DRAFT ENVIRONMENTAL MANAGEMENT PLAN (EMP)

In terms of the

Environmental Management Act (Act No. 7 of 2007) & Its Regulations

PROPOSED MIXED -USE TOWNSHIP DEVELOPMENT ON PORTION 115 OF THE FARM OF HENTIES BAY TOWNLAND NO. 133 SITUATED SOUTH OF HENTIES BAY, ERONGO REGION, NAMIBIA	
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Local Authority:	**Henties Bay Municipality** Corner of Nickey Iyambo and Jakkalsputz Streets, Hentiesbay, Erongo Region, Namibia
Ministry of Environment, Forestry and Tourism **EIA Application Reference No:**	**#240919004696**

DRAFT ENVIRONMENTAL MANAGEMENT PLAN

in terms of the Environmental Management Act (Act No. 7 of 2007) & Regulation No. 29, Section 21 under the Environmental Management Act (Act No. 7 of 2007

PROPOSED MIXED -USE TOWNSHIP DEVELOPMENT ON PORTION 115 OF THE FARM OF HENTIES BAY TOWNLAND NO. 133 SITUATED SOUTH OF HENTIES BAY, ERONGO REGION, NAMIBIA

Submitted for:

Stakeholder Review & Comment

REPORT DETAILS

TITLE:	DRAFT ENVIRONMENTAL MANAGEMENT PLAN (EMP)
Purpose of this report:	This Draft Environmental Management Plan is available to all registered and potential Interested and Affected Parties (I&AP's). This Draft Scoping Report forms part of a series of reports and information sources that are being provided during the Environmental Impact Assessment (EIA) for the proposed **MIXED -USE TOWNSHIP DEVELOPMENT ON PORTION 115 OF THE FARM OF HENTIES BAY TOWNLAND NO. 133 SITUATED SOUTH OF HENTIES BAY, ERONGO REGION, NAMIBIA.** This is the first report in the series that forms part of the environmental process. Registered I&APs will be given an opportunity to comment on the following reports as part of this environmental process: - Draft Scoping Report, - Draft Environmental Impact Assessment Report, and - Draft Environmental Management Programme By the regulations, the objectives of a scoping process is to, through a consultative process: a) identify the relevant policies and legislation relevant to the activity; b) motivate the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the preferred location; c) identify and confirm the preferred activity and technology alternative through an impact and risk assessment and ranking process; d) identify and confirm the preferred site, through a detailed site selection process, which includes an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified alternatives focusing on the geographical, physical, biological, social, economic, and cultural aspects of the environment; e) identify the key issues to be addressed in the assessment phase; f) agree on the level of assessment to be undertaken, including the methodology to be applied, the expertise required as well as the extent of further consultation to be undertaken to determine the impacts and risks the activity will impose on the preferred site through the life of the activity, including the nature, significance, consequence, extent, duration and probability of the impacts to inform the location of the development footprint within the preferred site; and g) identify suitable measures to avoid, manage or mitigate identified impacts and to determine the extent of the residual risks that need to be managed and monitored. The Draft EMP is available to all stakeholders for a 14-day (plus) review & comment period, 27 September to 15 October, 2024. An application has been submitted to the Department of Environmental Affairs, Ministry of Environment, Forestry and Tourism (MEFT) for the proposed development.
Prepared for:	Schmidtco Property Developers P. O Box 914, Oshakati, Namibia
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Date:	September, 2024
To be cited as:	*Erongo Consulting Group, 2024, Mixed -Use Township Development on Portion 115 Of the Farm of Henties Bay Townland No. 133 Situated South Of Henties Bay, Erongo Region, Namibia.*
MEFT Reference:	#240919004696

EXPERT CERTIFICATION

This Environmental Management Plan (EMP) was prepared by Erongo Consulting Group, a registered and experienced EIA Lead Expert firm. It complies with the Environmental Management Act, 2007, and the Environmental (Impact Assessment and Audit) Regulations, 2012, and is submitted to the Ministry of Environment & Tourism through the Directorate of Environmental Affairs.

I certify that the report presents an accurate and fair disclosure of information from the proponent, includes feedback from neighbouring stakeholders, and provides recommendations for the proponent's actions.

LEAD EXPERT

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- Date: September, 2024

PROPONENT CERTIFICATION

I, _____, on behalf of Schmidtco Property Developers (Pty) Ltd, submit this Environmental Impact Assessment report for the Township Development in Henties Bay Townlands. The information contained in this report is believed to be accurate and an honest representation of the project's findings.

- Signature:
- Date:
- Designation:

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1 INTRODUCTION

1.1 Purpose of the EMP

The purpose of this Environmental Management Plan (EMP) is to provide a comprehensive framework for managing and mitigating the potential environmental and socio-economic impacts associated with the Mixed-Use Township Development project on Portion 115 of Henties Bay Townland No. 133, Erongo Region, Namibia. This EMP outlines the strategies to ensure that environmental considerations are integrated into the project's planning, construction, operation, and eventual decommissioning phases. It serves as a guide for Schmidtco Properties, contractors, and other stakeholders to minimize the project's environmental footprint while ensuring compliance with Namibian environmental regulations.

This EMP has been developed in accordance with the provisions of Namibia's Environmental Management Act, No. 7 of 2007, which mandates the formulation of environmental management strategies for all projects with potential environmental impacts. The EMP is a dynamic tool that must be reviewed and updated periodically to respond to changing environmental conditions and project requirements.

1.2 EMP Objectives

The key objectives of this Environmental Management Plan are:

- **Ensure Regulatory Compliance**: To ensure that the project complies with all applicable national and international environmental regulations, particularly the Environmental Management Act, No. 7 of 2007.
- **Identify and Mitigate Impacts**: To identify the potential environmental and socio-economic impacts of the proposed development and to implement appropriate mitigation measures to minimize negative impacts during all project phases (pre-construction, construction, operation, and decommissioning).
- **Promote Sustainable Development**: To foster a sustainable development approach that balances the social, economic, and environmental aspects of the project, ensuring long-term benefits for local communities and the environment.
- **Provide a Monitoring Framework**: To establish a detailed monitoring plan that outlines key environmental indicators and provides mechanisms for ongoing monitoring, reporting, and review of environmental performance.
- **Define Roles and Responsibilities**: To clearly define the roles and responsibilities of all parties involved, including the project proponent (Schmidtco Properties), contractors, Environmental Control Officer (ECO), and local authorities, ensuring accountability and effective environmental management.
- **Engage Stakeholders**: To outline processes for engaging with relevant stakeholders, including the local community, government authorities, and environmental specialists, ensuring transparent and inclusive decision-making.

1.3 Select Legal and Regulatory Framework

The select legal and regulatory framework guiding the preparation and implementation of this EMP is drawn from national and international legislation, policies, and guidelines that govern environmental management in Namibia. These frameworks ensure that the project adheres to best practices for sustainable development, environmental conservation, and social equity. The following are key legal instruments relevant to this project:

1.3.1 National Legislation

Table 1: National Legislation

Legal Instrument	Description	Key Requirements
Environmental Management Act, No. 7 of 2007	Framework for environmental protection and sustainable development in Namibia.	EIA must be conducted; ECC required before project initiation; adherence to "precautionary" and "polluter pays" principles.
Water Resources Management Act, No. 11 of 2013	Governs the use and management of water resources in Namibia.	Permits required for water abstraction and discharge into water bodies.
Labour Act, No. 11 of 2007	Outlines legal framework for employment in Namibia, focusing on worker safety.	Safety measures must be implemented to protect workers.
Township and Division of Land Ordinance, No. 11 of 1963	Governs land subdivision and township establishment.	Compliance with land-use and zoning regulations required.
National Heritage Act, No. 27 of 2004	Protects cultural and historical heritage in Namibia.	Work must cease if artifacts are uncovered; National Heritage Council must be notified.
Atmospheric Pollution Prevention Ordinance, No. 11 of 1976	Regulates activities resulting in air pollution.	Management of emissions and dust from construction activities required.

1.3.2 International Treaties and Agreements

Table 2: International Treaties and Agreements

Treaty/Agreement	Description	Key Contributions to the Project
United Nations Sustainable Development Goals (SDGs)	Global goals to promote sustainable development.	Contributes to Goal 11 (Sustainable Cities) and Goal 13 (Climate Action).
United Nations Framework Convention on Climate Change (UNFCCC)	Framework to reduce greenhouse gas emissions.	Encourages use of renewable energy (solar) and energy-efficient infrastructure.
Convention on Biological Diversity (CBD)	International treaty for the protection of biological diversity.	Measures included to protect local ecosystems and biodiversity.

1.3.3 Local and Regional Policies

Table 3: Local and Regional Policies

Policy	Description	Relevance to Project
Erongo Regional Integrated Development Plan (IDP)	Promotes sustainable development and economic growth.	Project alignment with IDP objectives essential for approval.
Henties Bay Spatial Development Framework	Guides land-use planning in Henties Bay.	Ensures urban expansion and commercial growth while preserving natural environments.

1.3.4 Permitting Requirements

Table 4: Permitting Requirements

Permit	Authority	Requirement
Environmental Clearance Certificate (ECC)	Ministry of Environment, Forestry and Tourism (MEFT)	Must be obtained before construction based on EIA findings.
Water Abstraction and Discharge Permits	Ministry of Agriculture, Water, and Land Reform	Required for groundwater use or discharge of treated wastewater.

1.3.5 Environmental and Social Principles

Table 5: Table 5: Principles of the EMP

Principle	Description	Implications for Project
Precautionary Principle	Prevent environmental degradation despite uncertainties.	Proactive measures to avoid harm to the environment.
Polluter Pays Principle	Developer responsible for environmental damage.	Schmidtco Properties must restore any environmental harm caused.
Inclusivity and Stakeholder Participation	Involvement of all stakeholders in decision-making.	Public consultations to ensure transparency and equity throughout the project lifecycle.
Sustainable Development	Balancing environmental, social, and economic needs.	Focus on minimizing carbon footprint, promoting energy efficiency, and using renewable technologies.
Social and Environmental Justice	Equitable distribution of project benefits and impacts.	Attention to vulnerable communities to prevent disproportionate impacts.

The legal and regulatory framework, along with the environmental and social principles, establishes a robust foundation for the EMP. It ensures compliance with national and international standards while promoting sustainable development, environmental protection, and social equity throughout the project's lifecycle.

2 PROJECT DESCRIPTION

The proposed Mixed-Use Township Development on Portion 115 of Henties Bay Townland No. 133 aims to establish a sustainable and modern township that will serve as a residential, commercial, and industrial hub in the Henties Bay area. This development is spearheaded by Schmidtco Properties and is intended to cater to the growing population and economic activities in the Erongo Region, particularly in Henties Bay, which has seen increased demand for housing, commercial spaces, and industrial facilities.

The project envisions the construction of various types of infrastructure, including residential units, commercial facilities, light industrial parks, schools, and other essential public amenities. The township will be designed using sustainable urban planning principles, with a focus on minimizing environmental impacts, promoting social inclusivity, and integrating eco-friendly technologies.

2.1 Project Locality

The proposed development is located in the Henties Bay Townland, a coastal town in the Erongo Region of Namibia. Henties Bay is known for its tranquil environment and tourism potential, attracting residents and businesses alike. The project site, Portion 115 of Henties Bay Townland No. 133, is strategically positioned within close proximity to existing town infrastructure, but remains sufficiently isolated to allow for large-scale development.

Figure 1: Zoning legend: Township establishment on Portion 115, of the Henties Bay Townlands no. 133, Henties Bay

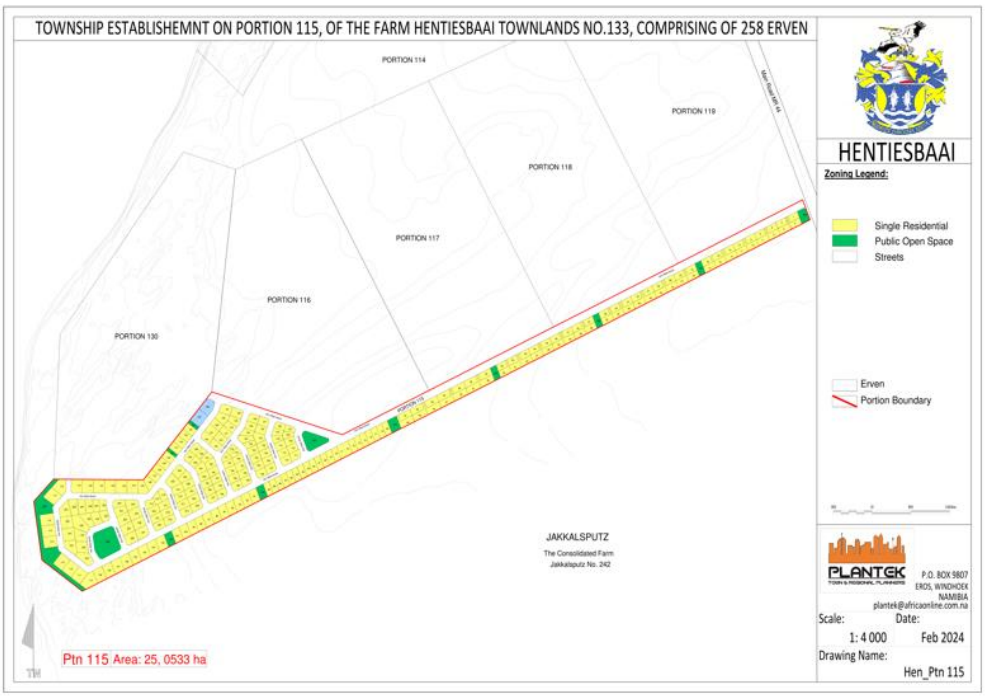

Figure 2: Table of Portion 115 Henties Bay Erf List

Erf No.	Size (m²)	Zoning	Erf No.	Size (m²)	Zoning	Erf No.	Size (m²)	Zoning	Erf No.	Size (m²)	Zoning
1	452	Single Residential	51	591	Single Residential	101	747	Single Residential	151	639	Single Residential
2	591	Single Residential	52	452	Single Residential	102	863	Single Residential	152	546	Single Residential
3	452	Single Residential	53	591	Single Residential	103	863	Single Residential	153	543	Single Residential
4	591	Single Residential	54	452	Single Residential	104	863	Single Residential	154	543	Single Residential
5	452	Single Residential	55	583	Single Residential	105	863	Single Residential	155	567	Single Residential
6	591	Single Residential	56	713	Single Residential	106	863	Single Residential	156	567	Single Residential
7	591	Single Residential	57	713	Single Residential	107	863	Single Residential	157	543	Single Residential
8	452	Single Residential	58	583	Single Residential	108	863	Single Residential	158	543	Single Residential
9	452	Single Residential	59	583	Single Residential	109	878	Single Residential	159	546	Single Residential
10	591	Single Residential	60	713	Single Residential	110	1168	Single Residential	160	441	Single Residential
240	731	Single Residential	241	663	Single Residential	242	518	Single Residential	243	4107	Public Open Space
244	6026	Public Open Space	245	704	Public Open Space	246	275	Public Open Space	247	275	Public Open Space
248	707	Public Open Space	249	2046	Public Open Space	250	890	Public Open Space			

Key Locality Features:

- **Coordinates**: The project site lies at coordinates approximately -22.1078° S, 14.2847° E.
- **Land Area**: The total area of Portion 115 is estimated at 25 hectares, which will accommodate the various mixed-use facilities, including housing, commercial spaces, and industrial zones.
- **Proximity to Major Routes**: The site is located near major transport routes, particularly the **C34 road** that connects Henties Bay to the towns of Swakopmund and Uis, facilitating easy access to and from the development.
- **Topography and Climate**: The site is characterized by relatively flat terrain with sandy soil, typical of Namibia's coastal regions. The climate in Henties Bay is semi-arid with cool, dry winters and warmer, dry summers, making it suitable for construction and year-round operations.
- **Surrounding Land Use**: The area surrounding Portion 115 includes predominantly undeveloped land, although residential and commercial areas are found within a 10 km radius. The project area also falls within the jurisdiction of the Henties Bay Municipality, which has been involved in land-use planning and zoning for this development.

Figure 3: Project area situated top hill of the dunes with access through beach salt road

2.2 Project Components

The proposed Mixed-Use Township Development will be implemented in multiple phases over a 5-year period and will include the following major components:

2.2.1 Residential Development

The residential area will consist of low, medium, and high-density housing units to accommodate different income groups. The units will include freestanding houses, townhouses, and apartment blocks. The residential zones will be serviced with modern infrastructure, including:

- **Electricity**: Sourced from the national grid, with supplementary solar installations for renewable energy.
- **Water Supply**: The township will connect to the Henties Bay Municipality's water supply system, with provisions for water-efficient technologies such as greywater recycling.
- **Sanitation**: A decentralized wastewater treatment system will be constructed, including a sewer network and treatment plant.
- **Road Networks**: Paved and gravel roads will be developed to facilitate movement within the township.

2.2.2 Commercial and Industrial Zones

The township will feature a mix of commercial and light industrial areas to support local business growth and employment opportunities. The key components of these zones include:

- **Retail Centers**: Shops, supermarkets, and service stations will be developed to meet the needs of township residents.
- **Offices and Business Parks**: Modern office buildings and business parks will provide space for professional services, SMEs, and corporate offices.
- **Light Industrial Areas**: Designed to accommodate non-polluting industries such as manufacturing, logistics, and warehousing. Industrial zones will be located at the periphery of the township to minimize noise and traffic disruptions in residential areas.

2.2.3 Public Amenities

The project includes several public facilities and green spaces to promote social interaction and enhance the quality of life for residents. These include:

- **Educational Facilities**: educational facilities have been earmarked for the development to serve the residents.
- **Healthcare Facilities**: A clinic and pharmacy will be built to provide basic healthcare services, with provisions for future expansion to a full-service hospital if required.
- **Recreational Areas**: Public parks, playgrounds, and sports facilities will be integrated into the township design to encourage outdoor activities and social cohesion.

- **Community Centers**: These will serve as meeting spaces for local residents, with a focus on fostering community spirit and providing venues for social events.

2.3 Infrastructure

The township's infrastructure is designed to meet the needs of residents, businesses, and industries while minimizing environmental impacts and ensuring long-term sustainability. The key infrastructure components are outlined below:

2.3.1 Roads and Transportation

The development will include the construction of an internal road network, with primary, secondary, and tertiary roads to connect different parts of the township. The road layout will follow the principles of sustainable urban mobility, promoting walking, cycling, and public transportation. Traffic calming measures such as speed humps and pedestrian crossings will be implemented to improve road safety.

The township will also include a public transport terminal, with provisions for minibus taxis, buses, and private vehicles. The road network will connect to the C34 highway, ensuring seamless access to surrounding towns and regional centers.

2.3.2 Water and Wastewater Management

The township will be connected to the existing municipal water supply system in Henties Bay. Water-efficient technologies will be incorporated into the design, including:

- **Rainwater Harvesting**: Roofs of public buildings and houses will be equipped with rainwater collection systems.
- **Greywater Recycling**: Wastewater from sinks and showers will be treated for reuse in irrigation and non-potable applications.

A centralized wastewater treatment plant will be constructed on-site to handle domestic sewage and industrial effluents. The treated water will be used for irrigation in public spaces, reducing reliance on freshwater resources.

2.3.3 Energy Infrastructure

The township will be connected to the national electricity grid, with the possibility of incorporating solar energy systems into homes and commercial buildings to reduce reliance on non-renewable energy sources. Solar panels will be installed on rooftops, and street lighting will utilize energy-efficient LED technology powered by solar energy.

2.3.4 Waste Management

A comprehensive waste management plan will be implemented to ensure that solid waste is collected, sorted, and properly disposed of or recycled. **Waste separation facilities** will be available at residential and commercial centers, encouraging the recycling of paper, plastic, and glass. Regular waste collection services will be provided, and a landfill site will be designated for non-recyclable waste.

3 IMPACTS ASSOCIATED WITH THE SITE

This chapter explores the potential environmental and socio-economic impacts of the Mixed-Use Township Development on Portion 115, Henties Bay Townland No. 133. These impacts are assessed based on the elements of the site that will be affected during the development phase, particularly focusing on infrastructure development, land use changes, biodiversity, and water resources.

3.1 Infrastructure Development

Infrastructure development is a crucial part of the project and will bring significant changes to the site. These changes will have both positive and negative impacts, which are outlined in the sections below.

3.1.1 Positive Impacts

The development of the township's infrastructure will bring numerous socio-economic benefits, especially in terms of economic growth and improvement in the quality of life for the residents of Henties Bay and the wider Erongo Region. Some of the key positive impacts are summarized below:

Table 6: summary of key positive impacts

Positive Impact	Description
Job Creation	Significant employment opportunities will be created during the construction and operation phases of the project. These jobs will range from unskilled labor to skilled engineering and technical positions, contributing to the reduction of unemployment in the region. The local economy will benefit from the increased purchasing power of employed workers.
Economic Growth	The development of commercial and industrial zones will stimulate local businesses and attract new investments into the region. This will not only provide additional employment opportunities but also increase revenue for local municipalities through taxes and service fees.
Improved Infrastructure	The construction of modern roads, energy networks, water supply, and sanitation systems will improve the access to essential services for both the township's residents and the surrounding communities. These infrastructural improvements will contribute to an overall enhanced quality of life.
Increased Property Value	The development of a well-planned, modern township is likely to increase the value of properties in the surrounding areas, providing financial benefits to landowners. This can further stimulate the local real estate market.
Skills Development	Local workers will benefit from training and skill development during the construction and operational phases, leading to long-term employability in the region's growing industrial and construction sectors.

3.1.2 Negative Impacts

Despite the positive contributions, infrastructure development also comes with several negative environmental and social impacts. These impacts will need to be mitigated through effective management strategies and planning. Key negative impacts associated with infrastructure development are outlined below:

Table 7: Key negative impacts associated with infrastructure development

Negative Impact	Description
Dust and Air Pollution	Construction activities, including earthworks, the movement of vehicles, and the operation of machinery, will lead to dust generation and the emission of pollutants. This could result in reduced air quality, posing health risks to workers and nearby residents. Appropriate dust suppression methods, such as water spraying and vehicle speed limits, should be implemented to minimize this impact.
Noise Pollution	The use of heavy machinery during construction will result in high noise levels, particularly near residential areas. Prolonged exposure to noise pollution may disturb nearby residents and disrupt local wildlife. Noise abatement strategies, such as limiting construction hours and using sound-dampening equipment, will be essential in mitigating this impact.
Traffic Congestion	Increased construction vehicle movements on nearby roads could cause traffic congestion, particularly on the C34 road and surrounding access routes. This may disrupt daily commuting for local residents and increase the risk of road accidents. Traffic management plans, including designated haul routes and scheduling of vehicle movements, will be necessary to minimize disruption.
Land Disturbance	The clearing of vegetation and land for infrastructure development will result in habitat destruction and potential displacement of wildlife. The project will need to adopt strategies to minimize vegetation loss and restore disturbed areas through replanting and habitat rehabilitation.
Water Demand and Contamination	Construction activities may increase water demand, placing strain on local water resources. There is also a risk of surface water contamination due to the improper disposal of construction waste, fuels, and other pollutants. Measures such as careful waste management, spill prevention, and water conservation technologies should be put in place to mitigate these effects.

3.2 Land Use Changes

The development of the township will lead to significant changes in land use patterns in the project area. As agricultural or undeveloped land is converted to residential, commercial, and industrial uses, these transformations will have associated impacts on the environment and local communities.

Table 8: Land Use Changes

Impact	Description
Loss of Open Space	As the project site transitions from a natural or semi-natural state to a developed urban environment, there will be a reduction in open spaces and natural landscapes. This could result in the loss of ecosystem services provided by these areas, such as carbon sequestration and habitat provision for wildlife. Green spaces and parks should be integrated into the township design to mitigate this effect.
Pressure on Local Resources	The influx of new residents and businesses into the area will increase the demand for local resources such as water, energy, and waste management services. The municipality will need to ensure that its service delivery capacity is enhanced to accommodate the growing population.
Changes in Land Ownership	Land ownership patterns may shift as the project progresses, with possible dispossession or displacement of smaller landowners. A fair and transparent compensation process, in compliance with local legislation, will be critical to mitigate any negative social impacts related to land rights.

3.3 Biodiversity

The site of the proposed township development includes areas of natural vegetation and wildlife habitat. Although the project is located near existing infrastructure and development, it may still pose risks to local biodiversity. The key impacts on biodiversity include:

Table 9: key impacts on biodiversity

Impact	Description
Loss of Vegetation	Site clearance for construction will result in the loss of natural vegetation, which may serve as a habitat for local wildlife. While the area is not a biodiversity hotspot, steps should still be taken to conserve key plant species and rehabilitate disturbed areas post-construction.
Disruption to Wildlife	The noise and human activity associated with construction may disrupt wildlife, particularly species sensitive to human presence. Measures such as controlled access to sensitive areas and avoiding construction during breeding seasons will help minimize these impacts.
Increased Human-Wildlife Conflict	The development could lead to increased interaction between humans and wildlife, particularly as urban expansion encroaches on natural habitats. The implementation of barriers and wildlife corridors will help reduce conflicts and preserve local fauna.

3.4 Water Resources

Water resources in Henties Bay are already under pressure due to the arid climate and limited availability of freshwater. The township development may exacerbate this situation, leading to several potential impacts:

Table 10: potential impacts on water resources

Impact	Description
Increased Water Demand	The construction phase, along with the subsequent influx of residents and businesses, will increase demand for water in the region. This could strain the existing water supply system unless additional resources or conservation measures are implemented.
Water Pollution	Construction activities pose a risk of contaminating surface and groundwater resources due to the improper disposal of construction waste and accidental fuel or chemical spills. Measures such as silt fences, sediment traps, and safe storage of hazardous materials should be employed to prevent contamination.
Altered Hydrology	The modification of land surfaces during construction may alter the natural hydrological regime of the site, leading to changes in surface water runoff and drainage patterns. Appropriate drainage systems should be installed to manage stormwater and prevent flooding or erosion.

4 ROLE PLAYERS & RESPONSIBILITIES

Effective environmental management of the Mixed-Use Township Development in Henties Bay requires the identification of key role players and their associated responsibilities throughout the project lifecycle. This section outlines the roles of various stakeholders and describes their responsibilities to ensure compliance with environmental and safety regulations. The success of the Environmental Management Plan (EMP) hinges on clear assignment of duties to all relevant parties involved in the project.

4.1 Roles and Responsibilities

The various role players in the project include the project proponent, contractors, the Environmental Control Officer (ECO), local authorities, and relevant government ministries. Each role player has specific responsibilities in ensuring that environmental and safety standards are adhered to throughout the project's development.

Table 11: Roles and Responsibilities

Role Player	Responsibility
Project Proponent (Schmidtco Properties)	The proponent is responsible for ensuring the implementation of the EMP. This includes allocating adequate resources for environmental management, ensuring compliance with national and local legislation, and engaging stakeholders throughout the project. They also must appoint competent personnel such as the ECO and monitor overall project performance.
Contractor	The contractor is responsible for implementing all environmental mitigation measures as stipulated in the EMP during the construction phase. This includes managing on-site activities to prevent environmental damage, ensuring all staff are trained on environmental awareness, and adhering to best practices in waste management, pollution control, and health and safety protocols. Contractors should maintain open communication with the ECO and project manager.
Environmental Control Officer (ECO)	The ECO, appointed by the project proponent, is tasked with monitoring the daily compliance of the project with the EMP. Their duties include regular site inspections, reporting non-compliance, and suggesting corrective actions. The ECO will serve as the liaison between the project team and environmental authorities. The ECO is also responsible for compiling monitoring reports and submitting them to the relevant authorities.
Local Authority (Henties Bay Municipality)	The local authority ensures that the development complies with municipal regulations and policies, particularly concerning zoning, land use, and environmental protection. They are also responsible for reviewing and approving construction permits and overseeing the provision of services such as water, electricity, and waste management to the new township.
Namibia's Ministry of Environment, Forestry and Tourism (MEFT)	MEFT is responsible for reviewing and approving the Environmental Impact Assessment (EIA) and EMP for the project. The ministry monitors the project to ensure it adheres to national environmental legislation, particularly regarding biodiversity, conservation, and pollution control. MEFT has the authority to impose penalties or halt activities in case of non-compliance.
Namibia's Ministry of Mines and Energy (MME)	The MME is involved in ensuring that the energy infrastructure in the project area, including renewable energy components, complies with national energy policies and standards. They will also oversee the sustainable sourcing and utilization of energy resources for the project.
Occupational Health and Safety (OHS) Officer	The OHS Officer is responsible for ensuring that all workers on-site comply with health and safety standards. Their role includes risk assessments, provision of personal protective equipment (PPE), regular safety drills, and maintaining accident or incident reports.
Independent Environmental Auditor	The independent environmental auditor is engaged periodically to verify that the project adheres to the EMP. This role includes conducting third-party audits and evaluations, assessing the effectiveness of mitigation measures, and recommending improvements. The auditor must be impartial and provide objective reports on compliance.

Community Liaison Officer (CLO)	The CLO is responsible for facilitating communication between the local community and the project team. Their role is crucial in addressing community concerns, managing expectations, and ensuring that the local population is informed about project activities and any potential environmental or social impacts.
Stakeholders and Interested & Affected Parties (I&APs)	Local community members, neighboring landowners, civil society organizations, and other interested parties play a key role in monitoring the socio-economic impacts of the project. Their involvement ensures that the project proponent is accountable to the local population and that social impacts are minimized. Regular stakeholder meetings and consultations should be held to discuss issues and potential grievances.

4.1.1 Summary of Key Roles and Responsibilities

The table below summarizes the key responsibilities of each role player during the development phase of the project:

Table 12: key responsibilities of each role player during the development phase of the project

Role	Responsibility
Project Proponent	Ensure overall compliance, allocate resources, appoint ECO and contractors, engage stakeholders.
Contractor	Implement mitigation measures, train staff on environmental awareness, waste management, and pollution control, communicate with ECO and project manager.
ECO	Monitor compliance, report non-compliance, conduct site inspections, submit reports to authorities.
Local Authority	Enforce municipal regulations, issue permits, oversee provision of services (water, electricity, waste management).
MEFT	Review and approve EIA and EMP, monitor project compliance with environmental laws, impose penalties if necessary.
MME	Ensure energy infrastructure compliance with national policies, oversee energy resource management.
OHS Officer	Ensure compliance with health and safety standards, risk assessments, safety drills, PPE provision.
Independent Environmental Auditor	Conduct third-party audits, assess effectiveness of mitigation measures, recommend improvements.
CLO	Facilitate communication between the project and community, address community concerns, ensure project transparency.
Stakeholders & I&APs	Monitor socio-economic impacts, participate in consultations, hold project accountable, address grievances.

4.2 Compliance with Requirements

To ensure the successful implementation of the EMP and adherence to legal and environmental requirements, all role players must understand and comply with the regulatory framework governing the project. Compliance measures include monitoring, reporting, and maintaining open communication between the project proponent, contractors, the ECO, and relevant authorities.

4.2.1 Disciplinary Action

Disciplinary actions will be taken in cases of non-compliance with environmental management requirements. These actions will ensure that all project activities are aligned with the prescribed environmental, safety, and legal standards. Depending on the severity of non-compliance, the following disciplinary measures may be implemented:

Table 13: disciplinary measures may be implemented

Type of Non-Compliance	Disciplinary Action
Minor Violations	Minor infractions, such as improper waste disposal, may result in verbal warnings or re-training of the staff involved.
Repeated Non-Compliance	Repeated infractions may result in written warnings, financial penalties, or removal from the project site until compliance is achieved.
Serious Violations	Major violations, such as unauthorized land clearing or contamination of water resources, may result in suspension of activities, reporting to authorities, and possible legal action.
Breach of Permit Conditions	Non-compliance with permit conditions issued by the MEFT or local authority may result in the revocation of permits or licenses, halting the project until full compliance is demonstrated.
Failure to Implement Mitigation Measures	Contractors failing to implement required mitigation measures may face contractual penalties, project delays, or termination of contract.

4.3 Environmental Monitoring and Reporting

Regular environmental monitoring and reporting are essential to ensure ongoing compliance with the EMP. The ECO will be responsible for maintaining detailed records of all project activities, conducting site inspections, and ensuring that corrective actions are taken when necessary.

Table 14: Environmental Monitoring and Reporting

Monitoring Activity	Frequency	Responsible Party
Site Inspections	Weekly during construction	ECO
Air Quality and Dust Monitoring	Monthly	Contractor and ECO
Noise Monitoring	As required during high-noise activities	Contractor and OHS Officer
Waste Management Audits	Monthly	Contractor and Independent Environmental Auditor
Stakeholder Consultations	Quarterly	CLO and Project Proponent
Water Quality Testing	Bi-Annually	ECO and Contractor

This chapter outlines the clear roles and responsibilities of all parties involved in the project and the processes necessary to ensure compliance with environmental regulations. Maintaining robust monitoring and taking timely corrective actions will ensure that the project's environmental and socio-economic impacts are managed effectively.

5 ENVIRONMENTAL MANAGEMENT PLAN (EMP)

The Environmental Management Plan (EMP) outlines the necessary actions to mitigate the adverse environmental and social impacts of the project during its different phases: pre-construction, construction, operational, and decommissioning. The EMP aims to ensure that the environmental, social, and economic benefits of the project are maximized while minimizing negative consequences. This chapter provides a comprehensive guide on impact mitigation, monitoring, and responsibilities, ensuring compliance with environmental regulations and sustainability principles.

5.1 Objectives of the EMP

The objectives of this EMP are to:

- Identify potential environmental impacts during each project phase.
- Propose mitigation measures to minimize or prevent adverse impacts.
- Establish roles and responsibilities for the implementation of the EMP.
- Provide a monitoring framework to ensure the effective implementation of mitigation measures.

The EMP is structured into phases to allow targeted and specific actions in each project stage.

5.1.1 Pre-Construction Phase

During the pre-construction phase, activities such as land preparation, site clearance, and stakeholder engagement are initiated. The focus during this phase is on preventing significant impacts from the onset, particularly concerning biodiversity, heritage sites, and community engagement.

Table 15: Pre-Construction Impacts and Mitigation Measures

Impact Category	Potential Impact	Mitigation Measures	Responsibility	Monitoring Activity	Frequency
Biodiversity Loss	Disturbance to local flora and fauna	Conduct biodiversity surveys; limit site clearance to designated areas.	ECO, Contractor	Biodiversity monitoring reports	Prior to land clearance
Soil Erosion	Increased soil erosion due to land clearing	Implement erosion control measures (e.g., silt fences, berms).	Contractor	Site inspections	Weekly
Cultural Heritage	Disturbance to cultural/archaeological sites	Conduct archaeological surveys; implement a chance-find procedure.	Heritage Specialist, Contractor	Heritage findings inspections	Prior to site activities
Community Engagement	Potential community concerns about land use	Conduct community consultations and provide project updates.	Community Liaison Officer (CLO)	Community meetings and feedback	Quarterly

The pre-construction phase involves preparing the site and initiating communication with local communities and stakeholders. Key impacts include potential biodiversity loss, soil erosion, and cultural heritage disturbance. Proper surveys and consultation processes will be critical during this phase to mitigate these impacts.

5.1.2 Construction Phase

The construction phase entails significant physical activities that can lead to disturbances to air, water, biodiversity, and the local community. The goal is to mitigate negative impacts related to construction activities and ensure occupational health and safety for workers and the surrounding community.

Table 16: Construction Impacts and Mitigation Measures

Impact Category	Potential Impact	Mitigation Measures	Responsibility	Monitoring Activity	Frequency
Air Quality	Increased dust and emissions from machinery	Use water sprays for dust suppression; maintain equipment to reduce emissions.	Contractor	Air quality monitoring	Monthly
Water Contamination	Risk of water contamination from spills	Establish bunded areas around fuel storage; train staff in spill management.	Contractor	Regular inspections of bunded areas	Weekly
Soil Erosion	Erosion from site grading and earthworks	Use sediment traps and ensure minimal disturbance to natural drainage.	Contractor, ECO	Inspection of erosion controls	Weekly and post-rainfall
Biodiversity	Disturbance to wildlife from construction activities	Create wildlife buffer zones; minimize noise and light pollution.	ECO, Contractor	Monitoring wildlife movement	Bi-weekly
Health and Safety	Increased risk of accidents	Develop and enforce Occupational Health and Safety (OHS) Plan; provide PPE.	Contractor, OHS Officer	OHS audits; accident/incident reporting	Monthly
Community Concerns	Noise, dust, and increased traffic	Limit noisy activities to daytime; ensure regular communication with local communities.	CLO	Community feedback and grievance records	Monthly

The construction phase involves high-risk activities such as heavy machinery operation, excavation, and building works. Impacts on air, water, soil, and biodiversity can be significant, and appropriate mitigation measures are crucial to minimize the negative outcomes. Furthermore, health and safety protocols must be in place to protect workers and the public.

5.1.3 Operational Phase

During the operational phase, the focus shifts to managing the continuous impacts associated with the daily operation of the project, including emissions, waste management, and maintaining good relations with the local community.

Table 17: Operational Impacts and Mitigation Measures

Impact Category	Potential Impact	Mitigation Measures	Responsibility	Monitoring Activity	Frequency
Air Quality	Emissions from operational machinery	Maintain operational machinery; conduct regular emissions testing.	Operations Manager	Emissions reports	Quarterly
Waste Generation	Solid waste from operational activities	Implement a waste management plan including recycling and proper disposal.	Operations Manager	Waste audits	Monthly
Water Usage	Increased demand on local water resources	Implement water-saving technologies and practices; use recycled water where feasible.	Operations Manager	Water usage monitoring reports	Monthly
Health and Safety	Ongoing risk of accidents or hazardous exposure	Regular safety training for staff; continue use of PPE and OHS protocols.	Operations Manager, OHS Officer	Safety audits and incident tracking	Quarterly
Community Relations	Community dissatisfaction due to ongoing impacts	Maintain open communication with communities and continue consultations.	CLO	Community engagement reports	Quarterly

The operational phase primarily focuses on the sustainability of daily operations. The key areas of concern are maintaining good air and water quality, managing waste efficiently, and ensuring the health and safety of both workers and the local community. The continued engagement with stakeholders is essential to maintaining good community relations.

5.1.4 Decommissioning Phase

The decommissioning phase involves dismantling and rehabilitating the project site once the operations come to an end. The main focus here is to mitigate the environmental impacts associated with the removal of infrastructure and to restore the site to its original condition or a condition agreed upon with local stakeholders.

Table 18: Decommissioning Impacts and Mitigation Measures

Impact Category	Potential Impact	Mitigation Measures	Responsibility	Monitoring Activity	Frequency
Site Rehabilitation	Soil erosion and landscape degradation	Implement a comprehensive rehabilitation plan; restore natural vegetation and landscape.	Contractor	Inspections of rehabilitation progress	Weekly during decommissioning
Waste Management	Generation of demolition waste	Develop and implement a decommissioning waste management plan; prioritize recycling and proper disposal.	Contractor	Waste audits	Weekly
Air Quality	Dust generation from demolition activities	Use water sprays and limit demolition to favorable weather conditions.	Contractor	Dust monitoring reports	Weekly
Job Loss	Loss of employment due to closure	Provide job transition support programs for workers.	HR Team	Employment transition reports	Monthly until project closure
Community Engagement	Concerns over post-project land use	Engage communities in discussions about future land use and site restoration.	CLO, Local Authorities	Community feedback sessions	Quarterly

The decommissioning phase aims to mitigate the environmental impacts related to the removal of infrastructure and the rehabilitation of the site. Key considerations include managing waste, restoring the natural landscape, and addressing the socio-economic impact of job loss due to the project's closure. Engaging with local communities about future land use is essential to ensure a smooth transition after the project ends.

5.2 Heritage and Cultural Management

Heritage findings, both tangible and intangible, must be handled with care to preserve the cultural integrity of the area. This includes the identification of heritage sites and safeguarding culturally significant practices.

Table 19: Heritage and Cultural Management

Impact Category	Potential Impact	Mitigation Measures	Responsibility	Monitoring Activity	Frequency
Cultural Heritage	Disturbance of archaeological sites	Implement a chance-find procedure and halt construction if artifacts are found.	Heritage Specialist, Contractor	Heritage site monitoring	Continuous during earthworks
Cultural Practices	Disruption of local cultural practices	Engage local communities to identify and integrate cultural concerns into project planning.	CLO, Heritage Specialist	Regular engagement with community leaders	Bi-annually

Managing heritage and cultural resources is critical to ensure that the project's impacts do not undermine the cultural integrity of local communities. This includes the identification of significant heritage sites and the consideration of local cultural practices. Engaging local communities in the decision-making process ensures that their concerns are addressed and that they feel a sense of ownership in the project's outcomes.

5.3 Employment and Economic Development

The project has the potential to significantly impact local employment and economic development. It is crucial to maximize the economic benefits while minimizing negative socio-economic impacts.

Table 20: Employment and Economic Development Measures

Impact Category	Potential Impact	Mitigation Measures	Responsibility	Monitoring Activity	Frequency
Job Creation	Increased local employment opportunities	Prioritize hiring local workers for construction and operational roles; provide training and capacity-building programs.	HR Manager, Contractor	Employment records and training program outcomes	Monthly
Economic Growth	Boost to local businesses	Encourage local procurement of goods and services; collaborate with local suppliers.	Procurement Officer	Local supplier engagement reports	Quarterly
Economic Displacement	Competition with existing local businesses	Develop a local business support program to help mitigate competition.	Economic Development Officer	Community economic assessments	Bi-annually

Maximizing local employment opportunities and fostering economic development are central to the project's success. The focus should be on creating job opportunities, supporting local businesses, and mitigating any negative impacts on existing local economic structures.

5.4 Monitoring and Reporting

Continuous monitoring and reporting are essential to ensure compliance with the EMP and to assess the effectiveness of mitigation measures. A structured monitoring framework should be established, detailing the indicators, responsible parties, and reporting schedules.

Table 21: Monitoring and Reporting Framework

Monitoring Activity	Indicators	Frequency	Responsible Party	Reporting Format
Biodiversity Monitoring	Number of species present, habitat health	Quarterly	ECO	Monitoring report
Air Quality Monitoring	Levels of PM10, PM2.5, CO2	Monthly	Environmental Consultant	Air quality assessment report
Water Quality Monitoring	Contaminant levels in water bodies	Monthly	Environmental Consultant	Water quality assessment report

Community Engagement Reports	Number of consultations, feedback received	Quarterly	CLO	Community engagement summary
Health and Safety Audits	Number of incidents, compliance with OHS	Monthly	OHS Officer	Safety audit report

This monitoring and reporting framework outlines the key indicators for assessing the project's environmental and social performance. It defines the responsibilities and frequencies of monitoring activities, ensuring that data is collected, analyzed, and reported consistently to inform decision-making and improve practices.

The Environmental Management Plan (EMP) is a comprehensive framework designed to address the environmental and social impacts of the project throughout its lifecycle. By systematically identifying potential impacts, implementing mitigation measures, and monitoring outcomes, the project aims to achieve its objectives sustainably. Engaging with stakeholders, particularly local communities, is crucial to building trust and ensuring that the project contributes positively to the local economy while preserving the environment and cultural heritage. The successful implementation of this EMP will require commitment and collaboration among all stakeholders, reinforcing the project's commitment to environmental stewardship and community well-being.

6 EIA EVALUATION METHOD

This chapter outlines the evaluation methods for the Environmental Impact Assessment (EIA) as it pertains to the proposed Mixed-Use Township Development on Portion 115 of Henties Bay Townland No. 133. The focus will be on identifying, assessing, and mitigating potential environmental impacts throughout the various stages of the project, with particular emphasis on the construction stage.

6.1 Potential Impacts during Construction Stage

The construction stage of the project is crucial and presents a range of potential environmental and socio-economic impacts. These impacts can be both positive and negative and will vary based on the nature of the activities involved, the location of the site, and the local environment.

6.1.1 Positive Impacts

Table 22: Potential positive Impacts during Construction Stage

Impact Category	Description	Importance
Job Creation	Employment opportunities for local residents during construction.	High
Local Business Boost	Increased demand for goods and services from local businesses.	Moderate
Infrastructure Improvements	Enhancement of local infrastructure (roads, utilities) that benefits the community.	High

The construction stage provides significant opportunities for job creation and local economic stimulation. This is essential for the local community, particularly in areas with high unemployment rates. Additionally, the development will lead to improved infrastructure, benefiting residents beyond the project's duration.

6.1.2 Negative Impacts

The construction activities may also lead to various negative environmental impacts, which must be evaluated and addressed:

Table 23: Negative environmental impacts

Impact Category	Potential Negative Impact	Mitigation Measures	Responsibility
Air Quality	Dust and emissions from construction activities	Implement dust control measures; use water sprays	Site Manager, Contractor

Noise Pollution	Increased noise from machinery and construction activities	Schedule work during daylight hours; install noise barriers	Site Manager, Contractor
Water Pollution	Potential contamination of local water bodies due to runoff	Establish silt fencing; regular monitoring of water quality	Environmental Consultant
Soil Erosion	Soil disturbance leading to erosion	Implement erosion control measures; re-vegetate disturbed areas	Site Manager, Contractor
Traffic Congestion	Increased traffic from construction vehicles	Develop traffic management plans; schedule deliveries off-peak	Traffic Management Officer
Impact on Biodiversity	Disturbance of local flora and fauna during land clearing	Conduct pre-construction biodiversity assessments; avoid critical habitats	ECO

The potential negative impacts during the construction stage must be assessed and effectively managed through a combination of mitigation measures. Each impact has associated mitigation strategies that are essential for minimizing harm to the environment and local communities.

6.1.3 Assessment Methodology

The assessment of potential impacts will follow a systematic approach that includes the following steps:

- **Identification of Impacts**: Using checklists and consultations with stakeholders to identify potential environmental impacts associated with construction activities.
- **Impact Assessment**: Evaluating the significance of identified impacts based on criteria such as magnitude, duration, reversibility, and likelihood of occurrence. The assessment will use qualitative and quantitative methods to provide a comprehensive understanding of potential effects.
- **Mitigation Measures**: Developing and implementing specific mitigation measures to address identified negative impacts. These measures will be integrated into project planning and execution to ensure compliance with environmental standards.
- **Monitoring and Reporting**: Establishing a monitoring framework to evaluate the effectiveness of mitigation measures and the overall environmental performance of the project during construction. Regular reporting will be conducted to ensure transparency and accountability.

6.1.4 Key Stakeholders Involved

The EIA evaluation process will involve multiple stakeholders to ensure comprehensive assessment and decision-making:

Table 24: Key Stakeholders Involved

Stakeholder Group	Role	Key Responsibilities
Project Proponent	Responsible for overall project execution	Ensure compliance with EIA regulations and EMP
Environmental Consultant	Provide expertise in EIA processes	Conduct environmental assessments; recommend mitigation
Local Authorities	Regulatory oversight and permitting	Review EIA report and grant necessary permits
Local Communities	Directly impacted by the project	Provide input on concerns and expectations
NGOs and Advocacy Groups	Environmental protection and community advocacy	Raise awareness of potential impacts and promote sustainable practices

Engaging stakeholders throughout the EIA process is critical for obtaining diverse perspectives and ensuring that all potential impacts are considered and addressed.

The EIA evaluation method outlined in this chapter serves as a framework for systematically identifying and assessing potential environmental impacts during the construction stage of the Mixed-Use Township Development. By employing a structured approach and actively engaging stakeholders, the project aims to minimize negative impacts while maximizing positive outcomes for the local community and environment.

7 PROPOSED MITIGATION MEASURES

This chapter outlines the proposed mitigation measures for the significant negative impacts identified in the EIA process. The mitigation measures are crucial for minimizing the adverse effects of the Mixed-Use Township Development on the environment and local communities. Each section focuses on specific resources and socio-economic activities impacted by the project.

7.1 Proposed Mitigation Measures (for Significant Negative Impacts Only)

Table 25: Air Resources

Impact	Mitigation Measure	Responsibility	Timing
Dust and particulate emissions	• Implement dust control measures such as water spraying and covering stockpiles. • Use low-dust construction materials.	Site Manager, Contractor	Throughout construction
Emissions from construction vehicles	• Ensure all vehicles and equipment are well-maintained and comply with emission standards.	Contractor	Throughout construction
Odor from construction activities	• Avoid using odorous materials and implement odor control strategies.	Site Manager	Throughout construction

The proposed measures aim to control air quality during the construction phase by reducing dust and emissions. Regular monitoring and maintenance of equipment will ensure compliance with air quality standards.

7.1.1 Water Resources

Table 26: Water Resources

Impact	Mitigation Measure	Responsibility	Timing
Contamination of water bodies	• Establish silt fences and sediment control barriers to prevent runoff. • Implement a spill response plan to address any accidental spills of hazardous materials.	Environmental Consultant	During construction
Increased water demand	• Use water-efficient construction methods and recycle water where possible. • Schedule construction activities to minimize peak water demand periods.	Site Manager	Throughout construction

Erosion and sedimentation	• Implement erosion control measures such as re-vegetation of disturbed areas after construction.	Site Manager	Post-construction

These measures will ensure that water resources are protected from contamination and that water use is efficient. Proper management of water resources will mitigate impacts on local water bodies and the overall environment.

7.1.2 Geological Resources

Table 27: Geological Resources

Impact	Mitigation Measure	Responsibility	Timing
Soil erosion	- Implement erosion control measures during construction, including maintaining vegetation cover.	Site Manager	Throughout construction
Groundwater contamination	- Monitor groundwater levels and quality regularly. - Ensure proper handling and disposal of hazardous materials.	Environmental Consultant	During construction

The proposed measures aim to protect geological resources by managing soil erosion and preventing groundwater contamination, ensuring that the project's activities do not adversely affect the local geology.

7.1.3 Biological Resources (Biodiversity)

Table 28: Biological Resources (Biodiversity)

Impact	Mitigation Measure	Responsibility	Timing
Habitat loss and fragmentation	• Conduct a pre-construction biodiversity assessment to identify critical habitats. • Implement a habitat restoration plan post-construction.	Environmental Consultant	Prior to construction
Disturbance to local wildlife	• Schedule construction activities to avoid breeding seasons of local fauna. • Implement noise control measures to minimize disturbances.	Site Manager	Throughout construction

Description: The proposed mitigation measures will help preserve local biodiversity and minimize disturbances to wildlife habitats, ensuring the ecological integrity of the site is maintained.

7.1.5 Socio-economic Activities

Impact	Mitigation Measure	Responsibility	Timing
Displacement of local businesses	• Engage with local businesses to address concerns and minimize disruption during construction.	Project Proponent	Throughout construction
Job creation and local employment	• Prioritize hiring local workers and ensure training programs are available for skill development.	Human Resources	Throughout construction
Traffic congestion	• Implement traffic management plans, including signage and detours to minimize disruptions.	Traffic Management Officer	During construction

These measures aim to enhance the socio-economic benefits of the project while mitigating negative impacts on local businesses and traffic conditions.

8 MONITORING PLAN

A comprehensive monitoring plan will be established to assess the effectiveness of the proposed mitigation measures. The monitoring plan will include specific metrics, responsibilities, and timelines.

8.1 During Construction Monitoring

Table 29: During Construction

Monitoring Aspect	Frequency	Responsibility	Reporting Method
Air Quality	Weekly	Environmental Consultant	Monthly report
Water Quality	Bi-weekly	Environmental Consultant	Monthly report
Soil Erosion and Sedimentation	Monthly	Site Manager	Monthly report
Biodiversity Monitoring	Monthly	Environmental Consultant	Monthly report
Community Engagement	Monthly	Project Proponent	Feedback sessions

The monitoring plan during construction will focus on assessing air and water quality, soil erosion, biodiversity impacts, and community engagement. Regular reports will ensure transparency and allow for adaptive management.

8.2 After Construction Monitoring

Monitoring Aspect	Frequency	Responsibility	Reporting Method
Air Quality	Quarterly	Environmental Consultant	Annual report
Water Quality	Quarterly	Environmental Consultant	Annual report
Post-Construction Site Assessment	Semi-annually	Site Manager	Semi-annual report
Biodiversity Recovery	Annually	Environmental Consultant	Annual report
Socio-economic Impact Assessment	Annually	Project Proponent	Annual report

Post-construction monitoring will focus on evaluating the long-term effectiveness of mitigation measures and the overall environmental recovery of the site. Annual reports will provide insights into the socio-economic impacts of the project.

9 ENVIRONMENTAL MANAGEMENT PLAN FOR PROJECT PHASES

This chapter presents the Environmental Management Plan (EMP) outlining key strategies, responsibilities, and actions necessary for managing environmental impacts throughout the various phases of the Mixed-Use Township Development project. The EMP is designed to ensure compliance with environmental regulations, promote sustainability, and foster community engagement.

9.1 EMP Structure

The EMP will be structured to address the following project phases:

9.1.1 Pre-Construction Phase

- Activities include finalizing project designs, conducting detailed environmental assessments, and obtaining necessary permits.

9.1.2 Construction Phase

- Focus on implementing mitigation measures, monitoring environmental impacts, and ensuring compliance with environmental regulations.

9.1.3 Operational Phase

- Strategies for managing ongoing operations, including waste management, resource conservation, and community engagement.

9.1.4 Decommissioning Phase

- Plans for restoring the site after project completion, including habitat restoration and waste disposal.

9.2 Key EMP Components

9.2.1 Pre-Construction Phase

Table 30: Pre-Construction Phase

Activity	Responsibility	Timeline
Conduct final environmental assessments	Environmental Consultant	Prior to construction
Obtain necessary permits	Project Proponent	Prior to construction
Stakeholder consultations	Project Proponent	Prior to construction

The pre-construction phase is critical for setting the foundation for sustainable practices and ensuring that all necessary environmental considerations are addressed before construction begins.

9.2.2 Construction Phase

Table 31: Construction Phase

Activity	Responsibility	Timeline
Implement mitigation measures	Site Manager	Throughout construction
Monitor environmental impacts	Environmental Consultant	Throughout construction
Community engagement activities	Project Proponent	Throughout construction

The construction phase focuses on active management of environmental impacts through the implementation of mitigation measures, monitoring, and community engagement to ensure transparency and collaboration with local stakeholders.

9.2.3 Operational Phase

Table 32: Operational Phase

Activity	Responsibility	Timeline
Waste management and recycling	Facility Manager	Ongoing
Resource conservation initiatives	Facility Manager	Ongoing
Community outreach programs	Community Liaison	Ongoing

The operational phase emphasizes sustainability through effective waste management, resource conservation, and continuous engagement with the community to ensure that operations align with local expectations and environmental standards.

9.2.4 Decommissioning Phase

Table 33: Decommissioning Phase

Activity	Responsibility	Timeline
Site restoration and rehabilitation	Environmental Consultant	After project completion
Waste disposal and management	Site Manager	After project completion
Final community engagement sessions	Project Proponent	After project completion

The decommissioning phase focuses on restoring the site to its natural state, ensuring that all waste is managed responsibly, and engaging with the community to provide updates and gather feedback on the restoration process.

10 CONCLUSION

The Environmental Management Plan (EMP) serves as a comprehensive framework for managing environmental impacts throughout the various phases of the Mixed-Use Township Development project. By implementing the proposed mitigation measures and monitoring plans, the project aims to achieve its objectives while minimizing adverse effects on the environment and local communities. Regular engagement with stakeholders will foster a collaborative approach to sustainable development, ensuring the long-term success of the project.