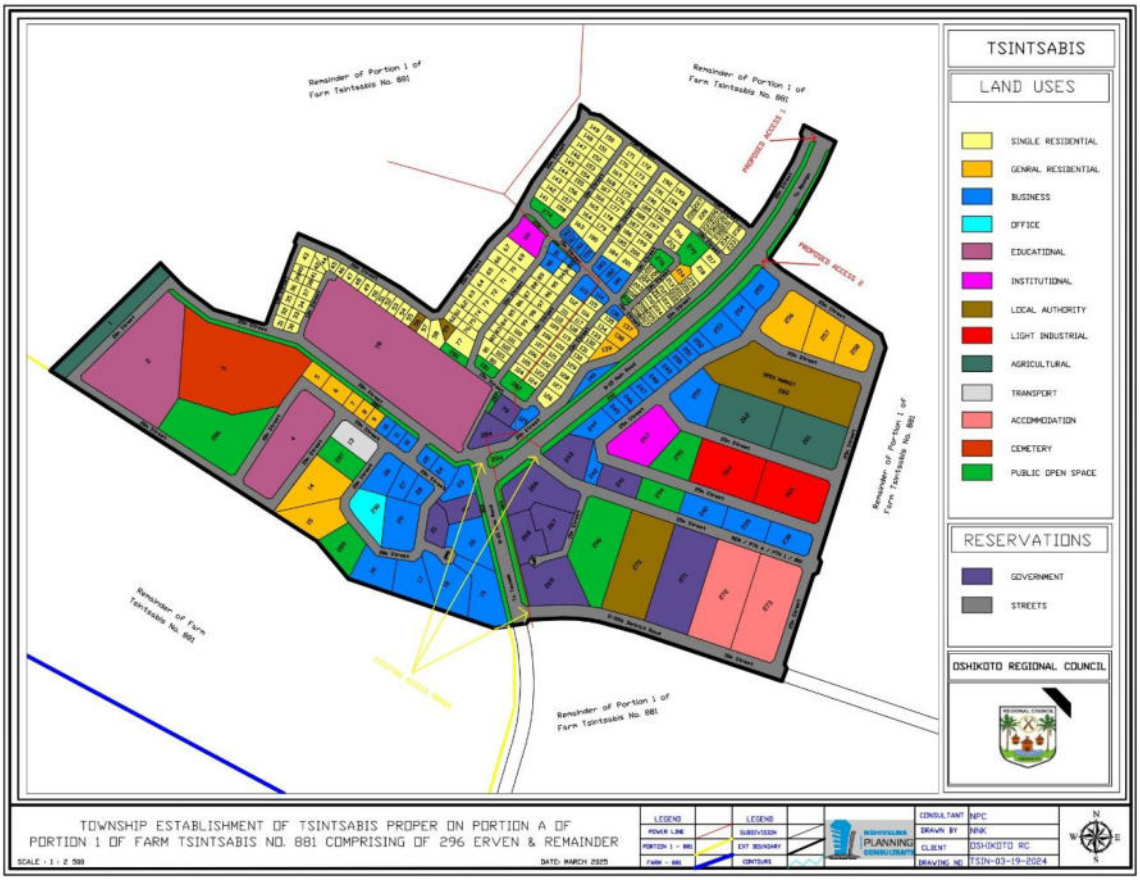
ENVIRONMENTAL IMPACT ASSESSMENT SCOPING REPORT

FOR THE PROPOSED TOWNSHIP ESTABLISHMENT OF TSINTSABIS PROPER ON PORTION A OF PORTION 1 OF THE FARM TSINTSABIS NO. 881.



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LIST OF ABBREVIATIONS

TERMS	DEFINITION
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
DEA	Department of Environmental Affairs
PPPPs	Projects, Plans, Programmes and Policies
NDC	Namibia Development Consultants
SANS	South African National Standards
I&APs	Interested and Affected Parties
PM	Particulate Matter
NPC	Nghivelwa Planning Consultants
ORC	Oshikoto Regional Council
GRN	Government of the Republic of Namibia

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1. INTRODUCTION

1.1 Project Overview

The Oshikoto Regional Council declared Tsintsabis as a settlement area in July 2020 in terms of Section 31 (1) of the Regional Councils Act, 1992 (Act No. 22 of 1922). The declaration was part of the Regional Council's initiative to provide governmental services to the inhabitants of Tsintsabis Settlement and to encourage business investment in the area. As part of the requirements for the declaration, the settlement must have at least one approved township. Thus, the Oshikoto Regional Council resolved to establish Tsintsabis Proper on Portion A of Portion 1 of the Farm Tsintsabis No. 881.

The Establishment of a Township and its associated infrastructure is a listed activity and thus, the Oshikoto Regional Council appointed Nghivelwa Planning Consultants, a Town and Regional Planning and Environmental Management Consultancy firm to conduct an Environmental Impact Assessment and Environmental Management Plan (EMP) for the proposed Township Establishment of Tsintsabis Proper. The Environmental Impact Assessment has been conducted to meet the requirements of the Namibia's Environmental Management Act (No. 7 of 2007).

An EIA may be defined as: a formal process to predict the environmental consequences of human development activities and to plan appropriate measures to eliminate or reduce adverse effects and to augment positive effects.

Thus, an EIA has three main functions:

- To predict environmental problems,
- To find ways to avoid environmental problems, and
- To enhance positive effects.

1.2 Terms of Reference

The proposed establishment of a township to be known as Tsintsabis Proper is a listed activity that cannot be undertaken without an Environmental Clearance Certificate. Therefore, as part of the commissioning process an Environmental Impact Assessment (EIA) is required. Thus, it was necessary for the Oshikoto Regional Council to appoint Nghivelwa Planning Consultants to provide environmental management consultancy services to undertake an environmental impact assessment to comply with the Environmental Management Act, 2007 (Act no. 7 of 2007).

The Terms of Reference (ToR) for the consultants were, but not limited to the following:

- The collection of all possible data on the environmental, social and natural resource components and necessary parameters;
- A description of the location of the proposed project including the physical area that may be affected by the project activities;
- Description of the design of the proposed project;
- Description of the activities that will be undertaken during the construction, operation and decommissioning phases;
- Listing of the materials to be used, products and by products, including waste to be generated by the project and the methods of disposal;
- Identification of the potential environmental impacts of the proposed project and
- The mitigation measures to be taken during and after implementation of the project;
- Accidents during the project cycle;
- Establishment of a plan to ensure the health and safety of the workers and neighboring communities;
- Identification of the economic and socio-cultural impacts of the proposed project;
- Economic and social analysis of the project including project risk and measures to mitigate them.
- Establishment of an action plan for the prevention and management of possible impacts (EMP).
- The consultant will prepare recommendation on the project for its future use.

1.3 Acknowledgement

Nghivelwa Planning Consultant has prepared this EIA Report on behalf of Oshikoto Regional Council. As the project proponent, Oshikoto Regional Council has provided the necessary information and documents and the necessary guidance during the project undertaking and during the preparation of this report. The Consultant (Nghivelwa Planning Consultant) acknowledges the contribution provided by the proponent and support and interest shown by all the identified stakeholders.

1.4 DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

This EIA Report was prepared by the following Environmental Practitioners:

Name of representative of the EAP	**Education qualifications**	**Professional affiliations**
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Table 1: EAP's

2. EIA METHODOLOGY

The objective of the assessment of impacts is to identify and assess all the significant impacts that may arise from the undertaking of an activity and the findings used to inform the competent authority's decision whether the activity should be approved, approved subject to conditions that will reduce the impacts to within acceptable levels, or should be rejected. In this sense impacts are defined as the changes in an environmental or social parameter that result from undertaking the proposed activity. The following general methodology was used in this EIA for the proposed township establishment of Tsintsabis Proper; to investigate the potential impacts on the social and natural environment due to the construction and operation of the proposed township:

The key activities undertaken during the assessment included the following:

2.1 Establishment of the environmental baseline

This involved study and description of the receiving environment on which the proposed project is to be implemented. Thus, it involved a site visit, physical inspection of the study area's soil, biology, topography, animal species, water resources, climate and the local socio-economic environment.

2.2 Impact analysis

This involves the identification of impacts that are usually associated with the construction, operation or maintenance and decommissioning of the proposed activity and are generally obvious and quantifiable. These impacts were analyzed and evaluated.

2.3 Impacts mitigation

This involves the identification of the impacts and once impacts have been identified and predicted for a particular activity, then appropriate mitigation measures need to be established. Mitigation measures are the modification of certain activity in such a way as to reduce the impacts on the physical- and socio-economic environment. The objectives of mitigation are to:

- Find more environmentally sound ways of doing things;
- Enhance the environmental benefits of a proposed activity;

- Avoid, minimize or remedy negative impacts; and ensure that residual negative impacts are within acceptable levels.

Furthermore, impacts associated with all the stages of the proposed project were identified and mitigated. An Environmental Management Plan has been prepared as framework for mitigation of impacts and environmental monitoring of the project.

2.4 Review of alternatives

This entailed a review of the alternatives to the proposed project. This was aimed at determining better ways of avoiding or minimizing environmental impacts while still realizing the project goals. The review of alternatives provided opportunities for environmental enhancement. The alternatives reviewed were alternative sites and the no project alternative.

2.5 Public Participation Process (PPP)

This process for the public participation was done by informing the relevant stakeholders and Interested and affected parties. Advertisements for the public to participate and raise their concerns on the proposed project were placed in two (2) local newspapers of the New Era and Confidante of the 10th and 18th October 2024. The public and interested and affected parties were invited to provide comments to the EIA and no interested or affected party registered any comments. A public meeting about the proposed development and its potential impacts to the environment was carried out on the 8th November 2024 at Tsintsabis Settlement / Guinas Constituency Office.

3. POLICY AND OTHER RELEVANT LEGISLATION

SUBJECT	INSTRUMENTS AND CONTENT	APPLICATION TO THE PROJECT
The Constitution of the Republic of Namibia	General human rights – eliminates discrimination of any kind The right to a safe and healthy environment Affords protection to biodiversity	Ensure these principles are enshrined in the documentation of the project
Environmental Management Act EMA (No 7 of 2007)	Requires that projects with significant environmental impact are subject to an environmental assessment process (Section 27). Details principles which are to guide all EAs.	Ensure that the township establishment is carried out within the parameters of the Act.
Environmental Impact Assessment (EIA)	Details requirements for public consultation within a given environmental assessment process	Ensure that the township establishment aligns with the EIA regulations.

Regulations GN 28-30 (GG 487	(GN 30 S21). Details the requirements for what should be included in a Scoping Report (GN 30 S8) and an Assessment Report (GN 30 S15).	
Forestry Act No 27 of 2004	Provision for the protection of various plant species.	Some species that occur in the area are protected under the Forestry Act and a permit is therefore required to remove the species
Hazardous Substances Ordinance 14 of 1974:	Control of substances which may cause injury or ill-health or death of human beings because their toxic, corrosive, irritant, strongly sensitizing or flammable nature	The waste generated on site and at the campsite should be suitably categorised/classified and disposed of properly and in accordance with the Measures outlined in the Ordinance.
The Nature Conservation Ordinance (No. 4 of 1975)	Prohibits disturbance or destruction of protected birds without a permit. Requires a permit for picking (the definition of "picking" includes damage or destroy) protected plants without a permit	Protected plants will have to be identified during the planning phase of the project. In case there is an intention to remove protected species, then permits will be required.
Forestry Act 12 of 2001 Nature Conservation Ordinance 4 of 1975	Prohibits the removal of any vegetation within 100 m from a watercourse (Forestry Act S22(1)). Prohibits the removal of and transport of various protected plant species.	Even though the Directorate of Forestry has no jurisdiction within townlands, these provisions will be used as a guideline for conservation of vegetation.
Convention on Biological Diversity, 1992	Protection of biodiversity of Namibia	Conservation-worthy species not to be removed if not absolutely necessary.
Water Resources Management Act 11 of 2013	The Act provides for the management, protection, development, use and conservation of water	Obligation not to pollute surface water bodies

	Resources; to provide for the regulation and monitoring of water services.	
National Heritage Act 27 of 2004	Section 48(1) states that "A person may apply to the [National Heritage] Council [NHC] for a permit to carry out works or activities in relation to a protected place or protected object	Any heritage resources (e.g. human remains etc.) discovered during construction requires a permit from the National Heritage Council for relocation
Labour Act 11 of 2007	Details requirements regarding minimum wage and working conditions (S39-47).	Employment and work relations
Health and Safety Regulations GN 156/1997 (GG 1617	Details various requirements regarding health and safety of labourers.	Protection of human health, avoid township establishment at areas that can impact on human health.
Public Health Act 36 of 1919	Section 119 states that "no person shall cause a nuisance or shall suffer to exist on any land or premises owned or occupied by him or of which he is in charge any nuisance or other condition liable to be injurious or dangerous to health."	Ensure that all contractors involved during the construction, operation and maintenance of the proposed project comply with the provisions of these legal instrument
Water Resources Management Act 11 of 2013	Prohibits the pollution of underground and surface water bodies (S23(1)). Liability of clean-up costs after closure/ abandonment of an activity (S23(2)).	The protection of ground and surface water resources should be a priority. The main threats will most likely be concrete and hydrocarbon spills during construction and hydrocarbon spills during operation and maintenance.
Urban and Regional Planning Act no 5 of 2018	Details the functions of the Urban and Regional Planning Board including their consideration when assessing an application for Township Establishment (S3)	The proposed layout and land uses should be informed by environmental factors such as water supply, soil etc. as laid out in Section 3 of the act.
Local Authorities Act, 23 of 1992	provide for the determination, for purposes of local government, of local authority councils; the establishment of such local authority councils; and to define the powers, duties and functions of local authority councils; and to	The Local Authority should govern and manage the proposed township in an Environmentally sustainable way as provided for by the act.

	provide for incidental matters.	

Table 2: Relevant legislation

4. NEED AND DESIRABILITY OF THE PROPOSED PROJECT

The Oshikoto Regional Council derives its powers from the Regional Authority Act, 22 of 1992 as amended to among other, establish townships in their area of jurisdiction that will promote the provision of governmental and basic services to the inhabitants, to promote orderly and sustainable development and to offer security of tenure to the people. Thus, the establishment of a township in Tsintsabis Settlement is in line with governmental objectives of human development in the country.

The Namibian Constitution guarantees the right to shelter as a fundamental human right and it recognizes the need for government to provide affordable housing to the population of the country. Since independence in 1990, The Government of Republic of Namibia has made housing provision as a priority to redress the social and economic inequalities that existed during the apartheid era. The establishment of a township to be known as Tsintsabis Proper will contribute to the provision of housing to the lowest of income groups of the population that are residing in Tsintsabis

In the past, the government has met with challenges in the provision of affordable housing in the country and the economic inequality has on gotten worse over the years. Thus, the Oshikoto Regional Council has resolved to curtail the situation by developing new townships in its settlements that offers housing to its residents. The Regional Council is busy with the town planning process for the Township Establishment of Tsintsabis Proper on Portion A of Portion 1 of the Farm Tsintsabis No. 881, comprising of ±296 Erven and Remainder.

The Farm Tsintsabis No. 881 was originally acquired by the Government of Republic of Namibia to resettle the marginalized community of San people that were land less and destitute after Namibia became independent. It soon became evident that more should be done to uplift the lives of the people living in the settlement and to offer basic services required for survival. The Township Establishment of Tsintsabis Proper is the first in a series of steps that the Oshikoto Regional Council plans to undertake in order to provide services to the people and attract investment to the settlement.

The development will consist of 296 single residential, general residential, businesses, institutional, educational, local authority, accommodation, agricultural, office and public open space erven.

5. SCOPE OF THE EIA

The objectives of the scope of the EIA were to ascertain key issues of the environmental impacts that are likely to be important during all the phases of the Project. Relevant environmental data has been compiled by making use of primary data which was collected during the site assessment done on the 9th of November 2024 and by using secondary data already available. Potential environmental impacts and associated social impacts were identified and addressed in this report.

The construction and operational phases of the proposed Township Establishment will involve;

- The preparation of the site, including excavations.
- Transportation of construction materials.
- Off-loading of materials
- The constructions of the buildings and other substructures
- The constructions of the streets (Roads).
- The constructions of bulk services infrastructure such as portable water, electrical infrastructure and sewerage networks and sewer ponds.
- The supply of bulk services such as water, electricity, waste disposal plan and waste management
- The Maintenance of the township by Oshikoto Regional Council.
- Maintenance of all service infrastructure constructed will be done by the proponent.

The Environmental Impact Assessment study report includes an impact assessment and mitigation measures for the three phases of the proposed project following:

- The field investigations (site assessment),
- Identifying and involving all stakeholders in the Environmental Impact Assessment process by expressing their views and concerns on the proposed project;
- Identify all potential significant adverse environmental and social impacts of the project and recommend mitigation measures to be well described in the Environmental Monitoring Plan (EMP);
- Coordination with the proponent, regarding the requirements of law of Namibia's Environmental Management Act (No. 7 of 2007) and other relevant policies and administrative framework.
- To define the Terms of Reference for the Environmental Impact Assessment study.
- A review of the policy, and relevant legislations
- To provide overall assessment information of the social and biophysical environments of the affected areas by the proposed development.

6. DESCRIPTION OF THE PROPOSED ACTIVITY

The proposed activity is for the establishment of a ±296 erven township of different land uses to be used for the construction of houses, business buildings, public open spaces, schools, government buildings, etc. The activity involves the constructions of bulk municipal services such as sewer water reticulation, electricity, roads, portable water, communication networks and towers, etc.

It also includes the maintenance of the site during the operational phase such as waste disposal, noise pollution as well as maintenance of the afore-mentioned municipal services. The proposed development will be connected to the existing bulk sewer, water and electricity services provided in Tsintsabis. However, additional services will be constructed to standardize the already existing services. The proposed development will obtain access from the B-15 Main Road and the D-3016 Road running through the settlement.

All new erven to be created will be connected to the bulk services and the water-borne sewage will be connected to the sewerage reticulation system of Tsintsabis that will be constructed from scratch. The Oshikoto Regional Council will extend the existing sewer ponds in order to accommodate the proposed development. The harmful trash that is created will be transported to the approved waste disposal site as provided by the Oshikoto Regional Council. The land is currently developed and is designated as a human settlement area by the Oshikoto Regional Council. Thus, the proposed township development is consistent with future plans of the government.

6.1 Proposed location and land ownership

Proposed Portion A of Portion 1 of the Farm Tsintsabis No. 881 is owned by Oshikoto Regional Council and currently occupied by different formal and informal households. The property currently measures ±123, 2169 Hectares in extent. It is situated on the property legally known as Portion 1 of the Farm Tsintsabis No. 881, Tsintsabis Settlement, Guinas Constituency, Oshikoto Region as shown in Figure 1 below. There are currently formal and informal houses located on the property. The proposed site is located at the center of Tsintsabis Settlement. The GPS coordinates of the location of the site are: -18.770817° Latitude and 17.963712° Longitude.

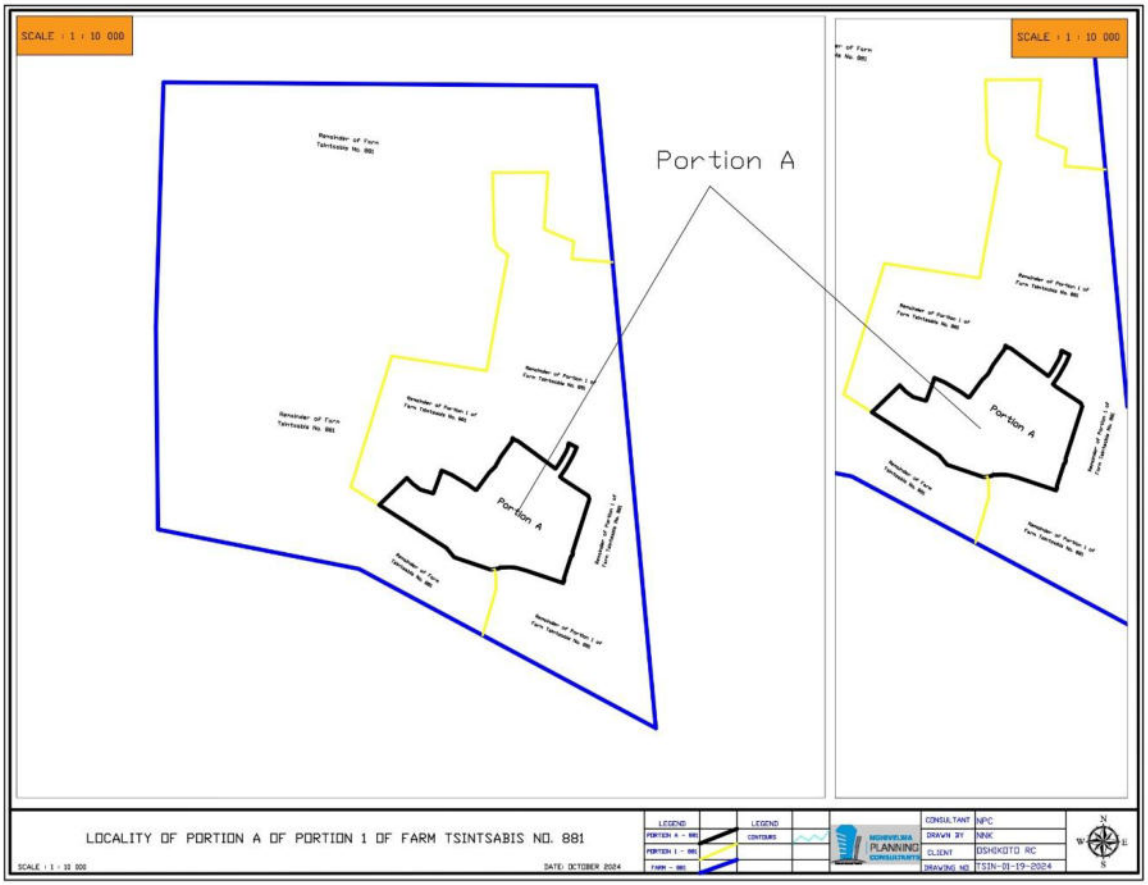

Figure 1: Locality plan

6.2 Ownership

Proposed Portion A of Portion 1 of the Farm Tsintsabis No. 881 is owned by the Oshikoto Regional Council, However, there are governmental offices, businesses, formal and informal housing that are currently occupying the land. This is due to the fact that Tsintsabis is declared as a settlement area and is under the jurisdiction of the Regional Council. Thus, the Oshikoto Regional Council will be managing the development during the construction and operational phases. The proposed erven will then be allocated the people residing in the area and the remainder to be sold to Tsintsabis residents. The Oshikoto Regional Council does not intend to relocate any residents as a result of this exercise and thus, there will not be any compensation or loss of land to the inhabitants.

6.3 Description of the site

- The slope of the site is relatively flat, with the seasonal river running about 2km south of the proposed Portion A of Portion 1 of the Farm Tsintsabis No. 881.
- There were no characteristics of ground slope instability observed on site, and thus the possibility of flooding during the rainy seasons is minimal.

- There was no ground surface water during the site investigation although it was done during the wet season of 2024. However, water is expected to accumulate in the localized water ponds during the early months of the coming year when the rainy season intesifies.
- There is no erosion recorded in the area.
- Medium excavations can be expected but no blasting operations are foreseen.

6.4 Photographic History

Below are the photographs indicating the general situation and environment of the proposed site and its surroundings.

Figure 2: Typical conditions of Tsintsabis

6.5 Description of the proposed project

The Oshikoto Regional Council proposes to formalize area situated on the proposed Portion A of Portion 1 of the Farm Tsintsabis Townlands no. 881. In order for the formalization to take effect, the statutory process for the Township Establishment of Tsintsabis Proper on the proposed Portion A of Portion 1 of the Farm Tsintsabis No. 881 should be carried out. The proposed Erven are currently used for office, business, institutional and residential purposes and there is a wide range

of flora and fauna that are located on site. The area is currently located in center of Tsintsabis Settlement and it is the intention of the Regional Council to construct municipal services when the planning and land surveying process is formalized.

The proposed development will entail the Subdivision of Proposed Portion 1 of the Farm Tsintsabis no. 881 into Portion A and Remainder and subsequent Township Establishment of Tsintsabis Proper on the proposed Portion A of Portion 1 of the Farm Tsintsabis No. 881. Consequently, an Environmental Impact Assessment for the proposed Township Establishment of Tsintsabis Proper on the proposed Portion A of Portion 1 of the Farm Tsintsabis No. 881 is being carried out

The proposed Township of Tsintsabis Proper will comprise of 297 Erven of different land uses that includes, residential, business, government, educational, local authority, public open spaces, institutional, accommodation, office, agricultural, etc. and Remainder (Streets). The Township is located on a portion within the Farm Tsintsabis No. 881, Tsintsabis Settlement, Guinas Constituency, Oshikoto Region as per the attached locality plan.

The township establishment involves the construction of bulk services such as sewer water reticulation, Electricity, Streets, portable water, the construction of dwellings, businesses the maintenance of the township by the regional council during the operational phase, waste disposal from site and noise pollution control as well as technical maintenance of the afore-mentioned services. The proposed development will be of houses, general residential dwellings, businesses, institutional, educational, local authority and public open spaces.

The development is however still in the designing phase and plans can change pending statutory approval. However, the layout of the site is shown in figure 3 below.

6.6 Proposed Project Activities

The proposed development entails the township establishment and construction of municipal service infrastructure for ±296 erven and remainder (streets) on a ± 123, 2169-hectare Portion A of Portion 1 of the Farm Tsintsabis No. 881. The layout plan for the proposed township is shown in figure 3 below.

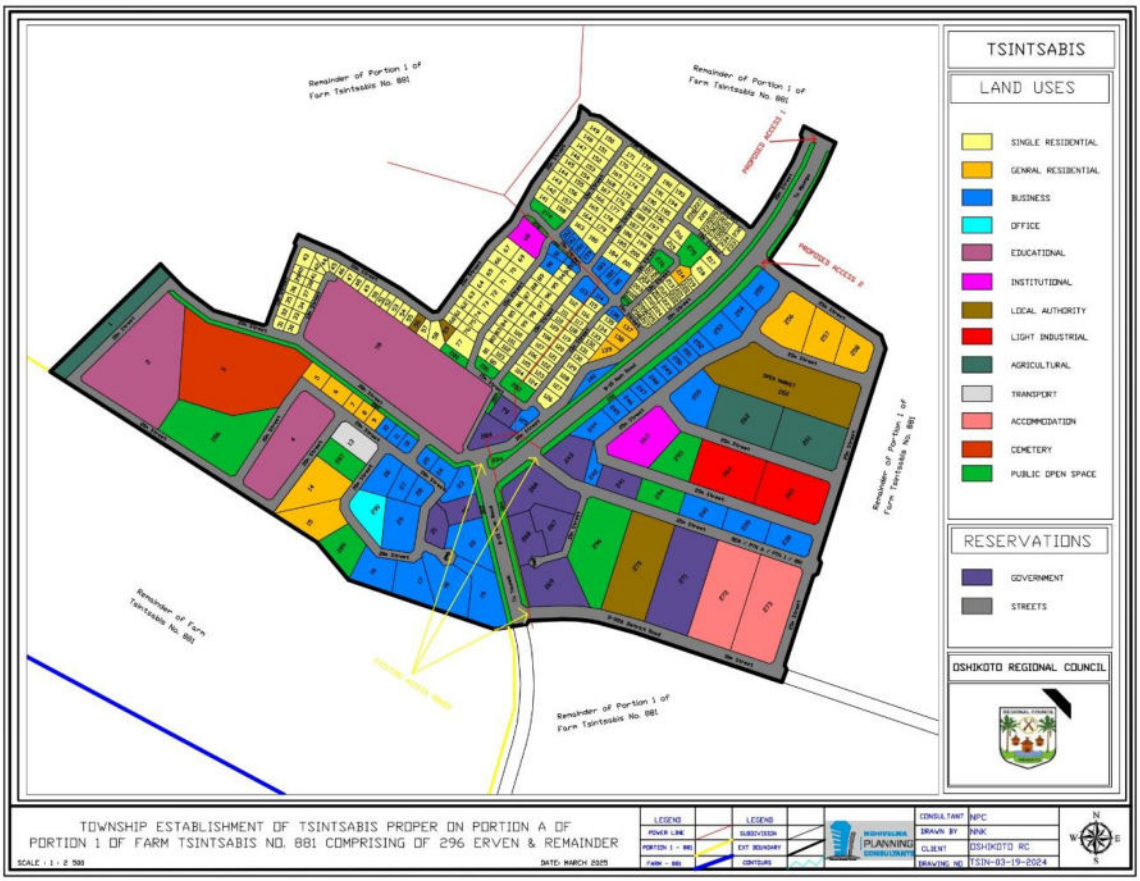

Figure 3: Layout plan for Tsintsabis Proper

6.7 Engineering Services

The proponent is proposing the establishment of a mixed land use township on Portion A of Portion 1 of the Farm Tsintsabis No. 881. The proposed township will consist of ±297 erven consisting of Residential, General Residential, Business, Office, Institutional, Educational, Local Authority, Light Industrial, Agriculture, Transport Accommodation, Cemetery, Public Open Spaces and reservations for Government and Streets. The township establishment will require bulk engineering services as per the standard engineering requirements that are used in the Namibian industry to make it safe for habitation of people.

6.7.1 Bulk Infrastructure

The proposed bulk services will be designed and constructed from scratch and will use the latest technology in terms of sustainable use of resources, recycling and sustainable energy generation. After the statutory town planning and land surveying processes are completed, the Oshikoto Regional Council will appoint a consulting engineer who will design the engineering services and supervise the construction of these services as per the designs.

a) Water

The existing infrastructure is not adequate to supply the proposed development thus, the proposed development will require the construction of a new water infrastructure that will be connected to the existing Tsintsabis bulk water infrastructure system. Tsintsabis water supply is currently connected to main Tsintsabis water pipelines and will be extended to accommodate the proposed development.

The proposed development will require about 60 cubic meters of water per day and it is estimated that the current water supply of Tsintsabis Settlement should be increased by the water supply state owned enterprise in order to accommodate the proposed development. Should the supply not be sufficient, the Oshikoto Regional Council is prepared to extend the current infrastructure to accommodate the propose development.

b) Sewerage

The existing sewer reticulation system in Tsintsabis is not sufficient in order to accommodate the proposed development. Plans are already underway for the extension of Tsintsabis Sewer Ponds and sewerage reticulation system to accommodate the proposed Tsintsabis Proper and future townships that are expected after the approval of Tsintsabis Proper as an approved township.

The existing bulk sewer infrastructure is therefore not adequate to accommodate the proposed development, thus additional infrastructure as well as additional pump stations will be constructed in this regard so that the infrastructure can be adequate enough to pump the effluent produced by the proposed township to be established on the proposed Portion A of Portion 1 of the Farm Tsintsabis No. 881.

The proponent will construct additional sewer water infrastructure on site that will be used to pump sewerage water into the sewer water disposal sites that are situated on the south western edge of the Farm Tsintsabis No. 881. Although the existing water pond is mostly localized, the future design of the sewer ponds will avoid the area immediately around large water bodies to avoid contamination of flood water during the rainy seasons.

c) Electricity

The proposed development will get electricity from the existing electricity network of Tsintsabis Settlement. Although additional substations and upgrades to the electricity infrastructure in the town is necessary in order to cater for the proposed development. The Oshikoto Regional Council in its mandate to provide development to the people of the settlement is prepared to engage the power utility company to increase this capacity of electricity supply in settlement.

d) Storm water

A storm water drainage system will be constructed adjacent to the streets of the proposed Tsintsabis Proper township; the streets are designed to channel storm water in the south westerly direction to allow for the continuation of natural storm water flow in the area. A system of channels will be constructed along the streets of the proposed development to safely guide the storm water out of the township and into natural water bodies in the area.

e) Waste Produced

The waste to be produced by the proposed development will be disposed of at the approved waste disposal site as operated by the Oshikoto Regional Council. The Oshikoto Regional Council already manages the day to day waste disposal activities of the settlement and the new township will be added to the waste disposal schedule. A standard waste disposal municipal levy will be charged on the residents to make sure that the waste is disposed of in a safe manner.

f) Roads

All roads to be constructed in the proposed development will be tarred roads and the main access to the development will be obtained from the main road and from 5 20-meter streets strategically located throughout Tsintsabis Proper and to the rest of the settlement. The internal street hierarchy will range from 20-meters to 13-meters wide streets.

6.7.2 Blasting

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, storm water drains, sewerage pipes and other services that are typical for a township establishment. All ditches to be constructed will utilize traditional non-blasting methods.

6.8 Phases of the project

The project will consist of three (3) phases, namely the construction, operational and possible decommissioning phase.

6.8.1 Activities during the Construction Phase

a) Site Office

The contractor shall construct a temporary site office to run and manage all activities on side during this phase.

b) Site clearance and fencing

This will involve clearance of vegetation that is currently found at the proposed site. For public safety and for the security of construction material and equipment, the site must be isolated from the general public.

c) Excavation

Excavations for the construction of roads, sewer ditches, water pipes, electrical poles, installation of bulk services and construction of buildings and other substructures as per the engineering designs. The earth works will use excavators and manual labor and thus, this process will generate waste in form of spoil soil and rock particles.

d) Construction of public buildings and utilities

The Oshikoto Regional Council will construct the following public structures for the inhabitants of Tsintsabis Proper:

- An open market on the one of the proposed public open spaces
- A public park on one of the proposed public open spaces
- Constructions of residential erven
- Public recreational area (Open space)
- Sewer reticulation system
- Electricity supply
- Portable water supply
- Associated piping work
- Tsintsabis Settlement Office
- Oshikoto Regional Council Guinas Constituency office

6.8.2 Activities during the operation and maintenance phase

During this phase, the Oshikoto Regional Council, the proponent; will be responsible for the following:

- Maintenance of the site, such as waste disposal;
- Controlling the noise pollution in the area;
- Maintenance of the bulk municipal services;
- Maintenance of public parks;
- Maintenance of roads, sewerage and electricity infrastructure;
- Collection of rates and taxes.

6.8.3 Activities at the decommissioning phase

In this stage of the development, it is deemed unnecessary to decommission the project because the area has been earmarked by the local authority as a township and thus can accommodate the

proposed development. Tsintsabis Settlement's population growth is expected to increase in the coming years and the Oshikoto Regional Council is expected to provide services to the future inhabitants of the settlement. There are no mineral resources which might lead to the decommissioning of the project. The proposed development will not affect the neighbours and locals in a negative way. Therefore, there will be no need for decommissioning the project in the near future.

7. BASELINE DATA

7.1 Climatic conditions

Located at an elevation of 1 160 meters above sea level, Tsintsabis has a Subtropical steppe climate (Classification: BSh). The district's yearly temperature is 27.09ºC and it is 2.63% higher than Namibia's averages. Tsintsabis typically receives about 58.52 millimeters of precipitation and has 90.11 rainy days (24.69% of the time) annually.

A look at the precipitation data reveals a large disparity, with a majority of months (May to September) lacking any rainfall at all. On the contrary, the wettest months are January and December, the average rainfall in the area is 534 mm. The number of rainy days per month echo this pattern as well, focusing rain activities around the start and end of each year.

Despite the lack of rainfall for a significant portion of the year, Tsintsabis maintains relatively stable humidity levels, ranging mostly between 37%. Wind speeds, meanwhile, shift from 9.6km/h to 13.4km/h, with most significant gusts occurring in the colder months of June and July. Cloud coverage appears minimal year-round, reinforcing the arid nature of the climate, with a particularly clear sky during May to September. On the contraction, daylight and sunshine hours are slightly dwindling between May to August but still remain above the 11-hour mark.

7.2 Geology, Topography and drainage

According to NDS, the topography of the Oshikoto region is predominantly flat, gradually descending from north south towards the Etosha pan. In this region, there are no perennial rivers, but at least 3 seasonal rivers of which some forms part of the Cuvelai Drainage system from Angola in the North to Etosha Pan in the South of the region.

The topography of Tsintsabis is typical of Oshikoto Region and is characterized by flat land that are mostly suitable for crop and stock farming.

7.4 Hydrology

The quality of the groundwater within the region is variable due to the fact that some boreholes provide a good yield at the depths of 10m and 50m. The water quality in the region is varying from drinkable to highly saline water. With Ephemeral River in the region, the water source in the ephemeral can be accessed even by hand-dug pit. The interconnected Ephemeral pans and shallow river courses known as Oshanas are the reminders of the proto-Kunene and Cuvelai systems which are emptied into the inland pan known as the Etosha pan.

The potable water in the region is supplied in piped system from the Calueque Dam in Angola, on the Kunene River, to the major urban settlements within the region. This dam does not only provide water to the Oshikoto Region, it also provides water to the Oshana, Omusati and Ohangwena Regions. The dam also provides water to the citizens of Angola that are residing in the south western part of that country.

Portable water in Tsintsabis Settlement is provided through its own boreholes that are situated a few hundred meters north of the proposed development.

7.5 Vegetation

There is a variety of vegetation including indigenous trees that are located on the project site. The vegetation on site consists of short grass and shrubs moderately scattered around the site, there is also a Marula and palm trees that are scattered around the site, these trees will be preserved during the construction phase of the project. The most prevalent plant in Tsinstsabis is the Acacia thorn tree (Acasia mellifera).

The project site is currently developed and there are already visible signs of human activities. The little vegetation that is left on the subject property will be preserved.

7.6 Soils

Oshikoto Region is covered by the Kalahari Sandveld which is mainly made up of an Aeolian sand mantle about 50m thick, covering calcretes and sediments. The high evaporation rate in the region makes the soils in the oshanas to be very saline with sodium and Gypsum found in these soils making the soils not suitable for agricultural projects. However, there are clay soils found in Tsintsabis that enables for agricultural activities in the area.

7.7 Fauna

The Kalahari woodland in the region is mainly dominated by species such as Rhodesian teak, kiaat, mangetti and silver leafed tennianalia. The Etaka and Cuvelai Systems are more ecologically sensitive and support a diverse but depressed fauna as well as fish which are introduced to the

system during good rainy years. During rainy season, the bird life picks up in the western part of the Region. However, other places get high numbers of individual species such as Abdim's stork and Flamingo rather than a wide variety of species.

During the site inspection, community's cattle, avifauna and small burrowing species were observed in the area. The surrounding area is currently used for grazing and other agricultural purposes (livestock enclosures). However, the remainder of the area is what is called a built-up area situated in an urban settlement. The site visit has revealed that it is unnecessary to appoint a specialist to assess the ecology of the area.

7.8 Flora

The proposed site was visited on the 7th of November 2024 and examined for any possible traces of red data or endangered species. It was observed that the proposed site is generally covered with grass and small shrubs with few scattered trees. However, no red data or endangered species were noted / recorded during the site visit, therefore it was decided that it is unnecessary to include an ecological specialist study in the report.

8. SOCIO-ECONOMIC ENVIRONMENT

8.1 Demographics

According to the Namibia 2023 Population and Housing Census the total population in Oshikoto Region was 257 302 (NPC, 2023). The population density is 6.653 persons per km^2 and the Human Poverty index (HPI) is 0.636 compared to National HPI of 20.35. Eighty-six (86 %) percent of the population lives in rural areas and fourteen (14%) percent live in urban areas. Life expectancy is 62 years for females and 52 years in males, resulting in most houses being head by females at 55% and the remainder by males at 45%. The population was divided into 20988 households, with an average size of 3.6 persons per household. Most (96%) of the households residing within the Oshikoto Region speak Oshiwambo (NPC, 2011).

According to Namibia 2023 Population and Housing Census, Guinas Constituency had a population of 8 578 residents from diverse cultural backgrounds in 2023. Almost half of the inhabitants of the Guinas Constituency resides in Tsintsabis as the only settlement in the constituency.

8.2 Economic activities

There has been immense commercial and administrative growth in Oshikoto Region. Oshikoto is commonly an agricultural region, with both crop and livestock farming, with the sector employing

more than 50% of economic active population. The trade and service sectors in the urban areas provide employment outside the agricultural sector while manufacturing occurs only on a small scale. However, the main economic activities are centered on agriculture and retail trade, public services such as cuca shops, open air butcheries, and mechanical land panel beating workshops, shoemakers, woodcarving and leather works and mining in the south.

There are popular Open Markets to be found in most towns and villages, while many traders find this an excellent facility to meet their clientele. Modern super markets, restaurants, general shopping facilities, pharmacies, private medical facilities schools and other support services are also available in the Region. The proclamation of settlements, which is a priority with the Regional Council, encourages private entrepreneurs to invest in the region.

8.3 Education Profile

According to (EMIS, 2012) there are 140 Primary schools, 105 Combines school and 28 Secondary schools in Oshikoto Region. The percentage literacy rates for persons older than 15 years in the Oshikoto Region is 88% compared with that of Namibia which is 81%. There are 274 schools altogether, where 257 are state owned and 17 privately owned and other schools there 1 owned by the state. From the 86,430 learners 84,555 are enrolled in public schools while the remaining 1,875 attend private schools. Only 94 of all 3,632 teachers in the Oshikoto Region are without training. The Oshikoto Region is known to yield exceptional results when it comes to academic ratings in the country, most schools offer quality education to the young ones as from primary to high schools. The Region has several tertiary institutions (UNAM and NUST) which provides knowledge and skills in terms of agriculture.

There is 1 primary and 1 secondary school in Tsintsabis Settlement area.

8.4 Employment Opportunities

In the year 2023, 58% of the population older than 15 years were employed and 36.9% unemployed in Oshikoto Region. The population outside the labor force comprised of students, homemakers and retired or old age persons. The median age of the population of Guinas Constituency is 19.8 years, this means that there are more young people of working age in the settlement that are unemployed. A formal town will encourage investors to set up businesses in the settlement, it will encourage government and non-governmental organizations to set up offices in the settlement and that will overall increase economic activity and employment prospects.

8.5 Income

According to the 2023 census, the subsistence farming and labour migration were considered the primary livelihood sources of many households in Oshikoto Region. The majority of the employed population (59.7%) are employed in the formal sector making Wages and Salaries 25% the main source of income in the region. Pensions 31%, Non-farming business 10%, Cash Remittance 5% and farming 22% is the means of survival for the rest of the population.

8.6 Health Profile

Oshikoto region has 3 district hospitals, (Oniipa, Omuthiya and Tsumeb) six health centers and 40 clinics and 124 Outreach points. Namibia is one of the ten worst affected countries in terms of the HIV/AIDS epidemic. According to the 2013 Namibia Demographic and Health Survey (NDHS), in Namibia, it is estimated that 14% of adults aged 15-49 and 16.4 % of those ages 50-64 are infected with HIV. Furthermore, the 2014 National HIV Sentinel Survey (NHSS) estimated that amongst pregnant women attending Antenatal Clinics (ANC) in Namibia, the overall prevalence was 16.9% which shows a reduction from 18% in 2012 (NARPR. 2015).

The HIV Prevalence rate among men in Namibia age 15-49 was 10.9%. According to the 2013 (NDHS.2013), the HIV/AIDS prevalence rate among adult pregnant women in the Oshikoto region is 17.4%. The 2013-2014 HIV Prevalence rate survey report shows that the HIV Prevalence rate among women age 15-49 in Oshikoto Region was estimated to be 21.9% (NARPR. 2015).

Among the many government clinics that are scattered through Oshikoto Region, one is located in Tsintsabis Settlement. The Health Center provides access to health facilities for the local people and helps in the prevention of Malaria and other diseases that are common in the northern areas of Namibia. There are no private health facilities in Tsintsabis at the moment, however, it is expected that these types of investments will take place once the settlement is upgraded to a formal urban settlement.

8.7 Immigration

Tsintsabis is affected by the rural to urban migration affecting Namibia. Although it is not at the same rate as big towns in the country, employment and business opportunities are the main reasons that people migrate to urban areas. The promise of a better life drives mostly young people from their villages into urban areas causing the demand for housing to skyrocket. This might cause discomfort to the local community currently residing in the town as the cost of living goes up, leading to increased stress and conflict over time and leading to the lack of housing resulting in increased informal settlements.

8.8 Acquisition

Jobs emanating from the construction and operation of the proposed municipal services and houses will be outsourced to small medium enterprises in the area and the companies that are awarded contracts to construct the settlement infrastructure will be encouraged to use as much manual labour as possible in order to benefit the locals.

Further employment will be created through the maintenance of the infrastructure, the construction of government and private buildings and through investment that is expected from the private sector as the settlement is upgraded to a formal urban settlement.

8.9 Tourism

The tourism industry is generally low in Tsintsabis area due to the lack of tourist attracting activities or structures. However, the San people who are believed to be the earliest inhabitants of Southern Africa call this area their home. The curiosity of foreigners on the ways of the first inhabitants has the potential to drive tourist activities and stimulate the economy of the area.

Apart from crop and cattle farms that are prevalent in the area, there are also a number of game farms and tourist establishments in the area. The proposed development seeks to provide erven reserved for accommodation purposes in order to support the small tourism industry in the area.

8.10 Amenities

A number of amenities are offered to the residents of the Oshikoto Region. As mentioned in the health profile section, there are three district hospitals, (Onandjokwe, Omuthiya and Tsumeb) six health centers and 40 clinics and 124 Outreach points health care facilities in the region, plus schools, different denomination churches such as the ELCIN, Roman Catholic Church, Anglican Church and many more, modern banking and financial facilities such as; First National Bank, Standard Bank, Bank Windhoek, Nedbank and Nampost all available in Oniipa, Onyaanya, Omuthiya and Tsumeb as well ATM facilities also available in the region.

There are however no banking facilities found in Tsintabis Settlement, the formalization of the urban settlement is expected to attract private investment into the settlement that will inevitably see banking facilities established.

9. ANALYSIS OF ALTERNATIVES

In terms of environmental impact assessment best practice, assessment of potential impacts from a proposed activity must include the assessment of alternatives. Assessment of alternatives is undertaken to identify the option that will minimise harm to the environment and may include site, technology and other alternatives, but must always include the option of not implementing the activity, known as the "no-go" alternative.

9.1 Alternative Site

The proponent has no other option of undertaking the proposed development in a different location other than the proposed site. This is because the existing houses that are to be formalized are situated on the proposed site and it will not make sense to carry out the development elsewhere. The aim of the proposed development is to formalize the existing houses and in the process empower inhabitants of Tsintsabis Settlement. The Oshikoto Regional Council thus, has no choice but to establish the proposed Tsintsabis Proper on proposed Portion A of Portion 1 of the Farm Tsintsabis Townlands No. 881.

Therefore, there are no other alternatives to this development, Alternative 1, is the only site that is identified for the establishment of a township. Therefore, no alternative site has been identified or considered during this study.

The following reasons justify the use of the proposed site for the development:

- The proposed site is under the jurisdiction of Oshikoto Regional Council;
- There are already existing houses, businesses and government buildings constructed on site;
- The township establishment is to empower the existing inhabitants and businesses on the site;
- The development will enable the Oshikoto Regional Council to offer municipal and governmental services to the inhabitants of Tsintsabis;
- The development will offer additional housing to the residents of Tsintsabis;
- The development will increase investment in Tsintsabis Settlement;
- The development will provide employment during the construction and operational phases; and
- The development will promote orderly and sustainable development in the town.

9.2 The "No Project" Alternative

The No-Go Option is the option not to proceed with the activity, implying a continuation of the current status quo. Therefore, the No-go Alternative would mean that the proposed township

establishment of Tsintsabis Proper on proposed Portion A of Portion 1 of Farm Tsintsabis No. 881 does not go ahead.

Should the proposed township establishment not take place, Tsintsabis Settlement and its inhabitants will not have access to the governmental and municipal services and thus, their livelihoods will not improve. The settlement will not develop in an orderly manner, it will not attract investment and disagreements with inhabitants will continue and this can have long term negative effects on the social and economic stability of the area.

From the environmental-socio-economic point of view, the no project option is the least preferred option due to the following factors:

- There will be no socio economic development in Tsintsabis Settlement;
- The community will continue to allocate land in an unorderly manner leading to informal settlements;
- Investment in the settlement will be limited;
- Inhabitants will be deprived of basic and governmental services;
- No employment opportunities will be created for the locals;
- Poverty will not be eradicated in terms of job creations;
- The local skills would remain underutilized;
- Reduced technology advancement in the settlement and interaction both at local, national and international levels;
- Promotes vegetation clearing.

This is therefore not a desirable alternative.

10. PUBLIC PARTICIPATION PROCESS (PPP)

This section of the report provides details of Public Participation Process (PPP) undertaken in the compilation of the EIA final report. In terms of Section 26(1)(h) of the Namibian Environmental Assessment Regulations (2012), it is a requirement to provide details of the public participation process conducted in accordance with Section 32 of the Environmental Assessment Regulations.

Furthermore, the Public Participation forms an important component of this EIA. It has been defined by the Ministry of Environment and Tourism that an Environmental Assessment Regulations (2012) of the Environmental Management Act (2007), as a process in which potential interested and affected parties such as service providers, traditional leaders, local authorities, environmental groups, village councils and communities, to comment on the potential environmental impacts

associated with the proposed township establishment project are given an opportunity to comment on, or raise issues relevant to the proposed project and its benefits to the nation and its economy.

Apart from these legal requirements, Consultations with the general public and other relevant stakeholders to ensure that their inputs are taken into account during the decision-making process was carried out as per the EIA regulations.

10.1 Aim for Public Participation Process (PPP)

The aim for the Public Participation Process is but not limited to:

- Informing Interested and Affected Parties (I&APs) of the proposed project;
- Identifying issues, comments and concerns as raised by I&APs;
- Promoting transparency and an understanding of the project and its consequences;
- Serving as a structure for liaison and communication with I&APs; and
- Providing local knowledge and input in identifying potential environmental (biophysical and social) impacts and "hotspots" associated with the proposed development.

10.2 Compilation of stakeholder database

The first step in the Public Participation Process (PPP) is to identify key stakeholders. A stakeholder database was compiled and the target groups for this project were invited to comment on the proposed development, A site meeting was held on the 8th of November 2024. The following where invited to Comment:

- Oshikoto Regional Council (as the approving authority for town planning projects and service provider for bulk services, as the proponent, developer and overall authority on the proposed project).

Please note that some of the interested and Affected Parties are also consulted during the town planning process of township establishment.

10.3 Background Information Document

This document provides a short summary of the project and the EIA process. Therefore, a background information document (BID) was prepared and was ready to be distributed to Interested & Affected Parties. After all stakeholder and I&Aps where informed none of them requested for the Background Information Document (BID). See a copy of the BID attached.

10.4 Notification of I&Aps

The requirements for the notification of potentially interested and affected parties of this application are set out in detail in section 32(2)(b) of the EA regulation. These requirements have been addressed and include;

- Forwarding letters to government authorities and other identified relevant stakeholders;
- Fixing a notice at a place conspicuous to the public in English;
- Placing advertisements twice in at least two local newspapers.

10.5 Advertisement

The advertisement of the public participation and submission of comments for the proposed project were placed in two national newspapers circulating in Tsintsabis Settlement, the New Era and Confidente Newspapers dated: 10th and 18th October 2024. Proof of advertisements are attached.

10.6 Notice Board

An A3 size notice detailing information about the project and the EIA process was placed on the notice board at the Oshikoto Regional Council, Guinas Constituency and on the site from the 10th October 2024 until the 8th November 2024. See proof of notice below

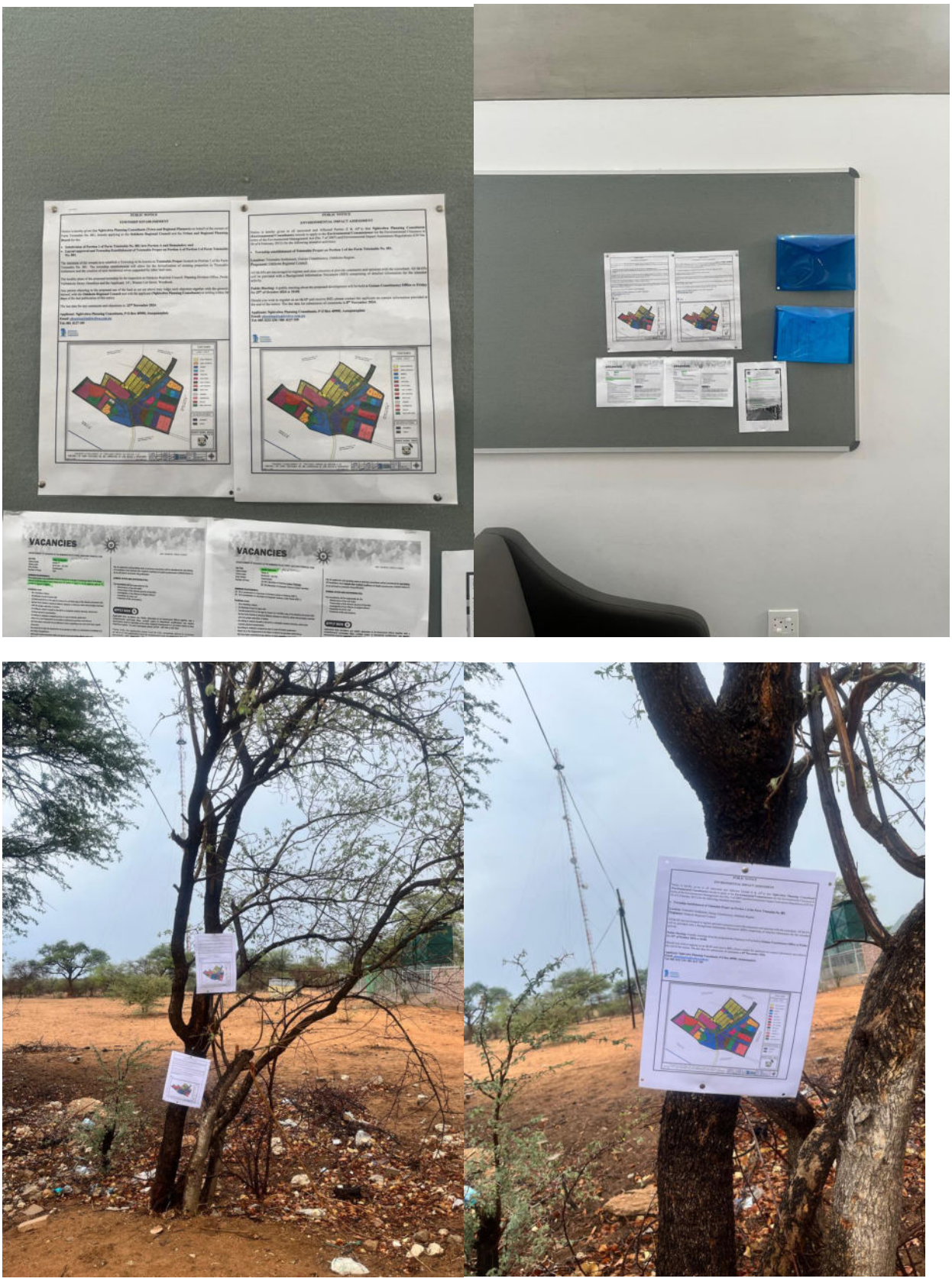

Figure 4: Proof of notice of EIA

10.7 Public Meeting

In compliance with the EIA Regulations (2012), public (I&AP) and all stakeholders were notified as a requirement for EIA process. Therefore, to incorporate the varying needs of stakeholders and I&APs, as well as to ensure the relevant interactions between stakeholders and the EIA specialist team; A public meeting took place on the 8th November 2024 at Guinas Constituency / Tsintsabis Settlement Office. See below the photographic evidence of the meeting and attached attendance register.

Figure 5: Public consultation meeting at Tsintsabis Settlement Office

10.8 Issues raised by interested and affected parties

Letters for comments were sent to the identified key stakeholders for comments and none of the identified stakeholders shared their comments. This can be attributed to the fact that this is a positive development that will develop Onayena as thriving urban settlement and the leaders in the area are in support of the development.

11. ENVIRONMENTAL ASSESSMENT METHODOLOGY

An appraisal of the type of effects the proposed township establishment would have on the affected environment; rate as either positive (beneficial on the environment), neutral (no impact on the environment), or negative (adverse impact on at a cost to the environment).

Rating	Description
1	Negligible / non-harmful / minimal deterioration (0 – 20%)
2	Minor / potentially harmful / measurable deterioration (20 – 40%)
3	Moderate / harmful / moderate deterioration (40 – 60%)
4	Significant / very harmful / substantial deterioration (60 – 80%)
5	Irreversible / permanent / death (80 – 100%)

Table 3: Assessment and rating severity

Rating	Description
1	Less than 1 month / quickly reversible
2	Less than 1 year / quickly reversible
3	More than 1 year / reversible over time
4	More than 10 years/ reversible over time/ life of project or facility
5	Beyond life of project or facility/ permanent

Table 4: Assessment and rating duration

Rating	Description
1	Within immediate area of the activity
2	Surrounding area within project boundary
3	Beyond project boundary
4	Regional/ Provincial
5	National/ International

Table 5: Assessment and rating extent

Consequence is calculated as the average of the sum of the ratings of severity, duration and extent of the environmental impact.

Determination of Consequence (C)	(Severity + Duration + Extent) / 3

Table 6: Determination of consequence

Rating	Description
1	Less than once a year
2	Once in a year
3	Quarterly
4	Weekly
5	Daily

Table 7: Assessment and rating of frequency

Rating	Description
1	Almost impossible
2	Unlikely
3	Probable
4	Highly likely
5	Definite

Table 8: Assessment and rating of probability

Likelihood

Likelihood considers the frequency of the activity together with the probability of the environmental impact associated with that activity occurring.

Determination of Likelihood (L) =	(Frequency + Probability) / 2

Table 9: Determination of likelihood

Environmental Significance

Environmental significance is the product of the consequence and likelihood values.

Rating	Description
L (1 - 4.9)	Low environmental significance
LM (5 - 9.9)	Low to medium environmental significance
M (10 - 14.99)	Medium environmental significance
MH (15 - 19.9)	Medium to high environmental significance
H (20 - 25)	High environmental significance. Likely to be a fatal flaw

Table 10: Determination of environmental significance

11.1 Impacts Associated with Construction Phase

Potential effects on the environment and their mitigation measures during construction phase are:

Dust pollution and air quality impacts- These are expected to be site specific, short-termed and will most probably pose a negligible nuisance and health threat to those residing nearby. The construction of the proposed municipal service infrastructure will have an impact on the surrounding air quality as a result of construction vehicles on site. Vegetation clearance and construction site preparation does expose the soil and causes dust which increases the particulate matter concentration in the atmosphere. PM can contribute to respiratory tract infections to the people inhabiting the area adjacent to the construction site.

	Severity	Duration	Extent	Consequence	Frequency	Probability	Likelihood	Status	Confidence/ Significance
Unmitigated	5	5	3	4.33	5	5	5	Negative	9.33(LM)
Mitigation measures: Dust may be generated during the construction/decommissioning phase and might be aggravated when strong winds occur therefore; dust suppression measures should be introduced during the construction phase. Vehicles travelling to and from the construction site must adhere to the speed limit so as to avoid producing excessive dust. A speed limit of 40 km/hr should be set for all vehicles travelling over exposed areas. Dumping trucks should be covered to avoid loss of materials during transport, especially if material is transported off site.									
Mitigated	2	2	1	1.66	1	2	1.5	Negative	3.16 (L)

Employment Creation (Positive Impact) job creation and economic benefit to the local community since the construction activities associated with the municipal infrastructure will require labour from the local community.

	Severity	Duration	Extent	Consequence	Frequency	Probability	Likelihood	Status	Confidence/ Significance
Unmitigated	1	2	2	1.66	2	5	3.5	Positive	5.16 (LM)
Mitigation measures: Various employment opportunities will be created during all phases of the development, ranging from highly skilled to unskilled. The development is expected to create more than 100 skilled and unskilled jobs. Preference should be given to locals and Namibian Citizens. When recruiting, the responsible contractor should ensure that all genders are accommodated and given equal opportunity to compete for employment. Equity and transparency should be taken into account when hiring and recruiting and that Public Participation I.e. community leaders or community committees should also take part in the recruiting process. In terms of human resource development and capacity building, the contractor must enforce training programs that allows skilled workers to train unskilled workers when necessary, in order for them to enhance their performance and to gain experience necessary for future employment opportunities.									
Mitigated	1	2	5	2.66	3	5	4	Positive	6.66 (LM)

Noise caused by construction activities- Noise levels are expected to rise during the construction phase of the development. Construction activities that can cause noise include construction vehicles, electricity generators, pressure hammers, noise from construction workers and earthmoving equipment which will be utilized during this phase. There are houses and other buildings that are currently on and around the site, these are however scattered and the expected disturbance to all will be kept at the minimum as construction will only take place during the day when most people are at work. The construction of the municipal services will disturb residents to a limited extent as the construction activities will be isolated from the existing properties. Therefore, the noise levels that are likely to occur during this phase are assessed to be only a nuisance to the residents.

	Severity	Duration	Extent	Consequence	Frequency	Probability	Likelihood	Status	Confidence/ Significance
Unmitigated	4	5	2	3.66	5	5	5	Negative	8.66 (LM)
Mitigation measures: Construction should be limited to normal working days and office hours from 08h00 to 17h00 on Mondays to Fridays and 7:30 – 13:00 on Saturdays. No construction activities may be undertaken on Sunday. Provide ear plugs and ear muffs to staff undertaking the noisy activity or working within close proximity thereof or alternatively, all construction workers should be equipped with ear protection equipment. Noise pollution should be addressed and mitigated at an early stage of construction phase.									
Mitigated	1	1	1	1	1	1	1	Negative	2 (L)

Soil Loss and Erosion- Loss of topsoil during the construction period caused by the clearing and removal of vegetation, the excavation of foundations, and earthworks may expose soils to wind and rain and could result in localized erosion.

	Severity	Duration	Extent	Consequence	Frequency	Probability	Likelihood	Status	Confidence/ Significance
Unmitigated	4	3	3	3.33	5	5	5	Negative	8.33 (LM)
Mitigation measures: Removal of vegetation is restricted to the portion of land under construction. No earth works to be conducted within 30 metres of all drainage lines; Topsoil should only be exposed for minimal periods of time and adequately stockpiled to prevent the topsoil loss and run-off. Planting more indigenous trees on public open spaces should be carried out. Reuse topsoil to rehabilitate disturbed areas.									
Mitigated	1	1	1	1	2	2	2	Negative	3 (L)

Removal and use of local flora for firewood- collection of local flora for firewood may lead to the removal of the protected flora due to the lack of knowledge of the types of protected flora.

	Severity	Duration	Extent	Consequence	Frequency	Probability	Likelihood	Status	Confidence/ Significance
Unmitigated	2	3	3	2.66	4	5	4.5	Negative	7.16 (LM)
Mitigation measures: No cutting down of trees for firewood. Utilise commercially sold wood or other sources of energy. Use electricity and gas in the construction camps for cooking Training of contractors on environmental awareness and the importance of flora.									
Mitigated	1	1	1	1	1	2	1.5	Negative	2.5 (L)

Health and Safety- Health and Safety Regulations pertaining to personal protective clothing, first aid kits being available on site, warning signs, etc. should be adhered to. During construction phase, there is a possibility of injuries to occur if no measures are taken into consideration.

	Severity	Duration	Extent	Consequence	Frequency	Probability	Likelihood	Status	Confidence/ Significance
Unmitigated	5	5	4	4.66	5	5	5	Negative	9.66 (LM)
Mitigation measures: A health and safety plan is to be developed and implemented as soon as land clearing commences. During construction, earthmoving equipment will be used on site, this increases the possibility of injuries. Thus, the responsible contractor must ensure that all staff members are briefed about the potential risks of injuries on site. Ensure the appointment of a Safety Officer to continuously monitor the safety conditions during construction. The contractor should further ensure that adequate emergency facilities are available on site. The construction staff handling chemicals or hazardous materials must be trained in the use of these materials and the environmental, health and safety consequences if not properly handled. All construction staff must have the appropriate PPE.									
Mitigated	2	1	2	1.66	1	2	1.5	Negative	3.16 (L)

Traffic - Potential impact due to increase in traffic because the increase in traffic due to construction activities on site. Construction related activities are expected to have a minimal impact on the movement of traffic along the road. Accidents might occur if unqualified drivers are employed on the proposed development or appropriate signs are not displayed.

	Severity	Duration	Extent	Consequence	Frequency	Probability	Likelihood	Status	Confidence/ Significance
Unmitigated	5	5	3	4.33	5	3	4	Positive	8.33 (LM)
Mitigation measures: No diversion of traffic or closure of the road is expected. Traffic signs indicating that there is construction work in the area should be displayed on the main roads and feeder roads. Traffic signallers and controllers should be employed to regulate traffic of construction and normal vehicles. The responsible contractor must ensure that all drivers employed on site are licenced for the type of vehicle they operate and that they have experience in driving those types of vehicles. The contractor must ensure that there is always a supervisor on site to ensure that no driver operates construction vehicle while under the influence of alcohol or narcotics. The construction vehicle's speed limit should be 40km/h and must consider other road users.									
Mitigated	2	1	1	1.33	1	2	1.5	Positive	2.83 (L)

Waste Impacts- The construction phase of the development is likely to generate waste from clearing of vegetation, builder's rubble, general construction refuse and minor hazardous waste including paint tins, cleaning acids, asphalt's and oils. The development could therefore impact on the environment by generating solid waste pollution.

	Severity	Duration	Extent	Consequence	Frequency	Probability	Likelihood	Status	Confidence/ Significance
Unmitigated	5	5	3	4.33	5	5	5	Negative	8 (M)
Mitigation measures: Ensure that no excavated soil, refuse or building rubble generated on site are placed or disposed of in the surrounding environment. Contaminated waste in the form of soil, litter, building rubble and other material must be disposed of at an appropriate disposal site. The contractor and developer should ensure that all the waste generated by the development is appropriately disposed of at the recommended waste disposal sites.									

The proponent and contractor should identify an appropriate area that is suitable to be used as a temporary disposal site. Strictly, no burning of waste on site or at the disposal site is allowed as it possess environmental and public health impacts; No construction waste should enter the surrounding environment and cleared vegetation should not be burnt on-site. To avoid contaminating the soil and underground ecosystem, wastewater should not be disposed on open soil onsite.									
Mitigated	1	1	1	1	4	2	3	Negative	4 (L)

Surface water contamination (Local water bodies) – Leakages from equipment, accidents from fuel tankers may occur during the construction phase and the waste can end up contaminating the local water bodies during the rainy season.

	Severity	Duration	Extent	Consequence	Frequency	Probability	Likelihood	Status	Confidence/ Significance
Unmitigated	5	5	5	5	5	4	5	Negative	9.5 (LM)
Mitigation measures: The construction vehicles are not allowed to be parked within 50-meters of the banks of the local water bodies after working hours. The construction site camp should be constructed more than 100-meter from the banks of the local water bodies. All streets crossing the local water bodies should be constructed below the minimum water line or must have a bridge. No dumping of solid or liquid waste in standing water. No blockage of any kind that will prevent the storm water from draining naturally is allowed along the local water bodies.									
Mitigated	3	1	1	1.66	5	3	4	Negative	5.66 (LM)

Underground water Contamination – Leakages from equipment and machinery might occur during the construction phase or mixing of cement and the use of ablution facilities will lead to the contamination of the under groundwater.

	Severity	Duration	Extent	Consequence	Frequency	Probability	Likelihood	Status	Confidence/ Significance
Unmitigated	5	5	5	5	5	4	5	Negative	9.5 (LM)
Mitigation measures: Chemicals used during construction e.g. paint and paint remover are a risk. Care must be taken to avoid contamination of soil and underground water. Ensure no cement or cement containers should be left lying around on site.									

Mixing of cement should be done at specifically selected areas on mortar boards or similar structures to contain surface run-off. Proper ablution facilities should be installed at the construction site and at the camping site or alternative arrangements made. The contractor shall ensure that there is no spillage when the ablution facilities are cleaned or during normal operation and that the contents are properly disposed of. Cleaning of cement mixing equipment should be done on proper cleaning trays. Prevent spillage of contaminants or of water potentially contaminated by cement, chemicals, sewage Fuel (diesel and petrol) and oil containers shall be in good condition and placed in a bunded area or on plastic sheeting covered with sand (temporary bunding).									
Mitigated	3	1	1	1.66	5	3	4	Negative	5.66 (LM)

Increased spread of communicable diseases- migrant workers with HIV/AIDS or Covid -19 may infect local people leading to a high rate of HIV/AIDS, covid-19 and other communicable diseases.

	Severity	Duration	Extent	Consequence	Frequency	Probability	Likelihood	Status	Confidence/ Significance
Unmitigated	5	5	5	5	5	5	5	Negative	10(M)
Mitigation measures: The spending power of locals and expatriates working for the developer and/or its contractors are likely to increase, and this might be a perfect opportunity for sex workers to explore. Migrant labourers from other regions and expatriates are normally vulnerable and may use the services rendered by the sex workers. A key initiative should be to educate workers. See section 9 (Socio-economic Environment) for details on region statistics. External construction workers should be housed in secure camp and are to abide by rules of the EMP to prevent public disruption (i.e. Spread of HIV/AIDS, crime, public disturbance). Contractors should be encouraged to source labour from surrounding areas to prevent the spread of HIV/AIDs and Covid – 19 from external workers. Condoms as a contraceptive should be distributed to construction employees. All government protocols on Covid – 19 (i.e., wearing masks and social distancing) should be practiced on site.									
Mitigated	2	1	4	2.33	2	3	2.5	Negative	4.8(L)

Heritage Impacts – There are no known heritage areas or artefacts that were identified on the site. However, there is a potential damage or destruction to undiscovered heritage sites in the area

	Severity	Duration	Extent	Consequence	Frequency	Probability	Likelihood	Status	Confidence/ Significance
Unmitigated	5	5	5	5	2	1	1.5	Negative	6.5 (LM)
Mitigation measures: There were no sites or objects of archaeological finds, Graves, historical and cultural significance identified, however, if during construction any possible finds are made, the operations must be halted and a qualified archaeologist be contacted for an assessment of the findings. Work may only commence once approval is given from the heritage agency. No specific mitigation measures are required at the moment.									
Mitigated	1	1	1	1	1	2	1.5	Negative	2.5 (L)

Ecological Impacts: No known conservation worthy vegetation are located on the site.

	Severity	Duration	Extent	Consequence	Frequency	Probability	Likelihood	Status	Confidence/ Significance
Unmitigated	1	1	1	1	1	1	1	Negative	1 (L)
Mitigation measures: No known conservation worthy vegetation are located on the site, except trees with stem diameter > 20mm.that are recommended to be conserved and be included in the town planning design of the development									
Mitigated	1	1	1	1	1	1	1	Negative	1 (L)

11.2 Impacts Associated with Operational Phase

Storm water usually runs off the area and flow into the water bodies without any kind of treatment. This can pollute the water bodies like creeks, lakes and rivers and have adverse effects on their chemical as well as biological nature. From this background plans for storm water drainage and collection have been proposed to accommodate the storm water during the rainy season.

	Severity	Duration	Extent	Consequence	Frequency	Probability	Likelihood	Status	Confidence/ Significance
Unmitigated	4	5	3	4	2	5	3.5	Negative	7.5 (LM)
Mitigation measures: Storm water drains to be constructed along the streets in the development and be channelled through the natural water courses, excess storm water to be collected for consumption and recreational use. Storm water will be collected through network of storm drains from gardens, parking areas, paved and unpaved areas, and roadways. The storm water drainage system should have the capacity to prevent flooding of the site and surrounding areas. All buildings to be constructed above the 50-year flood line to avoid flooding of properties.									
Mitigated	1	1	2	1.33	1	2	1.5	Negative	2.83 (L)

Commercialization of the area - The project will transform the area into a commercial hub that will see the increase in economic activities and it will bring much needed development and services closer to the people.

	Severity	Duration	Extent	Consequence	Frequency	Probability	Likelihood	Status	Confidence/ Significance
Unmitigated	1	1	1	2	5	5	5	Positive	7 (LM)
Mitigation measures: This project will contribute to the improvement of the services and infrastructure for the surrounding communities, as it will provide more municipal services within the area. The proposed development will create job opportunities for the local community which will improve their skills.									

Jobs emanating from the construction and operation of the proposed development will be outsourced to small medium enterprises in the area. Residents to be provided with all the basic amenities and utilities required by the community in order for them to live a high quality life style. Commercial activities like banking and guest houses are expected to be constructed after the construction of township, thus increasing economic activities in the area. Youth empowerment due to the fact that they can use land to create businesses that will intern create employment for other youths in the area.									
Mitigated	1	2	1	1.33	5	3	4	Positive	5.33 (LM)

Improved aesthetic look of the area- The development is essential to improve the aesthetics of the area while turning it into an environmentally friendly township with improved infrastructure services. This potential impact of the infrastructure on the economic structure is of a positive nature. The construction should be completed without delay to avoid the site becoming an eyesore;

	Severity	Duration	Extent	Consequence	Frequency	Probability	Likelihood	Status	Confidence/ Significance
Unmitigated	2	2	2	2	1	1	1	Positive	3 (L)
Mitigation measures: No mitigation required because it's a positive impact. However, the developer should create awareness among the residents about energy conservation and other resources as well as to implement measures to prevent or minimize any adverse effects on the environment. This project should provide a quality of life that can be expected in an urban area in relation to the utilities, convenience, amenities and security. This project will provide quality residential accommodation to the previously disadvantaged youths from the middle to low income segments of society. It should provide convenient transport system, accessibility to utilities and social centres to enhance the social quality of life. Public open space and parks should be vegetated to look greener and to minimize soil exposure to erosion. Camouflaged infrastructure should be utilized to blend in with the natural environment. Vegetation and trees should be planted along the main street to create an attractive look for the township.									

Mitigated	1	5	4	3.33	3	5	4	Positive	7.33 (LM)

Increased employment opportunities- the establishment of a township can increase the opportunities of employment as investment in houses, businesses and other amenities increases.

	Severity	Duration	Extent	Consequence	Frequency	Probability	Likelihood	Status	Confidence/ Significance
Unmitigated	2	3	5	3.33	3	3	3	Positive	6.33 (LM)
Mitigation measures: The principles of gender equality, maximising local employment should be implemented in the provision of jobs on site. Priority should be given to local people when recruiting, therefore unskilled labourers from the local community should be employed. Jobs for maintenance of infrastructure and services will be created following the completion of the development. These jobs might be made available to existing labour there creating long term employment. Jobs for security personnel to patrol the construction site and the surrounding areas will also be created. Equity, transparency, should be taken into account when hiring and recruiting and that Public Participation i.e. Community Leaders or Community committees should also take part in the recruitment process. The township will increase the development of the settlement and will help with the creation of additional jobs within the Council.									
Mitigated	1	4	4	3	2	5	4	Positive	6.5 (LM)

Traffic - Potential impact due to increase in traffic because the new inhabitants that will settle in the new township and the increased economic activities in the area.

	Severity	Duration	Extent	Consequence	Frequency	Probability	Likelihood	Status	Confidence/ Significance
Unmitigated	5	5	3	4.33	5	3	4	Positive	8.33 (LM)
Mitigation measures: A slight increase in the traffic is expected as the new inhabitants takes up residents in the new houses to be constructed as a result of the proposed development.									

The main streets should be wide enough to accommodate the anticipated increase in traffic flow. Provisions should be made for traffic turning off at high intensity intersections. Sidewalks for pedestrians should be provided along the property. Appropriate road signs and markings should be provided throughout the new township and to the entrance and exit points of the new township. Signs should be provided at intersections particularly at higher order intersections. Speed bumps should be installed to control the speed of traffic. Traffic circles to be utilized at high intensity intersections. Bicycle lanes to be introduces to cater for those who will utilize them.									
Mitigated	2	1	1	1.33	1	2	1.5	Positive	2.83 (L)

Waste management- the new township will be incorporated in the existing waste management process of Oshikoto Regional Council and all waste generated will be disposed of at an approved waste disposal site.

	Severity	Duration	Extent	Consequence	Frequency	Probability	Likelihood	Status	Confidence/ Significance
Unmitigated	5	3	3	3.66	5	5	5	Negative	8.66 (LM)
Mitigation measures: During the operations phase, the Oshikoto Regional Council waste management team will be responsible for waste generated by the new township. Oshikoto Regional Council to incorporate the new township into its formal waste collection strategy and that the waste is to be collected regularly and to be disposed of at an authorized dumping or disposal site. The Oshikoto Regional Council dispose of the generated waste at an approved waste disposal site situated on the southern boundaries of the settlement. Illegal dumping of waste in any form is prohibited.									
Mitigated	1	1	1	1	1	2	1.5	Negative	2.5 (L)

Land use -The proposed development will result in a slight change in land use as more land uses are added to the town. The density will change with some loss of grazing taking place. However, it will impact positively on the socio-economic development of Tsintsabis Settlement as much needed houses and small business investment are expected after the completion of the township.

	Severity	Duration	Extent	Consequence	Frequency	Probability	Likelihood	Status	Confidence/ Significance
Unmitigated	1	5	4	3.33	1	5	3	Positive	6.33 (LM)
Mitigation measures: The land use will remain residential, business and others However, the density will change as this will be a township development. The development will be compatible with the surrounding land use on completion of the construction phase. Residents will benefit from the security of land tenure that normally accompany urban development in Namibia. Business will be able to access financing to expand and set up new ventures in the settlement. The local government will benefit as the provision of serviced land will increase due to this development. The construction of illegal houses and business will be kept to a minimum as land becomes developed. Additional revenue is realized as the local government levies the property owners in the form of service delivery and land taxes. Harmonious town planning that will lead to the harmonious living for the local inhabitants. No informal settlements should occupy the land									
Mitigated	1	2	1	1.33	5	3	4	Positive	5.32 (LM)

11.5 Impacts Associated with Decommissioning Phase

At this point, it is difficult to visualise and assess the decommissioning phase, although the procedures for decommissioning phase should be the same as for the construction phase however, there will be possible pollution during the decommissioning phase of the project. Furthermore, during the decommissioning phase, an Environmental Impact Assessment (EIA) will be required and the disposal of decommissioned equipment and hazardous contaminated materials should be disposed following the disposal of hazardous material legislation.

12. CONCLUSIONS

In conclusion, The Oshikoto Regional Council declared Tsintsabis as a settlement area in July 2020 in terms of Section 31 (1) of the Regional Councils Act, 1992 (Act No. 22 of 1922). The declaration was part of the Regional Council's initiative to provide governmental services to the inhabitants of Tsintsabis Settlement and to encourage business investment in the area. As part of the requirements for the declaration, the settlement must have at least one approved township. Thus, the Oshikoto Regional Council resolved to establish Tsintsabis Proper on Portion A of Portion 1 of the Farm Tsintsabis No. 881.

The Establishment of a Township and its associated infrastructure is a listed activity and thus, the Oshikoto Regional Council appointed Nghivelwa Planning Consultants, a Town and Regional Planning and Environmental Management Consultancy firm to conduct an Environmental Impact Assessment and Environmental Management Plan (EMP) for the proposed Township Establishment of Tsintsabis Proper. The Environmental Impact Assessment has been conducted to meet the requirements of the Namibia's Environmental Management Act (No. 7 of 2007).

We further conclude that the proposed development has more positive than negative impacts to the natural environment and will provide much needed development in the form of services, businesses and housing to the population of Tsintsabis Settlement. The development will complement the efforts of the Government of the Republic of Namibia and help with the housing backlog that is being experienced in the country and provide shelter to the Namibian people.

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