ENVIRONMENTAL & SOCIAL IMPACT ASSESSMENT FOR THE PROPOSED SUBDIVISION AND DEVELOPMENT OF ERF RE 1-177, REHOBOTH- HARDAP REGION, NAMIBIA

ENVIRONMENTAL MANAGEMENT PLAN (EMP)

MAY 2021

APP: 002669

DENMARI PROPERTIES AND DEVELOPERS

HARMONIC TOWN PLANNING CONSULTANTS



DOCUMENT DATA SHEET

DOCUMENT VERSION

001

PROJECT NAME	PROPOSED SUBDIVISION AND DEVELOPMENT OF ERF RE 1-177, REHOBOTH- HARDAP REGION, NAMIBIA				
REPORT TITLE	ENVIRONMENTAL SCOPING REPORT: (ESR)				
PROPONENT	DENMARI PROPERTIES AND DEVELOPERS				
ENVIRONMENTAL	HARMONIC TOWN PLANNING CONSULTANTS				
CONSULTANT	POSTAL BOX: 3216, Windhoek-Namibia				
CONSOLIANT	PHONE NO: +264 (0) 813634904				
	EMAIL ADDRESS: ekasinganetie@gmail.com				
MET PROJECT NO.	APP-002669				
AUTHORS	TENDAI E. KASINGANETI				
DATE OF SUBISSION	31 May 2021				

Contents

1.	CHAPTER ONE: BACKGROUND	1
1.1.	INTRODUCTION	1
1.2.	PROJECT LOCATION	1
1.3.	PURPOSE OF THE ENVIRONMENTAL MANAGEMENT PLAN (EMP)	3
1.4.	LEGAL AND OTHER REQUIREMENTS COMPLIANCE	3
1.5.	THE EMP ADMINISTRATION	
2.	CHAPTER THREE: ENVIRONMENTAL MANAGEMENT PLAN (EMP)	4
2.1.	INTRODUCTION	4
2.2.	EMP ADMINISTRATION	4
2.3.	OPERATIONAL PHASE	12
2.4.	ENVIRONMENTAL MONITORING PLAN	16
3.	CHAPTER FOUR: CONCLUSION AND RECOMMENDATIONS	17
3.1.	CONCLUSION	17
3.2.	RECOMMENDATIONS	17
List of	f Figures	
	1: Project Locality	2
List of	f Tables	
Table 1	:Roles and Responsibilities in EMP Implementation	5
Table 2	2: Construction Phase	6
Table 3	8: Impacts associated with the Operation Phase	13

Definitions

TERMS	DEFINITION
BID	Background Information Document
EAP	Environmental Assessment Practitioner
ECC	Environmental Clearance Certificate
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
ESIA	Environmental and Social Impact Assessment
EMP	Environmental Management Plan
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
PRP	Pit Rehabilitation Plan
ToR	Terms of Reference
UNFCCC	United Nations Framework Convention on Climate Change

1. CHAPTER ONE: BACKGROUND

1.1. INTRODUCTION

Denmari Properties and Developers (herein referred to as the proponent) a 100% Namibian owned entity based in Rehoboth, Namibia intends to develop housing units on an portion of land in Rehoboth and as such the ssubdivision of the Erf Rehoboth Extension 1-177, into 17 Portions and the Remainder has to be undertaken. The project is initiated in a bid to ease

accommodation pressure in Rehoboth and to utilise land to its full potential.

In this respect, Denmari Properties has appointed Harmonic Town Planning 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).

As such, this document forms part of the application to be made to the DEA's office for an Environmental Clearance certificate for the proposed subdivision according to the the guidelines and 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

Erf Rehoboth Extension 1-177 is located in a well-established neighbourhood surrounded by land uses zoned 'Single residential', 'General Residential', Institutional and Public open space. The erf is situated on the southwest of Rehoboth Extension 1. Several Informal roads and

footpaths visible in the area.

The erf measures approximately $\pm 7544 \text{ m}^2$ in extent and is zoned 'General Residential' with a density of 1:100. Erf Rehoboth Extension 1-177 is currently undeveloped and gets access from a 15m wide Street.

The map below (Fig 1) gives an Arial view of the project site

Company Confidential
Harmonic Town Planning Consultants | © 2021

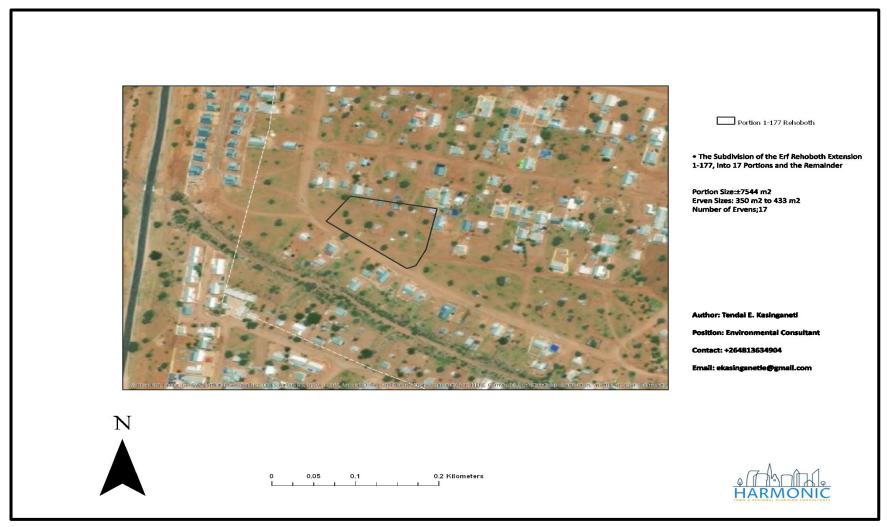


Figure 1: Project Locality

1.3. PURPOSE OF THE ENVIRONMENTAL MANAGEMENT PLAN (EMP)

This EMP has been developed for the proposed subdivision and construction of housing units on ERF RE 1/177 Rehoboth. It forms the operational framework within which the proposed project is to operate within. 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

1.4. 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.

1.5. THE 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 (Site Manager) to ensure the successful implementation of the EMP.

It solely remains the responsibility of Denmari Properties to ensure;

- That all members of the project team, including contractors, comply with the procedures set out in this EMP;
- That all personnel are provided with sufficient training, supervision, and instruction to fulfil this requirement; and
- Ensuring that any persons allocated specific environmental responsibilities are notified of their appointment and confirm that their responsibilities are clearly understood.

2. CHAPTER THREE: ENVIRONMENTAL MANAGEMENT PLAN (EMP)

2.1. INTRODUCTION

The proposed subdivision will have environmental impacts as indicated in the Environmental Scoping Report. This section is aimed at describing The Environmental Management Plan (EMP) for impacts associated with the proposed developments. 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.

2.2. 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 below:

Table 1:Roles and Responsibilities in EMP Implementation

ROLE	ENVIRONMENTAL RESPONSIBILITIES				
Denmari Properties	Responsible to enforce EMP implementation to contractors				
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 (tool box 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.				
	• Ensure materials being used on site are environmentally friendly and safe.				
The Department of Environmental	Approve the EMP and any amendments to the EMP.				
Affairs	• Approve 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 the ECO.				
	• 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.				
Workers/Employees/Visitors	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				

Table 2: Construction Phase

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			
	-Habitat destruction for both ground	of the ecosystem			-Site Manager	proclaimed and there is massive			
	dwelling species and tree dwelling	processes in the area.				urban area disturbances already,			
	species.	-Loss of aesthetic value of				hence there is little vegetation to be			
		the proposed project area.				affected by the development.			

				1		
	-Soil disturbance on and around the	-The few small animals still				- All the major trees will be preserved
	site.	habiting the place such as				and the layout plan will fit into the
		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.
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.					
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 Rehoboth
		the construction phase				waste disposal site.
		-Construction rubble,				-Bulk 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 camp for
		surrounding environs if				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
release into the	on site, however there is risk of spillage	contaminated soils by rains		Phase	Control Officer	programme to ensure all vehicles,
environment	of hydrocarbons from vehicles and	into nearby rivers			-Project Manager	machinery and equipment are
	machinery operations, maintenance	-Pollution of soil and			-Department of	maintained and remain in proper
	through leakages and spillages which	affecting small living			Environmental	working order
	may result in environmental	organisms habituating the			Affairs.	-Vehicle maintenance should be
	contamination	soil				Conducted in designated areas only,
		-Result in possible				preferably off-site.
		groundwater pollution.				- Spillages are to be removed from site
		-Possible fire risk on and				by a specialist waste removal
		around the site				contractor such a rent a drum.
						-Waste oil, fuels and other chemicals
						from drip trays on stationery vehicles
						and machinery will be disposed of as
						hazardous waste at a licensed facility
						by a specialist hazardous waste
						handler.
						-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,

	T			1		finale alexandrale and the total
						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	Project manager	- Equip workers with Personal
risks	hazards	Occupational dermatitis,		phase		Protective Equipment (PPE), provide
		slips and fall of humans				trainings on how to effectively use the
		and objects,				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 Rehoboth 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
		-Potential for rife				contraceptives such as condoms, as
		prostitution and spread of				well as provide means counselling for
		HIV/AIDS and other STDs				those that are affected by HIV/AIDS
		-Potential for scaring away				and other STDs,
		of local wild animals,				- Provide environmental trainings and
		poaching and removal of				continue a regular basis briefing the
		protected indigenous				employees about nature conservation
		vegetative species				(animal and plants), and discourage
						indiscriminate vegetation clearance.
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

		I		1		F
	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.
						-Electricity supply can be augmented
						by sustainable energy such as solar to
						power things such as boreholes and
						smaller appliances on site.
		Construction	L Phase-Positive Impact	S .		
Employment	The construction exercise provides an	- Improves disposable	Socio-economic	Project life	-Project Manger	- Work with local leadership
creation	opportunity of outsourcing work	income to those employed		time	, ,	(councillor) on acquiring non-skilled
		and their immediate				labour from the residents.
		families.				
Business linkages	-Raw materials acquiring and	-Local suppliers will be	-Socio-economic	Construction	-Project Manger	-The proponent will outsource most
	contracting companies provide an	presented with an		phase	.,	of its materials and services from
	opportunity for businesses.	opportunity to empower		p.v.a.c		Rehoboth.
	opportunity to additional to the state of th	their businesses.				
		-Construction workers can				
		be provided with				
		accommodation, food and				
		services from the local				
		community increasing				
		business activities.				
		שמוווכסט מכנועונופט.		Ì		

Infrastructure	The development presents a unique	-Existing roads will be	-Socio-economic	Construction	-Project manager	-Development such as road upgrading
development	opportunity for infrastructure	upgraded which will		phase		will not only be limited up until the
	development in Luderitz Town.	benefit the local				project site, but it will be extended to
		community.				service other residents as well.
		-Development 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.				

2.3. 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 development. 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 3: 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 Rehoboth Town council's water reticulation system.					availabilityWater saving connections to be put in placeRegular maintenance of water pipes to avoid leakages and wasteful use of water			
Energy usage	-Human settlements consume a lot of electrical energy daily, such that energy requirements will	-Energy supply through the main grid will be strained	-Socio-economic	Permanent	-Building/Site manager	resources. -The proponent is recommended to use energy saving equipment and gadgets			
Solid Waste	need checking. - 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	with green rating. -Visual inspections monitoring -All waste will be managed by Rehoboth Town Council, the developer will ensure that domestic waste handling facilities such as dust bins and skip containers are available for all erven.			
						-Waste 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	-Ensuring that additional social
increase		result in social evils such as			-Police	amenities are put in place to
		prostitution and high crime			-Health services	serve the growing population.
		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	-Firebreaks potential			-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.	Town 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.

Operational Phase-Positive Impacts						
Development of	-The project will further develop	-Ripple effects will result in	-Economic	Permanent	-Regional council	-The Development Should Be
the area	Rehoboth Town as a growing	construction of supporting				Regulated In Such a way that
	town.	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 town council will benefit	National	Permanent	-Project proponent	-The project will benefit the
generation	pay tax and rates to Luderitz	from revenue generation			-Inland Revenue	locals, authorities and the
	Town Council and the	from the development			department	government if all dues, rates
	government	-Business facilities will be				and taxes are adhered to.
		paying tax to the government				
		benefiting the country at				
		large.				

2.4. ENVIRONMENTAL MONITORING PLAN

Monitoring component is very important for identifying successfulness of mitigation measures formulated for the significant impacts identified. The monitoring works will identify impacts that have not been foreseen and give enough time to analyse the situation and formulate measures to minimise impact. 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 management 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 DEA, the environmental monitor and the project manager. 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:

- 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.
- 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.
- Ensure transportation of earth materials is done by covered trucks and from approved sites.
- The contractor must immediately and completely clean up spills of materials in public areas.
- Solid waste disposal practices to ensure appropriate on-site management and final disposal at approved dump.
- Health and Safety should be prioritised at all times.

3. CHAPTER FOUR: CONCLUSION AND RECOMMENDATIONS

3.1. CONCLUSION

Arising from the analysis by the consultants, the proposed project is going to create permanent land cover/use change on the proposed project site. The vegetation environment that is going to be converted into a residential area and the document has thus provided adequate mitigation measures for the identified impacts for sustainable land development, because land must develop, but with land development there should not be environmental degradation, thus the EMP provides for the sustainable land development for the township development.

3.2. RECOMMENDATIONS

To alleviate any negative impacts that may emanate from the construction and operation phases of the land development and its affiliate development, relevant and cost-effective management and mitigation measures will be put in place.

The following recommendations are proposed:

a) Waste Management Recommendations

Solid and liquid waste shall be generated during the project lifespan and must be managed in such a way that it does not impact on the environment.

- The waste water reticulation system should be regularly monitored and maintained in good working conditions and odours managed to make the facility environmentally friendly.
- Provision of colour coded dust bins at all erven to ensure that recyclable material is recovered.

b) Environment Management Plan Recommendations

To ensure a healthy and safe environment in the proposed site and its environs, a plan for environmental management has to be instituted through monitoring. This involves the collection and analysis of relevant environmental data of the site including:

- Health & Security provision for workers
- Firefighting equipment that is strategically placed for easy access
- Devoted maintenance status of drainage facilities (drainage lines)
- Energy production and use
- Ensuring that only efficient taps are installed to conserve water.
- Quantification on amount of waste generated and its management to obtain information for continued improvement in handling and disposal
- Observation on socio-economic & demographic characteristics of the projects life cycle and identification of unexpected environmental impact
- Formulation of counter-measures to mitigate against the observed unexpected negative impacts and comparing them with actual impacts

References

Health: Retrieved 9 April 2009 from

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

http://www.whoafro.unep.Inte/heag2008/docsenNew%20and%20emerging%threats.pdf.