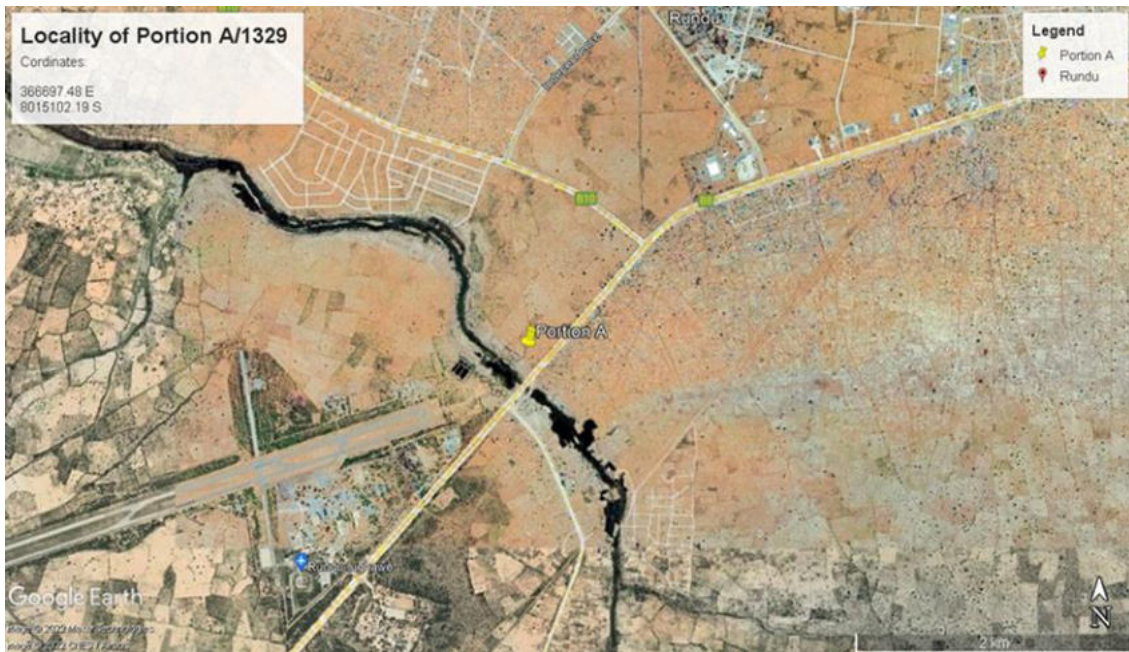


ENVIRONMENTAL IMPACT ASSESSMENT

FOR THE
SUBDIVISION OF PROPOSED PORTION A/1329 INTO 31 ERVEN AND REMAINDER
AND SUBSEQUENT CREATION OF A STREET, RUNDU TOWN, RUNDU URBAN
CONSTITUENCY, KAVANGO EAST REGION.



AUGUST 2022

Prepared by:

Nghivelwa Planning Consultants
P.O. Box 40900
Ausspannplatz
Tel: +264 61 269697 Cel: +264 85 323 2230
E-mail: planning@nghivelwa.com.na

Prepared for:

Rware Trading Enterprises cc
P O Box 2626
Rundu
Tel: +264 81 295 4069
Email: thikushogreece@gmail.com



Environmental Management Practitioners

Name of representative of the EAP	Education qualifications	Professional affiliations
Nghivelwashisho Natangwe Ndakunda	B-Tech Town and Regional Planning	Namibia Council of Town and Regional Planners
Ndati-Onawa N Ndakunda	Master of Science in Integrated Environmental Management and Sustainable Development	Geoscience Council of Namibia Geoscience Council of Namibia, Environmental Scientist (EAPAN Member)

See attached preparers' resumes

Client

Name	Position/ Role	Address
Rware Trading Enterprises CC	Rware Trading Enterprises CC (Proponent)	P O Box 2626 Rundu

LIST OF ABBRECIATIONS

TERMS	DEFINITION
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
DEA	Department of Environmental Affairs
MET	Ministry of Environment and Tourism
PPPPs	Projects, Plans, Programmes and Policies
NDC	Namibia Development Consultants

SANS	South African National Standards
I&APs	Interested and Affected Parties

Contents

1. INTRODUCTION AND BACKGROUND	6
1.1. Terms of Reference	6
1.2. Acknowledgement	7
2. PROJECT DESCRIPTION	8
2.1. Site Locality.....	9
2.2. Land Zoning and Ownership	10
2.3. Site Descriptions	10
2.4. Proposed Activities	10
2.5. Need and Desirability of the Proposed Project.....	11
3. ANALYSIS OF ALTERNATIVES.....	12
3.1. Alternative Site	12
3.2. The “No Project” Alternative	13
4. POLICY AND OTHER RELEVANT LEGISLATIONS	13
5. BASELINE DATA	17
5.1. Climatic conditions	17
5.2. Geology, Topography and drainage.....	17
5.3. Soils.....	18
5.4. Fauna	18
5.5. Flora	18
6. SOCIO-ECONOMIC ENVIRONMENT	19
7. PUBLIC PARTICIPATION PROCESS (PPP)	20
7.1. Aim for Public Participation Process (PPP).....	20
7.2. Compilation of stakeholder database	21
7.3. Background Information Document	21
7.4. Notification of I&APs	21
7.5. Advertisement.....	21
7.6. Notice Board.....	21
7.7. Public Meeting.....	22
7.8. Issues raised by interested and affected parties	22
8. ENVIRONMENTAL ASSESSMENT METHODOLOGY.....	22
8.1. Impacts Associated with Construction Phase	25
8.2. Impacts Associated with Operational Phase.....	32
8.3. Impacts Associated with Decommissioning Phase.....	36
9. CONCLUSION.....	36

10. REFERENCES	37
----------------------	----

LIST OF FIGURES

Figure 1: Layout plan.....	8
Figure 2: Locality plan.....	9
Figure 3: Undeveloped PTN A/1329.....	10
Figure 4: Layout plan.....	11

LIST OF TABLES

Table 1: Relevant legislation.....	16
Table 2: Demographic figures on Socio-Economic Environment.....	19
Table 3: Assessment and Rating of Severity.....	22
Table 4: Assessment and Rating of Duration.....	23
Table 5: Assessment and Rating of Extent.....	23
Table 6: Determination of Consequence.....	23
Table 7: Assessment and Rating of Frequency.....	23
Table 8: Assessment and Rating of Probability.....	24
Table 9: Determination of livelihood.....	24
Table 10: Determination of Environmental Significance.....	24

1. INTRODUCTION AND BACKGROUND

Rware Investment Enterprises CC proposes the subdivision of proposed Portion A of the Farm Rundu Town and Townlands No. 1329 into 31 Erven and Remainder and the creation of a street within Rundu Town, Kavango East Region in northern Namibia, to cater for the development of 31 houses to be constructed on the new erven.

Nghivelwa Planning Consultant has been appointed to conduct an Environmental Impact Assessment and Environmental Management Plan (EMP) for the subdivision proposed Portion A/1329 into 31 Erven and the creation of a street within Rundu Town, to cater for the development of 31 houses and a 15-meter street. The Environmental Impact Assessment has been conducted to meet the requirements of Namibia's Environmental Management Act, 2007 (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.

1.1. Terms of Reference

The proposed project for the subdivision of proposed Portion A/1329 into 31 Erven and Remainder and the creation of a street 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 Rware Trading Enterprises CC appointed Nghivelwa Planning Consultant to provide consultancy services to undertake an environmental impact assessment compliant to Environmental Management Act, 2007 (Act No. 7 of 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 neighbouring 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.

1.2. Acknowledgement

Nghivelwa Planning Consultant has prepared this EIA Report on behalf of Rware Trading Enterprises CC as the proponents of this project. The Project proponent has provided the necessary information during the EIA process and preparation of the Scoping Report. The Consultant (Nghivelwa Planning Consultant) gratefully acknowledges the help, advice and information provided by the proponent as well as the support and interest shown by all the identified stakeholders.

2. PROJECT DESCRIPTION

The proposed development is for the subdivision of proposed Portion A/1329 into 31 Erven and Remainder and the creation of a 15-meter street in Rundu Town, Kavango East Region located in Central Namibia, to cater for the development of 31 single residential houses to be constructed on the new erven.

The project involves the Constructions of Buildings and parking as well as the construction of the access road to the site from the main street, the constructions and installations of bulk services such as sewer water reticulation, the connection and installation of Electricity, the connection and installation of portable water to the buildings and the maintenance of the storm water network.

The proponent will also be responsible for the maintenance of the site during operational phase such as waste management from site, noise pollution control, safety as well as technical maintenance of the afore-mentioned services.

The layout of the site is shown in figure 1 below.

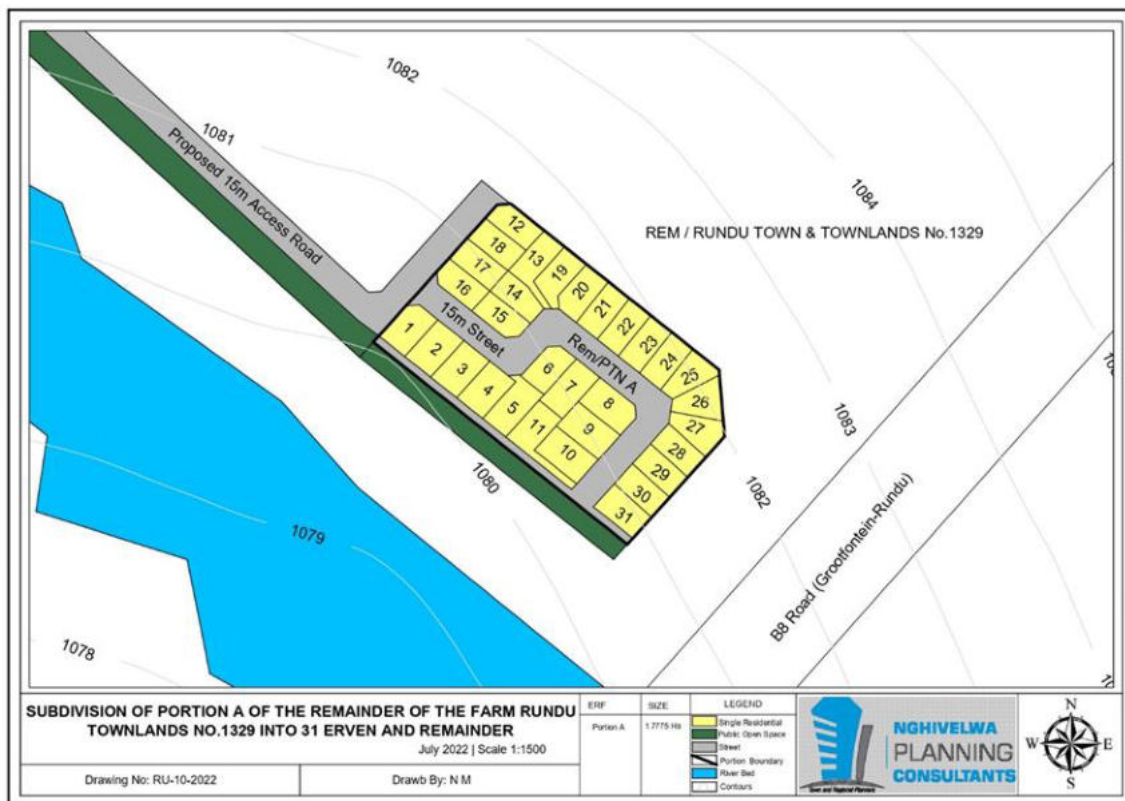


Figure 1. layout plan

2.1. Site Locality

Proposed Portion A/1329 is located on southern side of Rundu Townlands near the B8 Main Road to Grootfontein. Rundu Town is located in Rundu Urban Constituency, Kavango East Region, Namibia.

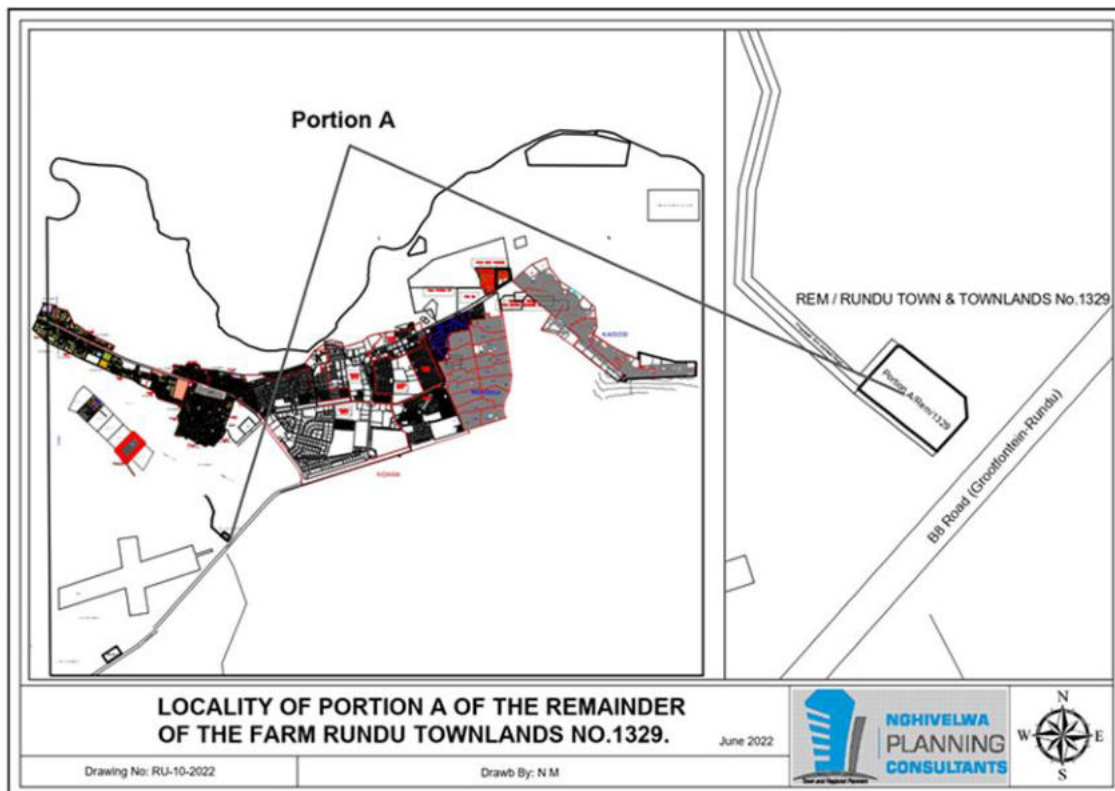
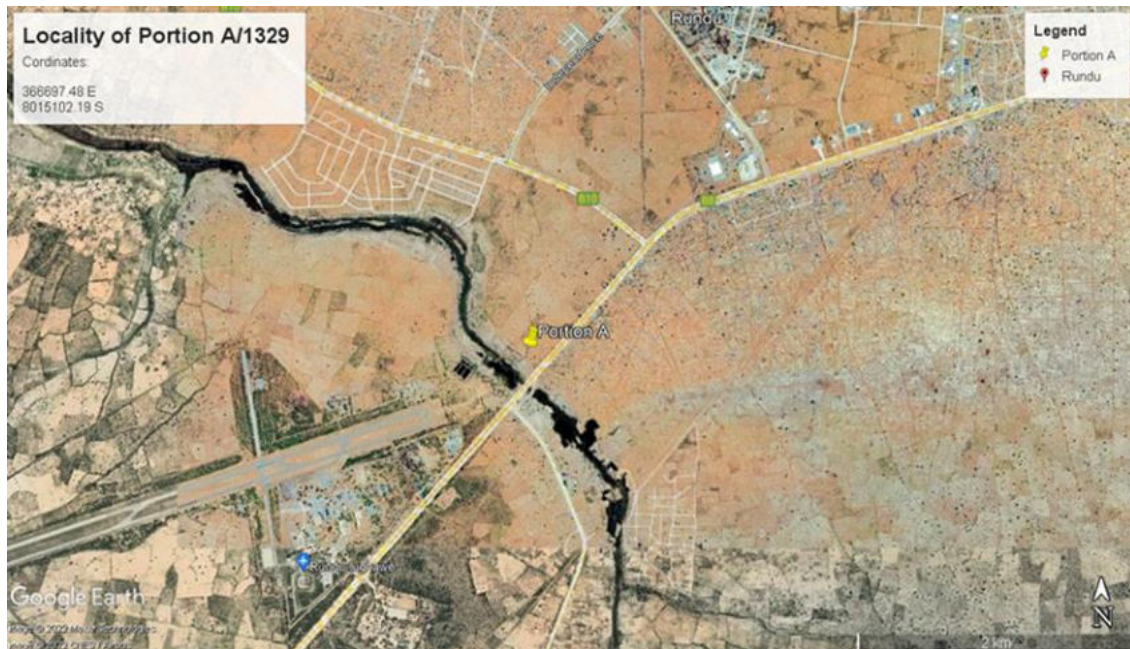


Figure 2: Locality Map

2.2. Land Zoning and Ownership

Proposed Portion A/1329 is currently owned by the Rundu Town Council. However, they town council is in the process of selling the land to Rware Trading Enterprises and the land sale process will be completed soon. Proposed Portion A is zoned for “Undetermined” purposes.

2.3. Site Descriptions

Proposed Portion A/1329 currently measure 1,7775 Hectares and is currently vacant. It is located on the southern side of Rundu Townalnds. There are residential erven near proposed Portion A/1329, thus the proposed development will blend in with the surrounding environment. There Erf is currently vacant and there are no buildings constructed on the property.



Figure 1: Undeveloped Portion A/1329

2.4. Proposed Activities

The proposed activities entail the following:

- Subdivision of proposed Portion A/1329 into 31 Erven and Remainder;
- Creation of a 15 Meter Street

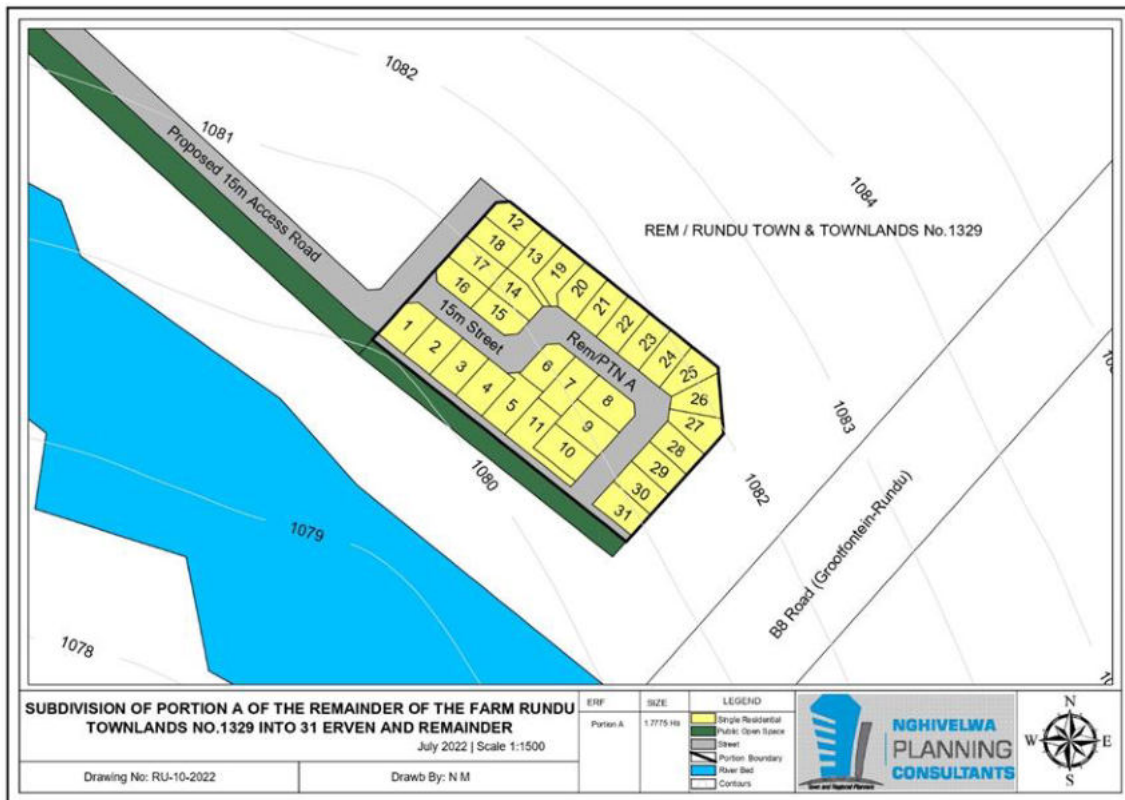


Figure 4: Layout Plan of the Site

After the successful implementation of the town planning and cadastral procedures, the 31 erven will be developed into houses and the remainder as a 15-meter street, no further subdivision will be done.

2.5. Need and Desirability of the Proposed Project

The proponent is desirous to subdivide proposed Portion A/1329 into 31 Erven and Remainder and the creation of a 15-meter street to allow him to develop houses on the 31 erven. The Namibian Constitution guarantees the right to shelter to every Namibian and the Central Government has made housing a priority over the years. However, due to the lack of resources and poor coordination between central, regional and local government there is a significant shortfall in the provision of Housing in the country.

Some local authorities have engaged the private sector to help in the development of residential infrastructure in their towns. Thus, the proponent will not only be a beneficiary to the proceeds from the sale of the residential properties but will be helping in the provision of a basic need of housing as guaranteed by the Constitution of the Republic of Namibia.

A new housing development will also increase the revenue of the Rundu Town Council as they will be able to collect rates and taxes and inter develop other services for the inhabitants of the town.

3. 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.

3.1. 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.

Due to land availability and the fact that this is the only portion of land the proponent owns, the proposed site, Alternative 1, is the only site that has been identified for the proposed development during the consultation process with the proponent and the Rundu Town 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 proponent owns the property and it will not make sense to purchase other land parcels for this project.
- The proposed site is easily accessible and close to existing municipal services such as roads, electricity, water and sewerage connection.
- The land is in a residential zone, therefore no red data recorded on the proposed land which might hinder the development on the proposed land.
- There is adequate space for the proposed development on the proposed land.
- It will create job opportunities for the local or Namibians in both construction and operational phases which will improve their skills.

3.2. The “No Project” Alternative

The No-Go Option is the option not to proceed with the proposed activity, implying a continuation of the current situation/ status quo. Therefore, the No-go Alternative would mean that the no subdivision of proposed Portion A/1329 takes place). Should the proposed development not take place, serious consequences can be expected. From the environmental-socio-economic point of view, the no project option is the least preferred option due to the following factors:

- Currently the site is undeveloped and may attract illegal activities such as dumping of waste therefore, leaving it in its current situation is not an option.
- No additional housing will be provided to the residents of Rundu
- The local skills would remain underutilized.
- 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.

This is therefore not a desirable alternative.

4. POLICY AND OTHER RELEVANT LEGISLATION

SUBJECT	INSTRUMENTS AND CONTENT	APPLICATION TO THE PROJECT
The Constitution of the Republic of Namibia	<p><i>General human rights – eliminates discrimination of any kind</i></p> <p><i>The right to a safe and healthy environment</i></p> <p><i>Affords protection to biodiversity</i></p>	<p><i>Ensure these principles are enshrined</i></p> <p><i>in the documentation of the exploration project</i></p>
Environmental Management Act EMA (No 7 of 2007)	<p><i>Requires that projects with significant environmental impact are subject to an environmental assessment process (Section 27).</i></p> <p><i>Details principles which are to guide all EAs.</i></p>	

<p>Environmental Impact Assessment (EIA) Regulations GN 28-30 (GG 487</p>	<p><i>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).</i></p>	<p>➤</p>
<p>Forestry Act No 27 of 2004</p>	<p><i>Provision for the protection of various plant species</i></p>	<p><i>Some species that occur in the area are protected under the Forestry Act and a permit is therefore required to remove the species</i></p>
<p>Hazardous Substances Ordinance 14 of 1974:</p>	<p><i>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</i></p>	<p><i>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</i></p>
<p>The Nature Conservation Ordinance (No. 4 of 1975)</p>	<p><i>Prohibits disturbance or destruction of protected birds without a permit. Requires a permit for picking (the definition of “picking”</i></p>	<p><i>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</i></p>

	<i>includes damage or destroy) protected plants without a permit</i>	<i>permits will be required</i>
Forestry Act 12 of 2001 Nature Conservation Ordinance 4 of 1975	<i>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.</i>	<i>Even though the Directorate of Forestry has no jurisdiction within townlands, these provisions will be used as a guideline for conservation of vegetation.</i>
Convention on Biological Diversity, 1992	<i>Protection of biodiversity of Namibia</i>	<i>Conservation-worthy species not to be removed if not absolutely necessary.</i>
Water Act 54 of 1956 Water Resources Management Act 24 of 2004	<i>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</i>	<i>Obligation not to pollute surface water bodies</i>
National Heritage Act 27 of 2004	<i>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</i>	<i>Any heritage resources (e.g. human remains etc.) discovered during construction requires a permit from the National Heritage Council for relocation</i>
Labour Act 11 of 2007	<i>Details requirements regarding minimum wage and working conditions (S39-47).</i>	<i>Employment and work relations</i>

<p>Health and Safety Regulations GN 156/1997 (GG 1617</p>	<p><i>Details various requirements regarding health and safety of labourers.</i></p>	<p><i>Protection of human health, avoid township establishment at areas that can impact on human health.</i></p>
<p>Public Health Act 36 of 1919</p>	<p><i>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.”</i></p>	<p><i>The proponent should ensure that all contractors involved during the construction, operation and maintenance of the proposed project comply with the provisions of these legal instrument</i></p>
<p>Water Act 54 of 1956</p>	<p><i>The Water Resources Management Act 24 of 2004 is presently without regulations; therefore, the Water Act No 54 of 1956 is still in force:</i></p> <p><i>Prohibits the pollution of underground and surface water bodies (S23(1)).</i></p> <p><i>Liability of clean-up costs after closure/ abandonment of an activity (S23(2)).</i></p>	<p><i>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.</i></p>

Table 1: Tools advocating the development

5. BASELINE DATA

5.1. Climatic conditions

The climate of the Kavango East Region is semi-arid with an average annual rainfall of 400 – 600 mm (van der Merwe 1983). The 500 mm rainfall isohyet cuts diagonally through the middle of the region in a broad loop from south-west to north-east, with lower mean annual totals recorded for the south. The region receives summer rainfall from December to April, and decades of regional climatic data record no rainfall between May and October.

The mean annual temperature of the regional weather station at Rundu is 22.2°C. Mean summer and winter temperatures differ by more than 5°C with a mean summer temperature (December to February) of 24.8°C and a mean winter temperature (June to August) of 17.1°C (P. Hutchinson, May 1999). Diurnal temperature ranges are highest in winter when frosts can occur. The frequency of high winds increases significantly from August onwards, reaching a maximum in November just prior to the onset of the rainy season. During the same period wind speeds also increase.

5.2. Geology, Topography and drainage

Kavango region can be described as a large aggradational land surface characterised by an increasing differentiation of aeolian sands. True Kalahari sands deposited on the margins of the Kalahari Basin during the Tertiary desert-forming era (1.8 to 66 million years BP) underlie younger red sands deposited and later redistributed from the Late Holocene period to the present. During the latter period, wetter conditions prevailed from 49,000 to 34,000 years BP. From 34,000 to 27,000 years BP a period of aridity favoured the precipitation of calcrete deposits, after which a short return to wetter conditions prevailed (27,000 to 25,000 years BP). In the most recent geological time frame, from 25,000 BP to present, a distinct return to aridity has been documented (Heine & Geyh, 1984).

Topographically, Kavango East Region is flat to gently undulating with maximum altitude differences of approximately 200 m across this vast region. The steepest relief gradients are encountered towards the Kavango River and where dry rivers (omiramba) have incised the surface mantle of sand. Regional elevations gradually descend from 1200 m.a.s.l in the extreme south and south-west to 1150 m.a.s.l west of Rundu, and to 1000 m at Andara on the Caprivi West boundary.

The south-north regional gradient is thus of the order of 0.8 m/km (0.08%). Gentle slope factors combined with the deep, highly permeable soils of the sand plains encourage very little surface runoff, and with the exception of rare high intensity rainfall events, soil absorption capacities are rarely exceeded. However, where long slopes, unstable soils and intensive forms of land use are combined, aeolian and sheet-wash erosion surfaces are evident.

Deep horizontal drainage occurs after heavy rains in the catchment areas of well-defined omiramba, although surface flow is ephemeral and generally truncated by sand drift and alluvial deposits. Surface waters collecting at the confluences of deep omiramba with the eastward draining Okavango River are largely the result of lateral flooding by the Okavango River.

5.3. Soils

The Okavango East Region is dominated by the Aeolian sand and water-deposited gravel that are dominant in the soil body of the region. The relatively sterile sandy soils of the Kavango are enriched by silt, deposited by the Okavango River, in both the river terraces and on the flood plain.

5.4. Fauna

During the site inspection, no animals were observed on site because the site is situated in the residential zone of the built up area of Rundu Town.

5.5. Flora

The vegetation of the Kavango East Region comprises of dry medium to tall woodland and savannah associated with the featureless plains. Dominant vegetation types are *Baikiaea plurijuga*, *Terminalia* spp, *Combretum* spp, *Burkea africana*, *Pterocarpus angolensis*, *Lonchocarpus* spp and *Guibourtia coleosperma*. Based on the physical observations, the proposed site is generally covered with soil and no vegetation was observed. Therefore, no clearing of land is going to be undertaken as the site has already been cleared. No red data or endangered species were noted / recorded during the site visit on the 25th of July 2022, therefore it was decided that it is not necessary to include an ecological specialist study in the report.

6. SOCIO-ECONOMIC ENVIRONMENT

According to Namibia Population and Housing Census of 2011, Rundu is experiencing a relatively high rural-urban migration rate compared to other big town in Namibia. The town had a population of 63 430 inhabitants in 2011. The following are demographic figures for the Hardap Region.

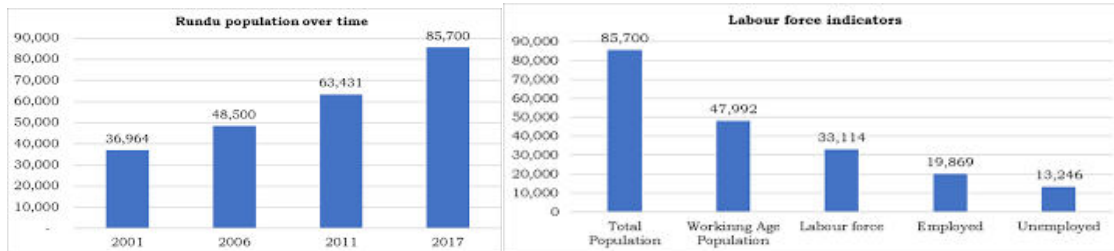


Table 2: Demographic figures on Socio-Economic Environment

There are five tertiary Institutions in Rundu, namely: University of Namibia Rundu campus, Institute of Open Learning (IOL), Rundu Vocational Training Centre, Namibia College of Open Learning (NAMCOL) and Triumphant College. Additionally, Namibia University of Science and Technology has a center in Rundu that provide support for students who are studying on distance. There are 13 primary schools, 10 secondary schools and 3 Combined schools.

Among the primary schools 12 are government school with no hotel, while 1 is private with hostel. However, there are 4 government secondary schools with no hostels and 2 government secondary schools with hostels. Private secondary schools are 4, all with hostels including the highly reputable St Boniface College, a Roman Catholic Church school 33km east of Rundu, which has been ranked the best-performing school in Namibia for the eighth consecutive year.

7. 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 activity and 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. Apart from the legal requirements, public and stakeholder consultations ensure that their comments and views are considered during the decision-making process.

7.1. Aim for Public Participation Process (PPP)

The aims 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.

7.2. 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 the public meeting, these were and not limited to:

- Mayor of Rundu Town Council;
- CEO of the Rundu Town Council;
- Rundu Urban Constituency Councillor;
- General public

7.3. 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 Interested & Affected Party requested for it. See a copy of the BID attached.

7.4. 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
- Placing advertisements twice in at least two local newspapers.

7.5. Advertisement

The advertisement of the public participation and public meeting for the proposed project were placed in two local newspapers, the New Era and the Confidante (dated: 15th and 22th July 2022). Proof of advertisements are attached.

7.6. Notice Board

An A3 size notice board detailing information about the project and the EIA process was erected at a recognised public area on 15th July 2022.

7.7. Public Meeting

In compliance with the EIA Regulations (2012), public (I&AP) and all stakeholders were notified as a requirement for EIA process 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. Due to lack of interest and small scale nature of the project, it was decided that a public meeting was not necessary for this project.

7.8. 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.

8. ENVIRONMENTAL ASSESSMENT METHODOLOGY

An appraisal of the type of effect the proposed subdivision 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).

Severity

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 of Severity

Duration

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 of Duration

Extent

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 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)	(Severity + Duration + Extent) / 3
---	---

Table 6: Determination of Consequence

Frequency

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

Probability

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

8.1 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 and surrounding area, short-termed and will most probably pose a negligible nuisance and health threat to those residing nearby. The construction of the proposed facility will have impact on the surrounding air quality as construction vehicle will be frequenting the site and surrounding.

	Severity	Duration	Extent	Consequence	Frequency	Probability	Likelihood	Status	Confidence/ Significance
Unmitigated	2	2	2	2	5	5	5	Negative	7(LM)
Mitigation measures:									
<ul style="list-style-type: none"> - 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	1	1	1	1	1	1	1	Negative	2 (L)

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 engines, generator noise, pressure hammers, including earthmoving equipment which will be utilized during the construction phase.

	Severity	Duration	Extent	Consequence	Frequency	Probability	Likelihood	Status	Confidence/ Significance
Unmitigated	3	4	3	3.33	5	3	4	Negative	8.33 (LM)
Mitigation measures: <ul style="list-style-type: none"> - Construction should be limited to normal working days and office hours from 08h00 to 17h00 and 07:30 – 13:00 on Saturdays. - 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)

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 areas.

	Severity	Duration	Extent	Consequence	Frequency	Probability	Likelihood	Status	Confidence/ Significance
Unmitigated	1	3	3	2.33	2	5	3.5	Positive	5.83 (LM)
Mitigation measures:									
<ul style="list-style-type: none"> - Various employment opportunities will be created during all phases of the development, ranging from highly skilled to unskilled. Preference should be given to Namibian Citizens residing in Rundu. - When recruiting, the responsible contractor should ensure gender equity is taken into consideration. - No employment applications may take place at the entrance to the site, formal employment channels must be used. - 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. 									
Mitigated	1	2	5	2.66	3	5	4	Positive	6.66 (LM)

Health and Safety- Health and Safety Regulations pertaining to personal protective clothing, first aid kits being available on site, warning signs, etc. is 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	2	4	5	3	4	Negative	8 (LM)
Mitigation measures:									
<ul style="list-style-type: none"> - 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 and 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 is further advised to ensure that adequate emergency facilities are available on site. - 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. - 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 site is in the urban area or industrial area. 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	4	3	4	3.66	5	4	4.5	Positive	8.16 (LM)
Mitigation measures: <ul style="list-style-type: none"> - No diversion of traffic or closure of the road is expected the site will be cordoned off. - 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. - 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. - The vehicle construction should limit speed to 40km/h and also be considerate of the surrounding land users. 									
Mitigated	1	1	1	1	1	2	1.5	Positive	2.5 (L)

Waste Impacts- The construction phase of the development is likely to generate waste from 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	3	3	3	3	5	4	4.5	Negative	7.5 (LM)
Mitigation measures:									
<ul style="list-style-type: none"> - Ensure that no excavated soil, refuse or building rubble generated on site are placed or dumped on surrounding properties or land. - Contaminated wastes in the form of soil, litter, building rubble and other material must be disposed off 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 close to the area. - Strictly, no burning of waste on the site or at the disposal site is allowed as it possess environmental and public health impacts; 									
Mitigated	1	1	1	1	4	2	3	Negative	4 (L)

Safety and Security- During the construction and decommissioning phase, earthmoving equipment will be used on site. This increases the possibility of injuries. Presence of equipment may encourage criminal activities (theft).

	Severity	Duration	Extent	Consequence	Frequency	Probability	Likelihood	Status	Confidence/ Significance
Unmitigated	3	3	3	3	5	4	4.5	Negative	7.5 (LM)
Mitigation measures:									
<ul style="list-style-type: none"> - The site must be fenced off to prevent unauthorized access during construction. - All visitors must report to the site office. - Ensure that the contact details of the police or security company and ambulance services are available on 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 close to the area. - Strictly, no burning of waste on the site or at the disposal site is allowed as it possess environmental and public health impacts; 									
Mitigated	1	1	1	1	4	2	3	Negative	4 (L)

8.2 Impacts Associated with Operational Phase

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)
Mitigation measures:									
<ul style="list-style-type: none"> - It is recommended to consider local people when hiring or recruiting people to benefit unskilled and semi-skilled people from the local community that can gain valuable skills during this project. - Jobs for the maintenance of infrastructure and services will be created following the completion of the development. These jobs will increase the labour force of Rundu Town Council and thus stimulate its development. - Equity, transparency, should be taken into account when hiring and recruiting and that committees should also take part in the recruiting process. 									
Mitigated	1	4	4	3	2	5	4	Positive	6.5 (LM)

Improved aesthetic look of the area- The development is essential to improve the visual and aesthetics view of the area. This potential impact of the infrastructure on the economic structure is positive.

	Severity	Duration	Extent	Consequence	Frequency	Probability	Likelihood	Status	Confidence/ Significance
Unmitigated	3	4	1	2.66	5	4	4.5	Positive	7.16 (LM)
Mitigation measures:									
<ul style="list-style-type: none"> - No mitigation required as it's a positive impact. However, the developer should create awareness among the administrative staff about energy conservation, waste management, water conservation and other resources. - It should provide accessibility to the services provided in the building. - Parking areas will be provided with 1 parking bay per 25m². - Ensure proper and regular maintenance of the area. - No illegal dumping of waste should be allowed 									
Mitigated	1	4	2	2.33	5	5	5	Positive	7.33 (LM)

Water demand- Namibia is a water scarcity country, therefore, the additional development like this one will increase the water demand.

	Severity	Duration	Extent	Consequence	Frequency	Probability	Likelihood	Status	Confidence/ Significance
Unmitigated	5	5	5	5	5	5	5	Negative	10 (M)
Mitigation measures:									
<ul style="list-style-type: none"> - This development will create employment to people from different backgrounds and with different perceptions on using water. Therefore, awareness should be created to inform people on the importance of saving water to reduce water consumption. 									
Mitigated	1	2	1	1.33	1	2	1.5	Negative	2.83 (L)

Power usage- Namibia is experiencing power shortage; therefore, electricity should be used wisely in order to sustain the future generation.

	Severity	Duration	Extent	Consequence	Frequency	Probability	Likelihood	Status	Confidence/ Significance
Unmitigated	2	5	5	4	5	3	4	Negative	8 (LM)
Mitigation measures:									
<ul style="list-style-type: none"> - Power should be off in areas that are not in use/avoid unnecessary lights - Avoid unnecessary printings - Unplug unused electronics - Ditch the desktop computers - Encourage use of renewable energy i.e. Solar lights at parkings to supplement the electricity supply 									
Mitigated	1	1	1	1	3	2	2.5	Negative	3.5 (L)

Waste management- Generation of domestic waste and sewage waste generated from bathrooms.

	Severity	Duration	Extent	Consequence	Frequency	Probability	Likelihood	Status	Confidence/ Significance
Unmitigated	4	3	3	3.33	5	3	4	Negative	7.33 (LM)
Mitigation measures:									
<ul style="list-style-type: none"> - During the operations phase, the Rundu Town Council waste management will manage the waste disposal from the site while the proponent will ensure that waste is stored correctly. - Rundu Town Council to follow their existing formal waste collection strategy and that the waste is to be collected regularly by disposed of at authorized dumping site or disposal site. - Ensure maintenance of sewage system - Illegal dumping should be prohibited. 									
Mitigated	1	1	1	1	4	2	3	Negative	4 (L)

8.3 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. However, 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.

9 CONCLUSION

Rware Trading Enterprises CC proposes the Subdivision of proposed Portion A/1329 into 31 Erven and Remainder and the creation of a 15-meter street in Rundu Town, Kavango East Region in northern Namibia, to cater for the development of 31 single residential houses. Nghivelwa Planning Consultant has been appointed to conduct an Environmental Impact Assessment and Environmental Management Plan (EMP) for the proposed project.

The potential environmental issues associated with the proposed activities have been identified and assessed. Therefore, they are considered sufficient and no additional specialist study is required. Furthermore, a number of potential impacts were assessed and mitigation measures are provided. The area is generally suitable for the proposed project and there were no objections or critical issues have been raised by I&AP's. Hence, all environmental risks can be minimised and managed through implementing preventative measures and sound management systems. Therefore, the approval of this application would not compromise the integrity of the existing environmental management priorities for the area.

10 REFERENCES

- Christelis, G and Struckmeier, W. (2001). Groundwater in Namibia: Explanation to the Hydrogeological map. Windhoek: Ministry of Agriculture, Water and Forestry.
- DEAT (2006) Guideline 5: Assessment of Alternatives and Impacts in support of the Environmental Impact Assessment Regulations, 2006. Integrated Environmental Management Guideline Series, Department of Environmental Affairs and Tourism (DEAT), Pretoria.
- DEAT (2006) Guideline 4: Public Participation in support of the Environmental Impact Assessment Regulations, 2006. Integrated Environmental Management Guideline Series, Department of Environmental Affairs and Tourism (DEAT), Pretoria
- DEAT (2006) Guideline 5: Assessment of Alternatives and Impacts in support of the Environmental Impact Assessment Regulations, 2006. Integrated Environmental Management Guideline Series, Department of Environmental Affairs and Tourism (DEAT), Pretoria.
- Education Management Information System Education Statistics (2011)
- Environmental Management Act guideline of Namibia. Khomas Regional Poverty Profile (2011).
- Giess, W. (1971). A preliminary vegetation map of South West Africa. *Dinteria* 4: 5 – 114.
- Griffin, M. (1998). Amphibian diversity. In: Barnard, P. (ed.). 1998. Biological diversity in Namibia: a country study. Windhoek: Namibian National Biodiversity Task Force.
- Mandelsohn J., Jarvis A., Roberts C. And Robertson T. (2013), A Profile and Atlas of the Cuvelai-Etosha Basin, RAISON, Namibia.
- Miller R.McG. (2008). Geology of Namibia.