

ENVIRONMENTAL SCOPING REPORT: PROPOSED TOWNSHIP ESTABLISHMENT ON PORTION 142 OF RUNDU TOWN AND TOWNLANDS NO.1329, RUNDU, KAVANGO EAST - NAMIBIA



DATE: MAY 2022

PROPONENT: PIONEER CIVIL CONTRACTORS CC

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Definitions

TERMS	DEFINITION
BID	Background Information Document
EAP	Environmental Assessment Practitioners
ECC	Environmental Clearance Certificate
ECO	Environmental Control Officer
EIA (R)	Environmental Impact Assessment (Report)
ESIA	Environmental and Social Impact Assessment
EMP	Environmental Management Plan
EMPr	Environmental Management Plan Report
GHG	Greenhouse Gasses
ISO	International Organization for Standardization
I&Aps	Interested and Affected Parties
MET: DEA	Ministry of Environment and Tourism's Directorate of Environmental Affairs
NHC	National Heritage Council
NEMA	Namibia Environmental Management Act
ToR	Terms of Reference
UNFCCC	United Nations Framework Convention on Climate Change

i. Purpose of This Environmental Impact Assessment Report

This Environmental Scoping Report (ESR) follows the Scope of Work delineated by Pioneer Civil Contractors (PCC). Existing information and input from commenting authorities, Interested and Affected Parties (I&APs) was used to identify and evaluate potential environmental impacts (both social and biophysical) associated with the proposed project.

Environmental flaws associated with the proposed project were identified through the Environmental Scoping Report. A conscious decision was made based on the recommendations and guidelines by the Directorate of Environmental Affairs EIA guidelines in order to assess both significant and less significant environmental impacts proposed by the development. The developed Environmental Management Plan (EMP) for this proposed activity will have to be effectively implemented by the client, to ensure that adverse environmental impacts are not considered.

The detailed assessment of the anticipated impacts was undertaken with the purpose of highlighting any areas of concern regarding the proposed project during its construction, and operation. In addition, an independent sensitivity mapping analysis was undertaken. This analysis characterised the development site on the significant environmental aspects in order to reflect the site's suitability.

This EIAR will also be used to motivate and define the previously identified, project alternatives (i.e. site, technology and layout) based on the findings of the environmental baseline study and the suitability of the site to the type of development. This EIAR has been compiled in accordance with the regulatory requirements stipulated in the EIA Regulations (2012), promulgated in terms of the Namibian environmental legislation (Environmental Management Act (No. 7 of 2007))

The EIAR aims to:

- Provide an overall assessment of the social, physical and biophysical environments of the area affected by the proposed establishment of the township establishment;
- Undertake a detailed environmental assessment, in terms of environmental criteria and impacts (direct, indirect and cumulative), and recommend a preferred location for the proposed plant (based on environmental sensitivity);
- Identify and recommend appropriate mitigation measures for potentially significant environmental impacts; and
- Undertake a fully inclusive Public Participation Process (PPP)
- GIS sensitivity mapping was conducted to identify potential impacts, propose mitigation and inform the sensitivity analysis.

A systematic approach was adopted for the successful completion of the EIA in line with the regulated process. The diagram in Figure 1 below indicates the sequential process that will be followed for this study.

ii. Assumptions And Limitations

The following assumptions and limitations underpin the approach to this EIA study:

- The information received from the stakeholders, desktop surveys and baseline assessments are current and valid at the time of the study;
- A precautionary approach was adopted in instances where baseline information was insufficient or unavailable;
- Mandatory timeframes will apply to the review and adjudication of the reports by the competent authority and other government departments; and
- No land claims have been registered for the proposed site at the onset and registration of the study.

NB: The EAP does not accept any responsibility in the event that additional information comes to light at a later stage of the process. All data from unpublished research utilised for the purposes of this project is valid and accurate. The scope of this investigation is limited to assessing the potential biophysical, social and cultural impacts associated with the proposed project.

1. CHAPTER ONE: BACKGROUND

1.1. Introduction

PIONEER CIVIL CONTRACTORS CC (proponent) are the prospective owner of portion 142 of the Rundu townlands No. 1329, measuring 14 hectares. As per the requirements of the Township and Division of Land Ordinance 1963 and the Environmental Management Act No. 7 of 2007, Pioneer Civil Contractors hereby appointed EnviroPlan Consultants to undertake an Environmental Scoping Assessment (ESA), formulate an Environmental Management Plan (EMP) and apply for an Environmental Clearance Certificate (ECC) to the Ministry of Environment and Tourism (MET): Directorate of Environmental Affairs (DEA).

In this respect, this document forms part of the application to be made to the DEA's office for an Environmental Clearance Certificate (ECC) for the proposed Township Establishment on portion 142 of Rundu Townlands that shall allow the development of affordable 90 residential stands, and 4 Public Open Spaces.

1.2. Project Location

The portion 142 of Remainder of Farm Rundu Townlands No. 1329 is found within the proclaimed jurisdiction area of the Rundu Municipal Area which is sandwiched between Portions, 138, 139, 140 and Rundu Extension 32 respectively. This Portion is zoned 'Townlands'. Portion 142 is bounded to the West by Portion 140 and to the East by Portion 139 while to the North by Portion 138 and to the South by Rundu Extension 32 respectively.

The proposed development is approximately 14 ha. in extent and is vacant. The area is mostly dominated by grass, bushes, shrubs the farm is currently zoned "Undetermined". Several Informal roads and footpaths visible in the area. Notable in the surrounding are disused buildings, the map below (Fig 1) gives an Aerial view of the project site and exact project location coordinates is illustrated on Figure 1.

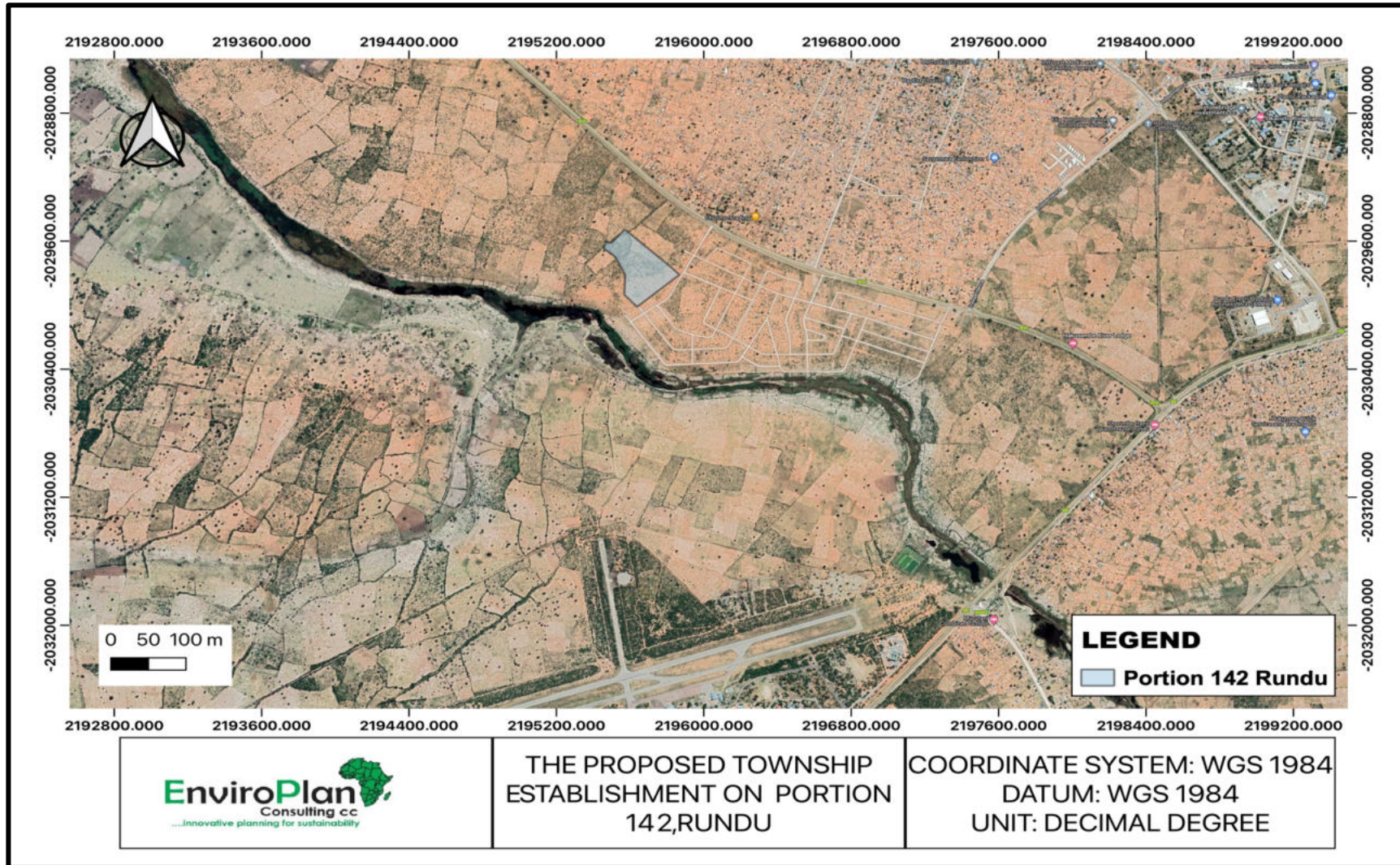


Figure 1: Proposed Layout.

1.3. Description

1.3.1. DEVELOPMENT PROPOSAL & LAYOUT

Approval by Rundu Town Council was granted by way of the private treaty (Appendix B- Attached Council letter for the sale of an unplanned Portion of the Remainder of Farm Rundu Townlands No. 1329 to Pioneer Civil Contractors CC with an approximate size of 40,000m²). It is worth noting that a subdivision of the Remainder of Farm Rundu Townlands No. 1329 into 'Portion 142' and Remainder must be carried out to create the new proposed Portion.

The development proposal gives maximum opportunities to private land ownership while ensuring that the future development of 'Rundu South' will not adversely affect the surrounding natural and built environment. The dominant land use of Portion 142 of the Remainder of Farm Rundu Townlands No.1329 will be single residential, as the Rundu Town Council is not of the intention to create a monotonous and mono-functional suburb as a range of land uses will be catered for in the proposed development.

It is proposed that 'Portion 142' of the Remainder of Farm Rundu Townlands No.1329 be subdivided into ninety-four (94) new Erven and the Remainder (street). The proposed township layout is indicated on the attached plans. It is further proposed that the density factor of 1:350 be approved and added to the Rundu Zoning Scheme. The following table indicates the total number of Erven that will be created as a result of the subdivision:

Number of Erven	Zoning
87	Single Residential with a densities of 1:350
3	General Residential with a densities of 1:100
4	Public Open Space
Re/Portion 142	Street
94	Total Erven

1.3.2. INFRASTRUCTURE AND SERVICES

The proponent at the developers' cost shall liaise with the municipality of Rundu for the provision of municipal services such as electricity, water reticulation, sewerage reticulation and domestic waste management. The services can easily be easily connected to the proposed project site. Since the site is adjacent to the existing Sauyemwa suburbs, water, sewer and electricity services are near and can be connected directly from Sauyemwa.

1.3.3. ROADS AND STORM WATER

Access to the respective portion is through the Rundu-Nkurenkuru highway road. Since the access road is existing, only the inside access roads need to be constructed, which will have a minimum environmental impact. Internal roads of a minimum width of 12m to 15m shall be constructed. The

roads would be constructed in line with municipal engineering standards and specifications and all traffic signs and road markings provided.

Storm water would be taken off from surface run-off and drain towards the bottom of the site/township. Adequate and proper drainage should be constructed that avoid instances of waterlogging and flooding of the township. It would be attempted to maintain the natural flow of storm water flow with minimum disruptions.

2. CHAPTER TWO: POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

2.1. Introduction

An important part of the EIA is identifying and reviewing the administrative, policy and legislative frameworks concerning the proposed activity, to inform the proponent about the requirements to be fulfilled in undertaking the proposed project. This section looks at the legislative framework within which the proposed development will conform to; the focus is on the compliance with the legislation during the planning, construction and operational phases. All relevant legislations, policies and international statutes applying to the project are highlighted in the table below as specified in the Environmental Management Act, 2007 (Act No.7 of 2007) and the regulations for Environmental Impact Assessment as set out in the Schedule of Government Notice No. 30 (2012).

Table 1: Policies, legal and Administrative regulations

The pursuit of sustainability is guided by a sound legislative framework. In this section, relevant legal instruments as well as their relevant provisions have been surveyed. An explanation is provided regarding how these provisions apply to this project

Aspect	Legislation	Relevant Provisions	Relevance to the Project
The Constitution	Namibian Constitution First Amendment Act 34 of 1998	<ul style="list-style-type: none"> Article 16(1) guarantees all persons the right to property. It therefore provides everyone a right to acquire, own and dispose of property, alone or in association with others and to bequeath such property. “The State shall actively promote and maintain the welfare of the people by adopting policies that are aimed at maintaining ecosystems, essential ecological processes and the biological diversity of Namibia. It further promotes the sustainable utilisation of living natural resources basis for the benefit of all Namibians, both present and future.” (Article 95(I)). 	<ul style="list-style-type: none"> The project will enable the full execution of right to practice any profession, or carry on any occupation, trade or business by availing necessary provisions such as practising any profession, or carry on any occupation, trade or business in the country. Through implementation of the environmental management plan, the proponent will ensure conformity to the constitution in terms of environmental management and sustainability.
National Development Plans		<ul style="list-style-type: none"> Namibia’s overall Development ambitions are articulated in the National Vision 2030. At the operational level, five-yearly national development plans (NDP’s) are prepared in extensive consultations led by the National Planning Commission in the Office of the President. The Government has so far launched a 4th NDP focusing on high and sustained economic growth, increased income equality Employment creation. 	<ul style="list-style-type: none"> The proposed project will propel NDP4 targets in logistics and commodities market. Adding on, this will create employment which will work towards the NDP and Vision 2030.
Archaeology	National Heritage Act 27 of 2004	<ul style="list-style-type: none"> Section 48(1) states that “A person may apply to the Namibian Heritage Council (NHC) for a permit to carry out works or activities in relation to a protected place or protected object” 	<ul style="list-style-type: none"> Any heritage resources discovered would require a permit from the NHC for relocation.
	National Monuments Act of Namibia (No. 28 of	<ul style="list-style-type: none"> “No person shall destroy, damage, excavate, alter, remove from its original site or export from Namibia: 	<ul style="list-style-type: none"> The proposed site of development is not within any known monument sites, both movable and

	1969) as amended until 1979	<ul style="list-style-type: none"> - Meteorites, fossils, petroglyphs, ornamental infrastructure graves, caves, rock shelters, middens, shells that came into existence before the year 1900 AD; or - any other archaeological or palaeontological finds 	immovable as specified in the Act, however in finding any materials specified in the Act, contractors on site will take the required route and notify the relevant commission.
Environmental	Environmental Management Act 7 of 2007	<ul style="list-style-type: none"> - Requires that projects with significant environmental impacts are subject to an environmental assessment process (Section 27). - Requires for adequate public participation during the environmental assessment process for interested and affected parties to voice their opinions about a project (Section 2(b-c)). - According to Section 5(4) a person may not discard waste as defined in Section 5(1)(b) in any way other than at a disposal site declared by the Minister of Environment and Tourism or in a manner prescribed by the Minister. - Details principles which are to guide all EIAs 	<ul style="list-style-type: none"> - This Act and its regulations should inform and guide this EIA process.
	EIA Regulations GN 57/2007 (GG 3812)	<ul style="list-style-type: none"> - Details requirements for public consultation within a given environmental assessment process (GN No 30 S21). - Details the requirements for what should be included in a Scoping Report (GN No 30 S8) an EIA report (GN No 30 S15). 	<ul style="list-style-type: none"> - This Act and its regulations should inform and guide this EIA process.
	Pollution and Waste Management Bill (draft)	<ul style="list-style-type: none"> - This bill defines pollution and the different types of pollution. It also points out how the Government intends to regulate the different types of pollution to maintain a clean and safe environment. - The bill also describes how waste should be managed to reduce environmental pollution. Failure to comply with the requirements considered an offence and is punishable. 	<ul style="list-style-type: none"> - The project should be executed in harmony with the requirements of the act to reduce negative impacts on the surrounding environs from waste during construction or operation. Rundu waste management by-laws will be abide to during construction and operation.
	Soil Conservation Act 76 of 1969	<ul style="list-style-type: none"> - This acts makes provision for combating and for the prevention of soil erosion, it promotes the conservation, protection and improvement of the soil, vegetation, sources and resources of the Republic of Namibia. 	<ul style="list-style-type: none"> - The Project impact on soil will rather be localised, however the Act should provide for guidelines of operation during construction to prevent soil erosion and contamination during operation.

	National Biodiversity Strategy and Action Plan (NBSAP2)	<ul style="list-style-type: none"> - The action plan was operationalised in a bid to make aware the critical importance of biodiversity conservation in Namibia, putting together management of matters to do with ecosystems protection, biosafety, and biosystematics protection on both terrestrial and aquatic systems. 	<ul style="list-style-type: none"> - Forming part of the EIA of and EMP for this Project, the proponent will consider all associated impacts, both acute and long term, and will propose methods and ways to sustain the local biodiversity.
Forestry	Forest Act 12 of 2001	<ul style="list-style-type: none"> - Tree species and any vegetation within 100m from a watercourse may not be removed without a permit (S22(1)) - Provision for the protection of various plant species. 	<ul style="list-style-type: none"> - The clearing of vegetation is prohibited (subject to a permit) 100m either side of a river. Certain tree species occurring in the area are protected under this Act. Permits must be obtained from MAWF in accordance with the Act. However, on site there are no trees that require clearing permit.
Water	Water Act 54 of 1956	<ul style="list-style-type: none"> - The Water Resources Management Act 24 of 2004 is presently without regulations; therefore, the Water Act No 54 of 1956 is still in force: - A permit application in terms of Sections 21(1) and 21(2) of the Water Act is required for the disposal of industrial or domestic wastewater and effluent. - Prohibits the pollution of underground and surface water bodies (S23(1)). - Liability of clean-up costs after closure/ abandonment of an activity (S23(2)). - Protection from surface and underground water pollution 	<ul style="list-style-type: none"> - The protection of ground and surface water resources should guide development's layout plans.
Health and Safety	Labour Act (No 11 of 2007) in conjunction with Regulation 156, 'Regulations Relating to	<ul style="list-style-type: none"> - 135 (f): "the steps to be taken by the owners of premises used or intended for use as factories or places where machinery is used, or by occupiers of such premises or by users of machinery about the structure of such buildings of otherwise to prevent or extinguish 	The proponent will employ several people from the local and shall ensure securing a safe environment and preserving the health and welfare of employees at work. This will include applying appropriate hazard management plans and

	the Health and Safety of Employees at work’.	fires, and to ensure the safety in the event of fire, of persons in such building;” (Ministry of Labour and Social Welfare). – This act emphasizes and regulates basic terms and conditions of employment, it guarantees prospective health, safety and welfare of employees and protects employees from unfair labour practices.	enforcing Occupational Health and Safety (OHS) enforcement by contractors.
	Public Health and Environmental Act, 2015	– Under this act, in section 119: “No person shall cause a nuisance or shall suffer to exist on any land or premises owned or occupied by him or of which he is in charge any nuisance or other condition liable to be injurious or dangerous to health.”	– The project will comply with the requirements of the Act..
Services and Infrastructure	Road Ordinance 1972 (Ordinance 17 Of 1972)	– Width of proclaimed roads and road reserve boundaries (S3.1) – Control of traffic during construction activities on trunk and main roads (S27.1) – Infringements and obstructions on and interference with proclaimed roads. (S37.1) – Distance from proclaimed roads at which fences are erected (S38)	– Although the project is a major boost for the suburb and the commodities market, the proponent needs to ensure that the development do not affect the major roads within their vicinity during construction and operation phases.
	Townships and Division of Land Amendment Act, 1992 (Act 28 of 1992)	– “(l) Whenever any area of land constitutes, by reason of its situation, a portion of an approved township, or adjoins an approved township, the Executive Committee may, by proclamation notice in the Gazette and after consultation with the Board, extend the boundaries of that township to include such area”. (Minister of Regional and Local Government) – A new township needs to be created for approval by the Namibian Planning Advisory Board and the Township Board.	– Through conducting this EIA and preparation of The townships board already approved this project, however the construction and operation will need to be regulated accordingly.

3. CHAPTER THREE: RECEIVING ENVIRONMENT

3.1. Socio-economic

The proposed project site, portion 142 of Rundu Townlands located adjacent Sauyemwa suburbs. The area is under Rundu Urban Electoral Constituency with a population of about 63,431 inhabitants (2011 Census). The entire Kavango regions (including Rundu Town) ranked among the poor regions in the country with a prevailing high unemployment rate despite some agricultural activities happen in the regions.

Rundu is the capital of the Kavango East region and links to the Capital City of Namibia-Windhoek by tarred B series national road network. This infrastructure serves as the main supply line for the region. All the other population centres in the region are linked with Rundu by road. The major economic activities sustaining Rundu is the existence and operation of both communal and commercial farming specialising in cultivation of different crops. Main agriculture activities are small scale crop farming (53%)-growing Mahangu, livestock (23%) –farming goats, donkeys and cattle, and poultry farming (8%) (Enviro Dynamic 2014). These farming systems provide a degree of food self-sufficiency with a few provisions of economic development of the region. Within the project site they are only two mahangu fields in the south side which is the same side that have a nearby river.

However, most of the crop-growing activities in the region generate little income because fields are small, soils have limited fertility, yields are low, surplus harvests are rare and markets are small (Mendelsohn and El Obeid 2003: 92ff Brown 2010: 25).

3.2. Climate

Classification of climate: Rundu is subjected to a humid subtropical climate, with hot summers and mild winters. During the austral winter, the days are warm and nights cool to cold.

Average rainfall: The annual rainfall ranges between 500 and 550mm with June normally reporting the lowest and January the highest (Mendelsohn et al., 2002)

Temperature: Daytime temperatures exceed 30°C throughout the year, except during May, June and July. Average maximum temperatures fluctuate between 32°C and 34°C and average minimum temperatures between 8°C and 10°C.

Humidity: The average level of humidity ranges from 10 to 20% during winter with the highest humidity normally recorded in March (70-80%).

3.3. Fauna

3.3.1. REPTILES, AMPHIBIANS AND INVERTEBRATES

The region has a high occurrence of reptiles, snakes. This includes cobras, puff adders (inhabit grasslands and bush ecosystems) and the black and green mamba (inhabiting the riverine ecosystems). The region generally is a habitat of a wide number of lizard species and tortoises.

However, on the baseline study conducted on site shows that none of the above reptiles and snakes are prevalent on site, the baseline revealed existence of snails, centipedes, spiders and scorpions. However, the proposed project site is currently affected by human activities occurring in the area as well as illegal dumping of waste in its vicinity. It is as such that the area is not pristine and it does not pose a great threat to the environment.

3.3.2. MAMMALS

The following list is of the mammals that are noticeable in the region however the disappearance of these mammals on the project site could be due to the driven by developmental activities happen in existing Sauyemwa suburb and other nearby areas. The list below was obtained from existing literature and some personal experience with the region. The list of mammals in the table below was then recognised as occurring in the area (MET, 2008).

Table 2: List of mammals occurring in and endemic to the region

Species	Conservation Status
African Buffalo	
Hippopotamus	Endangered
Tsessebe	
<i>Blue Wildebeest</i>	
<i>Sitatunga</i>	
<i>Common Reedbuck</i>	
<i>Elephant</i>	Endangered
<i>Giraffe</i>	
<i>Spotted Hyena</i>	Endangered
<i>Kudu</i>	
<i>Sable Antelope</i>	
<i>Roan Antelope</i>	
<i>Red Lechwe</i>	
<i>Chapman`s Zebra</i>	Endangered
<i>African Leopard</i>	Endangered
<i>South African Cheetah</i>	Endangered

3.3.3. BIRDS

Some environs near the Okavango River in western Bwabwata of the region are listed as an internationally recognized bird’s area hosting bird species that are threatened at global level and range as avian diversity hotspots. However, the project site is not part of the demarcated areas bird’s area hosting bird species since it is right in townlands. The list below is for bird species occurring in the region.

Table 3: Bird Species common in the area

Specie	Common Name	Conservation Status
<i>Rhynchope Flavirostris</i>	African Skimmer	Endangered
<i>Glareola nordmanni</i>	Black-winged Pratincole	Endangered

<i>Egretta vinaceigula</i>	Slaty Egret	Endangered
<i>Bugeranus carunculatus</i>	Wattled Crane	Endangered
<i>Nettapus auritus</i>	African Pygmy Goose	Endangered
<i>Centropus cupreicaudus</i>	Coppery-tailed coucal	Endangered
<i>Gorsachius leuconotus</i>	White Banked Night Heron	Endangered
<i>Ardeola rufiventris</i>	Rufous-bellied Heron	Endangered
<i>Porphyrio alleni</i>	Allen`s Gallinule	Endangered
<i>Falco dickisoni</i>	Dicksino`s Kestrel	Endangered
<i>Turdoides melanops</i>	Black-faced Babbler	Endangered
<i>Laniarius bicolor</i>	Swamp Boubou	Endangered
<i>Cichladusa arquata</i>	Collared Palm Thrush	Endangered
<i>Lamprotornis mevesii</i>	Meves`s Glossy Starling	Endangered
<i>Burcorvus leadbeateri</i>	Southern Ground Hornbill	Endangered
<i>Glaucidium cuculoides</i>	Asian Barred Owlet	Endangered
<i>Campethera bennettii</i>	Bennett`s Woodpecker	Endangered
<i>Phylloscopus sibilatrix</i>	Wood Warbler	Endangered
<i>Phyllocuspus bonelli</i>	Leaf Warbler	Endangered
<i>Cisticolidae juncidis</i>	Cisticola	Endangered

3.4. Flora

Trees / Shrubs and Grasses

Areas near the Okavango River prevails a high to very high vegetation density of considerable diversity. However, because of Rundu town development in the area it has been reduced considerably. The further inland is more densely vegetated and is prone to bush fires. Plant species in the area form part of the extensive Kalahari sand basin which is characterized by grassland and encompassing plant species such as Vossia Cuspidata, Cynodon Dactylon and Setaria Sphacelata (Burke, 2002). The project site has minimal vegetation cover cover. Composing of of mahangu fields (bare and sandy)



Figure 2: Shrubs on project site



Figure 3: (left) Cleared vegetation, (right) existing road

The site illustrated on figure 7 is largely composed of bare patches of land and shrubs. The area has been affected gravely by urban developments in its vicinity and residents were already using the open area as a waste dumping spot. In addition, nearby residents from informal settlements have been cutting down shrubs for firewood.

3.5. Mahangu Fields

A small proportion of the site has mahangu field that have sand soils that are unproductive to cultivate except to cultivate light feed crops like mahangu and groundnuts. This part of the site is located near the river. Rundu town council compensated the owners of the Mahangu field when the Town boundaries were extended, the fields were there because the land was lying idle before development.

3.6. Hydrology

A reconnaissance level field assessment was conducted to confirm the current hydrologic conditions at the proposed area and to identify potential hydrologic risks associated with establishment of the proposed township development. The site is relatively flat however, due to its gradient the site can have minor drainage issues but this will be compensated by adequate and proper drainage systems in the layout designs/plans. The potential hydrologic feature at risk is the perennial river that is nearby the site. A distance of 100m shall be maintained between the project and the river.

The river is perennial; therefore, the project development and operation phases must be careful so that activities took place on site will not pollute or interfere with the flows of the river. This means proper installation, sufficient and adequate drainage system in the township to ensure that all the

storm water collected is safely discharged into that natural water body. The area shows very low evidence of surface erosion. The surrounding area is relatively flat giving limited chance for surface drainage thence the need of good drainage system to avoid waterlogging problems in the township. The figure below shows the nearby river.

However, the region in general has access to potable surface water from the perennial Okavango River. Okavango is a shared water course by three country; Namibia, Botswana and Angola. The River Basin engulfs an area of rounded 190,000 square kilometers across three states (Mendelsohn and el Obeid, 2003). Its water originates from Angola and ends its flow in the Okavango delta in Botswana. Approximately half of its flow comes down the Cuito, with the remaining 50% originating from Cubango as it enters Kavango at Katwitwi.

3.7. Geology and Soils

As indicated above on the Figure 2, the area consists of completely weathering reddish sandy soils. The area was thoroughly investigated through transacts walks and no noticed rocks on site. The area is underlain by the Kalahari and Namib sands, which are dominated by cambic arenosols, albic arenosols and calcic xerosols (Mendelsohn & el Obeid, 2003). This indicates the completely weathering of the existed rocks long time back to give that Kalahari sand soils as shown on the images below. According to the Agro-Ecological Zoning Programme (AEZ) of the Ministry of Agriculture, Water and Forestry and the World Reference Base for Soil Resources (FAO, 1998), the arenosols contain sandy soil with poor retained nutrient capacity. The sand further is slightly acidic which also results in nutrient deficiency. Generally, soils are deep and purely sandy with average soil fertility. Images below shows the sandy soils at the site.

4. CHAPER FOUR: PUBLIC CONSULTATION

Public and Stakeholder involvement, is a key component of the EA process. The public consultation process, as set out in Section 21 of Regulation No 30 of EMA, has been followed during this assessment and the details thereof documented below.

4.1. Printed Media

4.1.1. BACKGROUND INFORMATION DOCUMENT

A Background Information Document (BID) was drafted at the onset of the EA process to act as a useful information handout about the proposed construction and operation of the proposed township establishment. In addition, the BID provided details on the public consultation process with contact details for further information. This document was advertised for availability through various means of newspaper articles, Public meeting and electronic mail; see Appendix B of this document.



4.1.2. NEWSPAPER ADVERTISEMENTS & ARTICLES

Newspaper notices about the proposed project and related EA processes was circulated in two newspapers for two weeks. These notices appeared in the “Confidante” and “New Era” newspapers, shown in Appendix B.



4.1.3. SITE NOTICES

A site notice was placed at the project site, Rundu Town Council Office and Rundu Spar. These provided information about the project and related EA while providing contact details of the project team.

Figure 4(top): Site Notice at Rundu Spar

Figure 5(bottom): Site Notice at Rundu Town Council.

4.1.4. BUILDING A STAKEHOLDER DATABASE

A stakeholder database for the project collected through a variety of means. During the advertisement of the project (through public notices in local newspapers and site notices) the list was augmented as Interested & Affected Parties (I&AP) registered and the contact information of stakeholders updated, please refer to Appendix B.

4.1.5. STAKEHOLDER MEETINGS & KEY CONVERSATIONS

A public meeting was only to be conducted with registered I&APs, however, the meeting was only attended by Rundu Town Council and the nearby residents did not attend. To augment the meeting, the consultant took to door-to-door consultation on all neighbouring properties.

4.1.6. COMMENTS AND REVIEW PERIOD

From the onset of the public consultation process and the initial information sharing through the BID, newspaper and site notices, various stakeholders have registered and provided comments. All of the immediate neighbours are not in support of the initiative due to several reasons. The Scoping Report and Environmental Management Plan was made available to the public and stakeholders for comment and review. Questionnaires and proof of stakeholder's engagement are attached in appendix B of this EAR.

5. CHAPTER FIVE: ENVIRONMENTAL AND SOCIO-ECONOMIC IMPACTS

5.1. Overview

The proponent has committed to sustainability and environmental compliance through coming up with a corrective action plan for all anticipated environmental impacts associated with the project. This is also in line with the Namibian Environmental Management legislation and International best practices on hydrocarbon handling. The proponent will implement an Environmental Management Plan (EMP) in order to prevent, minimise and mitigate negative impacts. The environmental management plan is being developed to address all the identified expected impacts, the plan will be monitored and updated on a continuous basis with aim for continuous improvement to addressing impacts.

5.2. Assessment Of Impacts

This section sets out the overall approach that was adopted to assess the potential environmental and social impacts associated with the project. To fully understand the significance of each of the potential impacts each impact must be evaluated and assessed. The definitions and explanations for each criterion are set out below in Table 4: Assessment Criteria .

Table 4: Assessment Criteria

Duration – What is the length of the negative impact?	
None	No Effect
Short	Less than one year
Moderate	One to ten years
Permanent	Irreversible
Magnitude – What is the effect on the resource within the study area?	
None	No Effect
Small	Affecting less than 1% of the resource
Moderate	Affecting 1-10% of the resource
Great	Affecting greater than 10% of the resource
Spatial Extent – what is the scale of the impact in terms of area, considering cumulative impacts and international importance?	
Local	In the immediate area of the impact
Regional / National	Having large scale impacts
International	Having international importance
Type – What is the impact	
Direct	Caused by the project and occur simultaneously with project activities
Indirect	Associated with the project and may occur at a later time or wider area
Cumulative	Combined effects of the project with other existing / planned activities

Duration – What is the length of the negative impact?	
Probability	
Low	<25%
Medium	25-75%
High	>75%

(Adopted from ECC-Namibia, 2017)

Table 5: Impact Significance

Class	Significance	Descriptions
1	Major Impact	Impacts are expected to be permanent and non- reversible on a national scale and/or have international significance or result in a legislative non- compliance.
2	Moderate Impact	Impacts are long term, but reversible and/or have regional significance.
3	Minor	Impacts are considered short term, reversible and/or localized in extent.
4	Insignificant	No impact is expected.
5	Unknown	There are insufficient data on which to assess significance.
6	Positive	Impacts are beneficial

(Adopted from ECC-Namibia, 2017)

Table 6: Environmental Impacts and Aspects Assessment

Environmental Impact	Valued Ecosystem Component	Impact	Project Phase	Duration	Magnitude	Extent	Type	Probability	Significance
TOPOGRAPHY	Landscape Scenery	Visual aesthetic impact	Construction	Moderate	Moderate	Local	Direct	Medium 25 - 75%	Minor
	Clearing of a large portion of land	Visual aesthetic impact	Construction	Moderate	Moderate	Local	Direct	Medium 25 - 75%	Minor
SOIL	Soil	Contamination to soil from waste disposal	Construction	Moderate	Small	Local	Direct	Low <25%	Minor
	Soil	Spillages of fuel, oil and lubricants.	Construction	Short	Small	Local	Direct	Low <25%	Minor
	Soil	Erosion from road opening and trenching	Construction	Moderate	Small	Local	Direct	Low <25%	Minor
LAND CAPABILITY	Terrestrial ecology and aquatic ecosystems	Change in land use	Construction	Permanent	Great	Local	Direct	Low <25%	Moderate
WATER	Surface water quality	Water pollution from oils and lubricants from vehicles and machinery.	Construction	Moderate	Moderate	Local	Direct	Medium 25 - 75%	Moderate
	Groundwater quality	Water pollution from oils and lubricants	Operation	Moderate	Small	Local	Direct	Low <25%	Moderate
AIR QUALITY	Noise Pollution	-Noise During Construction and operation	Construction	Moderate	Moderate	Local	Direct	Medium 25 - 75%	Moderate
	Dust Pollution	-Construction dust	Construction	Moderate	Moderate	Local	Direct	High >75%	High
WASTE	Groundwater quality	Hazardous waste such as waste oil and lubricants.	Construction	Short	Small	Local	Direct	Low <25%	Minor

Environmental Impact	Valued Ecosystem Component	Impact	Project Phase	Duration	Magnitude	Extent	Type	Probability	Significance
	Topography and Landscape	Visual impacts due to infrastructure and unsustainable handling and disposal of waste.	Construction	Short	Small	Local	Direct	Low <25%	Minor
FAUNA	Aquatic life	Antifouling paints, eutrophication and sedimentation of streams.	Construction,	Moderate	Small	local	Direct	Low <25%	Minor
	Terrestrial ecology and biodiversity	Destruction of vertebrate fauna (e.g. road kills; fence and construction /land clearing mortalities)	Construction	Long	Moderate	Local	Direct	Low <25%	Minor
FLORA	Terrestrial ecology and biodiversity	Proliferation of invasive species inland	Construction	Long	Moderate	Local	Direct	High >75%	Moderate
	Terrestrial ecology and biodiversity	Loss of unique flora and special habitats in the local environment because of general nuisance and animal migrate.	Construction	None	Moderate	Regional	Direct	Low <25%	Moderate
SOCIAL	Noise Pollution	Increased noise levels	Construction	Moderate	Small	Local	Direct	Low <25%	Minor
	Socio Economic Activities	Temporary and permanent employment prospects.	Construction	Long	Moderate	Regional	Direct	Medium 25 – 75%	Positive

Environmental Impact	Valued Ecosystem Component	Impact	Project Phase	Duration	Magnitude	Extent	Type	Probability	Significance
	Contribution to National Economy	Employment, local procurement, duties and taxes.	Construction	Short	None	Regional / National	Direct	Low <25%	Positive
HERITAGE/ARCHAEOLOGY	Artefacts, archaeological high value components	Destruction or affecting paleontological and archaeological artefacts	Construction	Moderate	Moderate	Local	Direct	Medium 25 – 75%	Moderate
HEALTH AND SAFETY	Health Sanitation	Poor ablution and waste management facilities may be detrimental to human health.	Construction	Moderate	Moderate	Local	Direct	Medium 25 – 75%	Moderate
	Property and human life	Electrical hazards and fires may result in fatalities, damage to properties and power surges.	Construction	Moderate	Great	Local	Direct	Medium 25 – 75%	Major

6. CONCLUSION

Based on the impacts identified by this study during site visit, process analysis, desk study and stakeholder consultations conducted, an integrated environmental risk analysis was carried out using the DEFRA Guidelines for Environmental Risk Assessment and Management 'Green Leaves III' (latest edition) as well as the international Procedures for best practices. The risk analysis shows that the project will have some negative impacts on the environment (Biophysical, economic, social and political), it has been also noted that the project will deliver some positive impacts on the receiving environment, as well as on social and economic aspects.

However, it is imperative to note that the project is being undertaken within an already disturbed locale. In order to prevent or mitigate negative impacts and to increase positive impacts a coordinated project management strategy according to an Environmental Management Plan, developed specific to this development.

Appendix A: References

- Directorate of Environmental Affairs. (2002) Ministry of Environment and Tourism, Atlas of Namibia Project.
- Ministry of Environment and Tourism. (1994) National Environmental Assessment Policy.
- Ministry of Environment and Tourism. (2002) National Environmental Management Bill.
- Ruppel and Ruppel schlichting (eds) (2011). Environmental Law and Policy in Namibia
- Simmons, R.E (1998a). Important Bird Areas in Namibia. In: Barnard,P. (ed). Biological Diversity in Namibia: a country study. Windhoek: Namibia Biodiversity Task Force.
- Lindback, E. & Murray, J. (1996). Shrimp Farming in the El Oro District. Agricultural Institute, Ecuador.
- Middler, S. (1998). Toxicological Effects of Methylmercury. National Academy Press, Washington D.C.
- Middler, S. (2001). The chemistry of water. Cambridge United States of America.
- UNEP. (2002). Tools and Approaches for policy making in Environmental Management and public Health: Retrieved 9 April 2009 from <http://www.whoafro.unep.inte/heag2008/docsenNew%20and%20emerging%threats.pdf>.