PROJECT STATUS

Title	Environmental Management Plan for the: Layout approval and township establishment on Portion A, B & C to be known as Tatamutsi Proper, Extension 1 & Extension 2, Erongo Region		
Report Status	Final		
SPC Reference	W/23059		
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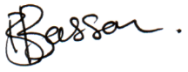
Authors	Bronwynn Basson		January 2026
Reviewer	Victoria Shikwaya		January 2026

LEGAL NOTICE

CONTENTS PAGE

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS

AIDS	Acquired Immuno-Deficiency Syndrome
DR	Developer's Representative
EA	Environmental Assessment
ECC	Environmental Clearance Certificate
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMA	Environmental Management Act
EMP	Environmental Management Plan
GG	Government Gazette
GIS	Geographic Information System
GN	Government Notice
GPS	Global Positioning System
HIV	Human Immuno-deficiency Virus
I&APs	Interested and Affected Parties
NHCN	National Heritage Council of Namibia
Reg.	Regulation
S	Section
SPC	Stubenrauch Planning Consultants
TB	Tuberculosis

1. INTRODUCTION

The Erongo Regional Council hereinafter referred to as the proponent intends to undertake the following activities:

- **Subdivision of the Remainder of the Farm Uis Townlands No. 215 into 3 portions (Portions A - C) and the Remainder;**
- **Layout approval and township establishment on Portion A to be known as Tatamutsi Proper;**
- **Layout approval and township establishment on Portion B to be known as Tatamutsi Extension 1;**
- **Layout approval and township establishment on Portion C to be known as Tatamutsi Extension 2.**

The above are listed activities in terms of the Environmental Management Act (No. 7 of 2007) and Environmental Impact Assessment Regulations (Government Notice No. 30 of 2012).

An Environmental Management Plan (EMP) is one of the most important outputs of the EIA process as it synthesises all the proposed mitigation and monitoring actions, set to a timeline and with specific assigned responsibilities. This EMP details the mitigation and monitoring actions to be implemented during the following phases of these developments:

- Planning and Design – the period, prior to construction, during which preliminary legislative and administrative arrangements, necessary for the preparation of erven, are made and engineering designs are carried out. The preparation of construction tender documents forms part of this phase;
- Construction – the period during which the proponent, having dealt with the necessary legislative and administrative arrangements, appoints a contractor for the development of services infrastructure and construction of the road to service the development as well as any other construction process(s) within the development areas;
- Operation and Maintenance – the period during which the services infrastructure will be fully functional and maintained.

It should be noted that to date, no engineering designs have been carried out for the development of the infrastructure associated with this development.

The decommissioning of these developments is not envisaged; however in the event that this should be considered some recommendations have been outlined in **Table 4.6-1**.

2. PROPOSED DEVELOPMENT

The Erongo Regional Council proposes the formalisation of the Tatamutsi informal settlement within the Uis townlands, alongside the planned establishment of two additional township developments to accommodate low-income housing.
Phase One focuses on Tatamutsi, where funding has already been secured. The settlement will be upgraded into a proclaimed township, Tatamutsi Proper, with an organised land-use framework to support future growth. This includes:

- Incorporation of most existing informal structures into the township layout.
- Allocation of the river corridor as Public Open Space.
- Integration of the existing informal road within the new layout.
- Provision of vacant erven to accommodate relocated structures where necessary.

The formalization will enable proper infrastructure planning, zoning, and delivery of essential services such as water, sanitation, and electricity. It will also provide residents with secure tenure, improving access to credit, raising property values, and reducing risks linked to informality.

Phase Two, pending funding from the Ministry of Urban and Rural Development, will extend the initiative through the creation of two additional townships for residential erven, further addressing housing needs for low-income groups.

Roads in the layout are designed to a minimum of 15 metres in width to allow for stormwater management, emergency access, and future service installations. While some temporary structures may need relocation, cost-effective in-situ development remains a guiding principle to minimise disruption and compensation.

Ultimately, this project aims to transform Tatamutsi into a sustainable, well-regulated urban environment that enhances living standards, economic opportunities, and service delivery for its residents and the wider community. Please refer to below locality map (**Figure 2-1**).

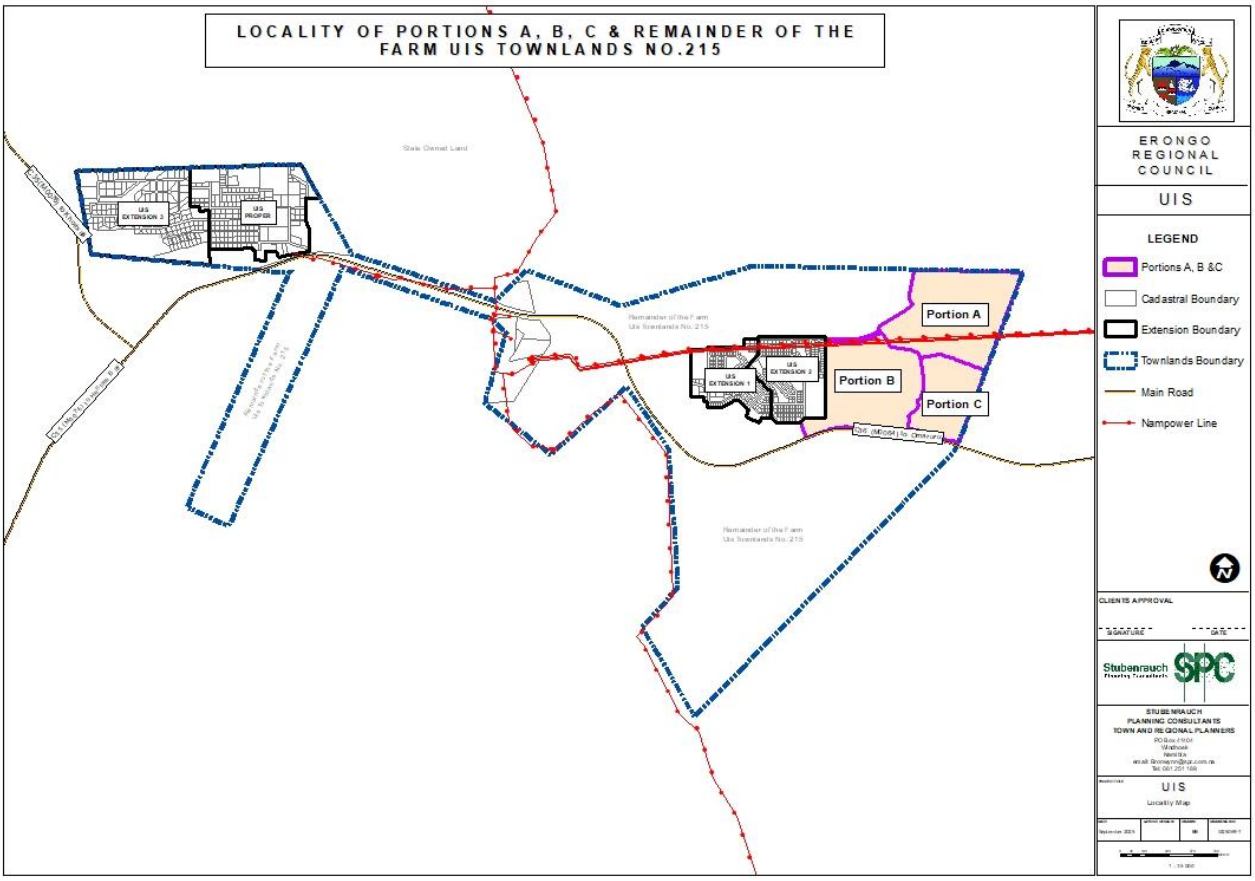


Figure 2-1: Locality of Portion A,B,C and Remainder of the Farm Uis Townlands No 215

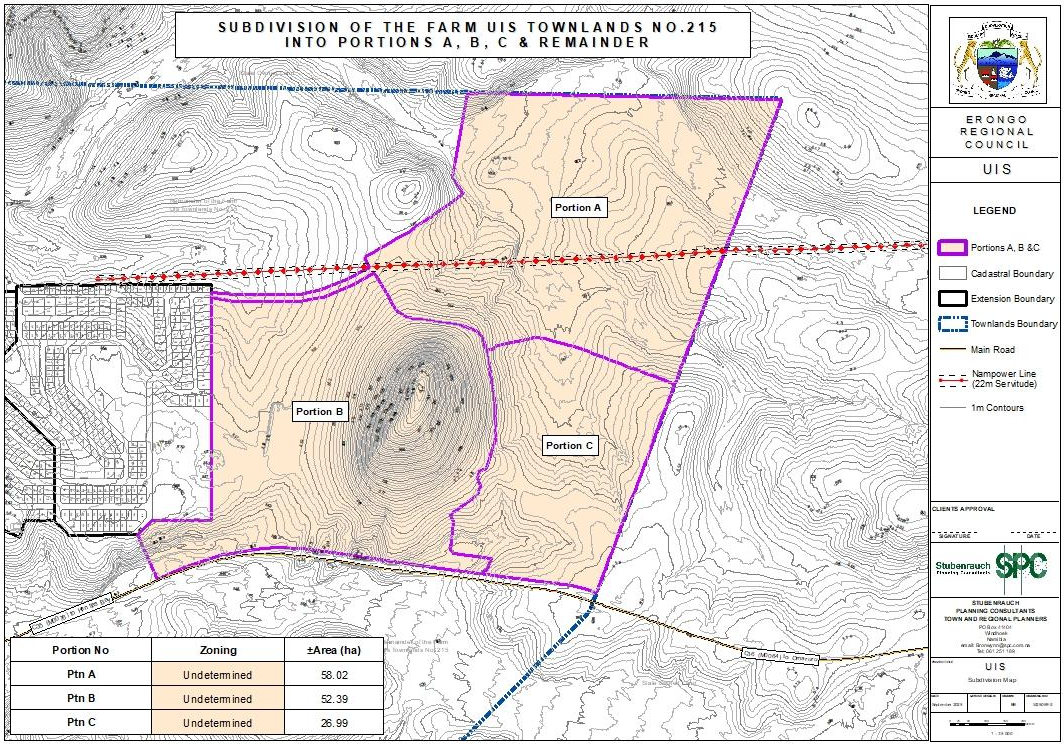
The subdivision of the Farm Uis Townlands No. 125

Remainder of the Farm Uis Townlands No. 215 is proposed to be subdivided into Portion A, B, C and the Remainder. Proposed Portion A is to accommodate the formalization of Tatamutsi Proper, while proposed Portions B and C will be reserved for future township establishments.

Please refer to below **Figure 2-2** and **Figure 2-3** for the proposed layout. **Table 1** below depicts the portion sizes as well as the proposed township name.

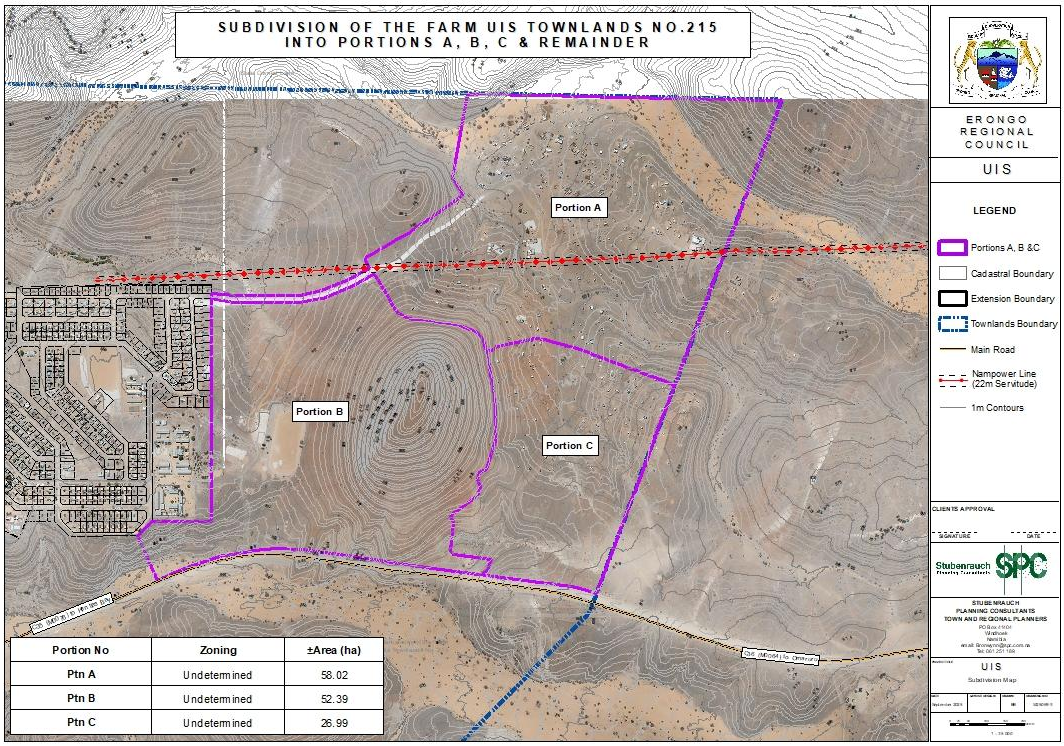
Table 1: Proposed portion sizes and township names

Portion Number	± Size (ha)	Proposed Township
Portion A	59.0973	Tatamutsi Proper
Portion B	51.8692	Reserved for future Tatamutsi Extension 1
Portion C	26.9949	Reserved for future Tatamutsi Extension 2



Portion No	Zoning	±Area (ha)
Ptn A	Undetermined	58.02
Ptn B	Undetermined	52.39
Ptn C	Undetermined	26.99

Figure 2-2: Subdivision of the Farm Uis Townlands No. 215 into Portions A, B & C and the Remainder



Portion No	Zoning	±Area (ha)
Ptn A	Undetermined	58.02
Ptn B	Undetermined	52.39
Ptn C	Undetermined	26.99

Figure 2-3: Aerial Map of Proposed Subdivision

2.1 The layout approval and Township Establishment on portion A to be known as Tatamutsi proper

The layout responds to the planning brief provided to SPC by the Erongo Regional Council. While the overall design is guided by biophysical factors and environmental considerations, the primary determinants of the design as discussed and agreed upon with the client, are as follows:

- The existing movement networks;
- The existing powerlines;
- The topography and the natural storm water drainage courses;
- Provide residential erven with sizes no less than 300 m²; and
- Ensure direct street access for each property created.

Tatamutsi Proper comprises of approximately 371 erven and the Remainder (street). The layout makes provision for the following land uses as outlined in **Table 2** below.

Table 2: Tatamutsi Proper Summary Table

Zoning	No of Erven	± Total Area (ha)	% of Total Area
Residential	334	20.72	35.06
Business	13	1.98	3.35
Institutional	1	0.42	0.72
Local Authority	2	0.20	0.34
Public Open Space	19	23.08	39.05
Street	Remainder	12.70	21.49

Residential Erven

A total number of 334 residential erven will be created during this township establishment. All residential erven created will measure 300m² or more in accordance with the town planning guidelines.

Business Erven

A total of 13 business erven has been provided as supporting land use zones to create employment opportunities for the residents as well as to ensure a well-balanced neighbourhood. Introducing business erven within the township establishment also promotes walkability and creates a self-sustaining community whereby the concept of work, live and play is in close proximity to one another.

Institutional Erf

Provision was made for one institutional erf as a supporting land use zoning for the residents of Tatamutsi.

Local Authority Erven

A total of two Local Authority erven has been accommodated within the layout of Tatamutsi Proper. One of the Local Authority erven is to cater for the existing water tower which is to provide water to the residents of Tatamutsi, while the other Local Authority erf is reserved for future local authority purposes.

Public Open Space

The Public Open Space erven serve the purpose of accommodating the natural drainage path of water and to accommodate the ErongoRed and NamPower lines.

Streets

The streets are designed in a manner that carries the water naturally in a southerly direction, ensuring that the water does not accumulate within residences. Figure 2-4 & 2-5 below depicts the proposed layout for Tatamutsi Proper.

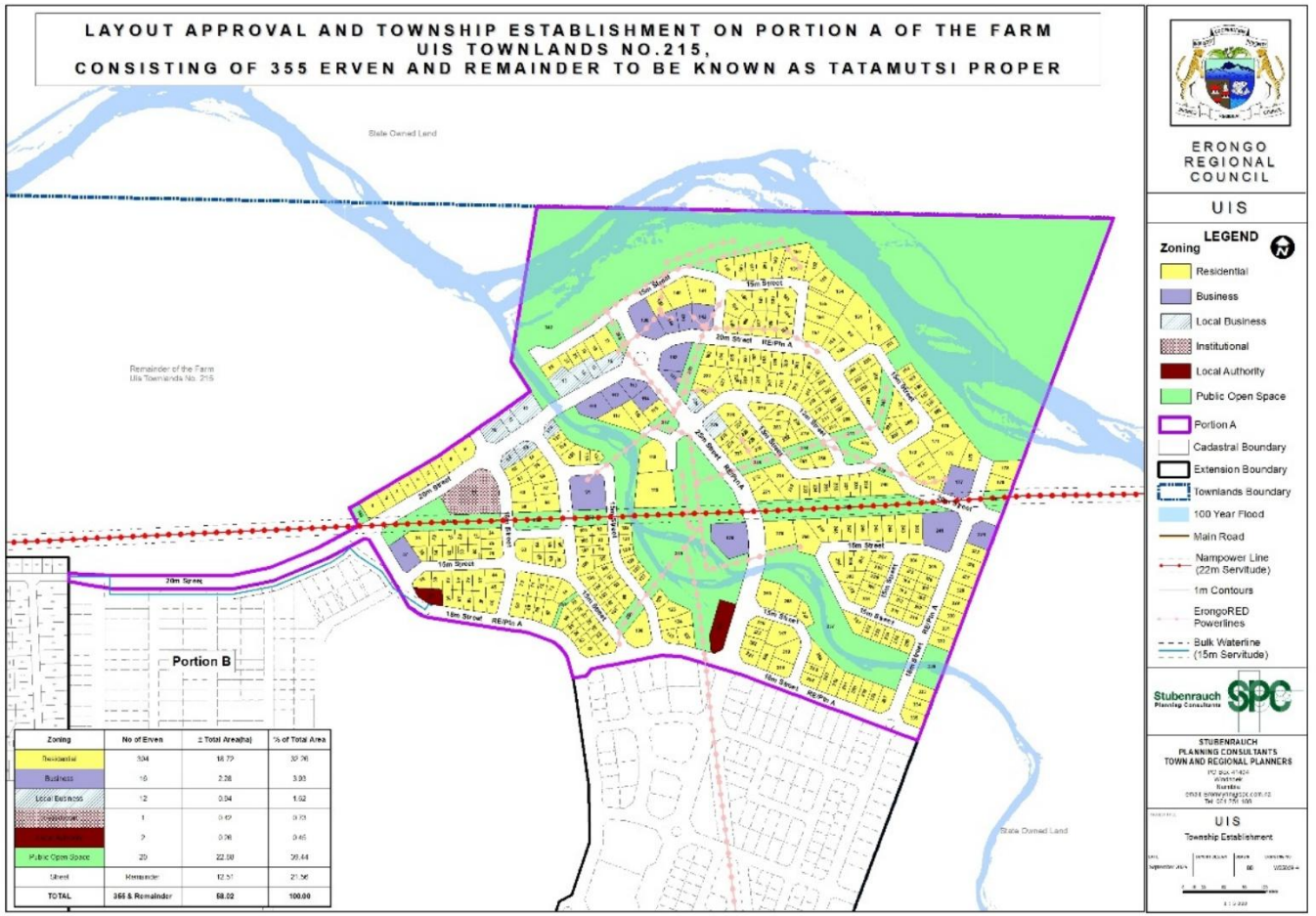


Figure 2-4: Proposed layout for Tatamutsi Proper

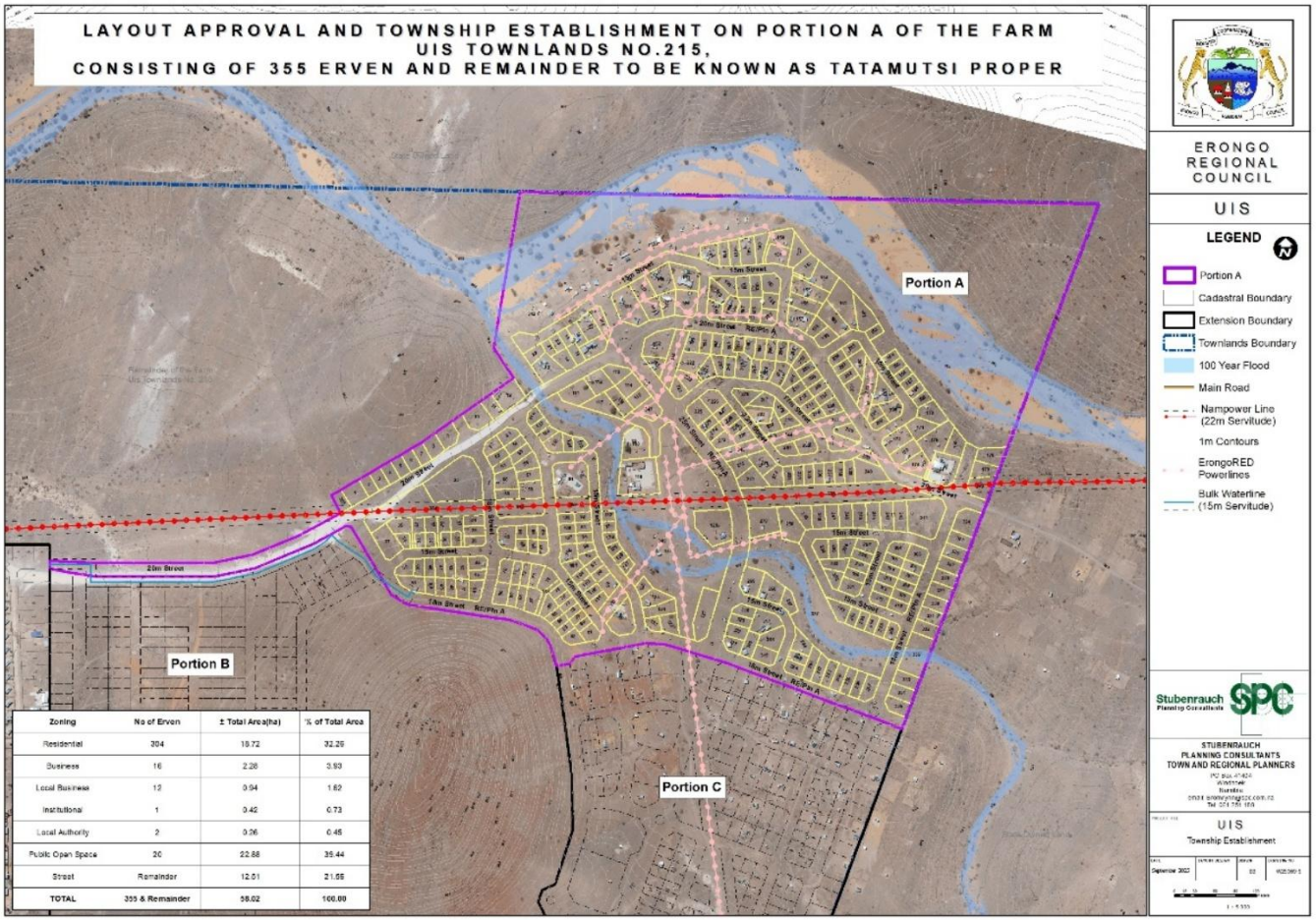


Figure 2-5: Aerial Image of the Proposed layout for Tatamutsi Proper

2.2 The Layout approval and Township Establishment on Portion B to be known as Tatamutsi Extension 1

Tatmutsi Extension 1 to be established on Portion B, the establishment of Extension 1 is motivated by the urgent need to address the growing demand for affordable and serviced residential land in Uis. While the formalization of Tatamutsi Proper will regularize existing informal developments, it will not be sufficient to accommodate the increasing number of low-income households in need of secure tenure and housing opportunities.

A key feature of Extension 1 is the provision of a dedicated sports field, which will serve as a vital community facility supporting youth development, recreation, and social cohesion. In addition, the extension incorporates a large open space to accommodate the existing rocky area, ensuring that natural constraints are respected and that land unsuitable for development is utilized productively as part of the township design. The draft layout for Tatamutsi Extension 1 is depicted in **Figure 2-6** below.

2.3 The Layout approval and Township Establishment on Portion C to be known as Tatamutsi Extension 2

Extension 2 to be established on Portion C, is proposed as a predominantly residential township while integrating key economic and service facilities to support Uis's growth. The layout includes an SME Park to promote local entrepreneurship, a few business erven to meet retail and service needs, and a truck port to accommodate heavy vehicles and improve logistics. The draft layout for Tatamutsi Extension 2 is depicted in **Figure 2-6** below

By combining affordable residential erven with economic infrastructure, Extension 2 will address housing demand while creating opportunities for livelihoods and reducing pressure on the existing town centre. This extension complements Tatamutsi Proper and Extension 1 by strengthening both the social and economic sustainability of Uis.

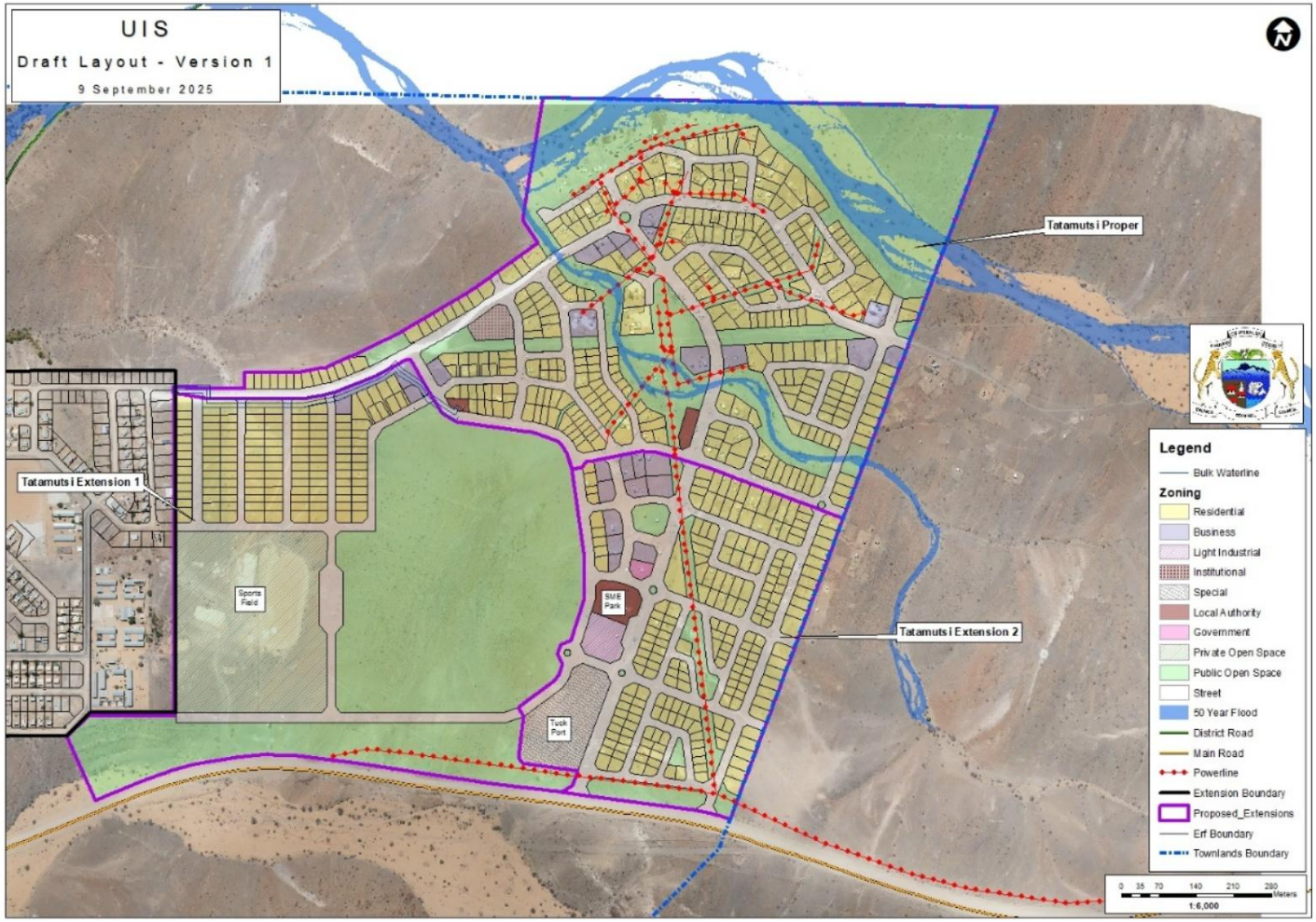


Figure 2-6: Combined proposed layout of Tatamutsi Proper, Extension 1 and Extension 2

3. ROLES AND RESPONSIBILITIES

The proponent is ultimately responsible for the implementation of the EMP, from the planning and design phase to the decommissioning phase (if these developments are in future decommissioned) of these developments. The proponent will delegate this responsibility as the project progresses through its life cycle. The delegated responsibility for the effective implementation of this EMP will rest on the following key individuals:

- Council's Representative;
- Environmental Control Officer; and
- Contractor (Construction and Operations and Maintenance).

COUNCIL'S REPRESENTATIVE

The proponent should assign the responsibility of managing all aspects of these developments for all development phases (including all contracts for work outsourced) to a designated member of staff, referred to in this EMP as the Council's representative (CR). The proponent may decide to assign this role to one person for the full duration of these developments, or may assign a different CR to each of the development phases – i.e. one for the planning and design phase, one for the construction phase and one for the operation and maintenance phase. The CR's responsibilities are as follows:

Table 3-1 Responsibilities of CR

Responsibility	Project Phase
Making sure that the necessary approvals and permissions laid out in **Table 4.2-1** are obtained/adhered to.	• Throughout the lifecycle of these developments
Making sure that the relevant provisions detailed in **Table 4.3-1** are addressed during planning and design phase.	• Planning and design phase
Monitoring the implementation of the EMP monthly.	• Construction • Operation and maintenance
Suspending/evicting individuals and/or equipment not complying with the EMP	• Construction • Operation and maintenance
Issuing fines for contravening EMP provisions	• Construction • Operation and maintenance

3.1 ENVIRONMENTAL CONTROL OFFICER

The CR should assign the responsibility of overseeing the implementation of the whole EMP on the ground during the construction and operation and maintenance phases to an independent external consultant, referred to in this EMP as the Environmental Control Officer (ECO). The CR/proponent may decide to assign this role to one person for both phases, or may assign a different ECO for each phase. The ECO will have the following responsibilities during the construction and operation and maintenance phases of these developments:

- Management and facilitation of communication between the proponent, CR, the contractors, and Interested and Affected Parties (I&APs) with regard to this EMP;
- Conducting site inspections (recommended minimum frequency is bi-annually) of all construction and/or infrastructure maintenance areas with respect to the implementation of this EMP (audit the implementation of the EMP);
- Assisting the Contractor in finding solutions with respect to matters pertaining to the implementation of this EMP;
- Advising the CR on the removal of person(s) and/or equipment not complying with the provisions of this EMP;
- Making recommendations to the CR with respect to the issuing of fines for contraventions of the EMP; and
- Undertaking an annual review and bi-annual audit of the EMP and recommending additions and/or changes to this document.

3.2 CONTRACTOR

Contractors appointed by the proponent are automatically responsible for implementing all provisions contained within the relevant chapters of this EMP. Contractors will be responsible for the implementation of this EMP applicable to any work outsourced to subcontractors. **Table 4.4-1** applies to contractors appointed during the construction phase and **Table 4.5-1** to those appointed during the operation and maintenance phase. In order to ensure effective environmental management, the aforementioned chapters should be included in the applicable contracts for outsourced construction, operation and maintenance work.

The tables in the following chapter (**Chapter 4**) detail the management measures associated with the roles and responsibilities that have been laid out in this chapter.

4. MANAGEMENT ACTIONS

The aim of the management actions in this chapter of the EMP is to avoid potential impacts where possible. Where impacts cannot be avoided, measures are provided to reduce the significance of these impacts.

The following tables provide the management actions recommended to manage the potential impacts rated in the scoping-level EA conducted for these developments. These management actions have been organised temporally according to project phase:

- Applicable legislation (**Table 4-1**);
- Planning and design phase management actions (**Table 4.3-1**);
- Construction phase management actions (**Table 4.4-1**);
- Operation and maintenance phase management actions (**Table 4.5-1**); and
- Decommissioning phase management actions (**Table 4.6-1**).
- The proponent should assess these **commitments** in detail and should acknowledge their commitment to the specific management actions detailed in the tables below.

4.1 ASSUMPTIONS AND LIMITATIONS

This EMP has been drafted with the acknowledgment of the following assumptions and limitations:

- This EMP has been drafted based on the scoping-level Environmental Assessment (EA) conducted for the proposed development as outlined in **Section 4** of the Draft Environmental Scoping Report. SPC will not be held responsible for the potential consequences that may result from any alterations to the above-mentioned layout.
- It is assumed that construction labourers will be sourced mostly from the Uis townlands area and that migrant labourers (if applicable) will be housed in established accommodation facilities within Uis.
- No engineering designs have been carried out for the development of the associated services infrastructure (roads, potable water, storm water, sewerage and electrical reticulations).

4.2 APPLICABLE LEGISLATION

Legal provisions that have relevance to various aspects of these developments are listed in **Table 4.2-1** below.

Table 4.2-1: Legislation applicable to proposed development

LEGISLATION/POLICIES	RELEVANT PROVISIONS	RELEVANCE TO PROJECT
The Constitution of the Republic of Namibia as Amended	Article 91 (c) provides for duty to guard against "the degradation and destruction of ecosystems and failure to protect the beauty and character of Namibia." Article 95(l) deals with the "maintenance of ecosystems, essential ecological processes and biological diversity" and sustainable use of the country's natural resources.	Sustainable development should be at the forefront of this development.
Environmental Management Act No. 7 of 2007 (EMA)	Section 2 outlines the objective of the Act and the means to achieve that. Section 3 details the principle of Environmental Management	The development should be informed by the EMA.
EIA Regulations GN 28, 29, and 30 of EMA (2012)	GN 29 Identifies and lists certain activities that cannot be undertaken without an environmental clearance certificate. GN 30 provides the regulations governing the environmental assessment (EA) process.	**Activity 10.1 (a) Infrastructure** **Activity 10.1 (b) Infrastructure** **Activity 10.2 (a) Infrastructure**
Convention on Biological Diversity (1992)	Article 1 lists the conservation of biological diversity amongst the objectives of the convention.	The project should consider the impact it will have on the biodiversity of the area.
Draft Procedures and Guidelines for conducting EIAs and compiling EMPs (2008)	Part 1, Stage 8 of the guidelines states that if a proposal is likely to affect people, certain guidelines should be considered by the proponent in the scoping process.	The EA process should incorporate the aspects outlined in the guidelines.

LEGISLATION/POLICIES	RELEVANT PROVISIONS	RELEVANCE TO PROJECT
Namibia Vision 2030	Vision 2030 states that the solitude, silence and natural beauty that many areas in Namibia provide are becoming sought after commodities and must be regarded as valuable natural assets.	Care should be taken that the development does not lead to the degradation of the natural beauty of the area.
Water Act No. 54 of 1956	Section 23(1) deals with the prohibition of pollution of underground and surface water bodies.	The pollution of water resources should be avoided during construction and operation of the development.
The Ministry of Environment and Tourism (MET) Policy on HIV & AIDS	MET has recently developed a policy on HIV and AIDS. In addition, it has also initiated a programme aimed at mainstreaming HIV and gender issues into environmental impact assessments.	The proponent and its contractor have to adhere to the guidelines provided to manage the aspects of HIV/AIDS. Experience with construction projects has shown that a significant risk is created when migrant construction workers interact with local communities.
Urban and Regional Planning Act 5 of 2018	The Act provides to consolidate the laws relating to urban and regional planning; to provide for a legal framework for spatial planning in Namibia; to provide for principles and standards of spatial planning; to establish the urban and regional planning board; to decentralise certain matters relating to spatial planning; to provide for the preparation, approval and review of the national spatial development framework, regional structure plans and urban structure plans; to provide for the preparation, approval, review and amendment of zoning schemes; to provide for the establishment of townships; to provide for the alteration of boundaries of approved townships, to provide for the disestablishment of approved townships; to provide for the change of name of approved townships; to provide for the subdivision and consolidation of land; to provide for the alteration, suspension and deletion of conditions relating to land; and to provide for incidental matters.	The subdivision and consolidation of land as well as the establishment of townships is to be done in accordance with the act.

LEGISLATION/POLICIES	RELEVANT PROVISIONS	RELEVANCE TO PROJECT
Local Authorities Act No. 23 of 1992	The Local Authorities Act prescribes the manner in which a town or municipality should be managed by the Town or Municipal Council.	The development must comply with provisions of the Local Authorities Act.
Labour Act no. 11 of 2007	Chapter 2 details the fundamental rights and protections. Chapter 3 deals with the basic conditions of employment.	Given the employment opportunities presented by the development, compliance with the labour law is essential.
National Heritage Act No. 27 of 2004	The Act is aimed at protecting, conserving and registering places and objects of heritage significance.	All protected heritage resources (e.g. human remains etc.) discovered, need to be reported immediately to the National Heritage Council (NHC) and require a permit from the NHC before they may be relocated.
Roads Ordinance 17 of 1972	• Section 3.1 deals with width of proclaimed roads and road reserve boundaries • Section 27.1 is concerned with the control of traffic on urban trunk and main roads • Section 36.1 regulates rails, tracks, bridges, wires, cables, subways or culverts across or under proclaimed roads • Section 37.1 deals with Infringements and obstructions on and interference with proclaimed roads.	Adhere to all applicable provisions of the Roads Ordinance.
Public and Environmental Health Act of 2015	This Act (GG 5740) provides a framework for a structured uniform public and environmental health system in Namibia. It covers notification, prevention and control of diseases and sexually transmitted infections; maternal, ante-natal and neo-natal care; water and food supplies; infant nutrition; waste management; health nuisances; public and environmental health planning and reporting. It repeals the Public	Contractors and users of the proposed development are to comply with these legal requirements.

LEGISLATION/POLICIES	RELEVANT PROVISIONS	RELEVANCE TO PROJECT
	Health Act 36 of 1919 (SA GG 979).	
Nature Conservation Ordinance no. 4 of 1975	Chapter 6 provides for legislation regarding the protection of indigenous plants	Indigenous and protected plants must be managed within the legal confines.
Water Quality Guidelines for Drinking Water and Wastewater Treatment	Details specific quantities in terms of water quality determinants, which wastewater should be treated to before being discharged into the environment (see Appendix B).	These guidelines are to be applied when dealing with water and waste treatment
Environmental Assessment Policy of Namibia (1995)	The Policy seeks to ensure that the environmental consequences of development projects and policies are considered, understood and incorporated into the planning process, and that the term ENVIRONMENT is broadly interpreted to include biophysical, social, economic, cultural, historical and political components.	This EIA considers this term of Environment.
Water Resources Management Act No. 11 of 2013	Part 12 deals with the control and protection of groundwater Part 13 deals with water pollution control	The pollution of water resources should be avoided during construction and operation of the development. Should water need to be abstracted, a water abstraction permit will be required from the Ministry of Water, Agriculture and Forestry.
Forest Act 12 of 2001 and Forest Regulations of 2015	To provide for the establishment of a Forestry Council and the appointment of certain officials; to consolidate the laws relating to the management and use of forests and forest produce; to provide for the protection of the environment and the control and management of forest fires; to repeal the Preservation of Bees and Honey Proclamation, 1923 (Proclamation No. 1of 1923), Preservation of Trees and Forests Ordinance, 1952 (Ordinance No. 37 of 1952) and the	Protected tree and plant species as per the Forest Act No 12 of 2001 and Forest Regulations of 2015 may not be removed without a permit from the Ministry of Agriculture, Water and Forestry.

LEGISLATION/POLICIES	RELEVANT PROVISIONS	RELEVANCE TO PROJECT
	Forest Act, 1968 (Act No. 72 of 1968); and to deal with incidental matters.	
Atmospheric Pollution Prevention Ordinance No 45 of 1965	Part II - control of noxious or offensive gases, Part III - atmospheric pollution by smoke, Part IV - dust control, and Part V - air pollution by fumes emitted by vehicles.	The development should consider the provisions outlined in the act. The proponent should apply for an Air Emissions permit from the Ministry of Health and Social Services (if needed).
Hazardous Substance Ordinance 14 of 1974	To provide for the control of substances which may cause injury or ill-health to or death of human beings by reason of their toxic, corrosive, irritant, strongly sensitizing or flammable nature or the generation of pressure thereby in certain circumstances; to provide for the division of such substances into groups in relation to the degree of danger; to provide for the prohibition and control of the importation, manufacture, sale, use, operation, application, modification, disposal or dumping of such substances; and to provide for matters connected therewith.	The handling, usage and storage of hazardous substances on site should be carefully controlled according to this Ordinance.
Soil Conservation Act No 76 of 1969	Act to consolidate and amend the law relating to the combating and prevention of soil erosion, the conservation, improvement and manner of use of the soil and vegetation and the protection of the water sources	The proposed activity should ensure that soil erosion and soil pollution is avoided during construction and operation.

4.3 PLANNING AND DESIGN PHASE

The CR should ensure that the management actions detailed below should be adhered to during the period before the construction of the services infrastructure starts.

Table 4.3-1: Planning and design management actions

Aspect	Management Actions
Existing Service infrastructure	• It is recommended that alternative and renewable sources of energy be explored and introduced into the proposed development to reduce dependency on the grid. • Solar geysers and panels should be considered to provide for general lighting and heating of water and buildings. • Water saving mechanisms should be considered for incorporation within the developments in order to further reduce water demands. • Re-use of treated wastewater should be considered wherever possible to reduce the consumption of potable water.
Visual Impacts	• It is recommended that more 'green' technologies be implemented within the architectural designs and building materials of the development where possible in order to minimise the visual prominence of such a development within the more natural surrounding landscape. • Natural colours and building materials such as wood and stone should be incorporated as well as the use of indigenous vegetation in order to help beautify the development. • Visual pollutants can further be prevented through mitigations (i.e. keep existing trees, introduce tall indigenous trees; keep structures unpainted and minimising large advertising billboards).
Water Quality	• The final effluent from the sewage treatment plant must conform to the current Namibian General Standard as per Namibian legislation for final effluents [Water Act, 1956 (Act No. 54 of 1956)].
Biodiversity	• Conduct a vegetation survey prior to construction to establish protected/endangered species to be marked and incorporated into the development.

4.4 CONSTRUCTION PHASE

The management actions listed in **Table 4-3** apply during the construction phase. This table may be used as a guide when developing EMPs for other construction activities within these development areas.

Table 4.4-1: Construction phase management actions

Environmental Feature	Impact	Management Actions	Responsible Person
EMP training	Lack of EMP awareness and the implications thereof.	All construction workers are to undergo EMP training that should include as a minimum the following: • Explanation of the importance of complying with the EMP. • Discussion of the potential environmental impacts of construction activities. • Employees' roles and responsibilities, including emergency preparedness. • Explanation of the mitigation measures that must be implemented when particular work groups carry out their respective activities.	Contractor, PR
Monitoring	EMP non-compliance	• The ECO or the Proponent/Proponents Representative should monitor the implementation of this EMP. • The Proponents Representative should inspect the site throughout the construction phase at least on a monthly basis. • Bi-annual audits should be conducted of site activities by an external ECO.	ECO, PR
Conservation of vegetation	Loss of biodiversity	• The layout and development design should incorporate existing trees[1]. • The Contractor should compile a Plant Management Plan which should include the following as a minimum: o Trees if not already accounted for in an existing Geographic Information System (GIS), should be surveyed, co-ordinates/location incorporated into the Contractor's GIS, marked with	Contractor

[1]a "tree" is defined as an indigenous woody perennial plant with a trunk diameter ≥150 mm.

Environmental Feature	Impact	Management Actions	Responsible Person
		paint (or other means to be readily visible) and protected; o Trees, which are impossible to conserve, need to be identified and their location recorded on a map; o The Contractor should apply to the local authority for a permit to remove these trees. o Special protection should be accorded to the protected endemic species, which are to be found within the development area. o A list should be compiled of all trees/plants to be removed detailing their location, the species as well as which plants will be planted to replace these. The nursery where these plants will be sourced from should also be included; o Each tree that is removed needs to be replaced with an indigenous tree species after construction; o Some of these trees can be obtained at the National Botanical Research Institute (NBRI) or at a commercial nursery. • Only a limited width +/- 5 m on the side of roads may be partially cleared of vegetation. • Workers are prohibited from collecting wood or other plant products on or near work sites. • No alien species may be planted on or near work areas.	
Lay-down areas and materials camp	Loss of biodiversity	Suitable locations for the contractors lay-down areas and materials camp should be identified with the assistance of the CR and the following should be considered in selecting these sites: • The areas designated for the services	Contractor and CR

Environmental Feature	Impact	Management Actions	Responsible Person
		infrastructure should be used as far possible. • Second option should be degraded land. • Avoid sensitive areas (e.g. rivers/drainage lines).	
Hazardous waste	Contamination of surface and groundwater sources.	• All heavy construction vehicles and equipment on site should be provided with a drip tray. • All heavy construction vehicles should be maintained regularly to prevent oil leakages. • Maintenance and washing of construction vehicles should take place only at a designated workshop area.	Contractor
Water, Sewage and grey water	Contamination of surface and groundwater sources and water wasting	• The wash water (grey water) collected from the cleaning of equipment on-site should not be left standing for long periods of time as this promotes parasite and bacterial proliferation. • Grey water should be recycled: o Used for dust suppression; o Used to water a vegetable garden, or to support a small nursery; o Used (reused) to clean equipment. • Grey water that is not recycled should be removed on a regular basis. • No dumping of waste products of any kind in or in close proximity to water bodies. • Heavy construction vehicles should be kept out of any water bodies and the movement of construction vehicles should be limited where possible to the existing roads and tracks. • Ensure that oil/ fuel spillages from construction vehicles and machinery are minimised and that where these occur, that they are appropriately dealt with. • Drip trays must be placed underneath	Contractor

Environmental Feature	Impact	Management Actions	Responsible Person
		construction vehicles when not in use to contain all oil that might be leaking from these vehicles. • Contaminated runoff from the construction sites should be prevented from entering the surface and ground water bodies. • All materials on the construction site should be properly stored. • Disposal of waste from the sites should be properly managed and taken to the designated landfill site in Uis. • Construction workers should be given ablution facilities at the construction sites that are located at least 30 m away from any surface water and ground water resources and should be regularly serviced. • Washing of personnel or any equipment should not be allowed on site. Should it be necessary to wash construction equipment these should be done at an area properly suited and prepared to receive and contain polluted waters.	
General waste	Visual impact and soil contamination	• The construction site should be kept tidy at all times. All domestic and general construction waste produced daily should be cleaned and contained daily. • No waste may be buried or burned. • Waste containers (bins) should be emptied regularly and removed from site to a recognised (municipal) waste disposal site. • All recyclable waste needs to be taken to the nearest recycling depot where practical. • A sufficient number of separate bins for hazardous and domestic/general waste must be provided on site. These should be clearly marked as such.	Contractor

Environmental Feature	Impact	Management Actions	Responsible Person
		• Construction labourers should be sensitised to dispose of waste in a responsible manner and not to litter. • No waste may remain on site after the completion of the project.	
Topsoil	Loss of topsoil and associated opportunity costs	• When excavations are carried out, topsoil[2] should be stockpiled in a demarcated area. • Stockpiled topsoil should be used to rehabilitate post-construction degraded areas and/or other nearby degraded areas if such an area is located a reasonable distance from the stockpile.	Contractor
Rehabilitation	Visual impact	• Upon completion of the construction phase consultations should be held with the local community/property owner(s) regarding the post-construction use of remaining excavated areas (if applicable). • In the event that no post-construction uses are requested, all excavated/degraded areas need to be rehabilitated as follows: o Excavated areas may only be backfilled with clean or inert fill. No material of hazardous nature (e.g. sand removed with an oil spill) may be dumped as backfill. o Rehabilitated excavated areas need to match the contours of the existing landscape. o The rehabilitated area should not be higher (or lower) than nearby drainage channels. This ensures the efficiency of revegetation and reduces the chances of potential erosion. o Topsoil is to be spread across excavated areas evenly.	Contractor, CR

[2] Topsoil is defined here as the top 150mm of surface material, which accounts for the seedbank.

Environmental Feature	Impact	Management Actions	Responsible Person
		○ Deep ripping of areas to be rehabilitated is required, not just simple scarification, so as to enable rip lines to hold water after heavy rainfall. ○ Ripping should be done along slopes, not up and down a slope, which could lead to enhanced erosion.	
Road safety	Injury or loss of life	• Demarcate roads to be used by construction vehicles clearly. • Off-road driving should not be allowed. • All vehicles that transport materials to and from the site must be roadworthy. • Drivers that transport materials should have a valid driver's license and should adhere to all traffic rules. • Loads upon vehicles should be properly secured to avoid items falling off the vehicle.	Contractor
Safety around work sites	Injury or loss of life	• Excavations should be left open for the shortest time possible. • Excavate short lengths of trenches and box areas for services or foundations in a manner that will not leave the trench unattended for more than 24 hours. • Demarcate excavated areas and topsoil stockpiles with danger tape. • All building materials and equipment are to be stored only within set out and demarcated work areas. • Only road construction personnel will be allowed within these work areas. • Comply with all waste related management actions stated above in this table.	Contractor
Ablutions	Non-compliance with Health and Safety	• Separate toilets should be available for men and women and should clearly be indicated as such.	Contractor

Environmental Feature	Impact	Management Actions	Responsible Person
	Regulations	• Portable toilets (i.e. easily transportable) should be available at every construction site: o 1 toilet for every 15 females. o 1 toilet for every 30 males. o Sewage needs to be removed on a regular basis to an approved (municipal) sewage disposal site in Uis. Alternatively, sewage may be pumped into sealable containers and stored until it can be removed. o Workers responsible for cleaning the toilets should be provided with environmentally friendly detergents, latex gloves and masks.	
Open fires	Injury or loss of life	• No open fires may be made anywhere on site.	Contractor
General health and safety	Injury or loss of life	• A fully stocked first aid kit should permanently be available on-site as well as an adequately trained member of staff capable of administering first aid. • All workers should have access to the relevant personal protective equipment (PPE). • Sufficient potable water reserves should be available to workers at all times. • No person should be allowed to smoke close to fuel storage facilities or portable toilets (if toilets are chemical toilets – the chemicals are flammable). • No workers should be allowed to drink alcohol during work hours. • No workers should be allowed on site if under the influence of alcohol. • Condoms should be accessible/ available to all construction workers. • Access to Antiretroviral medication should be facilitated.	Contractor

Environmental Feature	Impact	Management Actions	Responsible Person
Dust	Nuisance and health impacts	• A watering truck should be used on gravel roads with the heaviest vehicle movement especially during dry and windy conditions. However, due consideration should be given to water restrictions during times of drought. • In which case the use of waterless dust suppression means (e.g. lignosulphonate products such as Dustex) should be considered. • Cover any stockpiles with plastic to minimise windblown dust. • Dust protection masks should be provided to workers if they complain about dust.	Contractor
Noise	Nuisance impacts	Work hours should be restricted to between 08h00 and 17h00 where construction involving the use of heavy equipment, power tools and the movement of heavy vehicles is less than 500 m from residential areas. If an exception to this provision is required, all residents within the 500 m radius should be given 1 week's written notice.	Contractor
Recruitment of labourers	Negative conflict regarding recruitment	The Contractor should compile a formal recruitment process including the following provisions as a minimum: • Adhere to the legal provisions in the Labour Act for the recruitment of labour (target percentages for gender balance, optimal use of local labour and SME's, etc.). • Recruitment should not take place at construction sites. • Ensure that all sub-contractors are aware of recommended recruitment procedures and discourage any recruitment of labour outside these agreed upon procedures. • Contractors should give preference in terms of recruitment of sub-contractors	Contractor

Environmental Feature	Impact	Management Actions	Responsible Person
		and individual labourers to those who are qualified and from the Henties Bay project area and only then look to surrounding towns. • Clearly explain to all jobseekers the terms and conditions of their respective employment contracts (e.g. period of employment etc.) – make use of interpreters where necessary.	
Communication plan	Negative conflict with I&APs	The Contractor or proponent should draft a Communication Plan, which should outline as a minimum the following: • How Interested and Affected Parties (I&APs), who require ongoing communication for the duration of the construction period, will be identified and recorded and who will manage and update these records. • How these I&APs will be consulted on an ongoing basis. • Make provision for grievance mechanisms – i.e. how concerns can be lodged/ recorded and how feedback will be delivered as well as further steps of arbitration in the event that feedback is deemed unsatisfactory.	Contractor
General communication	Negative conflict with I&APs	• The CR must appoint an ECO to liaise between the Contractor, I&APs, Developer. • The Contractor shall at every monthly site meeting report on the status of the implementation of all provisions of the EMP. • The Contractor should implement the EMP awareness training as stipulated above in this table. • The Contractor must list the I&APs of the project and their contact details with whom ongoing communication would be required for the duration of the contract.	Contractor, ECO, CR

Environmental Feature	Impact	Management Actions	Responsible Person
		This list, together with the Communication Plan must be agreed upon and given to the CR before construction commences. • The Communication Plan, once agreed upon by the Developer, shall be legally binding. • All communication with the I&APs must take place through the ECO. • A copy of the EMP must be available at the site office and should be accessible to all I&APs. • Key representatives from the above-mentioned list need to be invited to attend monthly site meetings to raise any concerns and issues regarding project progress. • The Contractor should liaise with the Developer regarding all issues related to community consultation and negotiation before construction commences. • A procedure should be put in place to ensure that concerns raised have been followed-up and addressed. • All people on the I&APs list should be informed about the availability of the complaints register and associated grievance mechanisms in writing by the CR prior to the commencement of construction activities.	
Archaeology	Loss of heritage resources	• Should a heritage site or archaeological site be uncovered or discovered during the construction phase of the project, a "chance find" procedure should be applied in the order they appear below: o If operating machinery or equipment, stop work; o Demarcate the site with danger tape; o Determine GPS position if possible;	Contractor

Environmental Feature	Impact	Management Actions	Responsible Person
		○ Report findings to the construction foreman; ○ Report findings, site location and actions taken to superintendent; ○ Cease any works in immediate vicinity; ○ Visit site and determine whether work can proceed without damage to findings; ○ Determine and demarcate exclusion boundary; ○ Site location and details to be added to the project's Geographic Information System (GIS) for field confirmation by archaeologist; ○ Inspect site and confirm addition to project GIS; ○ Advise the National Heritage Council of Namibia (NHCN) and request written permission to remove findings from work area; and ○ Recovery, packaging and labelling of findings for transfer to National Museum. • Should human remains be found, the following actions will be required: ○ Apply the chance find procedure as described above; ○ Schedule a field inspection with an archaeologist to confirm that remains are human; ○ Advise and liaise with the NHCN and Police; and ○ Remains will be recovered and removed either to the National Museum or the National Forensic Laboratory.	

4.5 OPERATION AND MAINTENANCE PHASE

The management actions included in **Table 4-4** below apply during the operation and maintenance phase of these developments.

Table 4.5-1: Operation and maintenance management actions

Environmental Feature	Impact	Management Actions	Person Responsible
EMP training	Lack of EMP awareness and the implications thereof	All contractors appointed for maintenance work on the respective services infrastructure must ensure that all personnel are aware of necessary health, safety and environmental considerations applicable to their respective work.	Contractor
Personnel	Recruitment of qualified personnel	Suitably qualified and/or skilled personnel should be appointed to run the plant as required (which may include processing technicians, mechanical technicians and electrical technicians) based on the technology employed and the relevant expertise required to ensure efficient operation of the plant.	Proponent, Contractor
Water	Surface and groundwater contamination	• Ensure that surface run-off water accumulating on-site are channeled and captured through a proper storm water management system to be treated in an appropriate manner before disposal into the environment. • Ensure the sewer system is monitored for leakages. • Routine visual inspections of sewer infrastructure and resident parking areas for signs of soil contamination. • The sewage treatment plant is to be constructed 500 meter away from the nearest potable water source. • The release of pesticides and herbicides in harmful quantities should be prevented. • The use of eco-friendly and/or biodegradable pesticides and herbicides should be promoted.	Proponent, Contractor,

Environmental Feature	Impact	Management Actions	Person Responsible
	Water saving	Promote water saving within the development.	Proponent
Aesthetics	Visual impacts	The proponent should consult with a view to incorporate the relevant local/national/international development guidelines which addresses the following: • The incorporation of indigenous vegetation into road development. • To mark the area with appropriate road warning signs (e.g. the road curves to the left/right)	Proponent
Noise	Noise nuisance impact	The proponent should consult with the view to incorporate the relevant local/national/international guidelines to manage the generation of traffic noise in the development area.	Proponent
Waste	Environmental Pollution	• Waste is to be managed in accordance with the regulations of the Erongo Regional Council which relates to waste management. • The recycling of waste should be promoted amongst residents and business within the development. • Sludge produced from the sewage treatment plant should be disposed at a registered waste dumpsite.	Proponent
Odour	Odour impact	• The sewage treatment plant should be located at least 250 meter away from the nearest house. • Regular inspection of the system to detect failures in the system early in order to take remedial action accordingly. • Should the odour become significant odour abatement measures should be implemented.	Proponent, Contractor
Electricity	Energy management	• Electricity is to be obtained from an approved electrical supplier such as ErongoRed to ensure efficiency of	Proponent

Environmental Feature	Impact	Management Actions	Person Responsible
		generation and use as well as sustainability of supply.	
Health and Safety	Operational Health and Safety	• Operators at the site should be provided with awareness training about the risks associated with the associated operational activities. • During the works conducted, workers should be properly equipped with personal protective equipment (PPE) such as coveralls, gloves, safety boots, safety glasses etc. • All open water structures that are on ground level should be fitted with hand rails to prevent the possibility of operators falling into these structures. • Chlorination equipment must be contained in the appropriate way in a separate building away from other chemicals. • All relevant safety signage and equipment must be available on site.	Proponent, Contractor
Hazardous Substance Handling and Storage	Health and safety	• Emergency preparedness plans, safety equipment and emergency clean up procedures must be in place in case of a spillage. • Hazardous waste, including emptied chemical containers (e.g. liquid chlorine, sodium hypochlorite) and other chemicals used for disinfection in the operational phase should be safely stored on site where they cannot be reached and used by the unsuspecting and uniformed locals for personal use. • No waste should be improperly disposed of on site or its surroundings, i.e. unapproved waste	Proponent, Contractor

Environmental Feature	Impact	Management Actions	Person Responsible
		sites.	

4.6 DECOMMISSIONING PHASE

The decommissioning of these developments is not foreseen as the intended development is envisaged to be permanent. In the event that this infrastructure development is decommissioned the following management actions should apply.

Table 4.6-1: Decommissioning phase management actions

Environmental Feature	Management Actions
Deconstruction activity	Many of the mitigation measures prescribed for construction activity for these developments **(Table 4.4-1** above**)** would be applicable to some of the decommissioning activities. These should be adhered to where applicable.
Rehabilitation	In the event that decommissioning is deemed necessary, excavations need to be rehabilitated according to the management actions laid out in **Table 4.4-1** above.

5. CONCLUSION

The management actions included in this report aim to assist in the avoidance, management and/or mitigation of potential impacts on the environment that may result from the proposed activities.

Should the measures recommended in this EMP be implemented and monitored, SPC is confident that the risks identified in the FESR can be reduced to acceptable levels.