

ENVIRONMENTAL CLEARANCE CERTIFICATE (ECC) APPLICATION – ENVIRONMENTAL MANAGEMENT PLAN (EMP) FOR THE:

PROPOSED THE OPUWO FLEXIBLE LAND TENURE SCHEME (FLTS)- PROPOSED INFORMAL SETTLEMENTS UPGRADING UNDER THE FLEXIBLE LAND TENURE SYSTEM IN OPUWO, KUNENE REGION-NAMIBIA

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TOWN AND REGIONAL PLANNERS



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PROJECT NAME	THE PROPOSED INFORMAL SETTLEMENTS UPGRADING UNDER THE FLEXIBLE LAND TENURE SYSTEM IN OPUWO, KUNENE 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
ESA	Environmental Scoping Assessment
ESIA	Environmental and Social Impact Assessment
EMP	Environmental Management Plan
FLTS	Flexible Land Tenure System
I&APs	Interested and Affected Parties
MAWLR	Ministry of Agriculture, Water and Land Reform
MEFT: DEAF	Ministry of Environment, Forestry and Tourism's Department of Environmental Affairs and Forestry
NHC	National Heritage Council
N(EMA)	Namibia Environmental Management Act
PRO	Public Relation Officer

1. CHAPTER ONE: BACKGROUND

1.1. INTRODUCTION

Opuwo Town Council is part of the Inclusive and Sustainable Urban Development Project that has been commissioned by the German Federal Ministry for Economic Cooperation and Development (BMZ) to support Namibian efforts towards improving the living and housing conditions of residents of informal settlements. In this respect, Opuwo Town Council is proposing the upgrading of the following informal settlements:

- Okatuuo Informal Settlement
- Old Katutura Informal Settlement
- New Katutura informal settlement

In Namibia, town planning activities are one of the listed activities under the 2012 Environmental Impact Assessment (EIA) Regulations of the Environmental Management Act (EMA) No. 7 of 2007 that cannot be undertaken without an EIA or Environmental Scoping Assessment (ESA) Study done and Environmental Clearance Certificate (ECC) issued by the Environmental Commissioner. The EIA Study is aimed at assessing the proposed project potential, socio-economic aspects, infrastructure, and services, environmental, and geohydrology (hydrogeology) aspects of the respective FLTS sites.

Subsequently, the Proponent has appointed Harmonic Town & Regional Planning Consultants to undertake an Environmental Scoping Assessment (ESA) as part of the Feasibility Study, 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 and Forestry (DEAF).

As such, this document forms part of the application to be made to the DEAF for an ECC for the proposed scheme implementation according to the guidelines and statutes of the EMA and the 2012 EIA Regulations (Government Notice 30 in Government Gazette 4878).

1.2 PROJECT LOCATION

The three Portions selected for informal settlements upgrade, i.e., Okatuo Informal Settlement, Old Katutura Informal Settlement and New Katutura informal settlement and are shown on the map in

Figure 1.

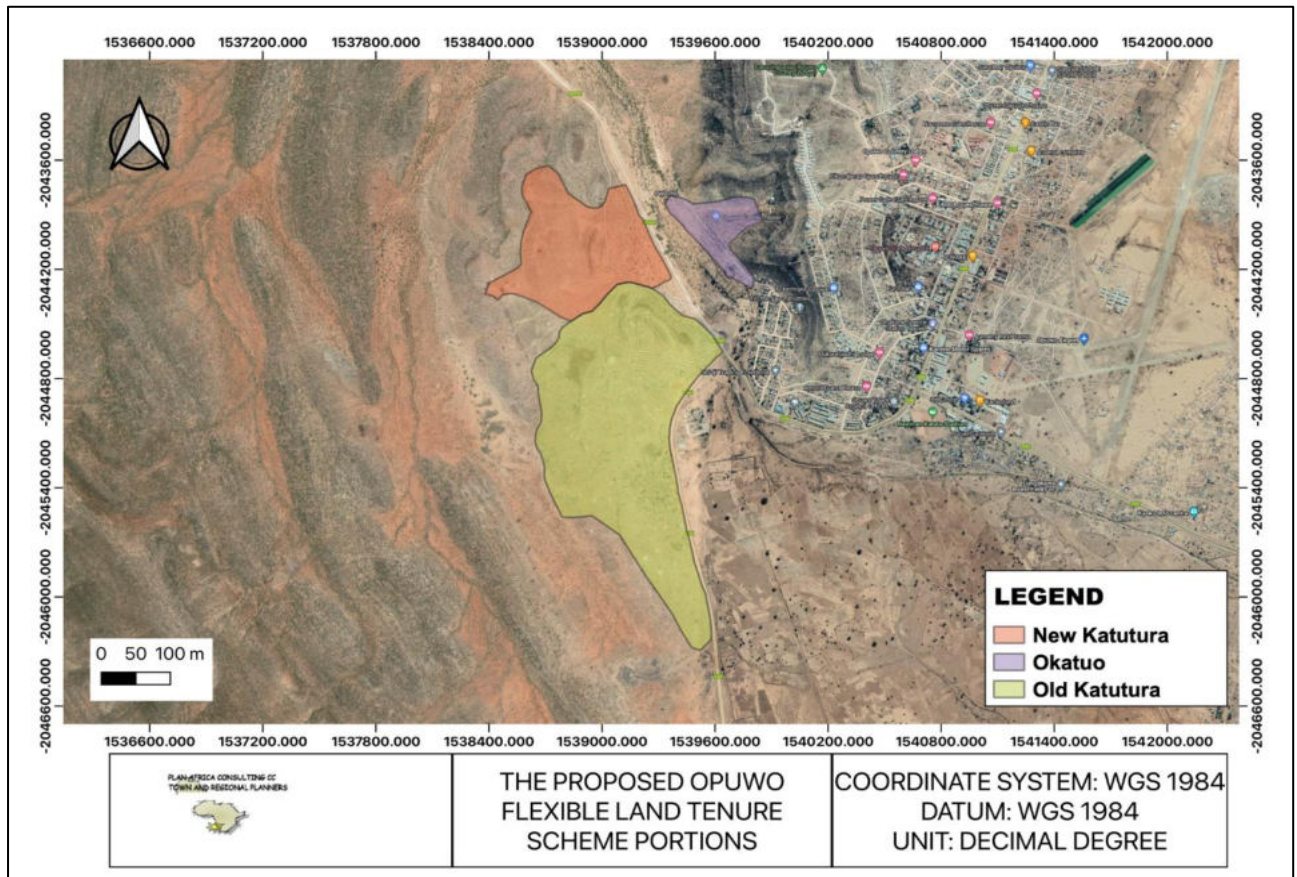


Figure 1: Locality of proposed informal settlements upgrading under the flexible land tenure system in Opuwo, Kunene Region-Namibia

1.2.1 DESCRIPTION AND DESIGN OF PROJECT

The project aims to assess formalize existing informal settlements through establishing Flexible Land Tenure Schemes by assessing the development potential, socio-economic aspects, infrastructure, and services as well as environmental and geo-hydrology aspects on the proposed FLTS portions. The Flexible Land Tenure Scheme under the Flexible Land Tenure Act, 2012 (Act No. 4 of 2012) creates new forms of secure urban land tenure:

- Starter Title, and
- Land Hold Title

The proposed project will include the establishment of FLTS System on the following project areas as illustrated in table 1 below;

Table 1: Project description

Portion Name	Size	Status	Infrastructure
Old Katutura	97.7 ha	Brownfield	Stormwater, Electricity, Roads, Sewer reticulation
New Katutura	40 ha.	Brownfield	Stormwater, Electricity, Roads, Sewer reticulation
Okatuuu	10.9 ha.	Brownfield	Stormwater, Electricity, Roads, Sewer reticulation

1.3 PURPOSE OF THE ENVIRONMENTAL MANAGEMENT PLAN (EMP)

This Environmental Management Plan (EMP) has been created for the proposed FLTS projects in Opuwo Town, and it establishes the framework within which these projects will operate. The EMP addresses all potential environmental and social impacts identified in the environmental scoping report, including mitigation actions, monitoring requirements, key indicators, and responsibilities. The EMP is continuous and will require monitoring and updates or amendments if there are any changes to the scope of operations. All project personnel must comply with the standards outlined in the EMP as required by law. This section provides details of the EMP and its management of environmental programs in a planned, systematic, and documented manner, including the organizational structure, planning, and monitoring for environmental protection at the proposed farm area development and other areas of its influence. The EMP aims to ensure that the Proponent:

- maintains control over project operations to prevent negative impacts wherever possible,
- minimize impact during the project's life cycle,
- prevent long-term environmental degradation, and
- protect public safety and health.

1.4 LEGAL AND OTHER REQUIREMENTS COMPLIANCE

As per the requirements of the Environmental Management Act No. 7 of 2007 and the Environmental Assessment regulations of 2012, Opuwo Town Council has appointed Plan Africa consulting cc to conduct an Environmental Assessment (EA) and develop an Environmental Management Plan (EMP) for the proposed the Proposed Informal Settlements Upgrading Under The Flexible Land Tenure System In Opuwo, Kunene Region-Namibia. Therefore, this report presents the EMP which has been undertaken in accordance with these requirements. As such, key requirements in accordance with this Act, classifies the proposed project as listed and invoke the need for an environmental management plan to sustainably implement this project.

In accordance with the acts stipulated above, the application for the Environmental Clearance Certificate (ECC) will be obtained from the Ministry of Environment, Forestry, and Tourism (MET): Directorate of Environmental Affairs (DEA) before the project can proceed. 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 Informal Settlements Upgrade, in accordance with 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). The Environmental Management Act of 2007 (Act No. 7 of 2007) due to it meeting the thresholds of the following Listed Activities:

A. Land Use And Development Activities:

The rezoning of land from -

- residential use to industrial or commercial use;
- light industrial use to heavy industrial use;
- agricultural use to industrial use; and
- use for nature conservation or zoned open space to any other land use.

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 for wastewater

discharge, the proponent should ensure that all licenses and permits are obtained and fulfilled as per conditions.

1.5 THE EMP ADMINISTRATION

To ensure the complete implementation of the EMP, it is crucial to clearly define the roles and responsibilities of all stakeholders. Additionally, the Proponent must designate a Site Manager who will be responsible for ensuring the successful execution of the EMP. It is the sole responsibility of the Opuwo Town Council to guarantee that all members of the project team, including contractors, adhere to the procedures specified in the EMP. Moreover, the council must provide adequate training, supervision, and instruction to all personnel to fulfil this requirement. Finally, any individuals assigned specific environmental responsibilities must be notified of their appointment and confirm that they fully comprehend their duties.

2. CHAPTER TWO: ENVIRONMENTAL MANAGEMENT PLAN (EMP)

2.1 INTRODUCTION

The implementation of the proposed FLTS projects is expected to result in environmental impacts, as outlined in the Environmental Scoping Report. This section aims to explain the Environmental Management Plan (EMP) that addresses these impacts. The EMP is designed to manage environmental programs in a methodical, planned, and documented manner. It includes the organizational structure, planning, and monitoring necessary to protect the environment at the proposed farm area development and other relevant areas. The goal is to ensure that the Proponent maintains adequate control over project operations and takes measures to prevent negative impacts wherever possible, minimize impact during the project's life cycle, and prevent long-term environmental degradation.

2.2 EMP ADMINISTRATION AND IMPLEMENTATION

It is crucial to define the roles and responsibilities of all stakeholders in a clear and concise manner to ensure that the EMP is implemented effectively. In addition, the Proponent must assign a Project Manager who will be responsible for overseeing the successful implementation of the EMP, as indicated in Table 1.

Table 2: Roles and Responsibilities in EMP Implementation

ROLE	ENVIRONMENTAL RESPONSIBILITIES
Opuwo Town Council (The Proponent)	-Responsible to enforce EMP implementation to contractors
Environmental Control Officer	<ul style="list-style-type: none"> -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.
Public Relations Officer (PRO)	<ul style="list-style-type: none"> -Liaising between the affected property or landowners and the Proponent. -Ensure effective communication with stakeholders, media (if necessary) and the public. -Organising and overseeing public relations activities, Managing public relations issues. -Collaborating with personnel and maintaining project-related open communication among project personnel, Proponent and property owners.
The Department of Environmental Affairs and Forestry	<ul style="list-style-type: none"> -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

ROLE	ENVIRONMENTAL RESPONSIBILITIES
Site Engineers and Project Managers	<ul style="list-style-type: none"> -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.
Sites Workers/Employees/Visitors	<ul style="list-style-type: none"> -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

The short description, effects, and class of potential impacts as well as timeframe, responsibility of implementation of management measures (actions) during the construction phase of the FLTS scheme are presented in Table 3 below.

Table 3: Construction Phase and management actions (measures)

Impact	Description	Effects	Class	Time frame	Responsibility	Action
Servicing and Construction Phase-Negative Impacts						
Social Grievance over property relocation or re-alignment	-The re-alignment and relocation of existing properties into surveyed erven may lead to loss of properties and possible conflicts between the Proponent and the landowner(s).	-Unresolved tension, poor consultations, and misunderstandings between the current residents (staying on or neighbouring the Portions) and Town Council may lead to unpleasant conflicts, especially the issue of relocation and re-alignment	Social	Prior to and during Constructi on Phase	-Proponent (Town Planning Department and Public Relations Officer)	-The Proponent should in time notify the potentially affected landowners (or neighbours) of the intention to establish and or upgrade the townships. -Thorough consultation and engagement with landowners should

Impact	Description	Effects	Class	Time frame	Responsibility	Action
		of properties to be incorporated into the FLTS scheme.				be conducted and amicable solutions found and agreed on. -Where compensation is the case, the Proponent should amicably compensate the affected landowner according to the National Compensation Policy.
Physical Disturbance of the site soils	-The stockpiling of topsoil and Proliferation of tracks -Excavation and associated works	-Compaction of soils by moving heavy vehicles and equipment and soil erosion	Environmental	Construction Phase	-Environmental Control Officer (ECO)	-Construction activities should be restricted on defined areas. -Proper management of stockpiles. Excavated material must be covered in stockpiles until reuse and backfilling. -Restrict movement of heavy vehicles and equipment to defined areas. Use existing roads until access require limited new roads. -Use surface anchored foundations with very limited rock breaking.
Stormwater management	-Some areas in Opuwo Town is always flooded during heavy rainy seasons such as old katatutura, and this water could be a problem to infrastructure.	The water could be a risk to both people (residents) and infrastructures such as houses.	Environmental and social	During the operation phases (existence of the FLTS houses)	-ECO -Opuwo Town Council	-Stormwater management plans (discharge points) should be designed and incorporated into the FLTS scheme designs this is to ensure that the well-known and experienced rainwater that flood the town areas during heavy rainy seasons are collected and diverted to specific

Impact	Description	Effects	Class	Time frame	Responsibility	Action
						rainwater collection area (point) in the town and not idle on site.
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	Constructi on phase	-ECO -Site Manager	-A construction interval should be established, used and adhered to. -Workers will be issued ear plugs to protect them from excessive noise. -Public should be notified through printed timetable stating planned operational activities. -Construction activities should be conducted during daytime. -Site notices should be erected on and around the site notifying visitors and nearby residents of different hazards on site.
Dust Generation	If construction is done during dry seasons of the year, 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 -Social	Constructi on Phase	-ECO -Project Manager	-Dust suppression should 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.

Impact	Description	Effects	Class	Time frame	Responsibility	Action
Loss of Biodiversity	<p>-Vegetation on site will be removed to allow site development.</p> <p>-Habitat destruction for both ground dwelling species and tree dwelling species.</p> <p>-Soil disturbance on and around the site.</p>	<p>-The clearing of vegetation will result in the breaking of the ecosystem processes in the area.</p> <p>-Loss of aesthetic value of the project site areas.</p> <p>-The few small animals still habiting the place such as small rodents and birds will be forced away.</p> <p>-The ecosystem food chain on and around the area will be broken.</p>	Environmental	Constructi on phase	<p>-Environmental Control Officer</p> <p>-Site Manager</p>	<p>-The proposed project area had development before the area was proclaimed and there are massive urban area disturbances already, hence there is little vegetation to be affected by the development.</p> <p>-All the major trees and protected species such baobab trees (<i>Adansonia digitata</i>) should be preserved, and the layout plan should fit into the environment without affecting the trees.</p> <p>-Ground disturbance should only be limited to boundary area to avoid affecting a large area.</p> <p>-Upon completion of construction activities more trees and lawn should be planted on and around the site to restore the site into a status that is environmentally friendly.</p>

Impact	Description	Effects	Class	Time frame	Responsibility	Action
	Disturbance, killing and snaring of domestic animals	The project site, especially Greenfield is currently a grazing area to some livestock during the rainy season. Therefore, the development of the land will push the animals away.	Environmental	Construction phase	-ECO	-The Proponent should inform the communities through the constituency office of the intention to close off the open land. -The livestock should not be killed but instead inform the locals / owner to look after the animals and keep them away from the town. -No beating or snaring of people's animals.
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 and Forestry.	-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 Manager	-All waste from construction activities should be stored and contained in designated containers and transported to the Opuwo waste disposal site. -Bulk waste such as building rubbles must be collected and disposed of at

Impact	Description	Effects	Class	Time frame	Responsibility	Action
		<p>-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.</p>				<p>any of the various municipal satellite sites or for landfilling. -Adequate mobile toilets must be provided at the construction camp for the use of the workers. -A skip container should be put on site and regularly emptied to handle domestic waste.</p>
<p>Hydrocarbons release into the environment</p>	<p>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</p>	<p>-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</p>	<p>Environmental</p>	<p>Construction Phase</p>	<p>-Environmental Control Officer -Project Manager -Department of Environmental Affairs.</p>	<p>-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 should be disposed of as hazardous waste at a licensed facility by a specialist hazardous waste handler. -Oil residue should be treated with oil absorbent material such as Drizit or</p>

Impact	Description	Effects	Class	Time frame	Responsibility	Action
						<p>bioremediation and removed to an approved waste disposal site</p> <ul style="list-style-type: none"> -Spill kits should be easily accessible, and workers should be trained in the use thereof. -Staff and contractors should 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	<ul style="list-style-type: none"> -Equip workers with appropriate and adequate 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 workplace -Provide site signs warning and informing about different hazards on site.
Population Influx	The project will bring in skilled and unskilled workforce into Opuwo area from other places increasing population density in the area.	-There is potential for cultural systems conflict between locals and new people in the area	Socio-economic	Construction phase	-ECO -Project Manager	<ul style="list-style-type: none"> -Train and brief employees to respect local cultures and leaders, -Engage on massive sexual health training and awareness and providing

Impact	Description	Effects	Class	Time frame	Responsibility	Action
		<ul style="list-style-type: none"> -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 				<ul style="list-style-type: none"> 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.
Employment opportunities during the servicing and construction phases of the development / implementation	-The general servicing and all construction activities create job opportunities.	-The unfair practices of giving jobs to outsiders overlooking locals could create conflicts and tensions between the contractors, Proponent, and the discriminated locals.	Socio-economic	Construction Phase	<ul style="list-style-type: none"> -Project Manager -Proponent 	-The Project Manager should make it mandatory to contractors that all unskilled and semi-skilled work should be given to the locals.
Extraction of consumption resources	-Construction raw materials such as sand and aggregate come from the extractive industry, and it might have detrimental impacts on the environment.	<ul style="list-style-type: none"> -Sand abstractors may result in degradation from the source areas. -Unsustainable construction practices can cause damage to the ecological and social environment through noise, driving away animals and destruction of forest resources. 	<ul style="list-style-type: none"> -Ecological -Social 	Construction Phase	<ul style="list-style-type: none"> -ECO -Site Engineer 	-The Project Manager should make sure that suppliers of raw materials from the extractive industry have an 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.	<ul style="list-style-type: none"> -Environmental Control Officer -Project Manager 	-Water saving measures should be encouraged and implemented by the site manager and contractors. This include water re-use, recycling,

Impact	Description	Effects	Class	Time frame	Responsibility	Action
						repairing leakages, opening taps only when water is required and recycling of water on site. -Electricity supply should be augmented by sustainable energy such as solar to power things such as boreholes and smaller appliances on site.
Change in topography / landscape character	-Use of caterpillars for servicing (roads construction and paving of the site)	The trenches and stockpiled materials would result in landscape change	Environmental	Construction Phase	-ECO -Site Manager / Project Manager	-All the excavated pits and trenches should be backfilled to ensure that there are no pits left open on site and creating a new paved landscape (use of cement interlocks).
Archaeological Landscape	-The Opuwo Town is home to some of the cultural and heritage sites.	The excavation works may lead to inadvertent damaging or opening of buried heritage and archaeological resources such as old graves or wartime artefacts.	Social	Construction Phase	-ECO -Project / Site Manager	-The project contractors and workers should be familiarised with the Chance Find Procedure (CFP) – Appendix 1. -Demarcate, protect, and avoid development near heritage sites. -If removal is inevitable, a Consent Letter should be applied for from the Heritage Council via an Archaeologist. -All heritage and cultural resources should be avoided and not to be disturbed.
Construction Phase-Positive Impacts						

Impact	Description	Effects	Class	Time frame	Responsibility	Action
Employment creation	The construction exercise provides an opportunity of outsourcing work	-Improves disposable income to the unemployed and their immediate families.	Socio-economic	Project lifetime	-Project Manager	-Work hand in hand with the local leadership (constituency councillor) on acquiring non-skilled labour from the residents.
Business linkages	-Raw materials acquiring and contracting companies provide an opportunity for local 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 Manager	-The Proponent should outsource most of its materials and services from Opuwo.
Infrastructure development	The development presents a unique opportunity for infrastructure development in Opuwo Town.	-Existing roads will be upgraded which will benefit the local community. -Development of the facilities will also pave way for future developers / investors to grow interests in the area and result in ripple effects and quick growing of the Town.	-Socio-economic	Construction phase	-Project manager	-Development such as road upgrading should not only be limited up until the project site, but it should be extended to service other residents as well.

2.3 OPERATIONAL PHASE

The operational phase of a project is critical as it involves long-term activities and has fewer impacts compared to the construction phase. In the case of the FLTS houses development, this phase will involve the daily operations and management of the housing units, which is expected to continue indefinitely, with occasional upgrades. Various impacts are expected to occur regularly during this phase and are outlined in detail in

Chapter 2, which forms the basis of the Environmental Management Plan (EMP). Following the operational phase, the decommissioning phase will begin. The impacts of the operational phase have been identified in the previous chapter, and the management actions necessary to mitigate these impacts are presented in Table 3.

Table 4: Impacts associated with the Operation Phase and management actions (measures)

Aspect	Description	Effects	Class	Time Frame	Responsibility	Action
Operation Phase-Negative 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 responsible department in the Opuwo Town council's water reticulation system.	-Straining local water supply from the council water reticulation system	Environmental	Permanent	Building/Site manager	-A supply and demand model should be applied and determined by seasonal variations in water availability. -Water saving connections should 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	- 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 should be managed by the Opuwo Town Council and ensure that that domestic waste handling facilities such as dust bins and skip

Aspect	Description	Effects	Class	Time Frame	Responsibility	Action
	management thus waste types, etc.					containers are available for all erven. -Waste separation should 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 should 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	-Proponent -Police -Health services	-Ensuring that additional social amenities are put in place to serve the growing population.
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	-There is potential for building collapse. -Firebreaks potential	-Socio-economic -Environmental	Permanent	-Site Engineer -Contractor -Proponent	-Sewerage infrastructure will be regularly monitored and inspected over time.

Aspect	Description	Effects	Class	Time Frame	Responsibility	Action
	environment, or surrounding residents.				-Buildings inspectorate -Ministry of Health & Social Services. -Ministry of Home Affairs, Immigration, Safety & security	-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 Opuwo Town as a growing town.	-Ripple effects will result in construction of supporting infrastructure such as schools, hospitals, car services and supermarkets.	-Economic	Permanent	-Kunene Regional Council	-The FLTS scheme 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 Opuwo Town Council 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	-Proponent -Inland Revenue department (now the Namibia Revenue Agency (NamRa)	-The project will benefit the locals, relevant authorities, and the government if all dues, rates and taxes are adhered to.

2.4 ENVIRONMENTAL MONITORING PLAN

The monitoring aspect is crucial for assessing the effectiveness of mitigation measures put in place to tackle significant impacts. It helps to identify any unforeseen impacts and allows for timely analysis and formulation of measures to minimize the impact. Records of the survey results must be kept for monitoring and inspections, highlighting any issues and measures taken to address them.

Before construction activities begin, the main contractor should present an EMP for review and approval by the relevant authorities. This should include a solid waste management plan, location of material storage areas, dust control measures, and an activity schedule. The Proponent should also present a landscape plan and identify the trees and vegetation earmarked for protection. An environmental monitoring program should be prepared based on the above and the requirements of the EIA and development permit. During the construction phase, the major elements of the environmental impact monitoring programme 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 THREE: CONCLUSION AND RECOMMENDATIONS

3.1 CONCLUSION

Based on the Consultants' analysis, the proposed project would lead to a permanent change in the land cover and use on the Greenfield Portion of the project site. This would involve the conversion of the existing vegetation into a residential area. The document has provided sufficient mitigation measures for the identified impacts to ensure sustainable land development. It is important to develop or upgrade the land, but it must be done in a way that does not result in environmental degradation. Therefore, the EMP has been designed to ensure sustainable land development for the implementation of FLTS.

3.2 RECOMMENDATIONS

In order to minimize any adverse effects resulting from the FLTS implementation and associated development, it is necessary to implement effective and affordable management and mitigation measures. To achieve this, the following recommendations have been proposed:

a) Waste Management Recommendations

During the construction and operation phases of the project, solid and liquid waste will inevitably be generated, and it is essential that effective waste management practices are put in place to prevent any negative impact on the environment. This can be achieved by:

- Regularly monitoring and maintaining the waste water reticulation system to ensure it is in good working condition and that any odours are managed to make the facility environmentally friendly.
- Providing colour-coded dust bins at all sites to enable the recovery of recyclable materials.

b) Environmental Management Plan Recommendations

- To maintain a healthy and safe environment at the proposed site and its surroundings, an environmental management plan must be implemented, which involves monitoring and analyzing relevant environmental data, including:
- Provision of health and security for workers, ensuring they have appropriate personal protective equipment.
- Ensuring that firefighting equipment is strategically placed for easy access in case of emergencies.

- Regularly maintaining the drainage facilities to prevent flooding and other negative impacts.
- Implementing energy-efficient practices to minimize energy use and reduce environmental impact.
- Installing efficient taps to conserve water.
- Quantifying the amount of waste generated and managing it effectively to minimize environmental impact.
- Monitoring the socio-economic and demographic characteristics of the project life cycle to identify any unexpected environmental impacts.
- Formulating countermeasures to mitigate any observed unexpected negative impacts and comparing them with actual impacts.

Appendix 1: Archaeology's Chance Finds Procedure (CFP) After Kinahan, 2020

During the planning stage of proposed activities or developments, heritage survey and assessment are conducted in the areas where the development will take place. The surveys are conducted based only on an on surface indication, which means that there is a possibility of discovering sites or items of heritage significance during the development work. The reporting and management of such findings are covered by the procedure outlined here.

Scope: The “*chance finds*” procedure covers the actions to be taken from the discovery of a heritage site or item to its investigation and assessment by a trained archaeologist or other appropriately qualified person.

Compliance: The “chance finds” procedure is intended to ensure compliance with relevant provisions of the National Heritage Act (27 of 2004), especially Section 55 (4): “*a person who discovers any archaeological ... objectmust as soon as practicable report the discovery to the Council*”. The procedure of reporting set out below must be observed so that heritage remains reported to the NHC are correctly identified in the field.

Manager/Supervisor must report the finding to the following competent authorities:

- **National Heritage Council of Namibia (061 244 375)**
- **National Museum (061 276 800)**
- **National Forensic Laboratory (061 240 461).**

Archaeological material (graves, artefacts, sites, etc) must NOT be touched. Tempering with the materials is an offence under the Heritage act and punishable upon conviction by the law.

Responsibility:

Operator: To exercise due caution if archaeological remains are found

Foreman: To secure site and advise management timeously

Superintendent: To determine safe working boundary and request inspection

Archaeologist: To inspect, identify, advise management, and recover remains

Procedure:

Action by person identifying archaeological or heritage material:

- a) If operating machinery or equipment stop work
- b) Identify the site with flag tape
- c) Determine GPS position if possible
- d) Report findings to foreman

Action by foreman

- a) Report findings, site location and actions taken to superintendent
- b) Cease any works in immediate vicinity

Action by superintendent

- a) Visit site and determine whether work can proceed without damage to findings
- b) Determine and mark exclusion boundary
- c) Site location and details to be added to project GIS for field confirmation by archaeologist

Action by Archaeologist

- a) Inspect site and confirm addition to project GIS
- b) Advise NHC and request written permission to remove findings from work area
- c) Recovery, packaging and labelling of findings for transfer to National Museum

In the event of discovering human remains

- a) Actions as above
- b) Field inspection by archaeologist to confirm that remains are human
- c) Advise and liaise with NHC and Police
- d) Recovery of remains and removal to National Museum or National Forensic Laboratory, as directed.