

ENVIRONMENTAL IMPACT ASSESSMENT

FOR THE PROPOSED TOWNSHIP ESTABLISHMENT OF ONYUULAYE PROPER AND ONYUULAYE EXTENSION 1 IN ONYUULAYE SETTLEMENT IN ONYUULAYE CONSTITUENCY, OSHIKOTO REGION



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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

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1. INTRODUCTION

1.1 Project Overview

The Oshikoto Regional Council proposes to establish two townships (Onyuulaye Proper and Extension 1) to be known as Onyuulaye Proper and Extension 1 with ±500 erven and related infrastructure on a 103 hectares of undeveloped land on Portions 1 and 2 of the Farm Onyuulaye Town and Townlands No. 1120 in Onyuulaye Settlement in Oshikoto Region.

Therefore, Nghivelwa Planning Consultant has been appointed to conduct an Environmental Impact Assessment and Environmental Management Plan (EMP) for the proposed Onyuulaye Proper and Extension 1 to be located on Portions 1 and 2 of the Farm Onyuulaye Town and Townlands No. 1120 in the Settlement of Onyuulaye. 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.

EIA thus has three main functions:

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

1.2 Terms of Reference

The proposed project for the establishment of Onyuulaye Proper and Extension 1 Townships 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 Oshikoto Regional Council appointed Nghivelwa Planning Consultant to provide consultancy services to undertake an environmental impact assessment compliant to Environmental Management Act (2007).

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

- The collection of all possible data on the environmental, social and natural resource components and parameters of necessity;
- 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 project 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 (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. The Project proponent, Oshikoto Regional Council had been extremely positive in providing necessary information and documents and also in providing necessary guidance during the undertaking of the study and preparation of the report. The Consultant (Nghivelwa Planning Consultant) gratefully acknowledges the help, advice and information provided by the Oshikoto Regional Council management as well as the support and interest shown by all the identified stakeholders.

1.4 Report Content

The outline of the report structure is given below:

Chapter 1: presents the introduction which will deal with the background, Terms of Reference, Report Content, EAP details and Acknowledgement

Chapter 2 presents the EIA Methodology

Chapter 3 covers Policy, and other Relevant Legislations applicable to developments of this type of project in Namibia.

Chapter 4: presents the Need and desirability

Chapter 5: Scope of the EIA

Chapter 6: covers the Overview of the proposed project which describes the project description, bulk services and the proposed project activities

Chapter 7 describes the Baseline Information. The following aspects are covered in this Chapter

Locality and Surrounding Land Use

Climate and Temperatures

Geology, Topography and drainage

Soil

Hydrology

Flora and Fauna

vegetation

Chapter 8: covers Socio-Economic- Environment

Chapter 9: covers Analysis of Alternatives

Chapter 10: presents Public Participation Process

Chapter 11: describes Environmental Assessment Methodology

Chapter 12: Conclusion

Chapter 13: References

Chapter 14: Appendices

1.5 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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Elina SP Vakuwile	B-tech Environmental Management	Environmental Scientist (EAPAN Member)

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 authorised, authorised subject to conditions that will reduce the impacts to within acceptable levels, or should be refused. 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 of the proposed Township Establishment in Onyuulaye Settlement in Oshikoto Region; to investigate the potential impacts on the social and natural environment due to the construction and operation of the proposed development:

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 of the area 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 an 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 made 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 conducting relevant stakeholders and public consultations with the consultant and they were involved in the EIA. Advertisements for the public participation to participate and raise their concerns on the proposed project were placed in two (2) local newspapers of the New Era and Confidente of the 9th and 16th

June 2020. The public and interested and affected parties were invited to provide comments to the EIA. Due to the Covid-19 Epidemic, there was no public meeting held.

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 exploration 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.	
Environmental Impact Assessment (EIA) Regulations GN 28-30 (GG 487)	Details requirements for public consultation within a given environmental assessment process (GN 30 S21). Details the requirements for what should be included in a Scoping Report (GN 30 S8) and an Assessment Report (GN 30 S15).	
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 and Bill

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 Act 54 of 1956 Water Resources Management Act 24 of 2004	The Water Resources Management Act 24 is presently without regulations; therefore, the Water Act 54 is still in force The Act provides for the management and protection of surface and groundwater resources in terms of utilisation and pollution	Obligation not to pollute surface water bodies
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	The Oshikoto Regional Council should ensure that all contractors involved during the construction, operation and maintenance of the proposed project comply with

	be injurious or dangerous to health.”	the provisions of these legal instrument
Water Act 54 of 1956	The Water Resources Management Act 24 of 2004 is presently without regulations; therefore, the Water Act No 54 of 1956 is still in force: 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.
Townships and Division of Land Ordinance 11 of 1963	Details the functions of the Townships Board including what they consider when receiving 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.

Table 1: Relevant Legislation

4. NEED AND DESIRABILITY OF THE PROPOSED PROJECT

It is a given fact that one of the development priorities of the Government of Namibia is the provision of housing to her inhabitants. The country of Namibia is still facing a housing backlog due to the population growth and rapid urbanization. This situation is not different in Oshikoto Region and Onyuulaye Settlement. The population According to the Population and Housing Census of 2011, the population for Onyuulaye Constituency was 13956. The Onyuulaye settlement is experiencing a major backlog in the provision of low-income housing for the poor, the local population has been waiting for a long time to formalize existing houses and business and finally receive the security of land tenure like their counterparts in other towns. Based on the reasons given above, there is a need or demand for low-cost housing to accommodate previously disadvantaged individuals who cannot afford houses. The proposed development of about 500 Erven Townships will contribute to the improvement of the services and infrastructure for the surrounding communities, as it will provide more social services within the area. This development can directly or indirectly affect the community because it could potentially create employment opportunities especially to the inhabitants of Onyuulaye and surrounding villages in both the construction and operational phases.

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 more important during all the phases of the Project. Relevant environmental data have been compiled by making use of primary data which was collected during the site assessment done on the 11th of June 2020 and secondary data. Potential environmental impacts and associated social impacts was identified and addressed in this report.

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

- The preparation of the site, including excavations no blasting required.
- Transportation of materials supply with road transport trucks.
- Off-loading of materials
- The constructions of the buildings and other substructures
- The constructions of the streets (Roads).
- The constructions of bulk services infrastructures such as water, electricity power lines and sewage.

- The supplying of bulk services such as water, electricity, waste disposal plan and waste management
- The Maintenance of the township by the Oshikoto Regional Council.
- All services infrastructure once constructed, the Regional Council will be responsible to maintain it.

The Environmental Impact Assessment study report includes an impact assessment and their mitigation measures of all 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 ±550 erven of different land uses including the low-cost housing development to be called Onyuulaye Proper and Extension 1 Townships on Portions 1 and 2 of the Farm Onyuulaye Town and Townlands No. 1120. The activity involves the constructions of bulk services and social and economic facilities such as Sewer Water Reticulation, Electricity supply, Roads, drinking water and the Constructions of Buildings as well as the maintenances of the site during operational phase such as Waste Disposal from the site to the recognized disposal site and the Noise Pollution control as well as technical maintenance of the afore-mentioned services. The proposed site is on the existing infrastructure which should make it more easily to be integrated into the bulk service infrastructure. With regard to services, running water will be supplied to each erf. It is expected that electricity will be supplied from the existing supply from the Onyuulaye substation located on site. The water-borne sewage will feed into the existing Onyuulaye reticulation system however; there is a need for additional

sewer system and additional pump stations. The sewer ponds will also be enlarged in the near future. The land is currently partially developed and is earmarked for township establishment.

6.1 Proposed location and land ownership

The proposed development is a property of the Oshikoto Regional Council with the area of 102 hectares. It is situated on the property legally known as Portion 1 and Portion 2 of the Farm Onyuulaye Town and Townlands No. 1120 in Onyuulaye Constituency, Oshikoto Region as shown in Figure 1 below. The site is partially developed with government buildings, business and households (most of the mahangu fields in the area have been compensated). The proposed site is dissected by the D3630 and D3631 Main Roads from Okankolo and Onyati. The GPS coordinates of the location of the proposed project site are (18° 4'30.59"S) (16°31'50.84"E).



Locality Map

6.2 Ownership

The proposed development is a property of the Oshikoto Regional Council which will be managing the development during the construction and operational phase. The proposed erven would then be leased to low-income residents of Onyuulaye Settlements.

6.3 Description of the site

- The slope of the site is relatively flat.
- No characteristics of ground slope instability were observed on site.
- No ground or surface water was encountered during the site investigation.
- No erosion was evident during the investigation.
- Medium excavations can be expected but no blasting operations are fore seen.

6.4 Photographic History

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

1. Typical vegetation condition of the proposed site;





2. The D3630 Crossing the site



2. Typical topography of the site;



6.5 Description of the proposed project

The proposed activity is for the establishment of Onyuulaye Proper and Extension 1 on Portions 1 and 2 of Farm Onyuulaye Town and Townlands No. 1120 which involves the constructions of bulk services such as Sewer Water Reticulation, Electricity, Roads, drinking water and the Constructions of Buildings as well as the maintenance of the site during operational phase such as Waste Disposal from site and Noise Pollution control as well as technical maintenance of the afore-mentioned services. There are no specific details of the exact design of houses to be built on the site due to the fact that the entire project is still in the designing phase. However, the layout of the site is shown in figure 1 above.

6.6 Proposed Project Activities

The proposed development entails township establishment and related infrastructure of ±550 erven on 102 hectares on Portions 1 and 2 of the Farm Onyuulaye Town and Townlands No. 1120. The proposed townships establishment comprises of the erven composition in Table 2 and 3 below.

Onyuulaye Proper

Land Use	No of Erven
Residential	208
General Residential	9
Business	32
Institutional	4
Government	6
Local Authority	5
Light Industrial	9
Public Open Space	7
Servitudes	1
Remainder/Streets	1
Total	282

Table 2: Erven composition for Onyuulaye Proper

Onyuulaye Extension 1

Land Use	No of Erven
Residential	167
General Residential	29
Business	39
Institutional	8
Government	10
Local Authority	2
Light Industrial	3
Public Open Space	6
Servitudes	2
Remainder/Streets	1
Total	267

Table 3: Erven composition for Onyuulaye Extension 1

6.7 Engineering Services

The proponent is proposing the establishment of a “low-income” townships, as detailed below. The proposed development of 550 erven consisting of 375 residential erven, General Residential, Business, Institutional, Government, Local Authority, Light Industrial, public open spaces and public roads to fulfil the market need for the proposed township lifestyle in the study area.

6.7.1 Bulk Infrastructure

The proposed bulk services will be integrated with the Existing Infrastructure.

a) Water

The existing infrastructure is adequate to supply the proposed development and the water pressure head available in the reservoir is adequate to supply water at the minimum required pressures. The proposed development will require about 40 cubic meters of water

per day. Construction of new water reservoir and additional water services should be undertaken to for the proposed development.

b) Sewerage

The existing bulk infrastructure is not adequate to carry the load of a further waterborne sewerage reticulation system, thus additional infrastructure as well as additional pump station will be constructed in this regard so that the infrastructure can be adequate enough to pump the effluent produced by the proposed development. Sewer ponds will also be enlarged in the near future.

c) Electricity

The Onyuulaye substation, which is located on the proposed site, has sufficient capacity to supply the proposed development.

d) Storm water

There is no storm water system in the proposed development; therefore, the storm water drainage system will be constructed.

e) Waste Produced

The waste to be produced will be dumped (disposed of) at the settlement dumping site located approximately 1.5 km from north west of the proposed development.

f) Roads

Road network will be constructed for land users and will be gravel and tarred.

6.7.2 Blasting

With regards to this development, no blasting is required since the area is relatively flat with sandy soils.

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 at this phase.

b) Site clearance and fencing

This will involve clearance of the little vegetation that is currently found at the proposed site. The site will then be isolated for public safety and for the security of construction material and equipment.

c) Excavation

This will involve excavation of the ground for the pipe working and constructions of bulk services and buildings and other substructures as per the engineering drawings. This will use appropriate excavation equipment. This process will generate waste in form of spoil soil and rock particles.

d) Construction of superstructures

Based on the proposal of the proponent, this will entail the construction of superstructures of the township with components that include: -

- An establishment of an Industrial and Business area
- Constructions of residential erven
- Open Market
- Public recreational areas (Open space)
- Sewage reticulation

- Electricity power lines
- Portable water supply
- Associated piping work

6.8.2 Activities during the operation and maintenance phase

During this phase, the Oshikoto Regional Council which is the landowner of the proposed site and the proponent of this project; will be responsible for the following:

- Maintenance of the site during operational phase such as Waste Disposal from site to the recognised waste disposal site;
- Controlling the noise pollution in the area;
- Technical maintenance of the bulk services.
-

6.8.3 Activities at the decommissioning phase

In this stage of the development, it is deemed unnecessary to demolish the project because the Onyuulaye area has adequate water supply, good climatic conditions, fair sewage disposal system, to accommodate the proposed development. It was also identified that the proposed site is located on a fair site with no mineral resources which might lead to the demolishing of the project and replace it with a mine. With this regard, the development of this project would not be affecting any of the locals in a negative way. Therefore, there will be no need for demolishing the project as there are no mineral resources or human settlements occupying the land except the illegal bars on the site of which most of them will be incorporated into the business even to minimize the cost of compensation.

7. BASELINE DATA

This section lists the most important environmental characteristics of the study area and provides a statement on the potential environmental impacts on each.

7.1 Locality and Surrounding Land Use

The proposed development is a property of the Oshikoto Regional Council with an area of 102 hectares. It is situated on the property described as Portions 1 and 2 of the Farm Onyuulaye Town and Townlands No. 1120 in Onyuulaye Settlement, Oshikoto Region as shown in the attached locality plan. The site is partially developed and currently used for Government offices, residential and businesses. The proposed site is dissected by the D3630 and D3631 from Okankolo and Onyati. The GPS coordinates of the location of the proposed project site are (18° 4'30.59"S) (16°31'50.84"E).

7.2 Climate and Temperature

The climatic condition in Onyuulaye is considered to be a local steppe climate. During the year, Onyuulaye receives little rainfall. The Köpper-Geiger climate classified is BSh. The average annual temperature is 22.8°C. The average rainfall in Onyuulaye is 469mm. Oshikoto Region has a negative water balance due to the dry conditions and high evaporation rate. The climate of the region is described as a semi-arid with an average annual rainfall ranging between 400mm to 500mm per annum.

The summer season of the region is described as hot with a maximum temperature between 30°C and 35°C during the hottest months and coldest winter temperatures are around 2°C to 6°C. The mean evaporation figure for the region lies from 2600mm to 280mm per annum.

7.3 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.

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 massive lake known as the Etosha lake.

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.

7.5 Vegetation

The vegetation on site consists of short grass moderately scattered around the site. The project site is currently semi-developed due to government offices, residential and business properties on the site, however, undeveloped areas within the proposed site clearly shows disturbances by animals and human activities such as vehicular tracks, sport fields and animal grazing.

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.

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 Ekata 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, no animals were seen except for the community's cattle and avifauna. However, small burrowing species are expected to occur. The area is currently transformed agricultural land and used for grazing and other agricultural purposes (livestock enclosures), businesses partially occupying the land and vehicular movement and footpaths. Due to the location of the proposed township and according to what was seen during site walkover, it is deemed unnecessary to appoint a specialist to assess the ecology of the area.

7.8 Flora

The proposed site was visited on the 11th of June 2020 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 2011 Population and Housing Census the total population in Oshikoto Region was 181 173 (NPC, 2011). The population density is 4.7 persons per km² 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, with an average size of 3.6 persons. Most (96%) of the households residing within the Oshikoto Region speaking Oshiwambo (NPC, 2011).

8.2 Economic activities

There has been immense commercial and administrative growth in Oshikoto Region. Oshikoto is commonly an agricultural region, with both cropping 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 centred 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. These 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. Therefore, the Oshikoto Regional Council assists small farmers in obtaining access to markets to sell agriculture produce on the open market. There are large salt pans in this region. These Salt pans are resources that can be developed into a major source of income to the Region. These pans consist of the large alkaline and saline content.

8.3 Education Profile

The Oshikoto Region is well placed with regards to academic rates in the whole of Namibia. According to (EMIS, 2012) there are 140 Primary schools, 105 Combines school and 28 Secondary schools in total. 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.

8.4 Employment Opportunities

In the year 2011, 58% of the population older than 15 years were employed and 49% unemployed. The population outside the labour force comprised of students, homemakers and retired or old age persons.

8.5 Income

According to the 2011 censuses, the subsistence farming and labour migration were considered the primary livelihood sources of many households. 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 centres 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).

8.7 Immigration

The settlement will attract many immigrants from other settlements and especially from the surrounding villages. Employment and business opportunities will be the main reason thereof. This might cause discomfort to the local community currently residing in the area as food prices might increase, cuca-shops will have more customers leading to increased stress and conflict over time and leading to the lack of housing resulting in the increasing informal settlements.

8.8 Acquisition

Jobs emanating from the construction and operation of the proposed development will be outsourced to small medium enterprises in the area.

8.9 Tourism

The tourism industry is generally poor in the Onyuulaye Settlement and Oshikoto Region at large. Apart from the Oshikoto and Guinas lakes in the south of the Region and the Nakambale heritage site in Olukonda, there are no other noticeable tourist attraction sites. However, the development of tourist sites north of the Etosha National Park promises to open up the tourism potential of the region and guarantee access to the inhabitants and foreign tourists alike access to the National Park. There is loyal house for Ondonga Traditional Authority which preserves the traditions and culture of people of the Ondonga Tribe. Above all, the region through Tsumeb Town is hosting the best and spectacular festival known as Copper Festival which is a combination of commercial advertisement and cultural fairs for both local and international entrepreneurs. This festival takes place in August annually. All the above-mentioned places hold the potential to become the region's most important industry subject to major investment and marketing initiatives from the private sector since they attract many tourists who may as well need some supportive services. Oshikoto Region is well connected by roads whereby all tourists can drive through. It can be easily reached from points such Ondangwa, Tsumeb, Eenhana and Okongo. Major roads such as B1 Main Road that that is the main arterial road in the Country passes through the region.

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 centres 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 and Nedbank and Nampost all available in Oniipa, Onyaanya, Omuthiya and Tsumeb as well ATM facilities also available in the region.

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 the option of undertaking the proposed development in a different location other than the chosen site. This could also entail acquiring land elsewhere to carry out the development.

However, in the planning process of the proposed project, Nghivelwa Planning Consultant had several consultation meetings with the Oshikoto Regional Council in order to determine the best site for the proposed township establishment. Due to land availability and service connections, the proposed site, Alternative 1, is the only site that has been identified for establishing a township during the consultation process with the Oshikoto Regional Council. 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 land is a property of the Oshikoto Regional Council; the proponent of the project to establish the township and no red data recorded on the proposed land which might hinder the development on the proposed land.
- This low-cost housing development will, in terms of the Oshikoto Regional Council Implementation Plan, together with the affordable Namibia Mass Housing Development Programme (MHDP) redress the number of informal settlements and address the housing shortage within the Onyuulaye area.
- It will accommodate previously disadvantaged individuals who cannot afford houses;
- It will create job opportunities for the local community in both construction and operational phases which will improve their skills.
- There is adequate space for the proposed development on the proposed land which is 102 hectares.
- There are already government, business and housing structures constructed on the property. Therefore, compensation will be minimum and that save cost.

- The proposed site will be located at a very suitable location that will avoid problems associated with traffic system.

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 situation/ status quo. Therefore, the No-go Alternative would mean that the proposed township establishment on the Portions 1 and 2 of the Farm Onyuulaye Town and Townlands Np. 1120 for the development of a new township would not be constructed at the proposed site and the land would remain at this current status. Should the proposed township establishment not take place, serious consequences can be expected. In the environmental-socio-economic point of view, the no project option is the least preferred option due to the following factors:

- Vacant land may result in informal settlement development.
- There will be a backlog in housing, which may lead to service protests as the community’s needs are not addressed.
- No employment opportunities will be created for the locals who would work on the project.
- Poverty will not be eradicated in terms of job creations.
- The local skills would remain underutilized.
- Reduced technology advancement at the village and interaction both at local, national and international levels.
- Promotes vegetation clearing for firewood

This is therefore not a desirable alternative as the option of not establishing a township, will be detrimental to the environment.

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. Therefore, 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 neighbouring landowners, 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 to Namibia's economy. Besides these legal requirements, it was also endeavoured to consult the public and other relevant stakeholders to ensure that their voices are heard and taken into account during the decision-making process.

10.1 Aim for Public Participation Process (PPP)

The aims for the Public Participation Process are 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, due to the outbreak of COVID-19 and government restrictions, no public meetings were held. The following were invited to Comment:

- Constituency Councillor,
- Oshikoto Regional Council,
- Namibian Government Authorities such as Road Authority;
- Business stakeholders, such as NamWater, NamPower, Nored and
- General public

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. However, no body requested for it. 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;

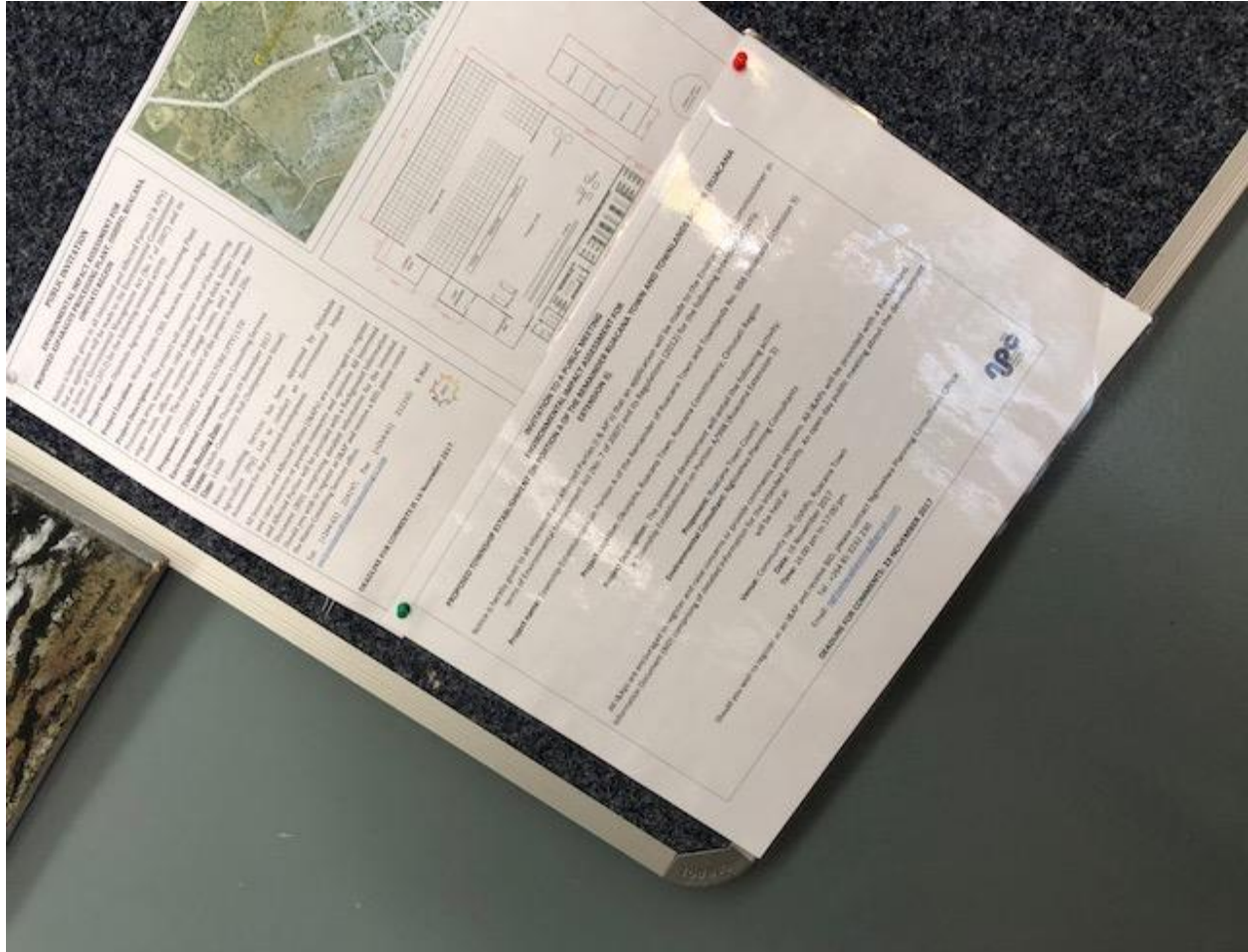
- Forwarding letters to government authorities and other identified relevant stakeholders;
- Fixing a notice board at a place conspicuous to the public in Oshiwambo & English;
- A word of mouth invitation by the Headmen and representatives of the nearby villages.
- Placing advertisements twice in at least two local newspapers.

10.5 Advertisement

The advertisement of the public participation and submission of comments for the proposed project were placed in the national newspaper, the New Era and Confidante Newspapers dated: 9th and 16th July 2020. Proof of advertisements are attached.

10.6 Notice Board

An A3 size notice board detailing information about the project and the EIA process was at the councillors office notice board on 9th of July 2020.



A3 notice board notice

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; However, there was no public meeting held due to government regulations related to the outbreak of COVID – 19 Pandemic.

The public interest on this project is minimal. Letters for comments were sent to the identified key stakeholders for comments see a copy of the letter for comments attached.

10.8 Issues raised by interested and affected parties

No comments received on the project from interested and affected parties (stakeholders), although they were notified about the project.

11. ENVIRONMENTAL ASSESSMENT METHODOLOGY

An appraisal of the type of effect 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 4: Assessment and Rating of 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 5: Assessment and Rating of 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 6: Assessment and Rating of 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)	$(\text{Severity} + \text{Duration} + \text{Extent}) / 3$
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Table 7: Determination of Consequence

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

Table 8: Assessment and Rating of Frequency

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

Table 9: 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
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Table 10: 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 11: Determination of Environmental Significance

11.1 Impacts Associated with Construction Phase

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

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 township will have impact on the surrounding air quality as construction vehicle will be frequenting the site and surrounding. The clearing of vegetation in preparation for construction exposes the soil to dust which increases the Particulate Matter concentration in the atmosphere. PM is contributing to respiratory tract infections, especially in rural areas much like the proposed 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 during the construction process is advised if dust becomes an issue. Vehicles travelling to and from the construction site must adhere to the speed limits so as to avoid producing excessive dust. A speed limit of 40 km/hr should be set for all vehicles travelling over exposed areas. Loads could be covered to avoid loss of material in 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) this is a job creation and economic benefit to local community since the construction activities associates with the installation of services infrastructure which will require labourers from the surrounding.

	Severity	Duration	Extent	Consequence	Frequency	Probability	Likelihood	Status	Confidence/Significance
Unmitigated	1	2	2	1.66	2	5	3.5	Positive	5.16 (LM)
<p>Mitigation measures:</p> <p>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 10 skilled and unskilled posts. Preference should be given to local residence and to Namibian Citizens.</p> <p>When recruiting, the responsible contractor should ensure gender equality is taken into consideration that both men and women are employed equally and treated equally.</p> <p>Equity, transparency, should be put 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 for decision makings.</p> <p>In terms of human resource development and capacity building, the contractor must enforce training programs that skilled workers should always train unskilled workers when necessary, in order for them to enhance their performances and to gain more knowledge that they might demonstrate at other levels in future.</p>									
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 cause noise include vehicle trafficking, generator noise, pressure hammers and construction worker's voices, including earthmoving equipment which will be utilized during the construction phase. However, no village properties nearby (<150m) the site were identified. The project site is currently not adjacent to any residential and industrial area except few government buildings, businesses and houses occupying the proposed site therefore the construction of the development will disturb residents at a limited extent. Therefore, these noise levels that are likely to occur during this phase are not assessed to be a nuisance to the residents and communities.

	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 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 digging of structure 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
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Unmitigated	4	3	3	3.33	5	5	5	Negative	8.33 (LM)
Mitigation measures: Removal of vegetation to take place only within demarcated construction site. No work is 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 park erven and on some areas of open space should be done. 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. 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. is very important and 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)
<p>Mitigation measures:</p> <p>A health and safety plan is to be developed and implemented as soon as land clearing commences.</p> <p>During construction, earthmoving equipment will be used on site. This increases the possibility of injuries and the responsible contractor must ensure that all staff members are briefed about the potential risks of injuries on site.</p> <p>Ensure the appointment of a Safety Officer to continuously monitor the safety conditions during construction.</p> <p>The contractor is further advised to ensure that adequate emergency facilities are available on site.</p> <p>The construction staff handling chemicals or hazardous materials must be trained in the use of the substances and the environmental, health and safety consequences of incidents.</p> <p>All construction staff must have the appropriate PPE.</p>									
Mitigated	2	1	2	1.66	1	2	1.5	Negative	3.16 (L)

Traffic - Potential impact due to increase in traffic because the site is dissected by the D3630 and D3631 main roads from Onyati and Okankolo. Construction related activities are expected to have a minimal impact on the movement of traffic along the road. Accidents might occur if no qualified drivers employed to drive vehicles for the project.

	Severity	Duration	Extent	Consequence	Frequency	Probability	Likelihood	Status	Confidence/Significance
Unmitigated	5	5	3	4.33	5	3	4	Positive	8.33 (LM)
<p>Mitigation measures:</p> <p>No diversion of traffic or closure of the road is expected.</p> <p>Flag men and traffic controllers should be appointed to regulate traffic flow of vehicle construction.</p>									

<p>The responsible contractor must ensure that all drivers employed have valid driver's licenses of vehicle types they employed for, and that they have experience in driving those vehicles.</p> <p>The contractor must ensure that there is always a supervisor on site to ensure that no driver under the influence of alcohol or narcotics to be authorized to drive company's vehicles.</p> <p>The vehicle construction should limit speed to 40km/h and also be considerate of the surrounding land users.</p>									
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)
<p>Mitigation measures:</p> <p>Ensure that no excavated soil, refuse or building rubble generated on site are placed or dumped on surrounding properties or land.</p> <p>Contaminated wastes in the form of soil, litter, building rubble and other material must be disposed of at an appropriate disposal site.</p> <p>The contractor and developer should ensure that all the waste generated by the development is appropriately disposed of at the recommended waste disposal sites close to the area.</p> <p>Strictly, no burning of waste on the site or at the disposal site is allowed as it possess environmental and public health impacts;</p> <p>No construction waste should enter the surrounding environment no cleared vegetation to be burnt on-site.</p> <p>To avoid contaminating the soil and underground ecosystem, no wastewater should be disposed on soil.</p>									
Mitigated	1	1	1	1	4	2	3	Negative	4 (L)

Groundwater Contamination – Leakages from equipment and machinery might occur during the construction phase or mixing of cement and the use of toilets all will lead to the contamination of the groundwater.

	Severity	Duration	Extent	Consequence	Frequency	Probability	Likelihood	Status	Confidence/Significance
Unmitigated	5	5	5	5	5	4	5	Negative	9.5 (LM)
<p>Mitigation measures:</p> <p>Chemicals used during construction e.g. paint and paint remover is also posing a risk. Care must be taken to avoid contamination of soil and groundwater.</p> <p>Ensure no cement or cement containers should be left lying around.</p> <p>Mixing of cement should be done at specifically selected areas on mortar boards or similar structures to contain surface run-off.</p> <p>Proper toilet facilities should be installed at the construction site and at the camping site or alternative arrangements made.</p> <p>The contractor shall ensure that there is no spillage when the toilets are cleaned or during normal operation and that the contents are properly removed from site.</p> <p>Cleaning of cement mixing equipment should be done on proper cleaning trays.</p> <p>Prevent spillage of contaminants or of water potentially contaminated by cement, chemicals, sewage</p> <p>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).</p>									
Mitigated	3	1	1	1.66	5	3	4	Negative	5.66 (LM)

Increased Spread of HIV/ AIDS- migrant workers with HIV/AIDS may affect local people leading to a high rate of HIV/AIDS in Onyuulaye Settlement.

	Severity	Duration	Extent	Consequence	Frequency	Probability	Likelihood	Status	Confidence/Significance
Unmitigated	5	5	5	5	5	5	5	Negative	10(M)
<p>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 from external workers who will be sourced from other areas out of Onyuulaye because sourcing labour from the surrounding will prevent the spread of the HIV/AIDS as the residents will not be vulnerable to new workers in the area. Condoms as a contraceptive should be distributed to construction employees.</p>									
Mitigated	2	1	4	2.33	2	3	2.5	Negative	4.8(L)

Heritage Impacts – There are no known heritage areas or artefacts were identified at the project site during the site visit. 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 stopped 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

	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 proposed facility, except trees with stem diameter > 20mm.that is recommended to be conserved and be made part of the development									
Mitigated	1	1	1	1	1	1	1	Negative	1 (L)

11.2 Impacts Associated with Operational Phase

Storm water- Storm water usually runs off the areas 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. It is in this nature that plans for storm water collection has been proposed in such way so as to accommodate the entire amount of outflow that may occur after development.

	Severit y	Duratio n	Exten t	Consequenc e	Frequenc y	Probabilit y	Likelihoo d	Status	Confidence / Significanc e
Unmitigate d	4	5	3	4	2	5	3.5	Negative	7.5 (LM)
Mitigation measures: All along the roads storm water drains would be provided to collect water during rains. Storm water drains will be collected through network of storm drains from gardens, parking areas, paved and unpaved areas, and roadways. They would be adequately sized to prevent over flooding of the site.									
Mitigated	1	1	2	1.33	1	2	1.5	Negative	2.83 (L)

Commercialization of the area - The project will be a social and financial upliftment for the community.

	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 social services within the area. 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 for them to live in a quality life style.									
Mitigated	1	2	1	1.33	5	3	4	Positive	5.33 (LM)

Improved aesthetic look of the area- The development of this project at this site is essential to improve the aesthetics of the area while turning it into an environmentally friendly settlement with improved infrastructure services. This potential impact of the infrastructure on the economic structure is positive impact. The construction should be completed on time to prevent the delay of the good looking and improved site;

	Severity	Duration	Extent	Consequence	Frequency	Probability	Likelihood	Status	Confidence / Significance
Unmitigated	2	2	2	2	1	1	1	Positive	3 (L)
Mitigation measures:									

<p>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.</p> <p>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.</p> <p>This project will provide quality residential accommodation to the previously disadvantaged residents with low income. It should provide convenient transport system, accessibility to utilities and social centres to enhance the social quality of life.</p> <p>Public open space and park erven should be revegetated to look greener and to minimize soil exposure to erosion.</p>									
Mitigated	1	5	4	3.33	3	5	4	Positive	7.33 (LM)

Increased employment opportunities-

	Severity	Duration	Extent	Consequence	Frequency	Probability	Likelihood	Status	Confidence/Significance
Unmitigated	2	3	5	3.33	3	3	3	Positive	6.33 (LM)
<p>Mitigation measures:</p> <p>The principles of gender equality, maximising local employment should be implemented in the provision and establishment of jobs.</p> <p>It is recommended to put local people at forefront when hiring or recruiting people, therefore unskilled people from the local community should be employed and semi-skilled from the region so that unskilled workers can be trained by semi-skilled for them to learn and be able to compete with others in future.</p> <p>Jobs for the 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.</p> <p>Equity, transparency, should be put 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 for decision makings.</p>									
Mitigated	1	4	4	3	2	5	4	Positive	6.5 (LM)

Traffic - Potential impact due to increase in traffic because the site is dissected by the D3630 and D3631 from Onyati and Okankolo and many vehicles will travel on that road.

	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: Sidewalks for pedestrians should be provided. Appropriate road signs and markings should be provided throughout the layout. Signs should be provided at intersections particularly at higher order intersections.									
Mitigated	2	1	1	1.33	1	2	1.5	Positive	2.83 (L)

Waste management-

	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 will service the proposed residential area. Oshikoto Regional Council to develop a formal waste collection strategy and that the waste is to be collected regularly by disposed of at authorized dumping site or disposal site. Illegal dumping should be prohibited.									

Mitigated	1	1	1	1	1	2	1.5	Negative	2.5 (L)
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Land use -The proposed development will result in a change in land use, with some loss of grazing taking place. However, it will impact positively on the current housing shortage within the Onyuulaye area because it will aim to address the number of informal settlements as well as providing houses to previously disadvantaged individuals who cannot afford houses. It is expected that 267 new units will be built on the proposed site, providing as many families with housing.

	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 be changed from agricultural to residential use. However, the development will be compatible with the surrounding land use on completion of the construction phase. Houses should be sold to local previously disadvantaged individuals who cannot afford houses or locals with low incomes. 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 the demolition 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

The Oshikoto Regional Council proposes to establish two Townships on Portions 1 and 2 of the Farm Onyuulaye Town and Townlands No. 1120 to be known as Onyuulaye Proper and Extension 1 in Oshikoto Region. Nghivelwa Planning Consultants had conducted an Environmental Impact Assessment (EIA) and prepared an Environmental Management Plan (EMP) for the construction, operation and decommissioning phases of the proposed development. Therefore, potential environmental issues associated with the proposed activities have been identified. A number of potential impacts were assessed and mitigation measures are provided. The area is generally suitable for the township establishment. All environmental risks can be minimised and managed through implementing preventative measures and sound management systems.

It is concluded that the Onyuulaye area has adequate water supply, good climatic conditions, fair sewage disposal system, etc. Thus, this development would not be affecting any of the locals in a negative way. It is also concluded that there will be no need for any rehabilitation as there are no human settlements in this area as all existing structures will be incorporated into the townships and the few mahangu fields on site have been already compensated. On the contrary there will be abundant opportunities for employment during the construction phase (both skilled and unskilled), although temporary and there will be permanent employment opportunities during the operational period of the project. These residential townships would enhance the quality of life in Onyuulaye Settlement.

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