ENVIRONMENTAL MANAGEMENT PLAN: PROPOSED TOWNSHIP ESTABLISHMENT ON PORTION 134 OF RUNDU TOWN AND TOWNLANDS NO.1329, RUNDU, KAVANGO EAST - NAMIBIA





DATE: FEBRUARY 2021

PROPONENT: SHILILIFA PROPERTY DEVELOPMENT CC

Contents

1. CHAPTER ONE: BACKGROUND	3
1.1. Introduction	3
1.2. Project Location	3
2. CHAPTER THREE: ENVIRONMENTAL MANAGEMENT PLAN (EMP)	6
2.1. Introduction	6
2.2. LEGAL AND OTHER REQUIREMENTS COMPLIANCE	6
2.3. EMP ADMINISTRATION	7
2.4. EMP Management Actions	8
2.5. Operational Phase	15
2.6. ENVIRONMENTAL MONITORING PLAN	19
3. CHAPTER FOUR: CONCLUSION AND RECOMMENDATIONS	20
List of Figures	
Figure 1: Proposed Layout.	4
Figure 2: Proposed Project Site Locality.	5
List of Tables	
Table 1: Site Coordinates	3
Table 2:Roles and Responsibilities in EMP Implementation	7
Table 3:Construction Phase Management Actions	9
Table 4: Impacts associated with the Operation Phase	16

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
MEFT: DEA	Ministry of Environment, Forestry 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 Management Plan

This Environmental Management Plan follows on environmental impacts associated with the proposed township establishment project which were identified in 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 framework within which this EMP is developed includes identifying various activities, their occurrence in the construction and operation processes and the likely impacts that are associated with those activities.

It is therefore necessary to subcategorize the EMP into the project implementation. The first category of the EMP which deals with project activities identified and highlight the activities impacts and the phases they are likely to occur. In this respect, this EMP alludes on anticipated construction activities and the mitigation measures that will need to be applied to reduce the severity of the impacts the proposed service station may have on the surrounding environment. This will also include rehabilitation measures that will need to be implemented once the construction is completed and how to continuously monitor the plant in accordance to monitoring parameters highlighted herein.

ii. EMP PRINCIPLES

The following principles have informed the compilation of this environmental management Plan:

- The environment is considered to be composed of both biophysical and social components.
- Environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably.
- Development must be socially, environmentally and economically sustainable.
- Construction, in general, is a disruptive activity and all due consideration must be given to the environment, particularly the social environment, during the execution of the project to minimize the impact on the affected parties.
- Minimization of areas disturbed by construction activities will reduce the severity of the construction related environmental impacts and reduce rehabilitation requirements and costs.
- As minimum requirements, relevant standards relating to international, national, regional and local legislation, where applicable, shall be adhered to. This includes

requirements relating to waste emissions (e.g. hazardous, airborne, liquid and solid), waste disposal practices, noise regulations, road traffic ordinance etc.

- Reasonable measures to avoid pollution and environmental degradation are to be provided for.
- The costs of remedying pollution, environmental degradation and consequent adverse
 health effects and of preventing, controlling, or minimizing further pollution,
 environmental damage or adverse health effects must be paid for by the person
 responsible for harming the environment.
- The responsibility for the environmental, health and safety consequences of the proposed development exists throughout its life cycle

1. CHAPTER ONE: BACKGROUND

1.1. Introduction

SHILILIFA PROPERTY DEVELOPMENT CC (proponent) are the prospective owner of the portion 134 of the Rundu townlands No. 1329, measuring 15 hectares. As per the requirements of the Township and Division of Land Ordinance 1963 and the Environmental Management Act No. 7 of 2007, Shililifa property Development cc 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 for the proposed township establishment on portion 134 of Rundu Townlands that shall allow the development of affordable 250 evren for residential, business, public Open Spaces and institutional. The assessment is done in accordance to the guidelines on the statutes of the Environmental Management Act No.7 of 2007 and the environmental impacts regulations (GN 30 in GG 4878 of 6 February 2012).

1.2. Project Location

The portion 139 is situated approximately 6km from Rundu Town along the Rundu-Nkurenkuru road opposite Sauyemwa Township. The exact coordinates of the location are:

The proposed development is approximately 15 ha. in extent and is vacant areas that 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 Arial view of the project site and exact project location coordinates are as follows:

Table 1: Site Coordinates

A22.436626°/ 18.990544°	B22.436626°/ 18.990043°
C22.437220°/ 18.990048°	D22.437263°/ 18.990521°

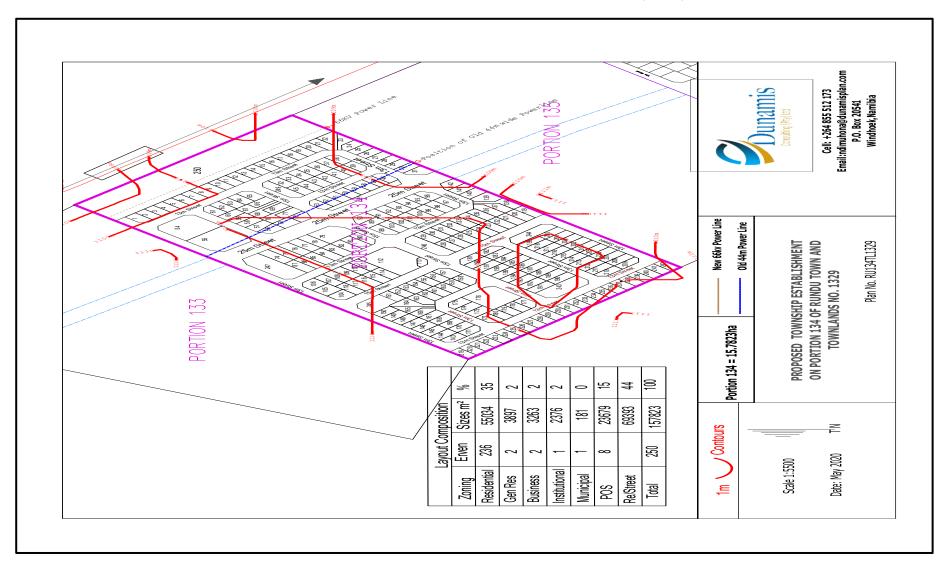


Figure 1: Proposed Layout.

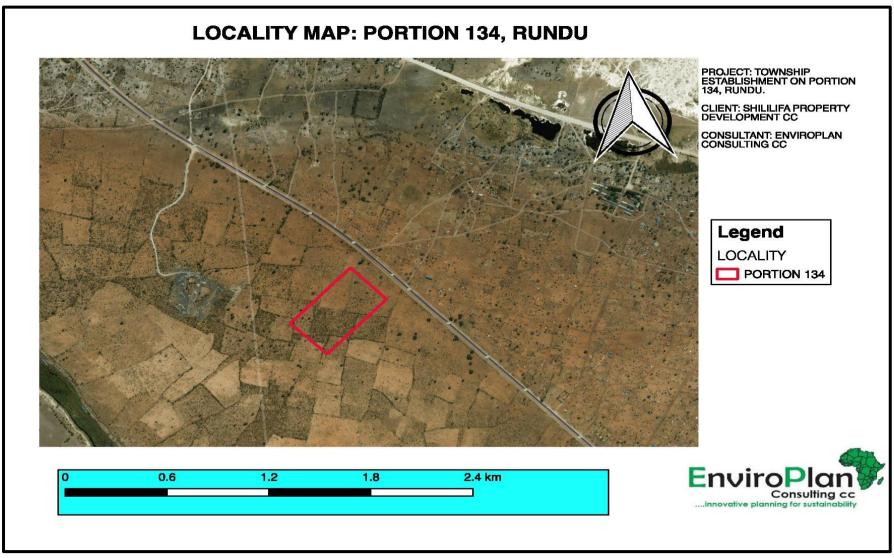


Figure 2: Proposed Project Site Locality.

2. CHAPTER THREE: ENVIRONMENTAL MANAGEMENT PLAN (EMP)

2.1. Introduction

This EMP has been developed for the proposed township establishment on portion 134, in Rundu. All anticipated environmental and social impacts identified in the environmental scoping report are addressed, with a mitigation action, monitoring requirements, key indicator and responsibilities.

This EMP is incessant, and it requires compliance monitoring, updating and or amendment if the scope of operations change. All personnel working on the project will be legally required to comply with the standards set out in this EMP.

This section describes the Environmental Management Plan (EMP) for impacts associated with the proposed development. The EMP stipulates the management of environmental programs in a systematic, planned and documented manner. The EMP below includes the organizational structure, planning and monitoring for environmental protection at the proposed farm area development and other areas of its influence. The aim is to ensure that the proponent maintains adequate control over the project operations to:

- To prevent negative impacts where possible;
- Reduce or minimise the extent of impact during project life cycle;
- Prevent long-term environmental degradation.
- Ensure public safety and health is protected

2.2. Legal and other requirements compliance

This report presents the EMP and has been undertaken in accordance with the requirements of the Environmental Management Act, No. 7 of 2007 and the Environmental Assessment regulations of 2012. As such, key requirements in accordance to this Act, classifies the proposed project as listed and invokes the need for an environmental management plan to sustainably implement this project. However, legal compliance is not only limited to the EMA, but also applies to all applying legal requirements identified in the ESR. When licenses are required such as wastewater discharge, the proponent should ensure that all licenses and permits are obtained and fulfilled as per conditions.

In line with the Namibian Environmental Management legislation and International best practices the proponent will implement an Environmental Management Plan (EMP) to prevent, minimise and mitigate negative impacts. The environmental management plan is being developed by EnviroPlan Consulting cc to address all the identified expected impacts.

2.3. EMP Administration

There is a strong need to clearly outline the roles and responsibilities of all stakeholders to ensure that the EMP is fully implemented. There is also a need for the proponent to appoint an overall responsible person (project manager) to ensure the successful implementation of the EMP as highlighted on table 3:

Table 2:Roles and Responsibilities in EMP Implementation

ROLE	RESPONSIBILITIES
Shililifa Property	Responsible to enforce EMP implementation to contractors
Development cc	
Environmental Control Officer	 Implement, review and update the EMP. Ensure all reporting and monitoring required under EMP is undertaken, documented and distributed as needed Conduct environmental site training (toolbox talks) and inductions with the support of an environmental consultant. Conducts environmental audit at work site with the support of environmental consultant. Close out all non-conformances.
	 Close out all non-conformances. Ensure materials being used on site are environmentally friendly and safe.
The Department of Environmental Affairs	 Review the EMP and any amendments to the EMP. Review reports of environmental issues and non-conformances as issued. Review and approve environmental reports submitted as part of EMP implementation
Site Engineers	 Control and monitor actions required by the EMP. Report all environmental issues to HSE Manager. Ensure documented procedures are followed and records kept on site. Ensure any complaints are passed onto the management within 24 hours of receiving the complaint.

ROLE	RESPONSIBILITIES
Employees	Follow requirements as directed by site engineers.
	 Report any potential environmental issues to site
	engineer/project manager, indicating spilt oil, excess
	waste, excessive dust generation, dirty water running off
	the site and other possible non-conformances

2.4. EMP Management Actions

The management actions aim to avoid potential impacts where possible. Where impacts cannot be avoided, management actions are outlined in order to minimize the significant impacts.

The tables below outline the specific management actions which need to be undertaken during the construction and operational phase of the development to ensure that the site activities are compliant.

Table 3:Construction Phase Management Actions

Impact	Description	Effects	Class	Time frame	Responsibility	Action		
Construction Phase-Negative Impacts								
Noise pollution	Noise will be generated through:	- The health of working	Environmental	6-8 months	-Environmental	- A construction interval will be		
	-Access roads upgrading	personnel could be			Control Officer	established, used and adhered to.		
	-Construction of Streets	disturbed.			-Site Manger	- Workers will be issued ear plugs to		
	-Construction of drainage services and	- Passers-by could be				protect them from excessive noise.		
	water reticulation systems.	disturbed by the noise.				- Public will be notified through		
	-Construction of buildings	- General annoyance				printed timetable stating planned		
	-Moving vehicles.	-Driving away of local				operational activities.		
		animals species near the				- Construction activities will be		
		project site				conducted during daytime.		
		-Residents nearby will be				-Site notices will be erected on and		
		affected				around the site notifying visitors and		
						nearby residents of different hazards		
						on site.		
Dust Generation	Dust will accumulate because of the	- Can lead to respiratory	Environmental	6-8 months	-Environmental	- Dust suppression will be done		
	land preparation, onsite movements of	illnesses especially to			Control Officer	through watering dust sources		
	vehicles and machines, wind blowing	those working in the area.			-Project Manger	surfaces.		
	on loose material during construction	- General air pollution.				-Watering down dusty surfaces,		
	and tipping.	-Nuisance to nearby				-Ensure that protective equipment		
		residents				such as respirators are distributed to		
						employees, and ensure their use.		
						-Site notices to be erected on and		
						around the site to inform visitors and		
						surrounding residents.		
Loss of	-Vegetative plants on site will be	-The clearing of vegetation	Environmental	Construction	-Environmental	- The proposed project area had		
Biodiversity	removed	will result in the breaking		phase	Control Officer	development before the area was		
		of the ecosystem			-Site Manager	proclaimed and there is massive		
		processes in the area.				urban area disturbances already,		

				T	T	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	-Habitat destruction for both ground	-Loss of aesthetic value of				hence there is little vegetation to be
	dwelling species and tree dwelling	the proposed project area.				affected by the development.
	species.	-The few small animals still				- All the major trees will be preserved
	-Soil disturbance on and around the	habiting the place such as				and the layout plan will fit into the
	site.	small rodents and birds will				environment without affecting the
		be forced away.				trees.
		-The ecosystem food chain				- Ground disturbance will only be
		on and around the area will				limited to boundary area to avoid
		be broken.				affecting a large area.
						-Upon completion of construction
						activities more trees and lawn will be
						planted on and around the site to
						restore the site into a status that is
						environmentally friendly.
						-When necessary a permit must be
						obtained from the Directorate of
						Forestry before removing a major tree
						species.
Greenhouse gas	Green House Gasses (GHGs) emissions	-Global climate change	Environmental	Construction	-Environmental	-Adopt the use of ethanol blended
emissions	will be produced from the following	- Air pollution		phase	Control Officer	fuels wherever necessary.
	activities:				-Project Manager	-Design an operation system that cuts
	• Fuels combustion for				-Department of	on fuel consumption.
	transport (construction				Environmental	- Use of solar energy system during
	vehicles and equipment)				Affairs.	construction for lighting and other
	 Ground excavation releases 					minor energy needs.
	phosphorus found					
	underground and releases					
	particulate matter into the					
	atmosphere.					
			l .	1		

Pollution from	Construction is associated with a lot of	-Chemical pollution from	Environmental	Construction	-Environmental	- Ensure that all waste from
construction	raw material and activities that results	oil spills resulting from the		phase	Control Officer	construction activities is stored and
activities	in pollution	handling of various			-Project Manger	contained in designated containers
	·	machineries used during				and transported to the Rundu waste
		the construction phase				disposal site.
		-Construction rubble,				-Bulky waste such as building rubbles
		empty packaging				must be collected and disposed of at
		containers/bags and				any of the various municipal satellite
		materials remnants.				sites or for landfilling.
		-Construction workers can				-Adequate mobile toilets must be
		also pollute the				provided at the construction camps
		surrounding environs if				for the use of the workers.
		they are not provided with				-A skip container will be put on site
		adequate toilet facilities				and regularly emptied to handle
		and a waste management				domestic waste.
		system for domestic waste.				
Hydrocarbons	There will be no storage of oils and fuel	-Washing away of	Environmental	Construction	-Environmental	-Implement a maintenance
Hydrocarbons release into the	There will be no storage of oils and fuel on site, however there is risk of spillage	-Washing away of contaminated soils by rains	Environmental	Construction Phase	-Environmental Control Officer	-Implement a maintenance programme to ensure all vehicles,
1 -	_	,	Environmental			'
release into the	on site, however there is risk of spillage	contaminated soils by rains	Environmental		Control Officer	programme to ensure all vehicles,
release into the	on site, however there is risk of spillage of hydrocarbons from vehicles and	contaminated soils by rains into nearby rivers	Environmental		Control Officer -Project Manager	programme to ensure all vehicles, machinery and equipment are and
release into the	on site, however there is risk of spillage of hydrocarbons from vehicles and machinery operations, maintenance	contaminated soils by rains into nearby rivers -Pollution of soil and	Environmental		Control Officer -Project Manager -Department of	programme to ensure all vehicles, machinery and equipment are and remain in proper working order
release into the	on site, however there is risk of spillage of hydrocarbons from vehicles and machinery operations, maintenance through leakages and spillages which	contaminated soils by rains into nearby rivers -Pollution of soil and affecting small living	Environmental		Control Officer -Project Manager -Department of Environmental	programme to ensure all vehicles, machinery and equipment are and remain in proper working order -Vehicle maintenance should be Conducted in designated areas only, preferably off-site.
release into the	on site, however there is risk of spillage of hydrocarbons from vehicles and machinery operations, maintenance through leakages and spillages which may result in environmental	contaminated soils by rains into nearby rivers -Pollution of soil and affecting small living organisms habituating the	Environmental		Control Officer -Project Manager -Department of Environmental	programme to ensure all vehicles, machinery and equipment are and remain in proper working order -Vehicle maintenance should be Conducted in designated areas only,
release into the	on site, however there is risk of spillage of hydrocarbons from vehicles and machinery operations, maintenance through leakages and spillages which may result in environmental	contaminated soils by rains into nearby rivers -Pollution of soil and affecting small living organisms habituating the soil -Result in possible groundwater pollution.	Environmental		Control Officer -Project Manager -Department of Environmental	programme to ensure all vehicles, machinery and equipment are and remain in proper working order -Vehicle maintenance should be Conducted in designated areas only, preferably off-site.
release into the	on site, however there is risk of spillage of hydrocarbons from vehicles and machinery operations, maintenance through leakages and spillages which may result in environmental	contaminated soils by rains into nearby rivers -Pollution of soil and affecting small living organisms habituating the soil -Result in possible groundwater pollutionPossible fire risk on and	Environmental		Control Officer -Project Manager -Department of Environmental	programme to ensure all vehicles, machinery and equipment are and remain in proper working order -Vehicle maintenance should be Conducted in designated areas only, preferably off-site Spillages are to be removed from site by a specialist waste removal contractor such a rent a drum.
release into the	on site, however there is risk of spillage of hydrocarbons from vehicles and machinery operations, maintenance through leakages and spillages which may result in environmental	contaminated soils by rains into nearby rivers -Pollution of soil and affecting small living organisms habituating the soil -Result in possible groundwater pollution.	Environmental		Control Officer -Project Manager -Department of Environmental	programme to ensure all vehicles, machinery and equipment are and remain in proper working order -Vehicle maintenance should be Conducted in designated areas only, preferably off-site Spillages are to be removed from site by a specialist waste removal contractor such a rent a drumWaste oil, fuels and other chemicals
release into the	on site, however there is risk of spillage of hydrocarbons from vehicles and machinery operations, maintenance through leakages and spillages which may result in environmental	contaminated soils by rains into nearby rivers -Pollution of soil and affecting small living organisms habituating the soil -Result in possible groundwater pollutionPossible fire risk on and	Environmental		Control Officer -Project Manager -Department of Environmental	programme to ensure all vehicles, machinery and equipment are and remain in proper working order -Vehicle maintenance should be Conducted in designated areas only, preferably off-site Spillages are to be removed from site by a specialist waste removal contractor such a rent a drumWaste oil, fuels and other chemicals from drip trays on stationery vehicles
release into the	on site, however there is risk of spillage of hydrocarbons from vehicles and machinery operations, maintenance through leakages and spillages which may result in environmental	contaminated soils by rains into nearby rivers -Pollution of soil and affecting small living organisms habituating the soil -Result in possible groundwater pollutionPossible fire risk on and	Environmental		Control Officer -Project Manager -Department of Environmental	programme to ensure all vehicles, machinery and equipment are and remain in proper working order -Vehicle maintenance should be Conducted in designated areas only, preferably off-site Spillages are to be removed from site by a specialist waste removal contractor such a rent a drumWaste oil, fuels and other chemicals from drip trays on stationery vehicles and machinery will be disposed of as
release into the	on site, however there is risk of spillage of hydrocarbons from vehicles and machinery operations, maintenance through leakages and spillages which may result in environmental	contaminated soils by rains into nearby rivers -Pollution of soil and affecting small living organisms habituating the soil -Result in possible groundwater pollutionPossible fire risk on and	Environmental		Control Officer -Project Manager -Department of Environmental	programme to ensure all vehicles, machinery and equipment are and remain in proper working order -Vehicle maintenance should be Conducted in designated areas only, preferably off-site Spillages are to be removed from site by a specialist waste removal contractor such a rent a drumWaste oil, fuels and other chemicals from drip trays on stationery vehicles and machinery will be disposed of as hazardous waste at a licensed facility
release into the	on site, however there is risk of spillage of hydrocarbons from vehicles and machinery operations, maintenance through leakages and spillages which may result in environmental	contaminated soils by rains into nearby rivers -Pollution of soil and affecting small living organisms habituating the soil -Result in possible groundwater pollutionPossible fire risk on and	Environmental		Control Officer -Project Manager -Department of Environmental	programme to ensure all vehicles, machinery and equipment are and remain in proper working order -Vehicle maintenance should be Conducted in designated areas only, preferably off-site Spillages are to be removed from site by a specialist waste removal contractor such a rent a drumWaste oil, fuels and other chemicals from drip trays on stationery vehicles and machinery will be disposed of as

						-Oil residue will be treated with oil
						absorbent material such as Drizit or
						bio-remediation and removed to an
						approved waste
						disposal site
						-Spill kits will be easily accessible and
						workers will be trained in the use
						thereof.
						-Staff and contractors will be trained
						in the handling and storage of oils,
						fuels, chemicals and other hazardous
						substances
						-No bins containing organic solvents
						such as paint and thinners shall be
						cleaned on site, unless containers for
						liquid waste disposal are provided on
						site.
Safety and Health	Construction related Safety and Health	-Injuries to workers such as	Health and safety	Construction	Drainet manager	- Equip workers with Personal
-	Construction related Safety and Health hazards	-	Health and Salety		Project manager	Protective Equipment (PPE), provide
risks	Hazarus	Occupational dermatitis,		phase		
		slips and fall of humans and objects,				trainings on how to effectively use the PPE.
		musculoskeletal disorders,				-Provide platforms for briefings and
		etc.				meetings about possible safety and
						health hazards in the work place
						-Provide site signs warning and
						informing about different hazards on
						site.
Population Influx	The project will bring in skilled and	-There is potential for	Socio-economic	Construction	-Environmental	-Train and brief employees to respect
	unskilled workforce into Rundu area	cultural systems conflict		phase	Control Officer	local cultures and leaders,
	from other places increasing	between locals and new			-Project Manger	-Engage on massive sexual health
	population density in the area.	people in the area				training and awareness and providing
	, ,	F				contraceptives such as condoms, as

		-Potential for rife prostitution and spread of HIV/AIDS and other STDs				well as provide means counselling for those that are affected by HIV/AIDS and other STDs,
		-Potential for scaring away				- Provide environmental trainings and
		of local wild animals,				continue a regular basis briefing the
		poaching and removal of				employees about nature conservation
		protected indigenous				(animal and plants), and discourage
		vegetative species				indiscriminate vegetation clearance.
Land use change	-The existing environment will	-The area will no longer be	-Social	Permanent	-Environmental	-The development should blend into
	drastically change from a dormant	suitable for agriculture.	-Terrestrial		Control Officer	the existing area through designing
	piece of land to a modernised urban	-Sudden change in	environment		-Project Manger	and colour coding.
	development.	landscape appearances				-Green designing will bring life to the
		may be unfavourable to				site and blend with surrounding
		the conservatives.				areas.
Extraction of	-Construction raw materials such as	-Sand abstractors may	-Ecological	Construction	-Environmental	-The project manager will only make
consumption	sand and aggregate come from the	result in degradation from	-Social	phase	Control Officer	sure that suppliers of raw materials
resources	extractive industry and it might have	the source areas.			-Site Engineer	from the extractive industry have an
	detrimental impacts on the	-Unsustainable				Environmental Clearance Certificate
	environment.	construction practices can				for their activities.
		cause damage to the				
		ecological and social				
		environment through				
		noise, driving away				
		animals and destruction of				
		forest resources.				
Resources	The construction industry can be	-The project can result in a	-Socio-economic	Construction	-Environmental	-Water saving should be ensured by
consumption	resource intensive, i.e. electrical and	strain on available water		phase.	Control Officer	the site manager i.e. repairing
	water resources.	resources and electricity.			-Project Manger	leakages, opening taps only when
						water is required and recycling of
						water on site.

Employment	The construction exercise provides an	Construction - Improves disposable	Phase-Positive Impact	s Project life	-Project Manger	-Electricity supply can be augmented by sustainable energy such as solar to power things such as boreholes and smaller appliances on site. - Work with local leadership
creation	opportunity of outsourcing work	income to those employed	30cio-economic	time	-Project Manger	(councillor) on acquiring non-skilled
	approximation of the state of t	and their immediate families.				labour from the residents.
Business linkages	-Raw materials acquiring and contracting companies provide an opportunity for businesses.	-Local suppliers will be presented with an opportunity to empower their businessesConstruction workers can be provided with accommodation, food and services from the local community increasing business activities.	-Socio-economic	Construction phase	-Project Manger	-The proponent will outsource most of its materials and services from Rundu.
Infrastructure development	The development presents a unique opportunity for infrastructure development in Rundu Town.	-Existing roads will be upgraded which will benefit the local communityDevelopment of the facilities will also pave way for future developers to grow interests in the area and result in ripple effects and quick growing of the area.	-Socio-economic	Construction phase	-Project manager	-Development such as road upgrading will not only be limited up until the project site, but it will be extended to service other residents as well.

2.5. Operational Phase

The operational phase is the most critical component of project implementation since it is more on a long term, however and it is normally associated with less impacts as compared to construction phase. This phase will comprise of the actual day to day running of the facilities. This phase is expected to last permanently, but with upgrading activities occasionally. There will be several impacts that will occur on a daily basis or other sequential routine. The phase forms the basis of an Environmental Management Plan that is detailed in Chapter and will be followed by the decommissioning phase. The major impacts identified by this study for the operational phase are as detailed in the previous chapter.

Table 4: Impacts associated with the Operation Phase

Aspect	Description	Effects	Class	Time Frame	Responsibility	Action		
Operation Phase-Positive Impacts								
Water usage	-Water is an important resource that will be used by the residents for domestic purposes, the	-Straining local water supply from the municipal council water reticulation system	Environmental	Permanent	Building/Site manager	- Apply a supply and demand model that will be determined by seasonal variations in water		
	proposed project will be serviced with water by Rundu Town council's water reticulation system.	water reticulation system				availabilityWater saving connections to be put in placeRegular maintenance of water pipes to avoid leakages and wasteful use of water resources.		
Energy usage	-Human settlements consume a lot of electrical energy daily, such that energy requirements will need checking.	-Energy supply through the main grid will be strained	-Socio-economic	Permanent	-Building/Site manager	-The proponent has a plan of using solar energy to power the area, but initially electrical energy will be supplied by Rundu Town Council.		
Solid Waste	- Domestic and industrial solid waste will be generated by the residents who will settle in this area. It is therefore very important to construct appropriate infrastructure to management thus waste types, etc.	- Eyesore to the environment -Unwanted nutrient disposal into the soils, - Detrimental to livestock health	Environmental Socio-economic	Permanent	-Site manager	-Visual inspections monitoring -All waste will be managed by Rundu Town Council, the developer will ensure that domestic waste handling facilities such as dust bins and skip containers are available for all ervenWaste separation will be provided for to allow for recycling of recyclable materials.		

Sewerage and	Domestic activities will result in	-Health hazard	-Environmental	Permanent	Site Manager	-All sewerage waste will be
effluent waste	ablution sewer water		-Health			channelled into the Municipal
						sewer reticulation system.
Population	Influx of population into the area.	-Population increase may	-Socio-economic	Permanent	-Project proponent	-Engaging actively in sexual
increase		result in social evils such as			-Police	health to avoid diseases
		prostitution and high crime			-Health services	spreading sexually.
		rate.				
		-Pressure on available social				
		services.				
		-Cultural integration may				
		result in dilution of the local				
		values and cultures.				
		-Possibility for conflicts				
		between new residents,				
		visitors and the residents.				
Increased storm	-The area is undeveloped hence	-Enhance the chances of flood	Environmental	Permanent	-Site Engineer	-Standard storm water
water flow	most water quickly infiltrates as it	occurrences			-Environmental	drainage will be part of the
	reaches the ground, but due to	-Chances of soil erosion and			Control Officer	water reticulation designs
	the paving and hard surfaces	gully formation will be				indicating the storm water
	storm water will increase	increased				deposit areas.
Infrastructure	-Infrastructure hazards are	-There is potential for building	-Socio-economic	Permanent	-Site Engineer	-Sewerage infrastructure will
hazards	potential risks that building pose	collapse.	-Environmental		-Contractor	be regularly monitored and
	to its inhabitants, local	-Fire risks and hazards			-Project proponent	inspected over time.
	environment or surrounding				-Buildings	-Standard buildings will be
	residents.				inspectorate	constructed and building
					-Ministry of Health	inspection will be done by
					and Social Services.	Regional Council officers.
					-Ministry of Safety	-Fire emergency evacuation
					and security	plan will be put in place to
						avoid fatalities and injuries in
						case of an emergency.

Pressure on social	The incoming population to the	-There will be increased	-Social	Permanent	-Project proponent	-The project proponent has left
amenities	area will result in pressure on	demand for education and				space for possible institutional
	available social amenities.	health facilities.				facilities for education or
	available social afficilities.	Treater raemites.				health, which will also serve
						the surround communities and
						further.
		Operational	Phase-Positive Impa	cts		rurtier.
		Operational	riiase-rositive iiiipa			
Development of	-The project will further develop	-Ripple effects will result in	-Economic	Permanent	-Regional council	-The Development Should Be
the area	Rundu Town as a growing town.	construction of supporting				Regulated In Such a way that
		infrastructure such as schools,				the local people are
		hospitals, car services and				empowered and benefit from
		supermarkets.				the development activities.
Revenue	The development is bound by to	-The regional council, village	National	Permanent	-Project proponent	-The project will benefit the
generation	pay tax and rates to Rundu Town	council and other service			-Inland Revenue	locals, authorities and the
	Council and the government	providers will benefit from			department	government if all dues, rates
		revenue generation from the				and taxes are adhered to.
		development				
		-Business facilities will be				
		paying tax to the government				
		benefiting the country at				
		large.				
Rehabilitation	Currently the project	-After construction trees will	Environmental	Permanent	-Building/site	-During operation phase tree
maintenance of	environment is already degraded	be planted and a green zone			manager	planting will continue and
the environment.		created improving the				maintenance of the green
		aesthetic value of the				zone.
		environment to a better				-Regular watering of the lawns
		position than it was before.				that will be panted.

2.6. Environmental Monitoring Plan

Monitoring is very important for identifying the success of mitigation measures formulated for the significant impacts identified. Monitoring of activities will identify impacts that have not been foreseen and give enough time to analyse the situation and formulate measures to minimise impacts. Survey records and results must be maintained for these monitoring and inspections, highlighting any problems and the measures taken to address it.

- Prior to site preparation and construction activities, the main contractor should present an environmental monitoring plan (including, inter alia, location of construction camp and toilet facilities, location of material storage areas, solid waste management plan, dust control measures, activity schedule, etc.) for review and approval by the Environmental Consultant.
- The developer should present a landscape plan and the trees/vegetation earmarked for protection should be flagged and hoarded by the contractor.

The entity selected to carry out environmental monitoring of the construction works should then prepare an environmental monitoring programme based on the above, the requirements of the EIA, and conditions of the development permit. The major elements of the environmental impact monitoring programme to be implemented during the construction phase of the project are as follows:

- i. Site clearance to ensure that trees marked for protection are left untouched and that large areas of soil are not left exposed and uncovered for extended periods of time.
- ii. Site drainage and surface runoff, especially during and shortly after major rainfall events, to ensure there is no flooding, ponding and runoff of surface water Compliance of construction works with site management and landscape plans.
- iii. Ensure transportation of earth materials is done by covered trucks and from approved sites.
- iv. The contractor must immediately and completely clean up spills of materials in public areas.
- v. Solid waste disposal practices to ensure appropriate on-site management and final disposal at approved dump.

3. CHAPTER FOUR: CONCLUSION AND RECOMMENDATIONS

The environmental impact assessment process for the proposed township establishment was conducted in accordance to the Environmental Management Act 2007 and EMA Regulation 2012. Further consideration was given to relevant legislation throughout the entire process to ensure a successful assessment process.

Impacts likely to occur during project phases (construction and operation) were assessed depicting a positive outlook despite limited details of the magnitude of the proposed development. Based on the assessment, the overall project is less damaging to the environment demonstrating high job creation opportunities and community development. Impacts with negative effects were also identified and summarized in a form of environmental management plan to ensure sustainable implementation.

The site has access to services such as electricity and roads for accessibility. Adding on the site has minimal vegetation such that no trees will be removed during the construction phase. It is important that the proponent observe and maintain accountability to both socio-economic and environmental sensitive activities from the project, such that the project is harmonized with policy, regulations, administrative frameworks and social interface with the public as proposed in the environmental management plan. Failure to observe these measures will significantly affect the local environment and lead to non-compliance. Therefore, implementation environmental protection measures should be executed in consultation with the key stakeholders.

EnviroPlan hereby recommends that MET: DEA grant the environmental clearance certificate for the following:

-TOWNSHIP ESTABLISHMENT ON PORTION 134 OF RUNDU TOWN AND TOWNLANDS NO. 1329, RUNDU, KAVANGO EAST – NAMIBIA

The project will have to be approved, under the condition of full implementation of this EMP.

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.