ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR THE PROPOSED QUIVER TREE INDUSTRIAL PARK EXT 1 IN KEETMANSHOOP, //KARAS REGION: NAMIBIA.

ENVIRONMENTAL MANAGEMENT PLAN

DATE: FEBRUARY 2021

APP APP-003509

KEETMANSHOOP MUNICIPALITY

EnviroPlan Consulting cc
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DOCUMENT DATA SHEET

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PROJECT NAME	**PROPOSED QUIVER TREE INDUSTRIAL PARK EXT 1 IN KEETMANSHOOP, //KARAS REGION: NAMIBIA**
REPORT TITLE	**ENVIRONMENTAL MANAGEMENT PLAN: (EMP)**
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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
MEFT: DEA	Ministry of Environment, Forestry 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

The proponent Keetmanshoop Municipality intends to improve business and industrial intergradation and development in the town. In this respect, the proponent seeks authorization for **Township Establishment & Layout Approval On Portion 83 Of Keetmanshoop Extension 1 Town And Townlands No.150, Consisting Of 31 Erven & Remainder to be known as Quiver Tree Ext 1.**

The project will oversee the conversion and consolidation of open land into industrial area, however for this to be approved, EnviroPlan consulting cc was appointed 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, Forestry and Tourism (MEFT): 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 according to 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

Quiver tree industrial park Ext 1is located on Portion 82 of Keetmanshopp Town and Townlands no. 150. The portion is located adjacent to the existing Keetmanshoop industrial area, bordered by the B4 highway to Luderitz to the South and the Railway line to the North. The portion gives way into the railway siding for industrial erven that require railway line access. Several Informal roads and footpaths visible in the area, the map below (Fig 1) gives an Arial view of the project site

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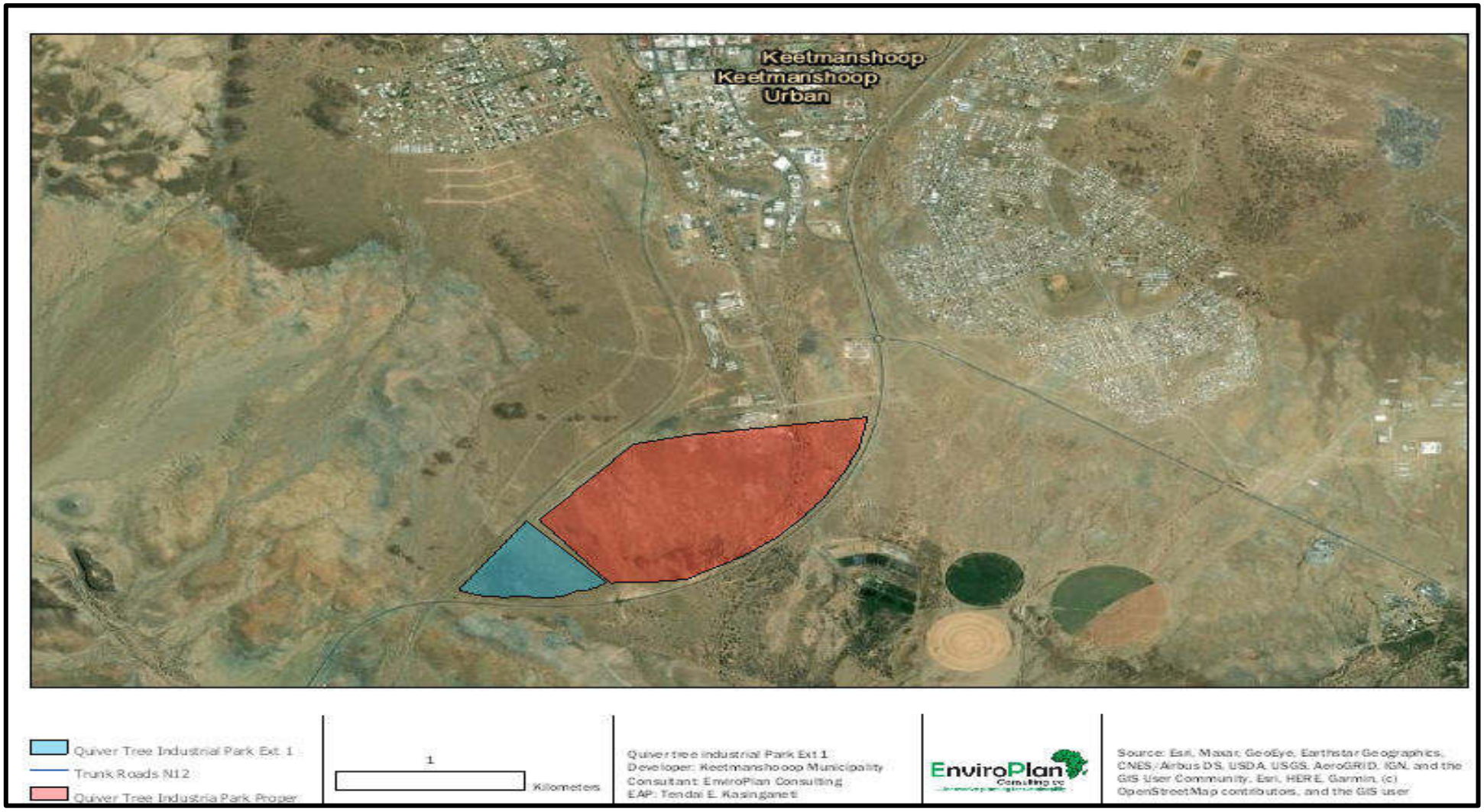

Figure 1: Quiver Tree Industrial Park Ext 1

2. PURPOSE OF THE ENVIRONMENTAL MANAGEMENT PLAN (EMP)

2.1. OVERVIEW

This EMP has been developed for the proposed Quiver Tree Industrial Park Ext 1 establishment. 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

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.

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 below:

Table 1: Roles and Responsibilities in EMP Implementation

ROLE	ENVIRONMENTAL RESPONSIBILITIES
Project Proponent	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 (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. • Ensure materials being used on site are environmentally friendly and safe.
The Department of Environmental Affairs	Approve the EMP and any amendments to the EMP. • 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: -Access roads upgrading -Construction of Streets -Construction of drainage services and water reticulation systems. -Construction of buildings -Moving vehicles.	- The health of working personnel could be disturbed. - Passers-by could be disturbed by the noise. - General annoyance -Driving away of local animals species near the project site -Residents nearby will be affected	Environmental	6-8 months	-Environmental Control Officer -Site Manger	- A construction interval will be established, used and adhered to. - Workers will be issued ear plugs to protect them from excessive noise. - Public will be notified through printed timetable stating planned operational activities. - Construction activities will be conducted during daytime. -Site notices will be erected on and around the site notifying visitors and nearby residents of different hazards on site.
Dust Generation	Dust will accumulate because of the land preparation, onsite movements of vehicles and machines, wind blowing on loose material during construction and tipping.	- Can lead to respiratory illnesses especially to those working in the area. - General air pollution. -Nuisance to nearby residents	Environmental	6-8 months	-Environmental Control Officer -Project Manger	- Dust suppression will be done through watering dust sources surfaces. -Watering down dusty surfaces, -Ensure that protective equipment 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 Biodiversity	-Vegetative plants on site will be removed -Habitat destruction for both ground dwelling species and tree dwelling species.	-The clearing of vegetation will result in the breaking of the ecosystem processes in the area. -Loss of aesthetic value of the proposed project area.	Environmental	Construction phase	-Environmental Control Officer -Site Manager	- The proposed project area had development before the area was proclaimed and there is massive urban area disturbances already, hence there is little vegetation to be affected by the development.

	-Soil disturbance on and around the site.	-The few small animals still habiting the place such as small rodents and birds will be forced away. -The ecosystem food chain on and around the area will be broken.				- All the major trees will be preserved and the layout plan will fit into the environment without affecting the trees. - Ground disturbance will only be limited to boundary area to avoid 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 emissions	Green House Gasses (GHGs) emissions will be produced from the following activities: • Fuels combustion for transport (construction vehicles and equipment) • Ground excavation releases phosphorus found underground and releases particulate matter into the atmosphere.	-Global climate change - Air pollution	Environmental	Construction phase	-Environmental Control Officer -Project Manager -Department of Environmental Affairs.	-Adopt the use of ethanol blended fuels wherever necessary. -Design an operation system that cuts on fuel consumption. - Use of solar energy system during construction for lighting and other minor energy needs.
Pollution from construction activities	Construction is associated with a lot of raw material and activities that results in pollution	-Chemical pollution from oil spills resulting from the handling of various machineries used during the construction phase -Construction rubble, empty packaging containers/bags and materials remnants.	Environmental	Construction phase	-Environmental Control Officer -Project Manger	- Ensure that all waste from construction activities is stored and contained in designated containers and transported to the Keetmanshoop solid waste disposal site. -Bulky waste such as building rubbles must be collected and disposed of at any of the various municipal satellite sites or for landfilling.

		-Construction workers can also pollute the surrounding environs if they are not provided with adequate toilet facilities and a waste management system for domestic waste.				-Adequate mobile toilets must be provided at the construction camp for the use of the workers. -A skip container will be put on site and regularly emptied to handle domestic waste.
Hydrocarbons release into the environment	There will be no storage of oils and fuel 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 contamination	-Washing away of contaminated soils by rains into nearby rivers -Pollution of soil and affecting small living organisms habituating the soil -Result in possible groundwater pollution. -Possible fire risk on and around the site	Environmental	Construction Phase	-Environmental Control Officer -Project Manager -Department of Environmental Affairs.	-Implement a maintenance programme to ensure all vehicles, machinery and equipment are maintained 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. -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,

						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 risks	Construction related Safety and Health hazards	-Injuries to workers such as Occupational dermatitis, slips and fall of humans and objects, musculoskeletal disorders, etc.	Health and safety	Construction phase	Project manager	- Equip workers with Personal Protective Equipment (PPE), provide trainings on how to effectively use the PPE. -Provide platforms for briefings and 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 unskilled workforce into the area, thereby increasing population density in the area.	-There is potential for cultural systems conflict between locals and new people in the area -Potential for rife prostitution and spread of HIV/AIDS and other STDs -Potential for scaring away of local wild animals, poaching and removal of protected indigenous vegetative species	Socio-economic	Construction phase	-Environmental Control Officer -Project Manger	-Train and brief employees to respect local cultures and leaders, -Engage on massive sexual health training and awareness and providing contraceptives such as condoms, as well as provide means counselling for those that are affected by HIV/AIDS and other STDs, - Provide environmental trainings and continue a regular basis briefing the employees about nature conservation (animal and plants), and discourage indiscriminate vegetation clearance.
Extraction of consumption resources	-Construction raw materials such as sand and aggregate come from the extractive industry and it might have	-Sand abstractors may result in degradation from the source areas.	-Ecological -Social	Construction phase	-Environmental Control Officer -Site Engineer	-The project manager will only make sure that suppliers of raw materials from the extractive industry have an

	detrimental impacts on the environment.	-Unsustainable construction practices can cause damage to the ecological and social environment through noise, driving away animals and destruction of forest resources.				Environmental Clearance Certificate for their activities.
Resources consumption	The construction industry can be resource intensive, i.e. electrical and water resources.	-The project can result in a strain on available water resources and electricity.	-Socio-economic	Construction phase.	-Environmental Control Officer -Project Manger	-Water saving should be ensured by the site manager i.e. repairing 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 Phase-Positive Impacts						
Employment creation	The construction exercise provides an opportunity of outsourcing work	- Improves disposable income to those employed and their immediate families.	Socio-economic	Project life time	-Project Manger	- Work with local leadership (councillor) on acquiring non-skilled 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 businesses. -Construction 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 Keetmanshoop..

Infrastructure development	The development presents a unique opportunity for infrastructure development in Keetmanshoop.	-Existing roads will be upgraded which will benefit the local community. -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.	-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. -Business opportunities through investment in industrial development is also an opportunity that the project will offer.

2.4. 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 proposed project will be serviced with water by Keetmanshoop Town council's water reticulation system.	-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 availability. -Water saving connections to be put in place. -Regular 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 is recommended to use energy saving equipment and gadgets with green rating.
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 Keetmanshoop 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 effluent waste	Domestic activities will result in ablution sewer water	-Health hazard	-Environmental -Health	Permanent	Site Manager	-All sewerage waste will be channelled into the Municipal sewer reticulation system.
Population increase	Influx of population into the area.	-Population increase may result in social evils such as prostitution and high crime 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.	-Socio-economic	Permanent	-Project proponent -Police -Health services	-Engaging actively in sexual health to avoid diseases spreading sexually.
Increased storm water flow	-The area is undeveloped hence most water quickly infiltrates as it reaches the ground, but due to the paving and hard surfaces storm water will increase	-Enhance the chances of flood occurrences -Chances of soil erosion and gully formation will be increased	Environmental	Permanent	-Site Engineer -Environmental Control Officer	-Standard storm water drainage will be part of the water reticulation designs indicating the storm water deposit areas.
Infrastructure hazards	-Infrastructure hazards are potential risks that building pose to its inhabitants, local environment or surrounding residents.	-There is potential for building collapse. -Firebreaks potential	-Socio-economic -Environmental	Permanent	-Site Engineer -Contractor -Project proponent -Buildings inspectorate -Ministry of Health and Social Services. -Ministry of Safety and security	-Sewerage infrastructure will be regularly monitored and inspected over time. -Standard buildings will be constructed and building inspection will be done by Town Council officers. -Fire emergency evacuation plan will be put in place to avoid fatalities and injuries in case of an emergency.

Operational Phase-Positive Impacts						
Development of the area	-The project will further develop Keetmanshoop as a growing town.	-Ripple effects will result in construction of supporting infrastructure such as schools, hospitals, car services and supermarkets.	-Economic	Permanent	-Regional council	-The Development Should Be Regulated In Such a way that the local people are empowered and benefit from the development activities.
Revenue generation	The development is bound by to pay tax and rates to the local authority and the government	-The town council will benefit from revenue generation from the development -Business facilities will be paying tax to the government benefiting the country at large.	National	Permanent	-Project proponent -Inland Revenue department	-The project will benefit the locals, authorities and the government if all dues, rates and taxes are adhered to.

2.5. 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 proposed 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

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