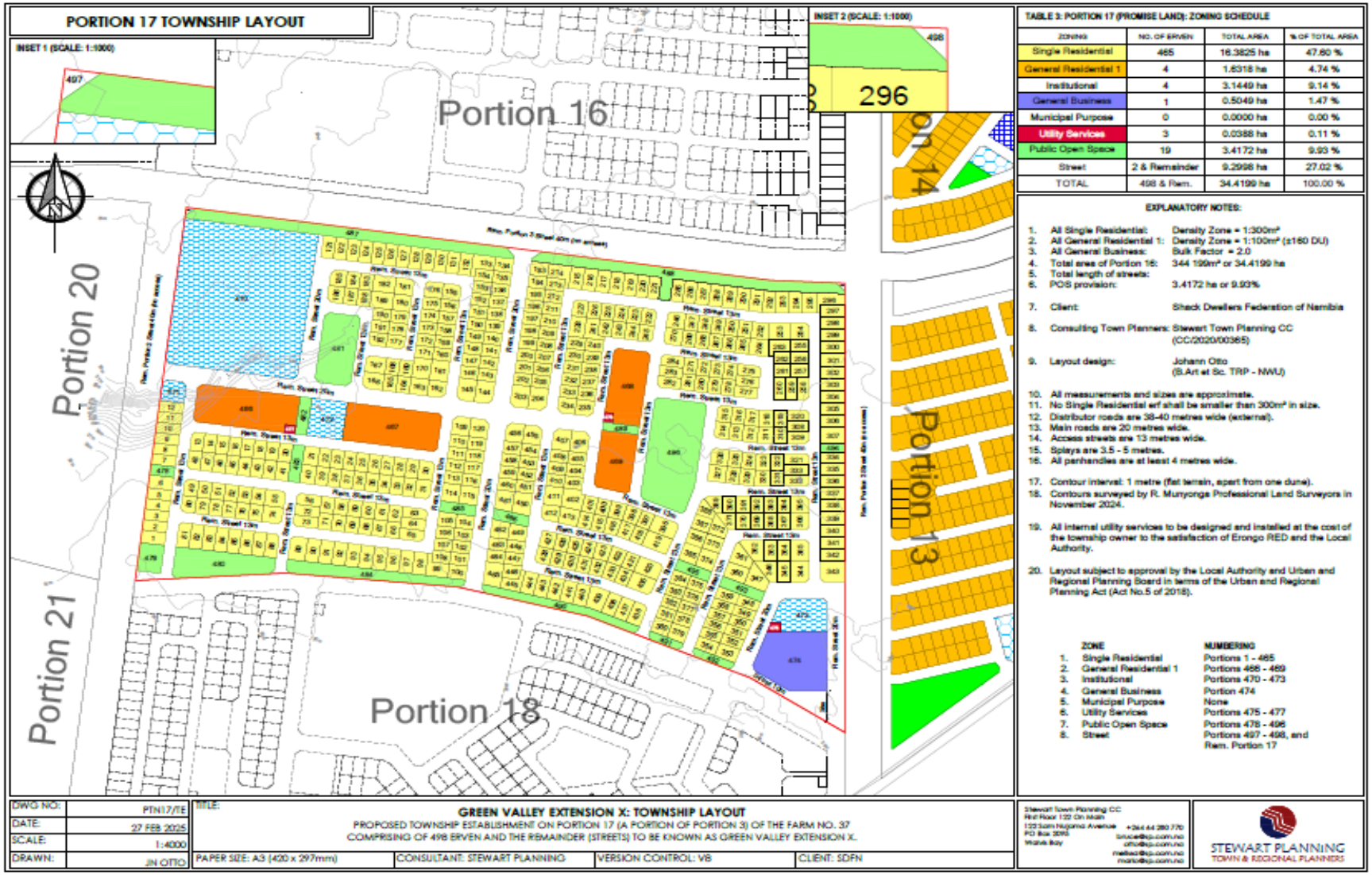


Figure 5.9. Proposed layout map for Portion 17 of Farm 37 (Green Valley)

Site Development Plan

The township layout will generate a total of 498 land portions, as set out in Table 5.4. The proposed township will provide predominantly residential erven which will be supported by additional land uses such as institutional (schools, clinics etc.), local business and public open spaces. Please refer to Figure 5.9 for the proposed layout plan for Portion 17 of Farm 37 (Green Valley).

Table 5.4: Number of erven per land use in Portion 17 of Farm 37

ZONING	NO. OF ERVEN	TOTAL AREA	% OF TOTAL AREA
Single Residential	465	16.3825 ha	47.60 %
General Residential 1	4	1.6318 ha	4.74 %
Institutional	4	3.1449 ha	9.14 %
General Business	1	0.5049 ha	1.47 %
Municipal Purpose	0	0.0000 ha	0.00 %
Utility Services	3	0.0388 ha	0.11 %
Public Open Space	19	3.4172 ha	9.93 %
Street	2 & Remainder	9.2998 ha	27.02 %
TOTAL	498 & Rem.	34.4199 ha	100.00 %

The zoning and size of the land portions are described as follows:

Single Residential:
• A total of 465 (Portions 1 to 465) single residential erven are provided in the layout with a density of 1 dwelling unit per 300m² (1:300).
• Most erf sizes range between 300m² to 700m², which was a design requirement from the applicant. This is to account for a variety of affordability levels and housing typologies. The total size is 163,825m², which represents 47.60% of the developable land area.
• The applicant opted not to create erf sizes less than 300m².

General Residential 1:
• 4x Land portions (Portions 466 to 469) are provided for General Residential 1 purposes with a density of 1 dwelling unit per 100m² (1:100) for the development of apartments and a wide variety of accommodation establishments.
• Erf sizes range from ±2,800m² to ±5,100m² with a total size of 16,318m², which represents 4.74% of the developable land.
• With a density of 1:100, the GR1 plots can accommodate up to 160 dwelling units (DU) in the form of apartments/flats and is located close to public open space/parks.
• Additional GR1 portions were not provided in the layout as the applicant wishes to maximise the number of Single Residential erven for freehold title plots.

Institutional:

• 4x Land portions (Portions 470 to 473) are provided for Institutional purposes for the development of a church with a day care centre and/or clinic and/or school to serve the immediate and wider neighbourhood.
• Portion 470 is a large ±26,600m² erf for the development of a sizeable school.
• Other portion sizes range between 680m² to 2,300m² in area with a total size of 31,449m² which represents 9.14% of the developable land area.

Public Open Space:
• 19x Land portions (Portions 478 to 496) are reserved as open space and for different functions. The total size is 34,172m², which represents 9.93% of the developable land area.
• Portion 480 (±3,200m²) and Portion 481 (±3,400m²) is reserved as a large play parks.
• Portion 496 is reserved as a large neighbourhood park (±7,500m²) servicing the immediate community and the wider neighbourhood, and situated next to a high density/General Residential erf.
• Portions 484, 487, 488, 490, 491, 492, and 418 serve as 13-meter wide greenbelt to prevent direct access to a distributor/main road, provides pedestrian links, and space for services and landscaping purposes.
• Portions 478, 482, 483, 485, 486, 489, 493, 494, 495 are reserved as pedestrian links, which will help improve walkability for residents and space for the provision of essential services.

General Business:
• 1x Land portion (Portion 474) are provided for General Business purposes with a bulk factor of 2.0.
• This business portion measures 5,049m² in area (1.47%) and is grouped with other business erven planned on Portion 18 to form a central business node adjacent to a major distributor road (40m wide).
• If there is a future need, the business plot can be subdivided further in support of smaller businesses.

Utility Services:
• 3x Land portions (Portions 475 to 477) are provided for Utility Services for the development of electrical substations.
• Each erf measures a minimum of 10 x 12m = 120m², which meets the minimum size requirements of Erongo RED.
• Each erf has direct access to a street and will be reserved and transferred to Erongo RED.

Number of households

The township layout for Portion 17 will generate a total of 465 + 160 = 625 or, say 650 dwelling units/households. With a total land size of 34.4199 hectares, this generates a gross density of 18.9 dwelling units per hectare (du/ha), which is a low to medium residential density. Using the average household size of 4, it is expected to provide housing for 650 x 4 = ±2600 people.

Internal streets and widths

External distributor roads (40 metres wide) are provided on eastern and western boundary and adjacent to Portion 17; the land is known as the Remainder of Portion 3 of Farm No. 37. Internal

main roads (20 metres wide) are provided through the middle of the township to facilitate through flow traffic. A total of 8 vehicle entrances are provided for the township for a fair traffic distribution.

Internal access streets are 13 metres wide. No cul-de-sac street has been provided. A 10m wide street is provided next to Portion 474 and next to the proposed 30m street on Portion 18 which has a combined road width of 40m. This allows for sufficient space for movement of traffic, loading bays, and on-street parking for the business node.

5.2.4 Municipal Service Delivery

Portion 15-17 has no internal services or access to nearby bulk services such as water, sewerage, and electricity. The Proponent is responsible for the provision of internal services (water, sewerage, electrical, and roads). The cost for the provision of bulk services for Green Valley will be shared proportionately between all extensions (Portions) of Farm 37. After the statutory town planning and land surveying processes are completed, the Proponent will appoint a consulting engineer who will design the engineering services and supervise the construction of these services as per the designs.

The bulk services required for the construction of the development will include the following:

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 (Figure 5.10). The town additionally pumps water from the Omdel aquifer. Fortunately, bulk infrastructure services are already available in the vicinity of Farm 37. A Namwater pipeline from the Kuiseb Dam/Delta Reservoir runs nearby, and connection to this pipeline will be necessary to supply Portions 15-17 with water.

Figure 5.10. The Namwater Mile 7 Reservoir located 1.5 km south of Portions 15-17

The proposed development will require about 680 cubic meters of water per day and it is estimated that the current water supply of Walvis Bay is sufficient to accommodate the development. The Mile 7 Namwater Reservoir is approximately 1.5 km south from Portions 15-17 of Farm 37 (Figure 5.10).

Sewage

A full waterborne sewage system is proposed for all erven. Excavations for sewer pipelines will have the maximum depth of 2.8m. Sewage generated from the proposed development will be pumped from the sewerage pump station via the rising main to the existing Wastewater Treatment Plant wastewater treatment works (WWTW) in Walvis Bay.

The location for the proposed sewerage pump station in Farm 37 location shall be decided by the consulting engineer in consultation with the Municipality of Walvis Bay. The sewerage pump station will include the following infrastructure:

- Inlet work and screening facility;
- Wet well pump station;
- Emergency storage sump;
- Motor control centre (MCC);
- Bulk electrical connection;
- Electrical cabling to the equipment;
- Standby generator with an automatic changeover panel;
- Ablution Facility and Storeroom; and a
- Boundary wall.

Furthermore, a new sewer rising main will be constructed between the new pump station and the existing wastewater treatment works (WWTW). The proposed new rising main is Ø315 mm uPVC, Class 12 pipe with a total length of 3500m.

Roads

All roads to be constructed in the proposed development will be graded and/or tarred roads and the main access to the development will be obtained from the external distributor roads (40 metres wide) on eastern boundary and adjacent to Portion 15-17; the land is known as the Remainder of Portion 3 of Farm No. 37. Provision is made for internal distributor roads (39m wide) on the northern and western boundary to facilitate higher order traffic.

Internal main roads (20 -25 metres) through the middle township to facilitate the flow of traffic. A total of 4 vehicle entrances are provided for the township for a fair traffic distribution.

Internal access streets vary in width from 11.6m to 13m, and 15m. No cul-de-sac streets are provided except for Portion 16 that has one cul-de-sac street, with a minimum turning radius of 25 metres. The street widths are for the entire road reserve and not only for vehicle lanes.

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.

An existing electrical substation managed by Erongo RED is located approximately 1 km from Portions 15-17, along the C14 road to the Walvis Bay International Airport. An extension from this substation will be used to supply electricity to the township.

5.3 Project Development Phases

5.3.1 Phase 1: Municipal Council consent for township establishment

The objective of the Proponent is to obtain the Council's consent for township establishment and township layout approval on Portion 17 of Farm No. 37 (Green Valley) in terms of the Urban and Regional Planning Act of 2018. The Proponent appointed Stewart Planning to attend to the internal subdivision/town planning matters. The township layout for Portions 15-17 was prepared will be fully compliant with policies and laws such as the Walvis Bay Residential Density Policy, Walvis Bay Urban Structure Plan, National Housing Policy of 2023, Ministerial Town Planning Standards and Urban Design Guidelines of 2013, Guidelines for Human Settlement Planning (CSIR Red Book), ALAN Panhandle Guidelines, UN-Habitat Guidelines, and the Walvis Bay Zoning Scheme, and the Urban and Regional Planning Act of 2018. The establishment of township on Portion 15-17 of Farm No. 37 for approval in terms of Section 109(2)(a) and 105(1)(b) of the Urban and Regional Planning Act, 2018 (Act No. 5 of 2018) is subject to the following conditions:

a) A valid Environmental Clearance Certificate be obtained from the Environmental Commissioner before the application is submitted to the Urban and Regional Planning Board.

Furthermore, The Proponent will enter into a development agreement with the Municipal Council whereby the provision of services (water, electricity, roads, and sewerage) is agreed upon with the Municipality of Walvis Bay. These services will be set up at the Proponent's expense once the Environmental Clearance Certificate has been obtained.

5.2.2 Phase 2: Construction of township development services

The existing access route, east of the informal gravel road leading towards the Mile 7 Reservoir and already disturbed areas will be used for access to, and construction activities associated with the proposed township of Portions 15-17 of Farm 37. A temporary laydown for safe storage of equipment, fuels, lubricants, solvents, paints and construction materials will be established on site.

Site preparation activities for the construction of the services (roads, water, electricity and sewerage) will involve:

- Surveying of the site

- Transporting relevant building material and equipment.
- Installation of associated electrical supply cables.
- Installation of associated water pipelines.
- Installation of associated sewer lines.
- Roads construction
- Land clearance

Construction activities will involve:

- Excavation of the foundation services (water, sewerage, electricity and roads).
- Installation of the earthing system.
- Cast blinding layer of the foundation covering the earthing system.
- Placement and fixing of the reinforced steel.
- Use of generators
- Handling, storage and transportation of non-hazardous and hazardous waste
- Cast the foundation and curing period.
- Site is ready for service.

The Shack Dwellers Federation of Namibia expect the construction of roads and installation of services (water and electricity) completion within six months and all excess excavated material and rubble be removed from site. The installation of the sewerage pump station and rising main will begin once an agreement has been reached with the Municipality of Walvis Bay and the residents of the other extensions/portions of Farm 3.

Furthermore, it is recommended that the Proponent reach a mutual agreement with the Municipality of Walvis Bay, in collaboration with the developers and residents of the other extensions of Farm 37, to plan and construct a centralized sewage system that will service the entire Farm 37 (Green Valley) area. This coordinated approach would ensure cost-effectiveness, proper sanitation, and long-term environmental sustainability for all extensions. In the event that an agreement with the Municipality of Walvis Bay and other developers or residents of Farm 37 has not been reached by the operational phase, it is recommended that sewage be temporarily managed through the use of septic tanks, supported by a regular emptying program, while discussions continue regarding the long-term feasibility of a centralized sewage system.

The Proponent should ensure that all bulk services—such as access roads, water, electricity, and sewage—are in place prior to the commencement of housing construction, as this will help reduce biodiversity loss by minimizing the need for residents to collect firewood and other resources from sensitive ecosystems such as the riverine system. If it is not immediately feasible to provide all bulk services, the Proponent should make adequate provision for their phased implementation.

Accommodation during construction phase

The construction team will stay in Walvis Bay. A maximum number of ±10 labourers will be appointed for the construction activity.

Sanitation during construction

Sanitation where required will be managed by the construction contractor. Portable toilets with associated septic tanks will be used. The septic tanks will be emptied on a regular basis and the effluent disposed of at a Walvis Bay licensed facility off-site.

Power supply for construction activities

Supply of power where required will be managed by the construction contractor. Small, mobile generators will supply power for the construction phase.

Water supply for construction activities

Supply of water where required will be managed by the construction contractor. Water supply on the site is to be provided by the nearest water meter from the Municipality of Walvis Bay.

Waste Management

Waste management will be managed by the construction contractor. Relatively small quantities of waste will be generated during the construction phase. Waste will be separated at source, stored in a manner that there can be no discharge of contamination to the environment and either recycled or reused where possible. The remainder will be transported off site to appropriate recycling or disposal facilities including the Walvis Bay Landfill site or the Walvis Bay hazardous disposal facility for hazardous waste. The only hazardous waste expected (in relatively small volumes) is possible hydrocarbon spillages and associated hydrocarbon contaminated material (i.e. soil, etc.) from construction vehicles and machinery, waste paint, etc.

Removal of Temporary Infrastructure and Rehabilitation

At the completion of the construction activities of the township development services, all temporary infrastructures including but not limited to laydown area and unused waste material, mobile toilets and construction equipment must be removed from site. Where soil contamination due to hydrocarbon spillages has occurred, soils must be treated according to the EMP recommendations. Vehicle tracks and any other excavations as a result of the proposed project must be rehabilitated and waste must be managed as per EMP recommendations.

The topography of the site is flat and there are no hills or rock formation on the property. Thus, there will be no blasting that is required during the construction of roads, buildings, sewerage pipes and other services that are typical for a township establishment. All ditches to be constructed will utilize traditional non-blasting methods.

5.2.3 Phase 3: Operational Activities

The activity during this phase will be operation and maintenance of the sewerage pump station and rising main, water, electrical services and roads. The activity also includes construction of houses group of members of the SDFN who are bound to benefit from the low-cost township development.

Housing

No contractors are allowed to camp on site during all phases of the project.

Access Road

The main access to the development will be obtained from the external distributor roads eastern and western boundary and adjacent to Portion 15-17.

Solid Waste Management

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).

Power supply during operational phase

The electrical supply cables that supplies the proposed site with electricity, independent of its length may pose a risk to the surrounding fauna in particular birds. However, the electrical supply cables at the proposed site will be buried which significantly reduces the risk to the surrounding fauna.

5.2.4 Phase 4: Decommissioning of development

The decommissioning of the proposed township development will be required either when the project reaches the end of its life cycle or if there is a change of use. In the case of the buildings reaching the end of their life, decommissioning will involve demolition, site clearing, and restoring the land to its natural state. This may include filling pits, grading the land, and planting vegetation to prevent flooding and soil erosion. If the land is immediately redeveloped, tree planting might not be necessary.

In the event of a change of use, the process may involve alterations or relocation of buildings. Demolition, site clearing, and land restoration, including landscaping and planting, will still be required. During demolition, debris will be removed by a licensed waste transporter or reused as base material for new construction. The process will include the removal of roofing materials, breaking down walls and slabs, and working at high levels. Health and safety measures, including personal protective equipment (PPE) such as safety harnesses, helmets, gloves, and respirators, will be mandatory. The decommissioning process must comply with safety guidelines outlined in Namibia's regulations.

5.3 Alternative Assessment

Alternatives are described as 'different methods of achieving the general purpose and objectives of the activity' (Environmental Management Act, 2007 of Namibia [and its regulations, 2012]). This section will explore the various approaches in which the project can be implemented, aiming to identify the most practical option that causes the least environmental harm.

Alternative Site

Portions 15-17 are already situated within the Walvis Bay Townlands. Due to limited land availability in Walvis Bay, the Municipality has allocated Portions 15-17 of Farm 37 to the SDFN members for township development. No alternative sites were considered. The SDFN members aim to provide serviced land and housing for the residents of Walvis Bay. The existing engineering services have the capacity to support the proposed Portions 15-17 of Farm 37 Township, making the site well-suited for this type of development. The area has minimal ecological and conservation value, and the best approach is to proceed with development while giving careful attention to environmental considerations. Mitigation measures for potential impacts are incorporated into the planning and execution of the project, ensuring that the development of Portions 15-17 Township will have a minimal environmental impact. The environmental footprint of this activity is expected to be very low.

5.4 The "No Go" Option

The "No-Go" alternative refers to the option of not proceeding with the proposed activity, which generally means maintaining the current conditions. If the proposed township development does not move forward, neither the positive nor negative impacts identified would take place. As a result, the area would remain undeveloped, and the potential for creating residential plots and other land uses would not be realized. If the township development is halted, the existing land use on the site would remain as it is.

The proposed project could lead to employment opportunities and contribute to both Harambee Prosperity Plan and Vision 2030 objectives for infrastructure development and community upliftment in the country. In that regard, the "no-go" alternative is not the preferred alternative as it is believed that this project could positively contribute to development in Namibia especially if the potentially negative effects of the project on the receiving environments are avoided or at least minimized.

6 THE RECEIVING ENVIRONMENT

This section has been compiled with reference to site visit by the environmental consultant; other EIAs conducted in the regional area; and use of satellite imagery. A site visit of the proposed project area was conducted on 8 April 2025.

6.1 LOCALITY, TOPOGRAPHY AND SURROUNDING LAND USE

The proposed development is located within the Walvis Bay municipal lands in the Farm 37 area at Portions 15, 16 and 17 (Figure 6.1). The proposed township development falls under the authority of the Municipality of the Walvis Bay Town Council and currently zoned “Undetermined”, which permits the establishment of a township with consent from the Council. Different zones have been allocated to the land portions which are consistent with the zoning scheme; therefore, the township will not be in conflict with the approved zoning scheme.

The proposed site is approximately 15.6 km away from the Walvis Bay lagoon, and 8.2 km from the man-made wetland formed as a result of the sewage treatment works. These coastal habitats have ecological features that are important to birds. The site is not situated in a catchment area of any major rivers or channels. The site is appromixately 11 km to the Kuiseb River Delta and 20 km from Rooibank which lies on the Kuiseb River banks. Walvis Bay is located in the Central Western Plain of Namibia. The Kuiseb River forms the southern boundary of this landscape group, with the Namib Dune Field being present south of the Kuiseb River. The bay is formed by a peninsula commonly known as Pelican Point. On the southern part of the bay is a lagoon which used to be the mouth of the Kuiseb River.

Figure 6.1. The proposed site for township establishment on Portions 15-17 of Farm 37 (S 23° 1′8.18″ E 14° 34′ 50.33″)

Dune migration however forced the flow of the Kuiseb River to the north. This flow was stopped through the construction of a flood control wall to prevent flooding of the town of Walvis Bay, thus forcing the flood waters to move through the dune area to the lagoon. The Kuiseb River now rarely reaches the lagoon.

The topography is generally flat with a local gentle downward slope in a westerly direction. Drainage is poorly developed due to the lack of rainfall <50mm/annum received in the area. A dune field is present southeast of Walvis Bay and also further to the northeast. These dunes generally migrate in a northerly direction. Further inland is the gravel plains of the central areas of the Namib Naukluft Park. Surface water around Walvis Bay is limited to the marine salt pans, lagoon and ocean as well as a man-made wetland formed as a result of the sewage treatment works.

The management of the natural resources and conservation of the Walvis Bay Wetland Reserve is under the control of the Walvis Bay Municipality through the Walvis Bay Environmental Management Plan and the draft Walvis Bay Nature Reserve Management Plan.
According to the Walvis Bay Structure Plan (Walvis Bay Municipality) the boundary of the Nature Reserve is demarcated as indicated in Figure 6.3. As described in section 6.4 the Nature Reserve is the most important wetland for water birds in Namibia, and is declared a Ramsar site.

Furthermore, the proposed site is situated outside of the Dorob National Park (refer to Figure 6.2) and approximately 34 km from the southern boundary of the Dorob National Park.

Implications and Impacts
The proposed site to establish townships on Portion 15-17 of Farm 37 site are classified as "Underdetermine" by the Walvis Bay Municipality which permits the establishment of a township with consent from the Council. Therefore, the Proponent requires land use consent to establish the proposed new township of Portions 15-17 of Farm 37 from the Walvis Bay Municipality. Moreover, different zones have been allocated to the land portions which are consistent with the zoning scheme; therefore, the township will not conflict with the approved zoning scheme.

The proposed site is situated outside of the Dorob National Park, approx. 34 km from its southern boundary and 11 km from the Kuiseb River Delta.

The management of the natural resources and conservation of the Walvis Bay Wetland Reserve is under the control of the Walvis Bay Municipality. Whereas, the management of natural resources and conservation of the Dorob National Park is under the control of the Ministry of Environment and Tourism.

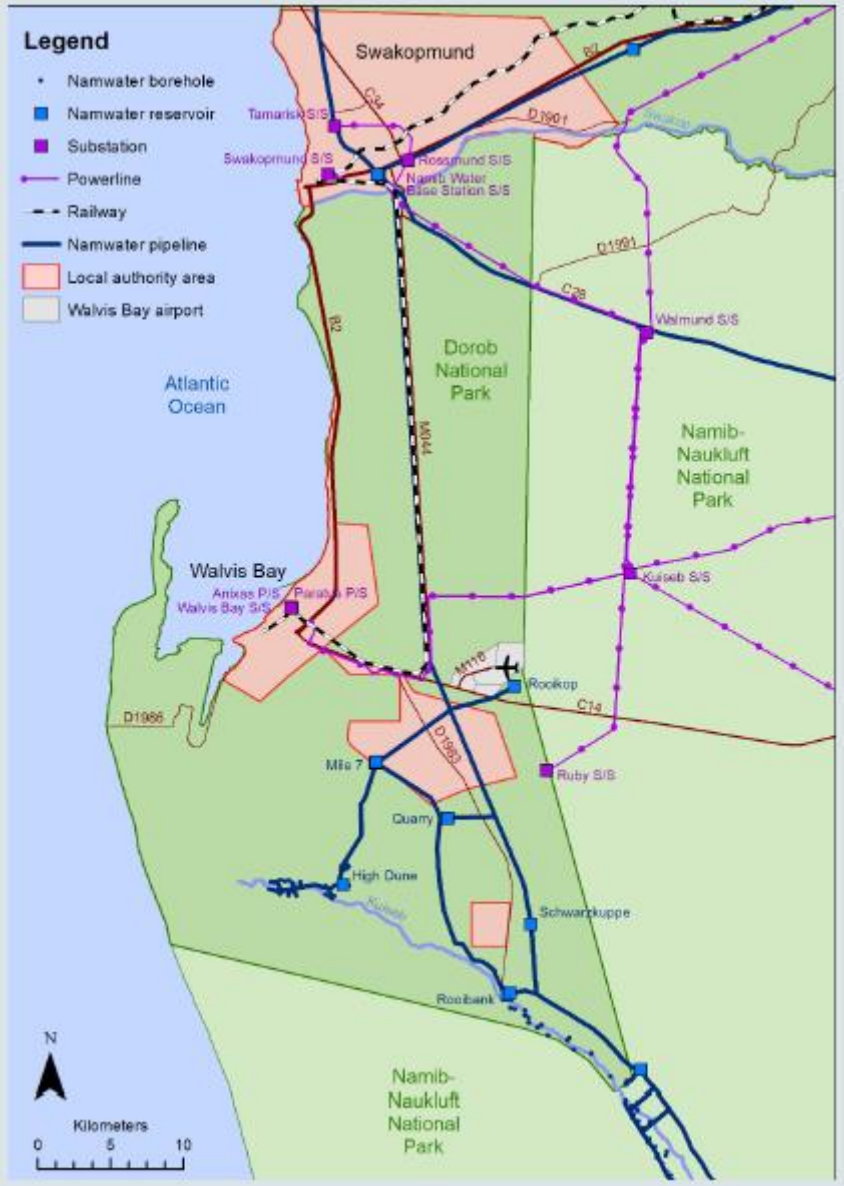
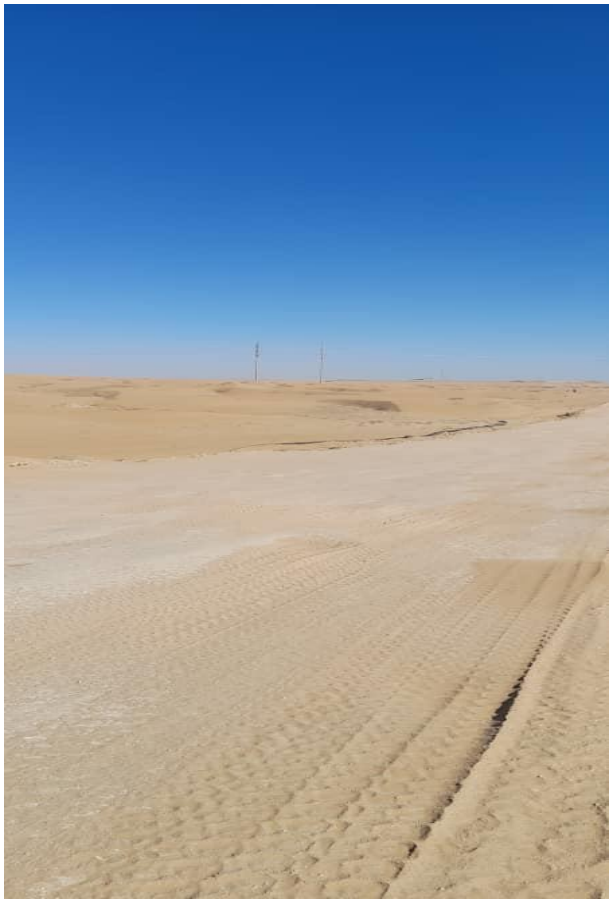


Figure 6.2. Southern Dorob National Park in relation to infrastructure development and municipal areas (Sourced from: Dorob National Park Management Plan).



Top Photo (1) and (2). View of the proposed site at the Portions 15-17 of Farm 37.

Bottom Photo (3). View of Portions 10-11 of Farm 37. Residents was victims of fires in Kuisebmond that have been relocated by the Municipality of Walvis Bay. The Municipality of Walvis Bay have installed communal water points, electricity and ablution facilities at Farm 37.

6.2 CLIMATE

Walvis Bay is situated in the most arid part of the Namib Desert. The climate is characterized by mild summers and cool winters, with average minimum and maximum temperatures ranging between 10˚C and 24˚C. The cold water Benguela system along the coast controls the coastal climate. Winds generated from the high-pressure cell over the Atlantic Ocean blow from a southerly direction when they reach the Namibian coastline. As the Namibian interior is warm (particularly in summer), localised low pressure systems are created which draws the cold southerly winds towards the inland desert areas (Mendelsohn et al. 2002).

These winds manifest themselves in the form of strong prevailing south-westerly winds, which range from an average of 20 knots (37 km/h) during winter months to as high as 60 knots (110 km/h) during the summer (Christian, 2006). Winds near Walvis Bay display two main trends namely; high velocity and frequency south to south-westerly winds in summer and high velocity, low frequency east to north-easterly winds during winter. During winter, the east winds generated over the hot Namib Desert have a strong effect on temperature, resulting in temperatures in the upper 30's degrees Celsius and tend to transport plenty of sand (Christian, 2006).

Fog is a common occurrence in the central coastal Namib, often providing the only source of water for the succulent and lichen flora in the Namib Desert. During spring and summer, the sea breezes move moisture inland, resulting in the formation of fog early and late in the day. In winter the fog is more the result of moist oceanic air blowing on shore (Mendelsohn et al. 2002).

Variation in annual rainfall is very high and most communities within this environment are dependent on regular fog occurrences. January to April is the months with the highest likelihood of rainfall. The long term mean annual rainfall for Walvis Bay is less than 20 mm per annum, with annual totals ranging from 0 mm to 100 mm. Annual evaporation in the area is fairly high and evenly spread throughout the year. Although the evaporation is reduced by fog and low mean daily temperature range, the high mean wind speed increases the evaporation considerably. With minimal rainfall, most of the waste stream is expected to dry out, rather than decomposing (Mendelsohn et al. 2002).

Table 6.1: Summary of Climate Data for Walvis Bay (Atlas of Namibia)

Precipitation (mm/a)	0-50
Variation in annual rainfall (%)	>100
Average annual evaporation (mm/a)	2800-3000
Water deficit (mm/a)	1901-2100
Temperature (°C)	18-19

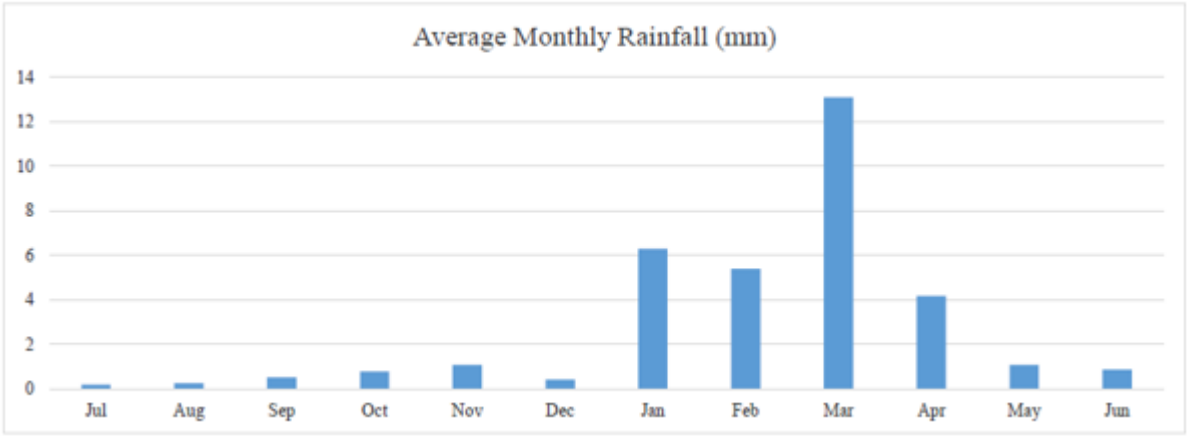


Figure 6.2. Rainfall information for the study area (Atlas of Namibia)

Water is a scarce and valuable resource in Namibia and especially in the Namib Desert. Rainfall events are scarce and regular occurrences of fog conditions supply many desert adapted species with the water they require (Mendelsohn et al. 2002).

Implications and Impacts
Water is a scarce and valuable resource in Namibia and especially in the Namib Desert. Rainfall events are scarce and regular occurrence of fog conditions supply many desert adapted species with the water they require.

The climatic conditions at the proposed site are not expected to present any major challenges for the construction and operation of the planned township development on Portions 15, 16, and 17 of Farm 37. However, the area is susceptible to strong winds, particularly prevailing south-westerlies, which typically average around 20 knots (37 km/h) during winter and can intensify to approximately 60 knots (110 km/h) in the summer months. During construction windy conditions may cause excessive dust to be generated when surfaces are exposed during excavations. Flooding is not a concern.

6.3 GEOLOGY AND HYDROGEOLOGY

Northerly dune migration is forcing the Kuiseb River in a northerly direction, with Kuiseb River paleochannels being present as far south as Sandwich Harbour. Following the breakup of West-Gondwana during the early Cretaceous (130 – 135Ma ago), continental uplift took place, enhancing erosional cutback and the formation of the Namibian Escarpment. A narrow pediplain formed, mainly over Damara Age rocks. The South Atlantic started filling in over the pediplain, with marine conditions established around 80 Ma ago. Towards the end of the

Cretaceous (70 – 65Ma ago) a relative level surface was created, on which later deposition of sediments took place. Marine deposition took place in the parts covered by the newly formed South Atlantic Ocean, while terrestrial deposits took place on land. Further continental uplift moved the shoreline to its present position.

Northwards migration of sand covered parts of the exposed marine deposits, with Kuiseb floods also depositing material over the marine sediments. Depth to bedrock in Walvis Bay is expected to be deeper than 40m. Based on previous work conducted in the area it is expected that the sediments under the project area would consist of medium to coarse grain sand with thin lenses of more clayey material and layers of shell material.

The hydraulic conductivity of the sediments is expected to be relatively high and groundwater flow would be mainly through primary porosity. No potable groundwater source is known of in the vicinity of the site. Groundwater at the site is expected to be saline and the depth to water table at the site is expected to be less than 5 m below surface.

The Municipality of Walvis Bay currently purchase fresh/potable water from NamWater, which is sourced from the Kuiseb Water Supply Scheme. The terrain at the site is relatively flat and does not contain any shifting sand dunes, which makes the land desirable for residential development.

Implications and Impacts

Groundwater is not utilised in the area. Groundwater is not a source of potable water and as such public water supply should not be at risk as a result of activities at the site.

The terrain at the site is relatively flat and does not contain any shifting sand dunes, which makes the land desirable for residential development.

6.4 BIODIVERSITY

Walvis Bay is a tourist attraction because of the proximity of 100,000 water birds, mainly flamingos, to public areas (Simmons et al. 1998). The Walvis Bay wetland system includes the lagoon, the ephemeral Kuiseb River mouth and the Walvis Bay sewage disposal facility (Bird Paradise; Figure 6.3, 6.4 and 6.5). Habitats identified as particularly important and/or sensitive for bird species include the Walvis Bay wetlands, specifically the lagoon and sewage works.

Figure 6.3. The Walvis Bay wetland system

The proposed site is located within Walvis Bay townlands and has been earmarked for residential and business development. In an urban setup, the habitat for fauna and flora is fragmented and is expected to degrade subsequently. Table 6.2 and Table 6.3 below indicate the fauna and flora found in the biome in which Walvis Bay is situated.

It is highly unlikely that all the species listed for this Biome occur in the vicinity of the proposed site. Of note nearby (15.6 km west) are the Walvis Bay Lagoon which are the key components of the 9,000 km^2 Ramsar site (Wetland of International Importance). It is important both as an over-wintering area for Palaearctic migrant wader species as well as for African species such as Greater and Lesser Flamingos, Great White Pelican and Chestnut-Banded Plovers.

The sewerage ponds (Birds Paradise), situated about 8 km west of the study area, are regarded as sensitive wetlands. Although a man-made fresh water source, they are an attraction for pelicans and flamingos. These wetlands also support 53% of the duck and geese population in the area. The wetland is formed by the constant inflow of semi-purified water and supports extensive stands of reeds. There is also a flight path for birds between the sewerage ponds and the Walvis Bay Lagoon. This flight path is near the project site.

The vegetation units and types of plant communities have been identified on the plains north of the Swakop River (Hachfeld, 1996). These units are here arranged into the climatic zones that run parallel to the coast. The vegetation units are named after their dominant plant or lichen species out of >150 species that they contain in total. The proposed site is located within the coastal zone.

The Coastal Zone comprises the coastal hummocks (the succulent shrubs *Arthraerua leubnitziae-Salsola nollothensis*), and the lichen fields of *Teloschistes capensis* and *Lecidella-Combea mollusca* with the shrub *Arthraerua leubnitziae*.

Other notable plant communities are in the:

Dune Fields between Swakopmund and Walvis Bay and south of Walvis Bay, where spiny dune grass *Stipagrostis sabulicola* and the succulent dwarf shrub *Trianthema hereroensis* dominate. Both of these can take up fog water, either through shallow roots (*S.sabulicola*; Louw & Seely, 1980), or through the leaves (*T.hereroensis*; Seely et al., 1977).

The !Nara *Acanthosicyos horridus* (Cucurbitaceae) is endemic to the Namib Desert, with high densities in the lower Kuiseb valley, particularly in the area some 10 km south-east of Walvis Bay in the Kuiseb Delta (Budack 1977). The Nara requires ground water (Herre, 1974; Pfeifer, 1979), tapped with long roots (Kutschera et al. 1997). !Naras grow 5-10 m high and 10-40 m in diameter. The fruits, seeds, growing tips and flowers are highly nutritious, and the canopies shelter many animals, making this a very important plant for the ecology of the Namib (Klopatek & Stock 1994).

!Nara fruit have been collected from wild plant populations as long as the Namib Desert exists. Attempts to domesticate !Nara have been unsuccessful for reasons relating to its very specific habitat requirements. Historically families of the Topnaar indigenous people of the Lower Kuiseb Valley owned and ustilised !Nara bushes allocated by the communities (Dentlinger, 1977). Currently the !Nara fields have largely been commercialised and are communal property (Maggs-Kölling, Iileka, Gottlieb, & Uushona, 2014). Numerous products are made by the Topnaar people from all parts of

the melons in an age-old tradition passed on from generation to generation and considerable potential exists in the larger scale utilization of this very localised resource.

Photos (above). The !Nara *Acanthosicyos horridus* (Cucurbitaceae). Sourced from Maggs-Kölling, Iileka, Gottlieb, & Uushona, 2014

In the past, !nara fields were divided into patches and allocated to different families, passing on to successive generations through inheritance, with ownership and access disputes resolved by the chief. This ensured sustainability of resource use. Today, however, !nara fields are largely commercialised, and have become a communal resource with no private ownership, thus affecting the direct relationship between the resource and those who have traditionally depended on it.

Recently, reports from the Topnaar indigenous people to the Kuiseb River, have noticed destruction of the !Nara plants by inexperienced harvesters that do not understand the plant's growth cycle and have damaged the !Nara plants. The Topnaar community fear that the reckless harvesting has severely impacted their livelihoods, as some of the plants may no longer be able to bear fruit. Since premature harvesting not only ruins the fruit but also prevents the plants from producing seeds for future seasons if the roots were not cut correctly. The Topnaar community have found residents of Farm 37 hoarding raw !Nara melons at their homes, while others cook and sell them prematurely. The !Nara plant was gazetted in 2015 as a protected plant species under Act 12 of 2001, Section 22/Regulation 13, stipulating that the plant is of cultural and economic value. (https://neweralive.na/topnaars-nara-survival-under-threat).

Vegetation of the West Erongo Region is important for its uniqueness (high degree of endemicity), and its resource potential, including medicinal. Several plant communities, particularly the coastal hummocks, the lichen fields in the coastal and foggy zones, as well as the dolerite ridges, are vulnerable to mechanical damage, e.g., by off-road vehicles, and take a very long time to recover.

Microfauna is an important component of the soil (André et al., 1997). This includes disturbance to the substrata on the dunes, gravel plains, beneath rocks, in rivers and washes and on the beach. The microfauna includes such animals as mites and nematode worms. Along with the microflora and

mycorrhiza (fungus), microfaunal communities are crucial for facilitating nutrient cycling and soil formation and this, in turn enables other organisms to occur at a site. The integrity of the entire microcommunity is most important and should not be overlooked when assessing damage or rehabilitation of an area.

Microfauna and other arthropods and snails, etc., are often overlooked in planning disturbances and rehabilitation. Although they can tolerate the apparently hostile desert conditions, they are very vulnerable to even slight disturbances. Not only these particular species may be threatened, but with them, also other essential ecological processes that they facilitate. The vulnerable population of Damara terns may serve as a flagship of conservation concerns as the protection of this species may also help to protect its environment and all the other less known animals. Although there are several venomous snakes, scorpions and spiders in the area, these can easily be avoided or moved without destroying, because some of these animals are important to the ecological functioning of the Namib.

Then Table 6.2 provides all the endemic vertebrates in the western Erongo region where the proposed site and activities are located.

Table 6.2: Endemic vertebrates in the Western Erongo Region

BIRDS:			
Namib endemic birds [4] Rüppel's korhaan *Eupodotis rueppellii* (gravel plains & interdune plains) Dune lark *Certhilauda erythrochlamys* (dunes) Damara *tern Sterna balaenarum* Gray's lark *Ammomanes grayi* (gravel plains & interdune plains)	**Namibian endemic birds [10]** Hartlaub's francolin *Francolinus hartlaubii* Rüppel's parrot *Poicephalus ruepelli* Monteiro's hornbill *Tockus monteiri* Barecheeked babbler *Turdoides gymnogenys* Violet woodhoopoe *Phoeniculus damarensis* Herero chat *Namibornis herero* Rockrunner *Achaetops pycnopygius* Short-toed rock thrush *Monticola breviceps* Whitetailed shrike *Lanioturdus torquatus*	**Endangered birds [6]** White pelican *Pelecanus onocrotalus* Pinkbacked pelican *Pelecanus rufescens (*rare vagrant) Cape gannet *Morus capensis* Crowned cormorant *Phalacrocorax coronatus* Greater flamingo *Phoenicopterus ruber* Lesser flamingo *Phoeniconaias minor*	**Vulnerable birds [8]** Lappetfaced vulture *Torgos tracheliotus* Black eagle *Aguila verreuxii* African black oystercatcher *Haematopus moquini* Chestnutbanded plover *Charadrius pallidus* Hartlaub's gull *Larus hartlaubii* Caspian tern *Hydroprogne caspia* Swift tern *Sterna bergii* Cape eagle owl *Bubo capensis*
MAMMALS: **Namibian endemics** Angola hairy bat *Myotis seabrai*: inselbergs, Brandberg Black mongoose *Galarella nigrita*: rocks Golden mole *Eremitalpa granti namibensis*: dunes Hartmann's mountain zebra *Equus zebra hartmannae*: eastern plains & inselbergs Mountain ground squirrel *Xerus princeps*: inselbergs Dassie rat *Petromus typicus*: inselbergs Namib bush-tailed gerbil *Gerbillurus setzeri*: plains			

Namib dune gerbil *Gerbillurus tytonis*: dunes
Namibian rock mouse *Petromyscus collinus*: inselbergs

FROGS:

Damara dwarf toad *Bufo hoeschi*: pools on inselberg [endemic]
Dombe dwarf toad *Bufo dombensis*: pools on inselberg [endemic]
Marbled rubber frog *Phrynomantus annectens*: pools on inselberg [endemic]
Tremolo pyxie *Tomopterna cryptotis*: pools in riverbed [not endemic]

REPTILES:

Namibian endemic lizards [10]	**Namibian endemic snakes [10]**	**Namibian endemic geckos [13]**
Slender blind legless skink *Typhlosaurus braini*: dunes Wedge-snouted skink *Mabuya acutilabris*: grass tufts on sand Namibian tree skink *Mabuya spilogaster*: Acacia trees in dry river courses Southern slipface lizard *Meroles anchietae*: dune slipfaces Wedge-snouted desert lizard *Meroles cuneirostris*: dune vegetation Small-scaled desert lizard *Meroles microphilodotus*: course coastal dune sand Reticulated desert lizard *Meroles reticulatus*: plains Short-headed sand lizard *Pedioplanis breviceps*: plains and washes Dwarf plated *lizard Cordylosaurus subtessellatus*: near succulents on inselbergs Small-legged burrowing skink *Typhlacontias brevipes*: coastal hummocks	Damara worm snake *Leptotyphlops labialis*: plains Western worm snake *Leptotyphlops occidentalis*: plains Beaked blind snake *Typhlops schinzi*: plains Namibian dwarf python *Python anchietae*: rocks & washes Namibian wolf snake *Lycophidion namibianum*: plains & washes Western keeled snake *Pythonodipsas carinata*: rocks Namibian shovel-snout Prosymna frontalis: rocks Damaraland tiger snake *Telescopus crf. semiannulatus polystictus*: trees Western spitting cobra *Naja nigricincta*: rocks, washes, trees Southern Namib sand adder *Bitis peringueyi*: dunes	Palmatogecko *Palmatogecko rangei*: dunes Banded barking gecko *Ptenopus carpi*: plains Koch's barking gecko *Ptenopus kochi*: interdune plains Coastal Namib day gecko *Rhoptropus afer*: rocks and inselbergs Lesser Namib day gecko *Rhoptropus barnardi*: rocks Damara Namib day gecko *Rhoptropus bradfieldi*: rocks and inselbergs African flat gecko *Afroedura africana*: granite outcrops Festive gecko *Narudasia festiva*: diurnal on rocks and inselbergs Velvety gecko *Pachydactylus bicolor*: rocky outcrops Damaraland banded gecko *Pachydactylus fasciatus* Brandberg gecko *Pachydactylus gaiasensis*: shelters in sandstone, forages on sand Namib ghost gecko *Pachydactylus kochi*: rocks on sandy plain (near Cape Cross) Smooth button-scale gecko *Pachydactylus laevigatus*: rocky outcrops

Bird Diversity

A total of 225 bird species has been recorded within the Walvis Bay study area. This represents 33% of the 676 species recorded in Namibia (Appendix F).

Red Data Species

A total of 225 bird species has been recorded within the Walvis Bay study area. This represents 33% of the 676 species recorded in Namibia (Appendix F). The bird species list information was compiled during the Southern African Bird Atlas Project (SABAP1), gathered during 1987-1992 (Harrison et

al. 1997) and the more recent second Bird Atlas Project, SABAP2, available from the Environmental Information Service (EIS [EIS 2015]) derived from Brown, C.J., Bridgeford, P.A., Braine, S.G., Paxton, M. and Versfeld, W. 2015. Breeding data on the birds of Namibia: laying months, colony and clutch sizes and egg measurements. Ornithological Observations, 6: 92-196.

Distribution maps for Greater Flamingo (Vulnerable), Lesser Flamingo (Vulnerable and Globally Threatened) and Great White Pelican (Vulnerable) serve as examples to indicate the high densities of these Red Data species in the Walvis Bay study area and adjacent coastal areas (Figure 6.5, 6.6 and 6.7).

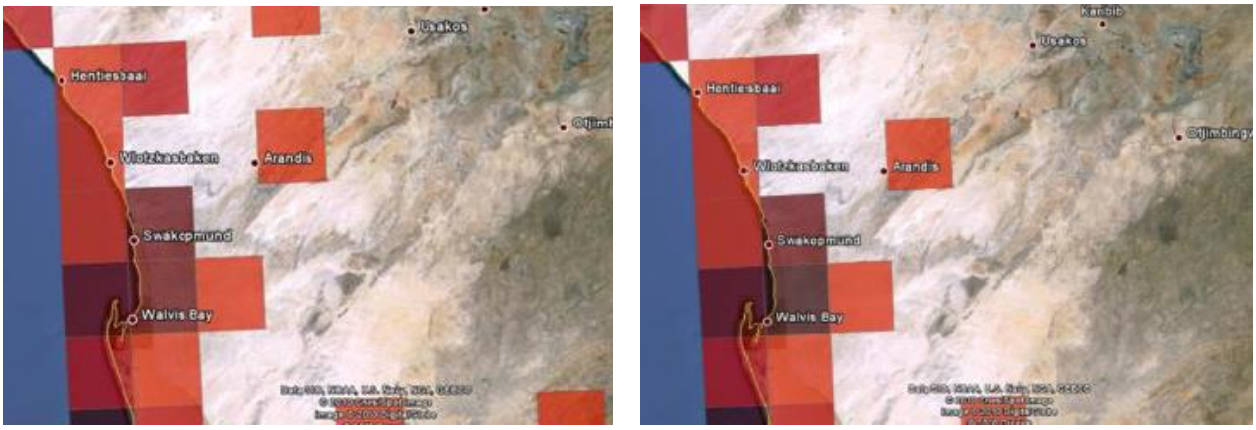


Figure 6.4 and 6.5. Distribution of Greater Flamingo (left) and of Lesser Flamingo (right) in the study area (SABAP1 data, EIS 2013).

Figure 6.6 Distribution of Great White Pelican in the study area (SABAP1 data, EIS 2013).

Endemic Species

Of the 225 bird species recorded within the whole of the study area, 36 are endemic/near-endemic to southern Africa, and two are endemic to Namibia, one being a breeding endemic (Appendix F). This represents a total of 41 species (18%) in terms of endemism.

Migrant and Nomadic Bird Species

Of the total number of bird species, 72 (32%) are migrant at some stage of their life, and 86 (38%) nomadic (Appendix F).

Implications and Impacts
The proposed site lies within Walvis Bay townlands of Farm 37 which are earmarked for future residential development. However, the sewage works/Bird Paradise is an important habitat for birds and is 8 km from the proposed site. The proposed site is out of the way of the flight path of the birds that is between the Lagoon, sewage works and guano platforms.

The !Nara *Acanthosicyos horridus* (Cucurbitaceae) is endemic to the Namib Desert, with high densities in the lower Kuiseb valley, particularly in the area some 10 km south-east of the proposed site in the Kuiseb Delta. The fruits, seeds, growing tips and flowers are highly nutritious, and the canopies shelter many animals, making this a very important plant for the ecology of the Namib Currently the !Nara fields have largely been commercialised and are communal property. Numerous products are made by the Topnaar, indigenous people, from all parts of the melons. There has been arrests made of residents of Farm 37 harvesting unripe !Nara melons.

An immediate threat to !Nara *Acanthosicyos horridus* (Cucurbitaceae) fields in the area can be expected due to inexperienced and illegal harvesting of the plant. The Topnaar community have found residents of Farm 37 hoarding raw !Nara melons at their homes, while others cook and sell them prematurely. Premature harvesting not only ruins the fruit but also prevents the plants from producing seeds for future seasons if the roots were not cut correctly. a permit must be obtained from the Forestry Office in Walvis Bay (Ministry of Environment, Forestry and Tourism) for the removal or harvesting of any protected species such as the !Nara *Acanthosicyos horridus* (Cucurbitaceae).

6.5 VISUAL BASELINE

The visual landscape is determined by considering: landscape character, sense of place, aesthetic value, sensitivity of the visual resource and sensitive views. In this regard, the study area is situated on the outskirts of Walvis Bay and presents a predominantly flat to gently undulating terrain typical of the Namib coastal plains. The landscape is largely arid, characterized by sparse vegetation with occasional hardy shrubs and grasses adapted to the dry, saline conditions. The natural colour palette includes sandy beiges, light browns, and dusty greys, interspersed with patches of exposed gravel or calcrete. There are expansive open views, with minimal vertical obstructions, offering long sightlines toward the Namib Desert dunes to the east and, in some areas, distant views of the Atlantic Ocean to the west. The area may also feature occasional man-made structures such as gravel roads, utility lines, or fencing, especially near the municipal boundary.

Implications and Impacts
The landscape character of the proposed site predominantly flat to gently undulating terrain typical of the Namib coastal plains. The landscape is largely arid, characterized by sparse vegetation with occasional hardy shrubs and grasses adapted to the dry, saline conditions.

6.6 CORROSION ENVIRONMENT

The proposed site is located in a very corrosive environment, which may be attributed to the frequent saltladen fog, periodic winds and abundance of aggressive salts (dominantly NaCl and sulphates) in the soil. At nearby Walvis Bay, the periodic release of hydrogen sulphide (H_2S) from the ocean

further contributes to corrosion. Table 6.4 provides corrosion comparison data for Walvis Bay with other towns in southern Africa show the characteristics of each site and the average annual corrosion rate of mild steel and the service life of galvanized steel in years, according to the Nickel Institute of America.

Table 6.3: Corrosion rates for Walvis Bay and other towns in southern Africa (Source: Nickel Institute at https://nickelinstitute.org/media/1613/11024-guidelines-for-corrosion-prevention.pdf)

	Pretoria-CSIR	Durban Bay	Cape Town Docks	Durban Bluff	Walvis Bay	Sasolburg
Environment						
Location Type	rural, very low pollution	marine, moderate pollution	marine, moderate pollution	severe marine, moderate/low pollution	severe marine, low pollution	industrial, high pollution
SO_2 Range µg/m³	6–20	10–55	19–39	10–47	NA	NA
Fog days/year	NA	NA	NA	NA	113.2	NA
Avg. rainfall, in/year (mm/year)	29.4 (746)	40 (1,018)	20 (508)	40 (1,018)	0.31 (8)	26.7 (677)
Relative humidity range %	26 - 76	54 - 84	52 - 90	54 - 84	69 - 96	49 - 74
Temp. range F (C)	43–79 (6–26)	61–80 (16–27)	48–77 (9–25)	61–80 (16–27)	50–68 (10–20)	41–67 (5–20)
Unpainted galvanized steel life, years*	5 - 15	3 - 5	3 - 7	3 - 5	0.6 - 2	5 - 15
Stainless steels	Annual Corrosion Rate mils/year (mm/year)					
Type 316	0.001 (0.000025)	0.001 (0.000025)	0.001 (0.000025)	0.01 (0.000279)	0.004 (0.000102)	NA
Type 304	0.001 (0.000025)	0.003 (0.000076)	0.005 (0.000127)	0.02 (0.000406)	0.004 (0.000102)	NA
Type 430	0.001 (0.000025)	0.02 (0.000406)	0.01 (0.000381)	0.07 (0.001727)	0.02 (0.000559)	0.004 (0.000107)
Aluminum alloys						
AA 93103	0.01 (0.00028)	0.21 (0.00546)	0.17 (0.00424)	0.77 (0.01946)	0.18 (0.00457)	0.11 (0.00281)
AA 95251	0.01 (0.00033)	0.14 (0.00353)	0.15 (0.00371)	0.66 (0.01676)	0.16 (0.00417)	NA
AA 96063	0.01 (0.00028)	0.12 (0.00315)	0.14 (0.00366)	0.79 (0.020)	0.19 (0.00495)	NA
AA 96082	0.01 (0.00033)	0.14 (0.00366)	0.13 (0.0034)	1.09 (0.02761)	0.23 (0.00587)	NA
AA 96261	NA	NA	NA	0.93 (0.02364)	0.15 (0.00375)	0.12 (0.00317)
Copper	0.22 (0.00559)	0.37 (0.0094)	0.28 (0.00711)	0.97 (0.0246)	1.51 (0.0384)	0.55 (0.014)
Zinc	0.13 (0.0033)	0.91 (0.0231)	1.14 (0.029)	4.37 (0.111)	NA	0.60 (0.0152)
Weathering steel	0.9 (0.0229)	8.35 (0.212)	3.60 (0.0914)	31.89 (0.810)	45.28 (1.150)	4.21 (0.107)
Mild steel	1.70 (0.0432)	14.61 (0.371)	10.12 (0.257)	86.22 (2.190)	33.31 (0.846)	5.91 (0.150)

Implications and Impacts
The materials used for the construction of services and housing infrastructure must be able to withstand the corrosive environment. Regular maintenance must be conducted to maintain the integrity of the infrastructure and prevent product loss to the environment.

6.7 SURFACE WATER AND GROUNDWATER

Areas of the Central Namib Desert usually have no surface water and little or no available groundwater. In the context of the desert environment, most surface water either evaporates or percolates rapidly into the ground. In some instances strong rainfall leads to temporary pools or flowing surface water resources. During strong rainfall events (flash floods) channels become highly erosive.

The Municipality of Walvis Bay currently purchase fresh/potable water from NamWater, which source water from the Kuiseb Water Supply Scheme. This area does not fall within a Water Control Area, but groundwater remains the property of the Government of Namibia.

Implications and Impacts
Public water supply would not be at risk as a result of the proposed township development.

6.8 DEMOGRAPHIC CHARACTERISTICS

The project area falls in the Erongo Region of Namibia for which the total population in the census of 2023 was estimated to be 240 206 (122 322 males representing 50.9 % and 117 884 representing 49.1 % females) (Namibia Statistics Agency, 2023). The Erongo Region shows promise in terms of socio-economic factors. The Erongo Region recorded the second highest urbanisation since from 63 % in 1991 to 90 % in 2023. It has one of the lowest unemployment rates of all regions in Namibia (22.6%) and only 5.1% of households in the Erongo Region is considered to be poor (Namibia Statistics Agency, 2009/2010). Furthermore, 95.4% of the population in the Erongo Region is considered to be literate the highest for any Namibian region, has education on secondary level. At local level Walvis Bay has an urban population size of 102 704 (Namibia Statistics Agency, 2023).

Walvis Bay is strategically situated with direct access to principal shipping routes and therefore the town is a natural gateway for international trade. Walvis Bay Port is an import/export facility for processed fish, mining products and beef. Mining products and raw material imports/exports are on the rise with the present upheaval in the uranium industry. The area is linked to Namibia's air, rail and road network, making its seaport well situated to service Zambia, Zimbabwe, Botswana, Southern Angola and South Africa. The fishing industry is the major employer of low skilled workers on a permanent and seasonal basis. The total employment of this sector is estimated at 2% of the total Namibian workforce. Attractions of Walvis Bay are the lagoon with its prolific bird life and variety of recreational possibilities, a desert golf course, a choice of restaurants & accommodation establishments and adventure activities such as sea kayaking, and dolphin cruises. Therefore, Walvis Bay is a key economic area and the town is very important for tourism. Walvis Bay relies heavily on telecommunication and network connection to the international markets.

Impacts and Implications
Housing in the Erongo Region is a concern because of very high urbanisation levels (90%). Walvis Bay has a housing shortage since it does not have land near the townlands to develop for residential and business areas. Thus, Farm 37 has been earmarked for residential and business development.

7 STAKEHOLDER CONSULTATION

7.1 PUBLIC PARTICIPATION PROCESS

Consultation with the public forms an integral component of an EIA investigation and enables I&APs e.g. neighbouring landowners, local authorities, environmental groups, civic associations and communities, to comment on the potential environmental impacts associated with the proposed development and to identify additional issues, which they feel should be addressed in the EIA.

Included below is a summary of the stakeholders consulted, the process that was followed, and the issues that were identified.

The public participation notices for the public meeting were advertised twice in the national newspapers: The Namibian as well as in The Namib Times (27 September 2024 and 4 October 2024). The notice of application for establishment of township was advertised in the Government Gazette No. 566 on 1 October 2024. The public participation notices were also placed at the Municipality of Walvis Bay (Civic Centre) in Town and the Kuisebmond Municipal Offices. No notice was placed on site because the locations are remote and not visible to the public. However, no comments or input from I&AP were received during 2024 when the process was managed by Stewart Planning. Moreover, further public engagement took place in 2025 when the process was managed by Gea Source Investment. Background Information Document (BID) containing descriptive information about the proposed township activities was compiled (Appendix E) and sent out to all identified and registered I&APs per email dated 1 April 2025 to representatives of the following stakeholders Ministry of Environment and Tourism, Erongo Regional Electricity Distributor (ErongoRED), Municipality of Walvis Bay, and Ministry of Health and Social Sciences.

Furthermore, the proposed township development has received consent from the Environmental Section of the Municipality of Walvis Bay to proceed with the planned activities (refer to the consent letter in Appendix B) and no objections were received from the stakeholders during the consultation process.

Views, comments and opinions expressed by I&APs were noted and incorporated into this report but are also included into an Issues and Response Report in Appendix D.

Table 7.2 sets out the steps that were followed as part of the consultation process:

Table 7.1: The Consultation Process

TASK	**DESCRIPTION**	**DATE**
Notification – regulatory authorities and IAPs		
Application/Notification to MET	Gea Source Investment submit the Application	May 2025

I&AP identification	A project specific stakeholder database was developed. This database is updated as and when required. A copy of the IAP database is attached in Appendix C.	Sept-Nov 2024 March/April 2025
Site Notices	Site notices were placed at the Municipality of Walvis Bay (Civic Centre) in Town and Kuisebmond Municipality Offices. No notice was placed on site because the locations are remote and not visible to the public.	Sept/Oct 2024
Newspaper Advertisements	Block advertisements were placed as follows: • The Namib Times (27 Sept. and 4 Oct 2024) • The Namibian Sun (27 Sept and 4 Oct 2024) Copies of the advertisements are attached in Appendix B	Sept/Oct 2024
TASK	**DESCRIPTION**	**DATE**
Focus Group Meetings and Submission of comments		
Focus group meetings, Consultations	Several consultations were made with the IAPs. This includes meetings, telephonic conversations and emails in correspondence to the IAPs. Focus group meetings were held with key stakeholders and interested and affected as follows: • Municipality of Walvis Bay stakeholders • Ministry of Health and Social Sciences • Ministry of Environment and Tourism	April 2025
Comments and Responses	All comments received during the consultation process are attached in Appendix E. A Summary of issues and response report is attached in Appendix D.	April 2025
Review of draft Scoping Report		
I&APs and authorities (excluding MET) review of Scoping Report and EMP	Copies of the main Scoping Report (excluding appendices) were sent via email to all parties who registered or showed an interest in this EIA process. A Summary of issues and response report was also sent to all parties who registered or showed interest in this EIA process. Authorities and IAPs had 7 days to review the	May 2025

	Scoping Report and submit comments in writing to Gea Source Investment. The closing date for comments was 15 May 2025. There were no comments raised during the review period.	
MET review of the Scoping Report and EMP	A copy of the final Scoping Report and EMP was delivered to MET on completion of the public review process.	May 2025

7.2 STAKEHOLDERS

The following table (Table 7.1) provides a broad list of stakeholders that were informed about the project development and were requested to register as Interested and Affected Parties (I&APs) should they be interested and/or affected.

Table 7.2: Relevant Stakeholders

Stakeholder Groups	**Organisation**
Government Ministries and Parastatals	Ministry of Environment and Tourism: Parks & Wildlife Erongo RED Municipality of Walvis Bay Ministry of Health and Social Sciences (Environmental Health division)
Private companies / organisations	Stewart Town Planning
Media	Namib Times The Namibian Sun

The full stakeholder database for the EIA is included in Appendix C of the report.

7.3 Summary of Comments Received

All comments/suggestions that have been raised to date by authorities and I&APs are provided in Appendix D to the Scoping Report. Comments/inputs pertain to:

- The accessibility to Portions 15-17 of Farm 37 by road.
- The absence of the phases of development and its timeline in the background information document (BID).
- Illegal harvesting of !Naras melon plants in the Kuiseb Delta;
- Illegal dumping and burning of solid waste within the river corridor;
- Unauthorized collection of firewood from the riverine ecosystem;
- Potential (unconfirmed) incidences of wildlife poaching;
- Sewage pollution associated with pit latrines.

8 IDENTIFICATION AND DESCRIPTION OF ENVIRONMENTAL ASPECTS AND POTENTIAL IMPACTS

Table 8.1 provides a summary of the environmental aspects and the potential impacts associated with the proposed construction and operation of the township development on Portions 15-17 of Farm 37.

The relevance of the potential impacts is presented in Table 8.1 below to determine if certain aspects require further assessment. In Section 9, aspects that required further detail were evaluated by using existing baseline information, management and mitigation measures required to minimise or prevent the potential impacts.

Table 8.1: Potential environmental aspects and impacts associated with the proposed township development

ACTIVITY	ASPECT	POTENTIAL ENVIRONMENTAL IMPACT	RELEVANCE (INITIAL SCREENING OF POTENTIAL IMPACT)
Construction of access roads and provision of services (i.e. construction workers, movement of vehicles, excavation, etc.)	Site Clearance	Physical disturbance and general destruction of biodiversity at the site	The development of access roads and the provision of services within the townships could have additional effects on local biodiversity. However, since the project site has limited vegetation, the anticipated impact on biodiversity is unlikely to be severe or significant enough to cause irreversible harm to the biodiversity or endemic species of the area or Namibia as a whole. These potential impacts of site clearance are further assessed in Section 9.
Construction	Health, Safety and Security	Health, Safety and Security	During construction phase, construction workers and heavy equipment will be onsite. Heavy machinery increases the risk of injuries. Even though, the project is relatively small scale, this aspect will be evaluated with further detail in Section 9. Furthermore, management and mitigation measures for contractors are provided in the EMP.

Construction	Impact on existing infrastructure and underground utilities	Damage to existing infrastructure like power lines, pipelines, sewers roads, and nearby properties	Damage to existing infrastructure such as power lines, pipelines, sewers, and roads is considered unlikely to be severe or significant, as the proposed site is currently undeveloped and key services (including water pipelines, power lines, and roads) are located outside the project area. Furthermore, the sewerage pump station and rising main for the whole of Farm 37 have yet to be constructed. However, connection to the amenities and pipelines will be required, and some damage may occur during the process of connecting these services. The potential impact on existing infrastructure and underground utilities are assessed in Section 9 and 10.
Construction	Noise Pollution	Noise Pollution from construction activities	Noise pollution will exist due to heavy vehicles accessing the site with building materials. Cement mixing, drilling and excavating will be some noise producing activities. The scale of the construction activities will not result in significant noise generation. Moreover, the neighbouring properties are currently undeveloped, as no construction activities have taken place to date. The construction activities for the proposed development are expected to span approximately six months. The potential impacts on noise are further assessed in Section 9 and 10.
Construction	Dust Pollution	Dust Pollution from construction activities	Dust may be generated during excavations and due to increased traffic to and from the site for deliveries and removals. This might be aggravated during periods of strong winds. This occurs regularly in Walvis Bay during the winter months when east winds occur. The nature of soil in Walvis Bay is such that it is moist due to frequent fog and mist rain and as a result of a very shallow water table. The dust impact would thus be limited to periods of strong winds when larger sand particles can be transported. However, due to the small scale of construction of the access road and service amenities, dust pollution is not expected to pose a significant impact. Moreover, the neighbouring properties are currently undeveloped, as no construction activities have taken place to date. The potential dust pollution is further assessed in Section 9 and 10.
Construction	General waste	General waste production and	The generation of waste at the construction site needs to be well

	management and disposal	ablution facilities	managed and has the potential to cause an impact on the environment. Due to the fact that the activities are relatively small and the fact that the contractors will not be a very big team (maximum 20 people), waste emissions can be effectively controlled with sufficient measures in place. The issue of waste management and ablution facilities will be assessed further in Section 9; however, the management and mitigation measures for contractors relating to waste management are stipulated in the EMP (Section 10).
Construction	Soil and Groundwater Contamination	Soil Pollution and Groundwater Pollution	Leakages from construction vehicles, accidental spills of fuel, paints and other chemicals might occur. Groundwater might spread pollutants to neighbouring receptors and may create an impact on underground infrastructure. Due to the small scale of the proposed construction activity in the area, hydrocarbon waste emissions can be effectively managed. This aspect is further assessed in this report (Section 9). The management and mitigation for containing and clean-up measures relating to hydrocarbon spillages can be easily mitigated through implementation of the mitigation measures presented in the EMP (Section 10).
Construction	Archaeological Sites/Resources	Discovery of heritage/ archaeological sites	The project area has not been previously disturbed. There are no known sites of heritage significance at the proposed site. However, there is always the possibility of unearthing resources of heritage significance during construction activities. The area was identified as having the least environmental impact for future urban development during the Strategic Environmental Assessment (SEA) for the coastal areas of the Erongo Region. These issues will be further evaluated in this report (Section 9) and management and mitigation measures are included in the EMP (Section 10).
Construction	Socio-economic (Employment)	Positive impact – Employment	The magnitude of the proposed township development is on a small scale. A maximum of ±20 temporary job opportunities will be created to unskilled, semi-skilled and skilled workers during the construction

			phase. The Shack Dwellers Federation of Namibia will primarily undertake the construction activities and, where necessary, will appoint a qualified contractor to carry out work that falls outside their scope of expertise. Certain construction activities will involve the use of heavy equipment and vehicles, which will require trained and competent operators.
Construction	Socio-economic (Knowledge and skills transfer)	Positive impact – Knowledge and skills transfer	The construction of service amenities and access roads presents a valuable opportunity for skills transfer to members of the Shack Dwellers Federation of Namibia (SDFN), who will undertake most of the work. While specialised tasks beyond their current capabilities will be handled by appointed contractors, SDFN members will still benefit through exposure to these activities. By working alongside experienced professionals and observing advanced construction techniques, members can gain practical knowledge and enhance their skills, which will contribute to future employment prospects, self-reliance, and capacity-building within their communities.
Operational	Township establishment	Positive impact - Housing	The proposed township development will provide significant benefits to the local community, particularly through improved housing conditions for the affected populations. Further assessment is done in Section 9 and 10.
Operational	Township establishment	Positive impact - Reducing rentals and backyard squatting	The Walvis Bay Municipal Council is committed to addressing the high population density in Kuisebmond by reducing backyard squatting, which is considered a pressing issue due to its adverse effects on housing conditions, strain on existing infrastructure, and related health and safety risks. To this end, the Council initiated a land development project aimed at relocating backyard dwellers to planned, higher-density residential areas. Portions 15–17 of Farm 37 have been designated for this purpose, specifically to accommodate members of the Shack Dwellers Federation of Namibia (SDFN). This initiative is expected to significantly enhance the quality of life for beneficiaries by alleviating overcrowding in Kuisebmond and formalising living arrangements through the reduction of backyard squatting on residential plots.

Operational	Health, Safety and Security	Health, Safety and Security	During the operational phase of the project, the SDFN members will commence with building houses. Compliance with national and international regulations is advised. Further assessment is done in Section 9 and and management and mitigation measures are included in the EMP (Section 10).
Operational	Biodiversity	Biodiversity loss	This impact is concerned with illegal harvesting of !Naras melon plants in the Kuiseb Delta; unauthorized collection of firewood from the riverine ecosystem; potential incidences of wildlife poaching in the Dorob National Park and Namib Naukluft National Park. The anticipated impact may be significant therefore further assessment is done in Section 9 and management and mitigation measures are included in the EMP (Section 10).
Operational	Corrosion	Corrosive Impact	Walvis Bay is well known for its extreme corrosive environment. Therefore, services infrastructure would require maintenance and management. The corrosive impact was further assessed in Section 9 and management and mitigation measures are included in the EMP (Section 10).
Operational	Waste and sewage production	General waste production and ablution facilities	Walvis Bay experiences strong winds and it carries domestic waste which must be cleaned up and disposed of regularly. In the absence of a constructed sewerage pump station and rising main, residents should be provided with temporary ablution facilities, which must be regularly emptied and maintained to ensure hygiene and public health. The anticipated impact may be significant therefore further assessment is done in Section 9 and management and mitigation measures are included in the EMP (Section 10).
Operational	Visual impact	Visual impact on tourism and recreation	The proposed site is located opposite the C14 road leading to Dune 7, a notable tourist destination. However, the site will not be visible from the C14 road and is intended for urban residential development. Therefore, no significant visual impact is anticipated, as further evaluated in Section 9.

9 ASSESSMENT OF IMPACTS

The purpose of this section is to assess and identify the most pertinent environmental impacts by describing certain quantifiable aspects of these impacts and to provide possible mitigation measures to minimise the magnitude of the impacts that would be expected from the construction, operations and decommissioning of the proposed township development on Portions 15, 16 and 17 of Farm 37 (Green Valley).

The following potential impacts on the environment during construction, operation and decommissioning activities have been identified for this project and grouped as below. The numerous aspects of each will be discussed under each impact.

- General Socio-Economic impacts (Knowledge and skill transfer; Employment)
- Township establishment (Housing provision, Backyard squatting reduction)
- Physical disturbance of biodiversity during site clearance activities
- Biodiversity loss (Illegal harvesting of !Nara melons, unauthorized collection of firewood from the riverine ecosystem; potential incidences of wildlife poaching in national parks).
- Health, Safety and Security
- Noise Pollution
- Dust
- Waste and Sewage management
- Soil and Groundwater Pollution
- Heritage Impacts (Archaeology)
- Visual Impacts

Table 9.1 Criteria for Impact Evaluation

Risk Event	**Description of the risk that may lead to an impact**
Nature of Impact	Reviews the type of effect that the Development have on the relevant component of the environment and includes **"what is affected and how?"**
Status (+ or -)	**Positive** – environment overall will benefit from the impact **Negative** – environment will be adversely affected by the impact **Neutral** – environment overall will not be affected
Extent	**Site specific** (on site) **Sub-local** (limited to within 1 km of the site) **Local** (limited to within 15 km of the site) **Regional** (limited to within the borders of Erongo Region) **National** (limited to within the borders of Namibia) **International** (extending beyond Namibia's borders)
Duration	**Very Short** (days, < 3 days) **Short** (days, 3 days to less than a year) **Medium** (months, 1 – 5 year) **Long** (years, 5 -20 years)

	Permanent (>20 years – life of the development)
Intensity	**No lasting effect** (No environmental functions and processes are affected) **Minor effects** (The environmental functions, but in modified manner) **Moderate effects** (Environmental functions and processes are altered to such extent that they temporarily cease) **Serious effects** (where environmental functions and processes are altered such that they permanently cease and/or exceed legal standards/requirements)
Probability	Refers to the probability that a specific impact will happen following a risk event. **Improbable** (low likelihood) **Probable** (distinct possibility) **Highly probable** (most likely) **Definite** (impact will occur regardless of prevention measures)
Prevention	Measures to reduce the probability of an impact occurring
Significance (no mitigation)	**None** (A concern or potential impact that, upon evaluation, is found to have no significant impact at all.) **Low** (Any magnitude, impacts will be localised and temporary. Accordingly, the impact is not expected to require amendment to the project design). **Medium** (Impacts of moderate magnitude locally to regionally in the short term. Accordingly, the impact is expected to require modification of the project design or alternative mitigation). **High** (Impacts of high magnitude locally and in the long term and/or regionally and beyond. Accordingly the impact could have a 'no go' implication for the project unless mitigation or re-design is practically achievable.)
Mitigation	Description of possible mitigation measures
Significance (with mitigation)	**None** (A concern or potential impact that, upon evaluation, is found to have no significant impact at all.) **Low** (Any magnitude, impacts will be localised and temporary. Accordingly, the impact is not expected to require amendment to the project design). **Medium** (Impact of moderate magnitude locally to regionally in the short term. Accordingly, the impact is expected to require modification of the project design or alternative mitigation.) **High** (Impacts of high magnitude locally and in the long term and/or regionally and beyond. Accordingly, the impact could have a 'no go' implication for the project unless mitigation or re-design is practically achievable.)
Confidence Level	The degree of confidence in the predictions, based on the availability of information and specialist knowledge. **Low** (based on the availability of specialist knowledge and other information) **Medium** (based on the availability of specialist knowledge and other information) **High** (based on the availability of specialist knowledge and other information)

9.1 CONSTRUCTION IMPACT ASSESSMENT

Potential effects on the environment during the construction of access roads and other services installation activities of the proposed township development are expected to be low. Some dust might be generated during the process. Increased noise levels can be expected. Some solid waste will be generated during the construction and its removal will be the responsibility of the contractor. The most significant potential impact identified in the construction phase is the physical disturbance and general destruction of habitat/biodiversity during site clearance activities, noise pollution and waste pollution. However, these potential impacts must be mitigated through the implementation of strict work protocols. Moreover, the duration of these impacts is expected to be short-term.

Potential impacts on the environment and their mitigation measures during the construction activities of the proposed township establish on Portions 15-17 of Farm 37 (Green Valley) are found in Table 9.2 to Table 9.13.

Table 9.2 Construction Phase – Socio-Economic (Knowledge and skill transfer)

Risk Event	**Positive effects from enhanced skills development among SDFN members through exposure to and collaboration with experienced contractors.**
Nature of Impact	The construction of service amenities and access roads presents a valuable opportunity for skills transfer to members of the Shack Dwellers Federation of Namibia (SDFN), who will undertake most of the work. While specialised tasks beyond their current capabilities will be handled by appointed contractors, SDFN members will still benefit through exposure to these activities. By working alongside experienced professionals and observing advanced construction techniques, members can gain practical knowledge and enhance their skills, which will contribute to future employment prospects, self-reliance, and capacity-building within their communities.
Status (+ or -)	**Positive**
Extent	**Local** (Knowledge and skills enhancement limited to developing Walvis Bay); **National** (Improved housing to benefit whole country in the long term)
Duration	Duration of construction phase is **short** but learnt skills and development are **permanent**
Intensity	**Minor effects**
Probability	**Probable** enhanced skills, which will contribute to future employment prospects, self-reliance, and capacity-building within the community of Walvis Bay. Economic development (reducing the inequality gap in society).

Table 9.3 Construction Phase – Socio-Economic (Employment)

Risk Event	**Employment**
Nature of Impact	The construction of the proposed township development requires contractors who in turn provide employment.
Status (+ or -)	**Positive**
Extent	**Local** (Skills upliftment limited to developing Walvis Bay); **National** (Technology to benefit whole country in the long term)

Duration	Duration of construction phase is **short** but learnt skills and development are **permanent**
Intensity	**Moderate Effects** In a positive sense, development will improve the quality of life of the people benefiting directly (employees) and indirectly (end users).
Probability	D**efinite** improved health, sanitation, mobility, and quality of life. Economic development (reducing the inequality gap in society) is **definite**. Employment is **highly probable** if the project goes ahead.

Table 9.4 Construction Phase – Socio-Economic (HIV/AIDS, In-migration, Informal Settlements and Property Prices)

Risk Event	**Increased spread of HIV/AIDS; Increased influx to Walvis Bay; Increased informal settlement and associated problems.**
Nature of Impact	Developments attract people who seek work. This in turn can increase the extent of informal settlements and its associated problems. It is expected that Shack Dwellers Federation of Namibia will perform the construction work themselves or make use of an existing local contractor(s) for the construction work outside of their expertise. A limited impact of this nature is therefore expected.
Status (+ or -)	**Negative**
Extent	HIV/AIDS, in-migration and informal settlement affects the local and national community. Reduced property prices affect individual properties and the extent is local.
Duration	Duration of construction phase is **short** but impacts may range from **long** to **permanent**
Intensity	**Minor effects**
Probability	**Improbable**
Prevention	Shack Dwellers Federation of Namibia to perform the construction work themselves or make use of an existing local contractor(s) for the construction work outside of their expertise. Appointing reputable contractors who implement educational program on HIV/AIDS for all the staff members is imperative. Restricted employment for local people only should be practiced. Deviations from this practice should be justified appropriately. Training of local people should be considered from the start. These measures will reduce the influx of newcomers to the town and thereby reduce growth in the informal settlement and maintain property prices.
Significance (no mitigation)	**Low**
Mitigation	Prevention as discussed above is the best mitigation.
Significance (with mitigation)	**Low**
Confidence Level	**High**

Table 9.5 Construction Phase – Impact on Existing Infrastructure and Underground Utilities

Risk Event	**Damage to existing infrastructure like power lines, pipelines, sewers roads, and nearby properties**
Nature of Impact	Damage to existing infrastructure such as power lines, pipelines, sewers, and roads is considered unlikely to be severe or significant, as the proposed site is currently undeveloped and key services (including water pipelines, power lines, and roads) are located outside the project area. Furthermore, the sewerage pump station and rising main for the whole of Farm 37 have yet to be constructed. However, connection to the amenities and pipelines will be required, and some damage may occur during the process of connecting these services.
Status (+ or -)	**Negative**
Extent	**Local**
Duration	**Short**
Intensity	**Minor effects**
Probability	**Improbable**
Prevention	The contractor must determine exactly where amenities and pipelines are situated before construction commence (utility clearance).
Significance (no mitigation)	**Low**
Mitigation	Appointing qualified and reputable contractors is essential. The contractor must determine exactly where amenities and pipelines are situated before construction commence (utility clearance e.g. ground penetrating radar surveys). Liaison with the Municipality and suppliers of services is essential.
Significance (with mitigation)	**Low**
Confidence Level	**Medium**

Table 9.6 Construction Phase - Physical disturbance of biodiversity during site clearance activities

Risk Event	**Physical disturbance and general destruction of biodiversity during site clearance activities**
Nature of Impact	The development of access roads and the provision of services within the townships could have additional effects on local biodiversity. However, since the project site has limited vegetation, the anticipated impact on biodiversity is unlikely to be severe or significant enough to cause irreversible harm to the biodiversity or endemic species of the area or Namibia as a whole.
Status (+ or -)	**Negative**
Extent	**Site Specific**
Duration	**Short**
Intensity	**Minor effects**

Probability	**Definite**
Prevention	• Proactively reduce the chances of disturbance of birds and other wildlife; deter wildlife poaching • Reduce the amount of vegetation destruction to a minimum; Replanting of vegetation may be required in the area.
Significance (no mitigation)	**Low**
Mitigation	• Avoid the removal of vegetation (trees and plants). If avoidance of vegetation is not possible then removal and rehabilitation (replanting) of trees and plants elsewhere at the site should be should be considered by the proponent. • Trees and plant species protected under the Forest Act No. 12 of 2001 must not be removed without obtaining a valid permit from the local office of the Department of Forestry. • On-going awareness should be promoted about the value of biodiversity and the negative impacts of disturbance, and of poaching and road kills. At the same time, the need for reporting incidents should be stressed, and reporting procedures clarified. Biodiversity awareness and training must be provided to the contractor before to construction commences. • The contractor is to report all biodiversity (fauna and flora) related incidents in report format and incident investigation must be completed. • Anti-poaching measures should be strictly enforced, with zero tolerance, and this should be emphasised during induction to contractors; construction workers should be under supervision at all times to prevent poaching; offenders should be prosecuted.
Significance (with mitigation)	**Low**
Confidence Level	**Medium**

Table 9.7 Construction Phase - Health, Safety and Security

Risk Event	**Health, Safety and Security**
Nature of Impact	During construction phase, construction workers and heavy equipment will be onsite. Heavy machinery, electricity and working at height, increases the risk of injuries. However, due to the relatively small scale of the project, the risk can be well managed. A temporary laydown area onsite will be established for safe storage of equipment, fuels, solvents, paints and construction materials.
Status (+ or -)	**Negative**
Extent	**Site specific**
Duration	**Short**
Intensity	**Minor effects**
Probability	**Probable**
Prevention	All Health and Safety standards as specified in the Labour Act must be strictly adhered to throughout the construction process. The responsible contractor must ensure that all personnel are adequately briefed on potential risks and hazards associated with the construction site. The contractor shall be obliged to implement the following measures:

	• Compliance with Health and Safety Regulations, including the provision and use of personal protective equipment (PPE), the availability of fully stocked first aid kits on site, and the installation of appropriate warning signs and hazard indicators. • Secure Storage of Equipment: All tools and equipment stored on-site must be secured in a manner that discourages theft or criminal activity. • Permit-to-Work Systems: Ensure that all high-risk tasks are governed by a permit-to-work system, with suitable PPE issued to all workers involved in such activities.
Significance (no mitigation	**Low**
Mitigation	The contractor must ensure that adequate emergency facilities, including first aid kits, are available on site at all times. Designated personnel should be trained in basic first aid, and the contact numbers for all relevant emergency services must be clearly displayed and readily accessible to all site workers.
Significance (with mitigation)	**Low**
Confidence Level	**High**

Table 9.8 Construction Phase – Traffic Impact

Risk Event	**Traffic impact during construction activities**
Nature of Impact	Construction activities are expected to have some impact on the movement of traffic to the site and its vicinity when building material, equipment and waste materials must be transported to the site.
Status (+ or -)	**Neutral**
Extent	**Site specific**
Duration	**Permanent**
Intensity	**Minor effects**
Probability	**Improbable**
Prevention	The impact cannot be prevented and mitigation is recommended.
Significance (no mitigation	**Low**
Mitigation	The contractor must also liaise with the relevant traffic department to ensure that traffic flow along the affected route is minimally disrupted. Alternative roads should be clearly indicated with signs and/or personnel directing traffic. Excavations and pipeline construction must be done in sections. Each section must be covered before the next section is initiated.
Significance (with mitigation)	**Low**
Confidence Level	**High**

Table 9.9 Construction Phase - Noise Pollution

Risk Event	**Noise Pollution from construction activities**
Nature of Impact	Noise pollution will exist due to heavy vehicles accessing the site with building materials. Cement mixing, drilling and excavating will be some additional noise producing activities. The scale of the construction activities will not result in significant noise generation. Moreover, the neighbouring properties are currently undeveloped, as no construction activities have taken place to date.
Status (+ or -)	**Negative**
Extent	**Site specific**
Duration	**Short**
Intensity	**Minor effects**
Probability	**Probable**
Prevention	There will be minor increases in the ambient noise level and it will be limited to the site. Nevertheless, noise will occur and therefore mitigation measures must be recommended for the construction workers.
Significance (no mitigation	**Low**
Mitigation	The Walvis Bay Municipality has no regulations with regard to noise levels. The World Health Organization (WHO) guideline on maximum noise levels (Guidelines for Community Noise, 1999) to prevent hearing impairment can be followed during the construction phase. This limits noise levels to an average of 70 db over a 24 hour period with maximum noise levels not exceeding 110 db during the period. It is recommended that any complaints regarding noise be registered.
Significance (with mitigation)	**Low**
Confidence Level	**High**

Table 9.10 Construction Phase - Dust Pollution

Risk Event	**Dust Pollution from construction activities**
Nature of Impact	Dust may be generated during excavations and due to increased traffic to and from the site for deliveries and removals. The area do experience windy conditions due to its close proximity to the coast and occasionally east wind conditions worsens dust emissions in the area. This occurs regularly in Walvis Bay during the winter months when east winds occur. The nature of soil in Walvis Bay is such that it is moist due to frequent fog and mist rain and as a result of a very shallow water table. The dust impact would thus be limited to periods of strong winds when larger sand particles can be transported. However, the limited nature of the construction activities will not result in significant dust generation. Moreover, the neighbouring properties are currently undeveloped, as no construction activities have taken place to date; therefore, dust is not expected to be a significant nuisance to surrounding properties.
Status (+ or -)	**Negative**
Extent	**Site specific**
Duration	**Short**

Intensity	**Minor effects**
Probability	**Probable**
Prevention	Regular dust suppression, if required, during times of strong winds should prevent dust impacts successfully.
Significance (no mitigation	**Low**
Mitigation	• All vehicles and machinery shall be regularly maintained and kept in good working condition to reduce emissions and mechanical failures. • The development of new access routes must be avoided where possible. Existing routes should be used to limit environmental disturbance. A nominal speed limit of 40 km/h shall be enforced to minimise dust generation. • All complaints related to dust must be recorded in a dedicated complaints register and addressed promptly in accordance with an established incident reporting and management procedure. • Personnel exposed to dusty conditions must be provided with appropriate dust masks to safeguard their health.
Significance (with mitigation)	**Low**
Confidence Level	**High**

Table 9.11 Construction Phase - Waste Production and Ablution Facilities

Risk Event	**Waste Production and Ablution facilities during construction**
Nature of Impact	Construction debris, including building rubble and product waste, has the potential to create environmental and safety hazards if not properly managed. Such waste must be regularly cleaned up and removed from the site. In addition, adequate ablution facilities must be provided for all construction personnel to ensure hygienic working conditions.
Status (+ or -)	**Negative**
Extent	**Site specific**
Duration	**Short**
Intensity	**Minor effects**
Probability	**Definite**
Prevention	The proposed construction of access roads and service amenities will generate waste, primarily from used construction materials. However, appropriate mitigation measures should be implemented to minimise the environmental impact of this waste.
Significance (no mitigation	**Low**
Mitigation	• The contractor must ensure that adequate temporary waste disposal facilities are available on-site throughout the construction period. • Reusable or recyclable materials must be separated at the source and stored appropriately to facilitate recycling or repurposing. • All general waste must be removed from the site on a regular basis and disposed of at appropriate, authorised waste disposal facilities. • Hazardous waste must be handled with care and disposed of at licensed,

	appropriately classified hazardous waste disposal sites. Where uncertainty exists regarding disposal procedures, Material Safety Data Sheets (MSDS) from suppliers must be consulted and followed. • Concrete mixing must be conducted manually on a hard surface lined with plastic sheeting to prevent contamination from concrete waste and runoff. • A mobile chemical ablution facility must be provided for all personnel working on site. The number of ablution units must be proportionate to the workforce and agreed upon with the Local Authority in accordance with the Labour Act and the Environmental Health Act. • Waste from the mobile ablution facilities must be collected and disposed of at a designated, approved waste treatment facility managed by the local authority.
Significance (with mitigation)	**None**
Confidence Level	**High**

Table 9.12 Construction Phase – Soil and Groundwater Contamination

Risk Event	**Soil, groundwater and surface water contamination**
Nature of Impact	Porous surface substrates can allow hazardous and ecologically detrimental substances to seep into the water table, either at the site of a spill or after being carried away by surface runoff. Construction vehicles may leak fuel, paints, and other chemicals, which could potentially contaminate the surrounding environment. These pollutants may spread to neighbouring receptors and impact underground infrastructure. However, due to the small scale of the project and the limited availability of surface water in the area, the risk of hazardous spills can be effectively managed through appropriate mitigation measures.
Status (+ or -)	**Negative**
Extent	**Site specific**
Duration	**Short**
Intensity	**Minor effects**
Probability	**Probable**
Prevention	Appointing qualified and reputable contractors is essential to ensuring high standards of safety and environmental protection. Proper training of construction personnel will further reduce the likelihood of negative impacts. All vehicles and machinery used on-site should undergo regular inspections to check for oil leaks and ensure they are in good working condition.
Significance (no mitigation)	**Low**
Mitigation	• Proper handling, storage, and disposal of hydrocarbons and hazardous materials must be strictly adhered to both on-site and off-site. • In the event of a spill, contaminated soil must be promptly removed and rehabilitated or replaced with uncontaminated soil to mitigate environmental impacts. • The contractor must complete a spill report form detailing the nature, extent, and location of the hazardous spill, as well as the actions taken to contain and remediate the spill.
Significance	**None**

(with mitigation)	
Confidence Level	**High**

Table 9.13 Construction Phase - Heritage Impact

Risk Event	**The discovery of archaeologically or culturally important sites**
Nature of Impact	There is a possibility that sites of archaeological or cultural significance, such as graves, stone walls, or cultural artefacts, may be uncovered during the construction phase. Although the project area has not been extensively disturbed in the past, there are no known sites of heritage significance within the proposed development site. The area was identified as having the least environmental impact for future urban development during the Strategic Environmental Assessment (SEA) for the coastal areas of the Erongo Region.
Status (+ or -)	**Negative**
Extent	**Site specific**
Duration	**Short**
Intensity	**Minor effects**
Probability	**Improbable**
Prevention	**N/A**
Significance (no mitigation	**Low**
Mitigation	If such a site is found during the construction activities the construction process must be halted and the relevant authorities must be informed. Construction may only continue at that location once permission has been given. Firstly, the Namibian Police must be informed. Secondly, the National Monuments Council dealing with heritage should be informed.
Significance (with mitigation)	**Low**
Confidence Level	**High** (based on the availability of specialist knowledge and other information)

9.2 OPERATIONAL PHASE IMPACT ASSESSMENT

The most significant potential impacts during the operational phase are the biodiversity loss (with illegal harvesting of !Naras melon plants in the Kuiseb Delta; unauthorized collection of firewood from the riverine ecosystem; potential incidences of wildlife poaching in the Dorob National Park), corrosive environment at Walvis Bay and waste production and sewage management. The specific impacts identified, associated with the operational phase, are summarised in Table 9.14 to Table 9.15.

Table 9.14 Operational Phases – Reducing rentals and backyard squatting

Risk Event	**Reducing rentals and backyard squatting as well as the mean gross residential density in Kuisebmond.**
Nature of Impact	The Walvis Bay Municipal Council is committed to addressing the high population density in Kuisebmond by reducing backyard squatting, which is considered a pressing issue due to its adverse effects on housing conditions, strain on existing infrastructure, and related health and safety risks. To this end, the Council initiated a land development project aimed at relocating backyard dwellers to planned, higher-density residential areas. Portions 15–17 of Farm 37 have been designated for this purpose, specifically to accommodate members of the Shack Dwellers Federation of Namibia (SDFN). This initiative is expected to significantly enhance the quality of life for beneficiaries by alleviating overcrowding in Kuisebmond and formalising living arrangements through the reduction of backyard squatting on residential plots.
Status (+ or -)	**Positive** – environment overall will benefit from the impact
Extent	**Local** (Skills upliftment limited to developing Walvis Bay); **National** (Technology to benefit whole country in the long term)
Duration	**Long** (years, 5 -20 years)
Intensity	**Serious effects** - In a positive sense, the project will improve the quality of life of the people benefiting directly (community) as they have reduced the residential gross density of Kuisebmond and reduced the backyard squatting in residential ervens.
Probability	**Definite** (A definite reduction in backyard squatting in Kuisebmond will ensue).

Table 9.15 Operational Phases – Inclusionary Housing and land delivery

Risk Event	**Inclusionary housing and land delivery promotes inclusive, integrated communities in well-resources urban areas**
Nature of Impact	The inclusionary housing initiative by the Walvis Bay Municipal Council aims to increase access to affordable housing within urban areas. This initiative is based on a public-private partnership model, where the Council enhances the value of land by granting additional development rights to private developers. In return, developers are incentivised to incorporate affordable housing units into their projects. These units must be priced lower than the majority of other units within the same development and made available for both rental and purchase.
Status (+ or -)	**Positive** – environment overall will benefit from the impact
Extent	**Local** (Affordable housing and land delivery to promote socio-economic development in Walvis Bay); **National** (Affordable housing to benefit whole country in the long term)
Duration	**Long** (years, 5 -20 years)
Intensity	**Serious effects** - In a positive sense, this initiative is expected to directly improve the quality of life for previously disadvantaged residents of Kuisebmond by increasing access to affordable, low-cost housing. Furthermore, it contributes to reducing social inequality in Namibia through inclusive urban development.
Probability	**Definite** (A definite improvement of in socio-economic living conditions of

	residents will ensue).

Table 9.16 Operational Phase – Biodiversity Loss

Risk Event	**Biodiversity loss due to illegal plant and wildlife harvesting**
Nature of Impact	This impact is concerned with illegal harvesting of !Naras *Acanthosicyos horridus* (Cucurbitaceae) melon plants in the Kuiseb Delta; unauthorized collection of firewood from the riverine ecosystem; potential incidences of wildlife poaching in the Dorob National Park. The Proponent should ensure that all bulk services—such as access roads, water, electricity, and sewage—are in place prior to the commencement of housing construction, as this will help reduce biodiversity loss by minimizing the need for residents to collect firewood and other resources from sensitive ecosystems such as the riverine system. If it is not immediately feasible to provide all bulk services, the Proponent should make adequate provision for their phased implementation.
Status (+ or -)	**Negative**
Extent	**Site specific**
Duration	**Permanent**
Intensity	**Minor effects**
Probability	**Highly Probable**
Prevention	All bulk services, including sewage, solid waste management, electricity and water provision, should be operational before residents occupy the area. However, if the sewage system is not place by the time residents occupy the proposed area then the Proponent should make available suitable ablution facilities to residents. Future residents should be introduced to environmental awareness programs to encourage responsible behaviour regarding waste disposal, natural resource use, and conservation.
Significance (no mitigation	**Medium**
Mitigation	• Collaboration between the Municipality of Walvis Bay, MEFT, and other relevant authorities should be encouraged to ensure effective management of environmental risks. • Provision should be made for long-term environmental monitoring and adaptive management to address any emerging environmental challenges associated with the township. • It is further recommended that the proponent take an active role in broader environmental stewardship by supporting the establishment of a biodiversity conservation task force for the entire Farm 37 area. This task force should focus on addressing critical environmental challenges, including the illegal harvesting of !Nara melons, firewood collection, and wildlife poaching, while promoting sustainable practices and environmental education. Its activities should involve collaboration with key stakeholders such as the Ministry of Environment, Forestry and Tourism (Wildlife Parks Division) and the Environmental Section of the Municipality of Walvis Bay, to ensure the protection of both human and ecological well-being in the area.

Significance (with mitigation)	**Low**
Confidence Level	**High**

Table 9.17 Operational Phase – Damage to Infrastructure due to the Corrosive Environment

Risk Event	**Damage to Infrastructure due to the Corrosive Environment**
Nature of Impact	Walvis Bay is well known for its extreme corrosive environment. Bird droppings do accelerate corrosion.
Status (+ or -)	**Negative**
Extent	**Site specific**
Duration	**Permanent**
Intensity	**Moderate Effects**
Probability	**Highly Probable**
Prevention	All access roads and services amenities must adhere to industry specifications and cathodic protection is required.
Significance (no mitigation	**Medium**
Mitigation	Regular inspections and maintenance of the access roads and services amenities is required to detect and repair any possible damage.
Significance (with mitigation)	**Low**
Confidence Level	**High**

Table 9.18 Operation Phase – Waste Production and Sewage Management

Risk Event	**Waste Production and sewage management**
Nature of Impact	Walvis Bay experiences strong winds and it carries domestic waste which must be cleaned up and disposed of regularly. The maintenance of the sewage pump station and rising main during the operational phase.
Status (+ or -)	**Negative**
Extent	**Sub-local**
Duration	**Permanent**
Intensity	**Minor effects**
Probability	**Definite**
Prevention	The Proponent should collaborate with the Municipality of Walvis Bay to ensure effective solid waste management and sewage management. Waste to be clean-up and disposed of regularly at the landfill site. Waste management should be practised at all times.
Significance (no mitigation	**Medium**

Mitigation	It is recommended that sewage be temporarily managed through the use of septic tanks, supported by a regular emptying program, while discussions with the Municipality of Walvis Bay and residents of other Farm 37 extensions continue regarding the long-term feasibility of a centralized sewage system. 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. 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.
Significance (with mitigation)	**Low**
Confidence Level	**High**

Table 9.19 Operation Phase – Traffic Impact

Risk Event	**Visual Impact of proposed township on tourism and recreation**
Nature of Impact	The site is situated in an undeveloped area; therefore, the proposed township development may lead to increased traffic volumes over time.
Status (+ or -)	**Neutral**
Extent	**Site specific**
Duration	**Permanent**
Intensity	**Minor effects**
Probability	**Improbable**
Prevention	**N/A**
Significance (no mitigation	**Low**
Mitigation	To minimise potential disruptions, careful planning of access roads and the implementation of appropriate traffic signage will be essential.
Significance (with mitigation)	**Low**
Confidence Level	**High**

Table 9.20 Operation Phase – Visual Impact

Risk Event	**Visual Impact of proposed township on tourism and recreation**
Nature of Impact	The proposed site is located south of the C14 road leading to Dune 7, a notable tourist destination. However, the site will not be visible from the C14 road and is intended for urban residential development.
Status (+ or -)	**Neutral**
Extent	**Site specific**
Duration	**Permanent**

Intensity	**Minor effects**
Probability	**Improbable**
Prevention	**N/A**
Significance (no mitigation	**Low**
Mitigation	The proposed site is located opposite the C14 road leading to Dune 7, a notable tourist destination. However, the site will not be visible from the C14 road and is intended for urban residential development.
Significance (with mitigation)	**Low**
Confidence Level	**High**

9.3 DECOMMISSIONING PHASE IMPACT ASSESSMENT

The proposed activities are expected to be a permanent activity and are thus not anticipated to be decommissioned in future. However, if in future decommissioning of the township is required the impacts associated with this phase will include noise, dust, waste production, soil pollution and health, safety and security. Guidelines for township demolition must be followed to reduce the risk of health and safety. Rubble and scrap waste will be created as structures are dismantled. These should be contained and disposed of at an approved waste facility and not dumped in the surrounding areas. The Environmental Management Plan for this phase will have to be reviewed at the time of decommissioning to cater for changes made to the Development.

10 CONCLUSION AND RECOMMENDATION

The proposed township is motivated by the growing need and demand for detached housing in Walvis Bay and the desirability of the project to help meet this market demand. The proposed development includes the creation of predominantly residential erven, but also land for businesses, clinics, churches and open spaces, streets and installation of bulk services within the proposed township.

The impact assessment consequently demonstrated that the potential negative environmental impacts of the township establishment can all be mitigated to be within acceptable levels. The most significant potential impact identified in the construction phase is physical disturbance and general destruction of habitat/biodiversity during site clearance activities, waste pollution and sewage management. The most significant potential impacts during the operational phase are the biodiversity loss specifically illegal harvesting of !Nara Acanthosicyos horridus (Cucurbitaceae) melon plants in the Kuiseb Delta, unauthorized collection of firewood from the riverine ecosystem, potential incidences of wildlife poaching in the Dorob National Park, and waste and sewage management.

The accompanying Environmental Management Plan (EMP), which must be implemented during the construction, operation, and potential decommissioning phases, aims to minimise environmental impacts associated with the Development. The EMP should serve as an on-site reference guide throughout all project phases. Any parties violating the EMP must be held accountable for the necessary rehabilitation actions. In addition, developing a comprehensive Health, Safety, Security, and Environment (HSSE) Management System to complement the EMP will further demonstrate the Applicant's commitment to responsible operations. All operators and relevant personnel involved in the Development must be thoroughly familiar with the contents of these documents.

Furthermore, it is recommended that the proponent actively participates in broader environmental stewardship by supporting the creation of a biodiversity conservation task force for the entire Farm 37 area. This task force could address pressing issues such as illegal harvesting of !Nara melons, firewood collection, and wildlife poaching, promoting sustainable practices and environmental awareness across all extensions of Farm 37

Provided that the recommended mitigation measures are effectively implemented, there are no environmental grounds to withhold the issuance of an Environmental Clearance Certificate for the proposed township development on Portions 15, 16, and 17 of Farm 37 (Green Valley) in Walvis Bay.

Gea Source Investment cc
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Appendix A: Environmental Practitioners CV's

Appendix B: Proof of consultations (public notices, adverts, etc.)

Appendix C: I&APs

Appendix D: Issues & Response Report

Appendix E: Background Information Document (BID)

Appendix F: Fauna and Flora Species List

Appendix G: WBM land Allocation

Appendix H: Township layout and design plans