

REPUBLIC OF NAMIBIA
ENVIRONMENTAL MANAGEMENT ACT, 2007
(SECTION 32)

APPLICATION FOR ENVIRONMENTAL CLEARANCE CERTIFICATE

Revenue
stamp or
revenue
franking
machine
impression

PART A : DETAILS OF APPLICANT

1.Name:

Laz Construction CC

2. Business Registration/Identity No.

(if applicable)

N/A

3.Correspondence Address:

P.O. Box 35368, Kleine Kuppe, Windhoek

4.Name of Contact Person:

Bronwynn Basson

5.Position of Contact Person:

Manager

6.Telephone No.:

+264 (61) 25 11 89

7.Fax No.:

N/A

8.E-mail Address:

Bronwynn@spc.com.na

PART B: SCOPE OF THE ENVIRONMENTAL CLEARANCE CERTIFICATE

1. The environmental clearance certificate is for:

Activity 9.4 The storage and handling of a dangerous goods, including petrol, diesel, liquid petroleum gas or paraffin, in containers with a combined capacity of more than 30 cubic meters at any one location.

Activity 9.5 Construction of filling stations or any other facility for the underground and aboveground storage of dangerous goods, including petrol, diesel, liquid, petroleum, gas or paraffin.

Activity 10.1 (a) (Infrastructure) The construction of – Oil, water, gas and petrochemical and other bulk supply pipelines.

2. Details of the activity(s) covered by the environmental clearance certificate:

Note: Please attach plans to show the location and scope of the designated activity(s), and use additional sheets if necessary:

Title of Activity

Environmental Clearance Certificate Renewal for the Construction and Operation of a Service Station, a shopping complex and related activities in Khorixas, Kunene Region.

Nature of Activity:

The project involves:

- The Construction and Operation of a service station, a shopping complex and related activities in Khorixas, Kunene Region.

Location of Activity:

Region: Kunene Region

Scale and Scope of Activity:

The scope of this project is limited to obtaining an Environmental Clearance Certificate for the above-mentioned proposed activities.

THE PROPOSED DEVELOPMENTS

The Laz Construction CC applied for an Environmental Clearance Certificate (ECC) for the proposed development in 2018. The Environmental Assessment (EA) for the proposed development was conducted by Africa Planning Forum in 2018. Following the submission of the final Environmental Assessment Report, the ECC was granted as per letter dated 12 June 2018. In accordance with the Environmental Management Act No 7 of 2007 and the Environmental Impact Assessment Regulations of 2012 the ECC is only valid for three years and as such the ECC has expired. Stubenrauch Planning Consultants (SPC) has been appointed to apply to the Ministry of Environment, Forestry and Tourism (MEFT) for the

renewal of the ECC. The EMP is herewith updated as part of the application to apply for the ECC renewal for the proposed activity.

The approved EMP which was initially submitted to MEFT was drafted in 2018. The Service Station has been constructed and operating, therefore, the environmental impacts assessed, and mitigation measures have been updated in the Environmental Management Plan.

OPINION WITH RESPECT TO THE ENVIRONMENTAL AUTHORISATION

Based on these initial findings, SPC do not foresee any activity during the proposed development that may pose a significant environmental risk to the biophysical or social environment on these sites.

As a result, we are of the opinion that there is no need for a full Environmental Impact Assessment study to be conducted for the reason that the significant effects associated with the proposed developments are minimal.

PART C: DECLARATION BY APPLICANT

I hereby certify that the particulars given above are correct and true to the best of my knowledge and belief. I understand the environmental clearance certificate may be suspended, amended or cancelled if any information given above is false, misleading, wrong or incomplete.



Signature of Applicant

Elina SP Vakuwile

Full name in Block Letters

Environmental Consultant

Position

on behalf of Laz Construction CC

03 May 2024

Date

Environmental Management Plan for

*Construction and Operation of a
Service Station, a Shopping
Complex, and related activities,
Khorixas, Kunene Region.*

May 2024


APP-003533

Prepared for: Laz Construction CC
P.O. Box 35368, Kleine Kuppe, Windhoek
Contact Number: +264 (61) 284 7047
Contact Person: Mr L Kunugab
Email: laz@iway.na

Prepared by: Stubenrauch Planning
Consultants
P.O. Box 41404, Windhoek
Contact Person: Bronwynn Basson
Contact Number: +264 (61) 25 11 89
Fax Number: +264 (61) 25 11 89
Email: bronwynn@spc.com.na



PROJECT STATUS

Title	Environmental Management Plan for the construction and operation of a service station and related activities, Khorixas, Kunene Region.		
Report Status	Final		
SPC Reference	APF18002		
Proponent	Laz Construction CC P.O. Box 35368, Kleine Kuppe, Windhoek Contact Person: Mr L Kunugab Contact Number: +264 (61) 284 7047 Email: laz@iway.na		
Environmental Assessment Practitioner	Stubenrauch Planning Consultants P.O. Box 41404, Windhoek Contact Person: Bronwynn Basson Contact Number: +264 (61) 25 11 89 Fax Number: +264 (61) 25 21 57 Email: bronwynn@spc.com.na		
Report date	April 2024		
	Name	Signature	Date
Author	Elina SP Vakuwile		April 2024

LEGAL NOTICE

This report or any portion thereof and any associated documentation remain the property of SPC until the mandator effects payment of all fees and disbursements due to SPC in terms of the SPC Conditions of Contract and Project Acceptance Form. Notwithstanding the aforesaid, any reproduction, duplication, copying, adaptation, editing, change, disclosure, publication, distribution, incorporation, modification, lending, transfer, sending, delivering, serving or broadcasting must be authorised in writing by SPC.

CONTENTS PAGE

ABBREVIATIONS..... III

1 INTRODUCTION 1

2 THE PROPOSED DEVELOPMENT 2

3 ROLES AND RESPONSIBILITIES..... 3

 3.1 DEVELOPER’S REPRESENTATIVE.....3

 3.2 ENVIRONMENTAL CONTROL OFFICER.....4

 3.3 CONTRACTOR.....5

4 MANAGEMENT ACTIONS 5

 4.1 ASSUMPTIONS AND LIMITATIONS5

 4.2 APPLICABLE LEGISLATION6

 4.3 PLANNING AND DESIGN PHASE..... 11

 4.4 CONSTRUCTION PHASE 11

 4.5 OPERATION AND MAINTENANCE PHASE 21

 4.6 DECOMMISSIONING PHASE 24

LIST OF TABLES

Table 3-1 Responsibilities of DR4

Table 4-1: Legal provisions relevant to the proposed development6

Table 4-2: Planning and design management actions 11

Table 4-3: Construction phase management actions 12

Table 4-4: Operation and maintenance management actions 21

Table 4-5: Decommissioning phase management actions..... 24

Table 4-6: Compliance rating checklist..... 34

ABBREVIATIONS

AIDS	Acquired Immuno-Deficiency Syndrome
DR	Developer 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
PR	Proponent's Representative
NHCN	National Heritage Council of Namibia
Reg.	Regulation
S	Section
SPC	Stubenrauch Planning Consultants
TB	Tuberculosis

1 INTRODUCTION

Khorixas is located close to the Petrified Forest and the Twyfelfontein valley, known for its rock art in the Kunene region. Khorixas is the institutional centre for the southern part of the Kunene Region, providing social services for the mainly rural population such as health and education. As the gateway to the highest number of communal conservancies that practice community-based natural resource management as well as community-based tourism, Khorixas fulfils an important logistical function by providing the most essential services to the predominantly self-drive, all-terrain vehicle tourism market. The town also caters for the needs of the surrounding community of communal farmers.

As with many towns in Namibia growth of the urban areas is inevitable and as such urban infill of previously underutilised spaces and areas are often seen as the ideal manner of establishing new business as well as other institutional structures in the town. The Khorixas town Council is receptive of the concept of partnering with private investors to facilitate further development of the town.

It is against this background that Mr Lazarus Kunugab hereinafter referred to as the proponent purchased the subject erven from the Khorixas Town Council with the intention of constructing and operating a service station and shopping complex on the subject erven. The proponent intends to carry out the following activity:

- **Construction and operation of a Service Station on Erf 4254, Khorixas Extension 1 and a shopping complex and related activities on Erf 4255, Khorixas Extension 1, Khorixas, Kunene Region.**

The objective of the intended development is to address the need for certain amenities and businesses in the town of Khorixas. 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).

The Environmental Assessment (EA) in order to obtain an Environmental Clearance Certificate (ECC) for the above activity was conducted by Africa Planning Forum CC (APF) in 2018. Following the submission of the final Environmental Assessment Report, the ECC was granted as per letter dated 12 June 2018 (**Appendix C**). In accordance with the Environmental Management Act No 7 of 2007 and the Environmental Impact Assessment Regulations of 2012 the ECC is only valid for three years and as such the ECC has expired. Stubenrauch Planning Consultants (SPC) has been appointed to apply on their behalf to the Ministry of Environment, Forestry and Tourism (MEFT) for the renewal of the ECC. The EMP is herewith updated as part of the application to apply for the ECC renewal for the above proposed activities.

The above development triggers 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 EMP is one of the most important outputs of the EA process as it synthesises all of 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:

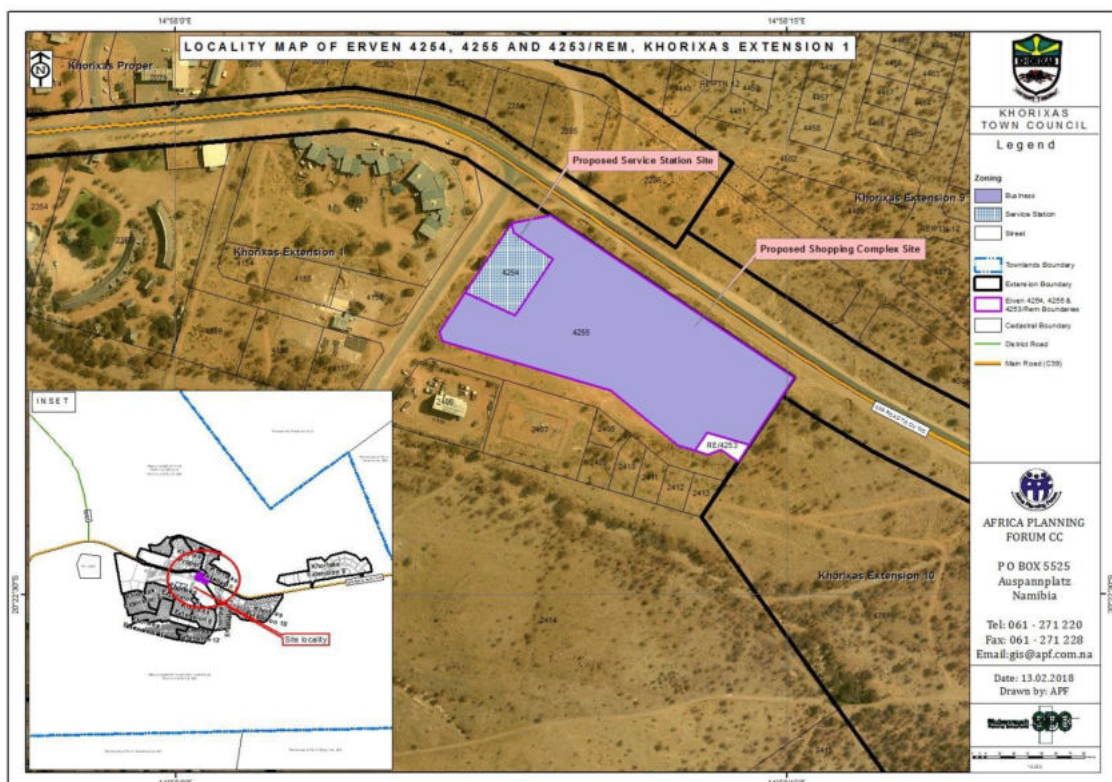
- Planning and Design – the period, prior to construction, during which preliminary legislative and administrative arrangements, necessary for the preparation of erven, are made and engineering designs are carried out. The preparation of construction tender documents forms part of this phase;
- Construction – 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 proposed development will be fully functional and maintained.

It should be noted that the service station has been constructed and is operating, although other substructures are yet to be constructed; therefore, the environmental impacts assessed, and mitigation measures have been updated. It should also be noted that, to date, no engineering designs of other substructures have been carried out for the development of the substructures' 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 4-5**.

2 THE PROPOSED DEVELOPMENT

The erven on which the subject service station (Erf 4254) and shopping complex (Erf 4255) are located are situated adjacent to each other in the neighbourhood of Khorixas Extension 1. Please refer to the below locality maps (Figures 1 and 2).



The proposed development entails the construction and operation of a service station on Erf 4254, Khorixas Extension 1 and a shopping complex on the adjacent Erf 4255, Khorixas Extension 1.

Erf 4254 is zoned for Service Station purposes and Erf 4255 is zoned for Business purposes. Thus, the erven are in line with the land use requirements in terms of the Khorixas Town Planning Scheme. The erven were created within the town to be utilised for these specific purposes. The subject environment has largely been disturbed by human activity and is thus not expected to have a significant impact on the environment as the area has been earmarked for urban development.

The proposed development is expected to provide much needed employment opportunities within the town and additionally attract investors for business opportunities within the town at the proposed shopping complex. The proposed development will also bring amenities to the residents in the town which are not currently available within the town.

The development is beneficial to the subject area as it introduces certain amenities that are not readily available within the town of Khorixas. It also cut on the distances that motorists have to travel to fuel up their vehicles and increase investment opportunities and economic growth within the town.

3 ROLES AND RESPONSIBILITIES

The proponent (Mr Lazarus Kunugab) 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:

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

3.1 DEVELOPER'S REPRESENTATIVE

The developer 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 Developer's representative (DR). The developer may decide to assign this role to one person for the full duration of these developments or may assign a different DR 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 DR's responsibilities are as follows:

Table 3-1 Responsibilities of DR

Responsibility	Project Phase
Making sure that the necessary approvals and permissions laid out in Table 4-1 are obtained/adhered to.	<ul style="list-style-type: none"> • Throughout the lifecycle of these developments
Making sure that the relevant provisions detailed in Table 4-2 are addressed during planning and design phase.	<ul style="list-style-type: none"> • Planning and design phase
Monitoring the implementation of the EMP monthly.	<ul style="list-style-type: none"> • Construction • Operation and maintenance
Suspending/evicting individuals and/or equipment not complying with the EMP	<ul style="list-style-type: none"> • Construction • Operation and maintenance
Issuing fines for contravening EMP provisions	<ul style="list-style-type: none"> • Construction • Operation and maintenance

3.2 ENVIRONMENTAL CONTROL OFFICER

The DR should assign the responsibility of overseeing the implementation of the whole EMP on the ground during the construction and operation and maintenance phases to a designated member of staff, referred to in this EMP as the Environmental Control Officer (ECO). The DR/Developer 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 Developer, DR, the contractors, and Interested and Affected Parties (I&APs) with regard to this EMP;
- Conducting site inspections (recommended minimum frequency is monthly) of all construction and/or infrastructure maintenance areas with respect to the implementation of this EMP (monitor and audit the implementation of the EMP);
- Monitor and audit (bi-annually) the implementation of the EMP;
- Assisting the Contractor in finding solutions with respect to matters pertaining to the implementation of this EMP;
- Advising the DR on the removal of person(s) and/or equipment not complying with the provisions of this EMP;
- Making recommendations to the DR with respect to the issuing of fines for contraventions of the EMP; and
- Undertaking an annual review of the EMP and recommending additions and/or changes to this document.

3.3 CONTRACTOR

Contractors appointed by the Developer 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 4-3** applies to contractors appointed during the construction phase and **Table 4-4** 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 4-2**);
- Construction phase management actions (**Table 4-3**);
- Operation and maintenance phase management actions (**Table 4-4**); and
- Decommissioning phase management actions (**Table 4-5**).
- 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 construction and operation of a service station and shopping complex in Khorixas as outlined in initial Environmental Scoping Report and based on the current situation on the subject site. 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 Khorixas townlands and that migrant labourers (if applicable) will be housed in established accommodation facilities within Khorixas.
- No engineering designs have been carried out for the development of the associated services infrastructure for the substructures (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 4-1: Legal provisions relevant to the proposed development below. The legal instrument, applicable corresponding provisions and project relevance details are provided.

Table 4-1: Legal provisions relevant to the 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.	The following listed activities are triggered by the proposed development: Activity 9.4 (Hazardous Substance Treatment, Handling and Storage) Activity 9.5 Construction of filling stations or any other facility for the underground and aboveground storage of dangerous goods, including petrol, diesel, liquid, petroleum, gas, or paraffin. Activity 10.1 (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.
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.

LEGISLATION/POLICIES	RELEVANT PROVISIONS	RELEVANCE TO PROJECT
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 must 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 No 5 of 2018	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 proposed development must adhere to the provisions regarding the subdivision and rezoning of land.
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.

LEGISLATION/POLICIES	RELEVANT PROVISIONS	RELEVANCE TO PROJECT
Roads Ordinance 17 of 1972	<ul style="list-style-type: none"> • 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 Health Act 36 of 1919 (SA GG 979).	Contractors and users of the proposed development are to comply with these legal requirements.
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	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	<p>Part 12 deals with the control and protection of groundwater</p> <p>Part 13 deals with water pollution control</p>	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

LEGISLATION/POLICIES	RELEVANT PROVISIONS	RELEVANCE TO PROJECT
		Ministry of Water, Agriculture and Land Reform.
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. 1 of 1923), Preservation of Trees and Forests Ordinance, 1952 (Ordinance No. 37 of 1952) and the Forest Act, 1968 (Act No. 72 of 1968); and to deal with incidental matters.	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 Department of Forestry.
Petroleum Products and Energy Act, 1990 (Act No. 13 of 1990)	The Act makes provision for impact assessment for new proposed fuel facilities and petroleum products known to have detrimental effects on the environment.	The proposed project involves the use and management of fuel facilities and petroleum products.
Pollution Control and Waste Management Bill	This Bill serves to regulate and prevent the discharge of pollutants to air and water as well as providing for general waste management. The Bill will repeal the Atmospheric Pollution Prevention Ordinance (11 of 1976) (below) when it comes into force.	The proposed development would not entail the discharge to air and or water, but might result in the generation of noise and dust during the construction phase. The potential risk of hazardous substance leakages does occur and should be managed accordingly.
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).

LEGISLATION/POLICIES	RELEVANT PROVISIONS	RELEVANCE TO PROJECT
<p>Hazardous Substance Ordinance 14 of 1974</p>	<p>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.</p>	<p>The handling, usage and storage of hazardous substances on site should be carefully controlled according to this Ordinance.</p>
<p>Soil Conservation Act No 76 of 1969</p>	<p>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</p>	<p>The proposed activity should ensure that soil erosion and soil pollution is avoided during construction and operation.</p>

4.3 PLANNING AND DESIGN PHASE

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

Table 4-2: Planning and design management actions

Aspect	Management Actions	Person responsible
Existing Service Infrastructure	<ul style="list-style-type: none"> • It is advised that the proponent engages the services of an engineering professional to design and construct the service connections to the development as far as water, sewer, electricity and roads are concerned. • It is recommended that alternative and renewable source 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 waste water should be considered wherever possible to reduce the consumption of potable water. • All servitudes are to be respected and not obstructed by the proposed development 	Proponent
Roads	<ul style="list-style-type: none"> • Make ample provision in road design for pedestrian walkways and speed bumps at crossings and busy nodes. • Ensure that road junctions have good sightlines. • Implement traffic control measures where necessary. 	Proponent
Certification/Guidelines	<ul style="list-style-type: none"> • Data center to comply with the below certification standards: <ul style="list-style-type: none"> ○ ISO 9001:2015 (Quality) ○ ISO 27001:2013 (Information Security) ○ ISO 14001:2015 (Environmental Management) ○ SANS 10089:1999. ○ SANS 100131-2 	Proponent, DR, ECO

4.4 CONSTRUCTION PHASE

The management actions listed in Table 4-4 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 4-3: Construction phase management actions

Environmental Feature	Management Actions	Person responsible
EMP training (Lack of EMP awareness and the implications thereof)	<p>All construction workers are to undergo EMP training that should include as a minimum the following:</p> <ul style="list-style-type: none"> • 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, ECO
Conservation of vegetation (Loss of biodiversity)	<ul style="list-style-type: none"> • The layout and development design should incorporate existing trees¹. • The Contractor should compile a Tree Management Plan which should include the following as a minimum: <ul style="list-style-type: none"> ○ 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 paint (or other means so as to be readily visible) and protected; ○ Trees, which are impossible to conserve, need to be identified and their location recorded on a map; ○ The Contractor should apply to the local authority for a permit to remove these trees. ○ Special protection should be accorded to the protected tree species, which are to be found within the development area. ○ A list should be compiled of all trees to be removed detailing the erf on which they are located, the species as well as which trees will be planted to replace these. The nursery where these trees will be sourced from should also be included; ○ Each tree that is removed needs to be replaced with an indigenous tree species after construction; ○ Some of these trees can be obtained at the nearest forestry office or at a commercial nursery. • Only a limited width +/- 5 m on the side of roads may be partially cleared of vegetation. 	Contractor

¹a “tree” is defined as an indigenous woody perennial plant with a trunk diameter ≥150 mm

Environmental Feature	Management Actions	Person responsible
	<ul style="list-style-type: none"> 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)	<p>Suitable locations for the contractors lay-down areas and materials camp should be identified with the assistance of the DR and the following should be considered in selecting these sites:</p> <ul style="list-style-type: none"> The areas designated for the services infrastructure should be used as far possible. Second option should be degraded land. Avoid sensitive areas (e.g. rivers/drainage lines). 	Contractor, DR
Hazardous waste (Contamination of surface and groundwater sources)	<ul style="list-style-type: none"> 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. Spilled cement and/or concrete (wet or dry) should be treated as hazardous waste and disposed of by the end of each day in the appropriate hazardous waste containers. All hazardous substances (e.g. fuel etc.) or chemicals should be stored in a specific location on an impermeable surface that is bunded - with a volume of 120 % of the largest single storage container or 25 % of the total storage containers, whichever is greater Refuel vehicles in designated areas that have a protective surface covering and utilise drip trays for stationary plant. 	Contractor
Water, Sewage and grey water (Contamination of surface and groundwater sources and water wasting)	<ul style="list-style-type: none"> Sewage should not be discharged directly onto open soil. All sewage must be removed regularly and disposed of at a recognised (municipal) sewage treatment facility. 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: 	Contractor, ECO

Environmental Feature	Management Actions	Person responsible
	<ul style="list-style-type: none"> ○ Used for dust suppression; ○ Used to water a vegetable garden, or to support a small nursery; ○ Used (reused) to clean equipment. ● Grey water that is not recycled should be removed along with sewage on a regular basis. ● It is recommended that construction takes place outside of the rainy season in order to limit flooding on site and surface and ground water pollution. ● 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 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. ● 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. 	
<p>General waste (Visual impact and soil contamination)</p>	<ul style="list-style-type: none"> ● The construction site should be kept tidy at all times. All domestic and general construction waste produced on a daily basis should be cleaned and contained daily. ● No waste may be buried or burned. 	<p>Contractor</p>

Environmental Feature	Management Actions	Person responsible
	<ul style="list-style-type: none"> • 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. • 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. • All waste should be disposed of at a municipal approved waste disposal site. 	
<p>Topsoil (Loss of topsoil and associated opportunity costs)</p>	<ul style="list-style-type: none"> • When excavations are carried out, topsoil² 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. 	<p>Contractor</p>
<p>Rehabilitation (Visual impact)</p>	<ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> ○ 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. ○ Rehabilitated excavated areas need to match the contours of the existing landscape. ○ 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. ○ Topsoil is to be spread across excavated areas evenly. ○ 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. 	<p>Contractor, DR</p>

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

Environmental Feature	Management Actions	Person responsible
	<ul style="list-style-type: none"> ○ Ripping should be done along slopes, not up and down a slope, which could lead to enhanced erosion. 	
HIV/AIDS and TB training (Lack of awareness regarding implications of risky behaviour)	The Contractor should approach the Ministry of Health and Social Services to co-opt a health officer to facilitate HIV/AIDS and TB education programmes periodically on site during the construction phase.	Contractor
Road safety (Injury or loss of life)	<ul style="list-style-type: none"> ● Demarcate roads 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)	<ul style="list-style-type: none"> ● 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, building material and topsoil stockpiles with danger tape. ● Provide additional warning signage in areas of movement and in “no personnel” areas where workers are not active. ● Borrow pits are to be fenced-off with steel wire fencing. ● Work areas must be set out and isolated with danger tape on a daily basis. ● All building materials and equipment are to be stored only within set out and demarcated work areas. ● Only construction personnel will be allowed within these work areas. ● Fire extinguishers should be available at diesel storage areas. ● Comply with all waste related management actions stated above in this table. ● A qualified traffic controller should be onsite always to direct the movement of other passenger vehicles as construction will be on-going. 	Contractor

Environmental Feature	Management Actions	Person responsible
Ablutions (Non-compliance with Health and Safety Regulations)	<ul style="list-style-type: none"> • Separate toilets should be available for men and women and should clearly be indicated as such. • Portable toilets (i.e. easily transportable) should be available at every construction site: <ul style="list-style-type: none"> ○ 1 toilet for every 15 females. ○ 1 toilet for every 30 males. ○ Sewage needs to be removed on a regular basis to an approved (municipal) sewage disposal site. Alternatively, sewage may be pumped into sealable containers and stored until it can be removed. ○ Workers responsible for cleaning the toilets should be provided with latex gloves and masks. 	Contractor
Open fires (Injury or loss of life)	No open fires may be made anywhere on site.	Contractor
General (Injury or loss of life health and safety)	<ul style="list-style-type: none"> • 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 and be encouraged to wear the relevant personal protective equipment. • 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 or any intoxicating substance. • Building rubble and domestic waste should be stored in skips. • Condoms should be accessible/ available to all construction workers. • Access to Antiretroviral medication should be facilitated. 	Contractor
Dust (Nuisance and health impacts)	<ul style="list-style-type: none"> • A watering truck should be used on gravel roads with the most heavy vehicle movement especially during dry and windy conditions. However, due consideration should be given to water restrictions during times of drought. 	Contractor

Environmental Feature	Management Actions	Person responsible
	<ul style="list-style-type: none"> • 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. 	
Noise (Nuisance impacts)	<p>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.</p>	Contractor
Recruitment of labourers (Negative conflict regarding recruitment)	<p>The Contractor should compile a formal recruitment process including the following provisions as a minimum:</p> <ul style="list-style-type: none"> • 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 and individual labourers to those who are qualified and from the project area and only then look to surrounding towns. • Clearly explain to all job-seekers the terms and conditions of their respective employment contracts (e.g. period of employment etc.) – make use of interpreters where necessary. 	Contractor
Communication plan (Negative conflict with I&APs)	<p>The Contractor or proponent should draft a Communication Plan, which should outline as a minimum the following:</p> <ul style="list-style-type: none"> • 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. 	Contractor, Proponent, DR

Environmental Feature	Management Actions	Person responsible
	<ul style="list-style-type: none"> • 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. 	
<p>General communication (Negative conflict with I&APs)</p>	<ul style="list-style-type: none"> • The DR 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. This list, together with the Communication Plan must be agreed upon and given to the DR before construction commences. • The Communication Plan, once agreed upon by the Developer, shall be legally binding. • All communication with 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 DR prior to the commencement of construction activities. 	<p>DR, Contractor, ECO</p>

Environmental Feature	Management Actions	Person responsible
<p>Archaeology (Loss of heritage resources)</p>	<ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> ○ If operating machinery or equipment, stop work; ○ Demarcate the site with danger tape; ○ Determine GPS position if possible; ○ 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: <ul style="list-style-type: none"> ○ 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. 	<p>Contractor, DR</p>

4.5 OPERATION AND MAINTENANCE PHASE

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

Table 4-4: Operation and maintenance management actions

Environmental Feature	Management Actions	Person responsible
EMP training (Lack of EMP awareness and the implications thereof)	All contractors appointed for maintenance work on the data center must ensure that all personnel are aware of necessary health, safety and environmental considerations applicable to their respective work.	Contractor
Monitoring (EMP non-compliance)	The ECO should monitor the implementation of the EMP: <ul style="list-style-type: none"> • The ECO should inspect the site before construction starts; and • The ECO should inspect the site at the end of the construction period. 	ECO
Water (Surface and groundwater contamination)	<ul style="list-style-type: none"> • Ensure that all properties are connected to a professionally designed and constructed water and wastewater infrastructure. • A no-go buffer area of at least 15 m should be allocated to any water bodies in the area. • No dumping of waste products of any kind in or in close proximity to any surface water bodies. • Contaminated runoff from the various operational activities should be prevented from entering any surface or ground water bodies. • Ensure that surface 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. • Disposal of waste from the various activities should be properly managed. 	ECO
Aesthetics (Visual impacts)	The proponent should consult with a view to incorporate the relevant local/national/international development guidelines which addresses the following: <ul style="list-style-type: none"> • The use of 'green' technologies within the architectural designs and building materials of the development. • The incorporation of indigenous vegetation, natural colours and building materials such as wood and stone into property development. 	Proponent

Environmental Feature	Management Actions	Person responsible
Energy efficiency (Waste of scarce resources)	<p>The proponent should consult, with the view to incorporate the relevant local/national/international development guidelines which addresses the following:</p> <ul style="list-style-type: none"> • The use of solar geysers and solar panels for the general lighting and heating of water for buildings. • Use of designs and building materials, which reduce dependency on artificial heating and cooling. • The incorporation of water saving initiatives within the development’s design and plans in order to reduce water demands. 	Proponent
Noise (Noise nuisance impact)	<p>The proponent should consult with the view to incorporate the relevant local/national/international guidelines to manage the generation of noise in the development area.</p>	Proponent
Waste management	<ul style="list-style-type: none"> • Sufficient waste storage containers are available on site. • Waste should be removed from new properties on a regular basis by an authorised waste management company. • All waste should be disposed of at a municipal approved waste disposal site as designated by the KTC. • Hazardous waste is separated from non-hazardous waste. • Hazardous waste should be disposed of at a registered hazardous waste disposal site. • Recycling of packaging and electronic waste should be considered and encouraged. 	Proponent, DR
Hazardous Substances	<ul style="list-style-type: none"> • Storage of the hazardous substances in a bunded area, with a volume of 120 % of the largest single storage container or 25 % of the total storage containers whichever is greater. • Refuel vehicles in designated areas that have a protective surface covering and utilise drip trays for stationary plant. • All fuel storage and handling facilities in Namibia must also comply with strict safety distances as prescribed by SANS 10089. SANS 10089 is adopted by the Ministry of Mines and Energy as the national standard. • All staff be trained with regards to the proper handling of these substances as well as First Aid in the case of spillage or intoxication. • Storage areas for all substances should be bunded and capable to hold 120% of the total volume of a given substance stored on site 	

Environmental Feature	Management Actions	Person responsible
	<ul style="list-style-type: none"> • Underground fuel tankers should be stored in proper containers and include appropriate risk control measures in the case of leakages or pollution. • Underground tankers should be properly lined. • Consider secondary lining suppression in order to minimise the risk of contamination of underground water sources. • Specific safety features and protocols should be implemented in the case of a fire or explosion. • Proper licensed and updated fire-fighting equipment should be installed and easily implemented. • It must further be assured that sufficient water and sand is available for fire-fighting purposes. • Regular inspections should be carried out to inspect and test fire-fighting equipment and pollution control materials at the service station. • The following plans should be onsite and well known to staff and easily directed to the general public in case of an emergency. These include but are not limited to: <ul style="list-style-type: none"> ○ Health and Safety Plan ○ Risk Management Plan ○ Fire and Explosions Management Plan (protection and prevention) 	
Fire and Explosion Risk Management	<ul style="list-style-type: none"> • The developer is to follow the guidelines for Managing the Risks of Fire and Explosion 	Proponent, DR
Emissions	<ul style="list-style-type: none"> • Manage and continuously monitor activities that generate emissions. • Use vapour recovery equipment and techniques to avoid air pollution and minimise fuel loss. • Train fuel area staff in vapour recovery procedures • The development is to be controlled and managed as required by the Public health Act (Act no 36 of 1919) and the Atmospheric Prevention Ordinance (No 11 of 1976). 	Proponent
Occupational Health and Safety	<ul style="list-style-type: none"> • 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 and be encouraged to wear the relevant personal protective equipment. 	Proponent, DR

Environmental Feature	Management Actions	Person responsible
	<ul style="list-style-type: none"> • A member of staff should be trained in fire fighting. • Specific consideration should be given with regards to health and safety in the following areas: <ul style="list-style-type: none"> ○ Ensuring electrical safety ○ Safety when working at heights ○ Fire and explosion ○ Lifting and handling procedures 	

4.6 DECOMMISSIONING PHASE

The decommissioning of these developments is not foreseen. In the event that these developments are decommissioned the following management actions should apply.

Table 4-5: Decommissioning phase management actions

Environmental Feature	Management Actions
Deconstruction activity	Many of the mitigation measures prescribed for construction activity for these developments (Table 4-3 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 4-3 above.

Appendix A – Water Quality Guidelines

THE WATER ACT, 1956 (ACT 54 OF 1956) AND ITS REQUIREMENTS IN TERMS OF WATER SUPPLIES FOR DRINKING WATER AND FOR WASTE WATER TREATMENT AND DISCHARGE INTO THE ENVIRONMENT

1. INTRODUCTION

The provisions of the Water Act are intended, amongst other things, to promote the maximum beneficial use of the country's water supplies and to safeguard water supplies from avoidable pollution.

The drinking water guidelines are not standards as no publication in the Government Gazette of Namibia exists to that effect. However the Cabinet of the Transitional Government for National Unity adopted the existing South African Guidelines (461/85) and the guidelines took effect from 1 April 1988 under the signature of the then Secretary for Water Affairs.

The sections of the Water Act that relate to the discharge of industrial effluents are: - Section 21(1) which states that

- The purification of waste water shall form an integral part of water usage and
- that purified effluents shall comply with the General Standard Quality restrictions as laid out in Government Gazette R553 of 5 April 1962 and
- Section 21(2) which further stipulate that this purified effluent be returned as close as possible to the point of abstraction of the original water.

Where a local authority has undertaken the duty of disposing of all effluents from an industrial process the provisions of Section 21(1) and 21(2) apply to the local authority and not the producer of the effluents. If there is difficulty in complying with these provisions then the applicant may apply for an exemption from the conditions in terms of Section 21(5) and 22(2) of the Water Act. The Permanent Secretary after consultation with the Minister may grant the issuance of a Waste Water Discharge Permit under Sections 21(5) and 22(2) subject to such conditions as he may deem fit to impose.

After independence, the Government of the Republic of Namibia decided that for the interim the existing guidelines will continue to be valid and to remain in use until a proper study has been conducted and new standards have been formulated (Article 140 of Act 1 of 1990).

2. GUIDELINES FOR THE EVALUATION OF DRINKING-WATER QUALITY FOR HUMAN CONSUMPTION WITH REGARD TO CHEMICAL, PHYSICAL AND BACTERIOLOGICAL QUALITY

Water supplied for human consumption must comply with the officially approved guidelines for drinking-water quality. For practical reasons the approved guidelines have been divided into three basic groups of determinants, namely:

- Determinants with aesthetic / physical implications: TABLE 1.
- Inorganic determinants: TABLE 2.
- Bacteriological determinants: TABLE 3.

2.1 CLASSIFICATION OF WATER QUALITY

The concentration of and limits for the aesthetic, physical and inorganic determinants define the group into which water will be classified. See TABLES 1 and 2 for these limits. The water quality has been grouped into 4 quality classes:

- Group A: Water with an excellent quality
- Group B: Water with acceptable quality
- Group C: Water with low health risk
- Group D: Water with a high health risk, or water unsuitable for human consumption.

Water should ideally be of excellent quality (Group A) or acceptable quality (Group B), however in practice many of the determinants may fall outside the limits for these groups.

If water is classified as having a low health risk (Group C), attention should be given to this problem, although the situation is often not critical as yet.

If water is classified as having a higher health risk (Group D), urgent and immediate attention should be given to this matter.

Since the limits are defined on the basis of average lifelong consumption, short-term exposure to determinants exceeding their limits is not necessarily critical, but in the case of toxic substances, such as cyanide, remedial measures should immediately be taken.

The overall quality group, into which water is classified, is determined by the determinant that complies the least with the guidelines for the quality of drinking water.

TABLE 1: DETERMINANTS WITH AESTHETIC / PHYSICAL IMPLICATIONS

DETERMINANTS	UNITS*	LIMITS FOR GROUPS			
		A	B	C	D**
Colour	mg/l Pt***	20			
Conductivity	mS/m !at 25 °C	150	300	400	400
Total hardness	mg/l CaCO ₃	300	650	1300	1300
Turbidity	N.T.U****	1	5	10	10
Chloride	mg/l Cl	250	600	1200	1200
Chlorine (free)	mg/l Cl	0,1- 5,0	0,1 – 5,0	0,1 – 5,0	5,0
Fluoride	mg/l F	1,5	2,0	3,0	3,0
Sulphate	mg/l SO ₄	200	600	1200	1200
Copper	µg/l Cu	500	1000	2000	2000
Nitrate	mg/l N	10	20	40	40
Hydrogen Sulphide	µg/l H ₂ S	100	300	600	600
Iron	µg/l Fe	100	1000	2000	2000
Manganese	µg/l Mn	50	1000	2000	2000
Zink	mg/l Zn	1	5	10	10
pH****	pH-unit	6,0 – 9,0	5,5 – 9,5	4,0 – 11,0	4,0 – 11,0

* In this and all following tables “l” (lower case L in ARIAL) is used to denote dm³ or litre
 ** All values greater than the figure indicated.
 *** Pt = Platinum Units
 **** Nephelometric Turbidity Units
 ***** The pH limits of each group exclude the limits of the previous group

TABLE 2: INORGANIC DETERMINANTS

DETERMINANTS	UNITS	LIMITS FOR GROUPS			
		A	B	C	D*
Aluminium	µg/l Al	150	500	1000	1000
Ammonia	mg/l N	1	2	4	4
Antimonia	µg/l Sb	50	100	200	200
Arsenic	µg/l As	100	300	600	600
Barium	µg/l Ba	500	1000	2000	2000
Beryllium	µg/l Be	2	5	10	10
Bismuth	µg/l Bi	250	500	1000	1000
Boron	µg/l B	500	2000	4000	4000
Bromine	µg/l Br	1000	3000	6000	6000
Cadmium	µg/l Cd	10	20	40	40
Calcium	mg/l Ca	150	200	400	400
Calcium	mg/l CaCO ₃	375	500	1000	1000
Cerium	µg/l Ce	1000	2000	4000	4000
Chromium	µg/l Cr	100	200	400	400
Cobalt	µg/l Co	250	500	1000	1000
Cyanide (free)	µg/l CN	200	300	600	600
Gold	µg/l Au	2	5	10	10
Iodine	µg/l I	500	1000	2000	2000
Lead	µg/l Pb	50	100	200	200
Lithium	µg/l Li	2500	5000	10000	10000
Magnesium	mg/l Mg	70	100	200	200
Magnesium	mg/l CaCO ₃	290	420	840	840
Mercury	µg/l Hg	5	10	20	20
Molybdenum	µg/l Mo	50	100	200	200
Nickel	µg/l Ni	250	500	1000	1000
Phosphate	mg/l P	1	See below note	See note below	See note below
Potassium	mg/l K	200	400	800	800
Selenium	µg/l Se	20	50	100	100
Silver	µg/l Ag	20	50	100	100
Sodium	mg/l Na	100	400	800	800
Tellurium	µg/l Te	2	5	10	10
Thallium	µg/l Tl	5	10	20	20
Tin	µg/l Sn	100	200	400	400
Titanium	µg/l Ti	100	500	1000	1000
Tungsten	µg/l W	100	500	1000	1000
Uranium	µg/l U	1000	4000	8000	8000
Vanadium	µg/l V	250	500	1000	1000

* All values greater than the figure indicated.

Note FOR Table 2 on phosphate: Phosphates are not toxic and essential for all life-forms. Natural water will, however, seldom contain phosphate; it is generally seen as an indicator of pollution and is usually accompanied by other pollutants. Wherever drinking water is combined with or consists wholly of reclaimed or recycled water, it may be expected to contain phosphate. The general guideline for a concentration level to be aimed at is 1 mg/l as P. But in many cases this may be difficult to achieve technically. For this reason the Department will allow a phosphate concentration level of up to 5 mg/l as P in water intended for human consumption. Please refer also to the "Note on Phosphate" under Section 3: General Standards for Waste/Effluent.

2.2 BACTERIOLOGICAL DETERMINANTS

The bacteriological quality of drinking water is also divided into four groups, namely:

- Group A: Water which is bacteriological very safe;
- Group B: Water which is bacteriological still suitable for human consumption;
- Group C: Water which is bacteriological risk for human consumption, which requires immediate action for rectification;
- Group D: Water, which is bacteriological unsuitable for human consumption.

TABLE 3: BACTERIOLOGICAL DETERMINANTS

DETERMINANTS	LIMITS FOR GROUPS			
	A**	B**	C	D*
Standard plate counts per 1 ml	100	1000	10000	10000
Total coliform counts per 100 ml	0	10	100	100
Faecal coliform counts per 100 ml	0	5	50	50
E. coli counts per 100 ml	0	0	10	10

* All values greater than the figure indicated.

** In 95% of the samples.

NB If the guidelines in group A are exceeded, a follow-up sample should be analysed as soon as possible.

2.3 FREQUENCY FOR BACTERIOLOGICAL ANALYSIS OF DRINKING-WATER SUPPLIES

The recommended frequency for bacteriological analysis of drinking water is given in Table 4.

TABLE 4: FREQUENCY FOR BACTERIOLOGICAL ANALYSIS

POPULATION SERVED	MINIMUM FREQUENCY OF SAMPLING
More than 100 000	Twice a week
50 000 – 100 000	Once a week
10 000 – 50 000	Once a month
Minimum analysis	Once every three months

3 GENERAL STANDARDS FOR WASTE / EFFLUENT WATER DISCHARGE INTO THE ENVIRONMENT

All applications in terms of Section 21(5) and 22(2), for compliance with the requirements of Section 21(1) and 21(2) of the Water Act (Act 54 of 1956) that purified water shall comply with the General Standard as laid out in Government Gazette Regulation R553 of 5 April 1962.

TABLE 5 GENERAL STANDARDS FOR ARTICLE 21 PERMITS (EFFLUENTS)

DETERMINANTS	MAXIMUM ALLOWABLE LEVELS
Arsenic	0,5 mg/l as As
Biological Oxygen Demand (BOD)	no value given
Boron	1,0 mg/l as B
Chemical Oxygen Demand (COD)	75 mg / l as O
Chlorine, residual	0,1 mg/l as Cl ₂
Chromium, hexavalent	50 Ng/l as Cr(VI)
Chromium, total	500 Ng/l as Cr
Copper	1,0 mg/l as Cu
Cyanide	500 Ng/l as CN
Oxygen, Dissolved (DO)	at least 75% saturation**
Detergents, Surfactants, Tensides	0,5 mg/l as MBAS – See also Note 2
Fats, Oil & Grease (FOG)	2,5 mg/l (!gravimetric method)
Fluoride	1,0 mg/l as F
Free & Saline Ammonia	10 mg/l as N
Lead	1,0 mg/l as Pb
Oxygen, Absorbed (OA)	10 mg / l as O*
pH	5,5 – 9,5
Phenolic Compounds	100 Ng/l as phenol
Phosphate	1,0 mg/l as P - See also Note 1
Sodium	not more than 90 mg/l Na more than influent
Sulphide	1,0 mg/l as S
Temperature	35°C
Total Dissolved Solids (TDS)	not more than 500 mg / l more than influent
Total Suspended Solids (TSS)	25 mg/l
Typical faecal Coli.	no typical coli should be counted per 100 ml
Zinc	5,0 mg/l as Zn

* Also known as Permanqanate Value (or PV).

** In Windhoek the saturation level is at approx. 9 mg/l O₂.

Note (1) on phosphate: Phosphates are not toxic and essential for all life forms. Natural water will seldom contain phosphate; it is generally seen as an indicator of pollution and is usually accompanied by other pollutants. Wherever drinking water is combined with or consists wholly of reclaimed or recycled water, it may be expected to contain phosphate. There is no general guideline for phosphate contained in the Regulation 553. But generally it is assumed that eutrophication or algal bloom in dams is promoted by nutrient concentrations as low as 0,01 mg/l as P; generally a phosphate concentration limit for dams of 0,1 mg/l is recommended. All water that is consumed and subsequently discharged, will eventually end up in rivers, dams or groundwater – that is why for potable water, a concentration level of 1 mg/l as P is aimed at. But, again, in many cases of waste and effluent treatment, this may be difficult to achieve technically, or the required waste and effluent treatment infrastructure is not available; as the required infrastructure is sophisticated and expensive. The current situation calls for a compromise and for this reason, this Department will judge each application individually on its merits and allow, in certain cases, a phosphate concentration level of up to 15 mg/l as P

in any effluent or waste stream to be discharged into the environment. This regulation is subject to be reviewed every two years, calculated from the date of approval of this document.

Note (2) on detergents, surfactants and ten sides: The MBAS (or methylene blue active substances) – test does not encompass all surface active compounds currently, commercially available. The limit given is therefore only a guideline. Many of the cleaning agents are toxic to biological life-forms in rivers and dams.

It should be taken into consideration that some commercial products interfere with the effective removal of oil, fat and grease by grease and fat traps, by breaking up such long-chain molecules into shorter ones. These cleaning agents thus effectively allow such components to pass through the traps and land into sections of a treatment plant further down the line and interfere with the process there.

Many cleaning agents contain very powerful disinfectants, and/or biocides. Such substances may interact with biological treatment processes. They may reduce the effectiveness of such treatment or 'kill' it completely, if they land in septic tanks, biofilters or even activate-sludge plants. Their activity may be attenuated by dilution.

4. AUTHORIZATION

Herewith, the Guidelines for the Evaluation of Drinking Water for Human Consumption with regard to Chemical, Physical and Bacteriological Quality, as well as the General Standards for Article 21* Permits, amended for detergents, surfactants, ten sides, as well as phosphates, are confirmed and remain in force until further notice.

Issued under my hand with the authority vested in my office, within the Ministry for Agriculture, Water and Rural Development,

PERMANENT SECRETARY
Dr V Shivute

WINDHOEK,

DATE STAMP

Appendix B: EMP Compliance checklist

CONSTRUCTION PHASE

Issues/Aspects	EMP Conditions	Compliance Rating	Comments
General	<ul style="list-style-type: none"> • A copy of the EMP available on site at all times • Contractors provided with suitable lay-down and materials camp areas • Construction site to be kept tidy at all times • Ablution facilities provided to construction workers (30 m from any surface or groundwater) separate for men (1 toilet for every 30 men) and women (1 toilet for every 15 females) • Recruitment to be done in accordance with Labour Act 		
Vegetation Management	<ul style="list-style-type: none"> • Compilation of Tree Management Plan • Removal of trees should be limited and not to include protected species • Approval to be obtained from the Directorate of Forestry for removal of trees • Clearing of vegetation to be limited to the subject site only 		
Waste Management	<ul style="list-style-type: none"> • Waste from construction vehicles – construction vehicles provided with drip trays, regular inspection and maintenance of vehicles • Waste containers/bins regularly removed from site • Waste regularly taken to nearest landfill • Separate bins for hazardous and domestic/general waste 		

Issues/Aspects	EMP Conditions	Compliance Rating	Comments
Water Management	<ul style="list-style-type: none"> • Recycling of grey water 		
Borrow pit Management	<ul style="list-style-type: none"> • During excavations – topsoil stockpiled in demarcated area • Topsoil used to rehabilitate post-construction degraded areas 		
General Health and Safety	<ul style="list-style-type: none"> • HIV/AIDS and TB education programmes provided to contract workers • Road safety ensured – driving on demarcated roads only, all vehicles on site roadworthy, drivers to have valid driver’s licence, loads upon vehicles properly secured • Excavated areas- demarcated, not left open for long periods 		
Dust	<ul style="list-style-type: none"> • Dust suppression means utilised • Stockpiles covered with plastic • Dust protection masks provided to workers (if complain about dust) 		
Noise	<ul style="list-style-type: none"> • Work hours 08h00 to 17h00 		
Communication	<ul style="list-style-type: none"> • Communication Plan drafted 		
Archaeology	<ul style="list-style-type: none"> • Should a heritage site or archaeological site be uncovered or discovered during the construction phase of the project, a “chance find” procedure to be applied 		

Table 4-6: Compliance rating checklist

Rating (1-5)	Compliance Rating	Description
1	No compliance	0% conditions met
2	Partial compliance	25% conditions met
3	Broad compliance	50% conditions met
4	Substantial compliance	70% conditions met
5	Full compliance	100% All activities conditions met

.....
Environmental Control Officer (ECO)

.....
Date

.....
Contractor

.....
Date

.....
Developer’s Representative (DR)

.....
Date

Appendix C: Environmental Clearance Certificate



REPUBLIC OF NAMIBIA

MINISTRY OF ENVIRONMENT AND TOURISM

Tel: (00 26461) 284 2111
Fax: (00 26461) 232 057

E-mail: johannes.hambia@met.gov.na

Enquiries: Mr. J. Hambia

Cnr Robert Mugabe &
Dr Kenneth Kaunda Street
Private Bag 13306
Windhoek
Namibia

12 June 2018

OFFICE OF THE ENVIRONMENTAL COMMISSIONER

The Managing Director
Laz Construction Cc
P O Box 35368
Kleine Kuppe
Windhoek
Namibia

Dear Sir /Madam

SUBJECT: ENVIRONMENTAL CLEARANCE CERTIFICATE FOR THE CONSTRUCTION AND OPERATION OF THE SERVICE STATION AND A SHOPPING COMPLEX IN KHORIXAS, KUNENE REGION

The Environmental Assessment report and the Environmental Management Plan submitted are sufficient as these make provisions of the environmental management concerning the project's activities. From this perspective regular environmental monitoring and evaluations on environmental performance should be conducted. Targets for improvements should be established and monitored throughout this process.

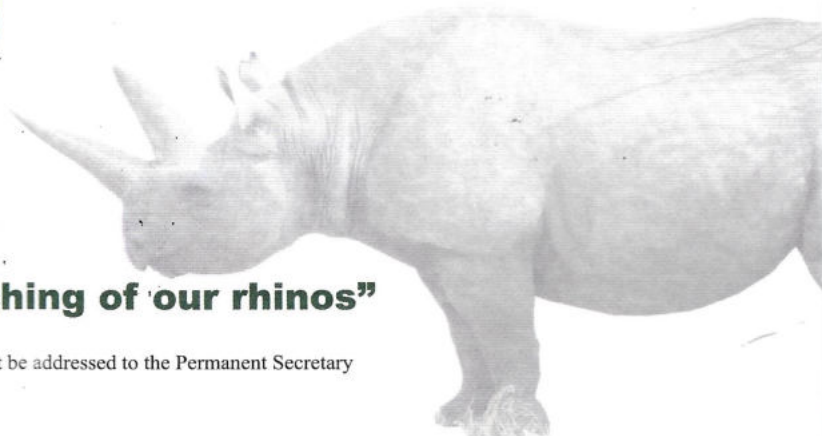
This Ministry reserves the right to attach further legislative and regulatory conditions during the operational phase of the project.

On the basis of the above, this letter serves as an environmental clearance for the project to commence. However, this clearance letter does not in any way hold the Ministry of Environment and Tourism accountable for misleading information, nor any adverse effects that may arise from this project's activities. Instead, full accountability rests with Laz Construction Cc and its consultants.

This environmental clearance is valid for a period of 3 (three) years, from the date of issue unless withdrawn by this office.

Yours sincerely,


Teofilus Nghitila
ENVIRONMENTAL COMMISSIONER



“Stop the poaching of our rhinos”

All official correspondence must be addressed to the Permanent Secretary

Form 2

APP- 003533

REPUBLIC OF NAMIBIA
ENVIRONMENTAL MANAGEMENT ACT, 2007

(Section 39)

APPLICATION FOR AMENDMENT OF CONDITIONS OF ENVIRONMENTAL
CLEARANCE CERTIFICATE

Revenue
stamp or
revenue
franking
machine
impression

A. PARTICULARS OF APPLICANT

Name of Applicant: Laz Construction CC

Address: P.O. Box 35368, Kleine Kuppe, Windhoek

Telephone Number: +264 (61) 284 7047

Cell phone Number: N/A

Fax Number: N/A

E-mail Address: laz@iway.na

Name of Contact Person: Bronwynn Basson

Telephone Number: +264 (61) 25 11 89

Cell phone Number: +264 81 303 4747

Fax Number: +264 (61) 25 21 57

E-mail Address: bronwynn@spc.com.na

B. PARTICULARS OF CURRENT ENVIRONMENTAL CLEARANCE CERTIFICATE

- 1. Name of current holder of Environmental Clearance Certificate:** Laz
Construction CC
- 2. Date of Issue of current Environmental Clearance Certificate:** 12 June 2018

PART C PROPOSED AMENDMENTS TO THE CONDITIONS IN CURRENT

1. **Condition(s) on the Current Environmental Clearance Certificate:** The current environmental clearance certificate includes the following activities:

- Construction and operation of a Service Station on Erf 4254, Khorixas Extension 1 and a shopping complex and related activities on Erf 4255, Khorixas Extension 1, Khorixas, Kunene Region.

2. **Proposed Amendment(s):**

It is proposed that the following activities be included in the ECC:

- **Rezoning of Erf 4254, Extension 1, Khorixas from “Service Station” to “Business”;**
- **Consolidation of Erf 4254 and Erf 4253, Extension 1, Khorixas into Consolidated Erf X**
- **Subdivision of Consolidated Erf X into two Portions and the Remainder namely: Portion A and B and the Remainder;**
- **Rezoning of Portion B from “Business” to “Service Station”;**
- **Registration of an Inlet Servitude over Portion V in favour of the Local Authority;**
- **Registration of a 100M Eide Right of Way Servitude over Portion A in favour of Portion B and the Remainder of Portion X**
- **Registration of a 6M Wide Right of Way Servitude over Portion V in favour of Portion A and the Remainder of Portion X**
- **Registration of a 6M Wide Right of Way Servitude over Portion A in favour of Portions B and the Remainder of Portion X**

3. **Reason for Amendment(s):**

The Proponent, as the owner of both Erf 4253 and Erf 4254, Extension 1, Khorixas intends to rezone Erf 4254 from “Service Station” to “business” so that it assumes the same land uses as Erf 4253 for the purposes of a consolidation of Portion X. Following the consolidation, Portion X will then be subdivided into two portions Portion A and Portion B, the Remainder, as a means to remedy an encroachment issue, as the Service Station currently encroaches onto Erf 4253. The intention is then to rezone Portion B back to its original land use, which is “Service Station.” Thereafter, the proponent then intends to build a hardware store on Portion A, with a potential restaurant planned for the northernmost portion of the property and a yard serving the hardware store on the southwest corner. The proposed land uses are compatible with the current land uses and comply with the current zoning. Furthermore, the above-mentioned proposed right-of-way servitudes are required due to the interdependency of the land uses. This would allow trucks that use the servitudes registered over Portions A and B as points of entry and exit to the hardware store to have more room to maneuver. In addition to the registration of right-of-way servitudes over Portion A and B, an inlet servitude accommodates the flow of the stream over Portion B. The entire plan of the proponent is aimed at enabling and easing the possibility of trading off the other portions in the future.

4. Describe the environmental changes arising from the proposed amendment(s):

The Service Station has been constructed and is operating, although other substructures are yet to be constructed; therefore, the environmental impacts assessed, and mitigation measures have been updated.

5. Describe how the environment and the community might be affected by the proposed amendment(s):

The community was consulted during the scoping assessment conducted for which the ECC was granted in June 2018 for the proposed development.

6. Describe how and to what extent the environmental performance requirements set out in the assessment report previously approved or activity profile previously submitted for this activity may be affected:

An updated Environmental Management Plan is attached to this submission and authorisation is to be granted on condition of the implementation of the EMP to ensure that regular environmental monitoring and compliance is ensured.

7. Describe any additional measures proposed to eliminate, reduce, or control any adverse environmental effect arising from the proposed amendment(s): These are outlined within the attached EMP.

PART D DECLARATION BY APPLICANT

I hereby certify that the particulars given above are correct and true to the best of my knowledge and belief. I understand the environmental clearance certificate may be suspended, amended, or cancelled if any information given above is false, misleading, wrong, or incomplete.



Signature of Applicant

Elina SP Vakuwile

Full name in Block Letters

Environmental Consultant

Position

on behalf of Laz Construction CC

03/05/2024

Date

ANNEXURE 2
FEES

1. The fees set out in this Annexure are payable in terms of the Act.
2. Payments must be made as prescribed in regulation 29.

FEES

Item	Fee payable for	Fees Payable N\$
1	Issue of environmental clearance certificate	300
2	Application for amendment of environmental clearance certificate	300
3	Application for transfer of environmental clearance certificate	1000
4	Appeal application	1000

Environmental Management Plan for

*Construction and Operation of a
Service Station, a Shopping
Complex, and related activities,
Khorixas, Kunene Region.*

May 2024



APP-003533

Prepared for: Laz Construction CC
P.O. Box 35368, Kleine Kuppe, Windhoek
Contact Number: +264 (61) 284 7047
Contact Person: Mr L Kunugab
Email: laz@iway.na

Prepared by: Stubenrauch Planning
Consultants
P.O. Box 41404, Windhoek
Contact Person: Bronwynn Basson
Contact Number: +264 (61) 25 11 89
Fax Number: +264 (61) 25 11 89
Email: bronwynn@spc.com.na



PROJECT STATUS

Title	Environmental Management Plan for the Amendment of the construction and operation of a service station and related activities, Khorixas, Kunene Region.		
Report Status	Final		
SPC Reference	APF18002		
Proponent	Laz Construction CC P.O. Box 35368, Kleine Kuppe, Windhoek Contact Person: Mr L Kunugab Contact Number: +264 (61) 284 7047 Email: laz@iway.na		
Environmental Assessment Practitioner	Stubenrauch Planning Consultants P.O. Box 41404, Windhoek Contact Person: Bronwynn Basson Contact Number: +264 (61) 25 11 89 Fax Number: +264 (61) 25 21 57 Email: bronwynn@spc.com.na		
Report date	April 2024		
	Name	Signature	Date
Author	Elina SP Vakuwile		April 2024

LEGAL NOTICE

This report or any portion thereof and any associated documentation remain the property of SPC until the mandator effects payment of all fees and disbursements due to SPC in terms of the SPC Conditions of Contract and Project Acceptance Form. Notwithstanding the aforesaid, any reproduction, duplication, copying, adaptation, editing, change, disclosure, publication, distribution, incorporation, modification, lending, transfer, sending, delivering, serving or broadcasting must be authorised in writing by SPC.

CONTENTS PAGE

ABBREVIATIONS.....	III
1 INTRODUCTION	1
2 THE PROPOSED DEVELOPMENT	2
3 ROLES AND RESPONSIBILITIES	8
3.1 DEVELOPER'S REPRESENTATIVE.....	9
3.2 ENVIRONMENTAL CONTROL OFFICER.....	9
3.3 CONTRACTOR	10
4 MANAGEMENT ACTIONS	10
4.1 ASSUMPTIONS AND LIMITATIONS	11
4.2 APPLICABLE LEGISLATION	11
4.3 PLANNING AND DESIGN PHASE	16
4.4 CONSTRUCTION PHASE.....	16
4.5 OPERATION AND MAINTENANCE PHASE	26
4.6 DECOMMISSIONING PHASE.....	29

LIST OF TABLES

Table 3-1 Responsibilities of DR.....	9
Table 4-1: Legal provisions relevant to the proposed development.....	11
Table 4-2: Planning and design management actions.....	16
Table 4-3: Construction phase management actions.....	17
Table 4-4: Operation and maintenance management actions.....	26
Table 4-5: Decommissioning phase management actions	29
Table 4-6: Compliance rating checklist	39

LIST OF FIGURES

Figure 2-1: Locality Map.....	2
Figure 2-2: Locality Plan	3
Figure 2-3: Aerial map of Erf 4254 and 4253 Extension 1, Khorixas, and their immediate surroundings.	4
Figure 2-4: Consolidation Plan of consolidated Erf 4253 and 4254, Ext 1, Khorixas into Portion X.	6
Figure 2-5: Subdivision Plan of Consolidated Portion X.....	7
Figure 2-6: Zoning Plan of Subdivided Portion A,B and Remainder	8

ABBREVIATIONS

AIDS	Acquired Immuno-Deficiency Syndrome
DR	Developer 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
PR	Proponent's Representative
NHCN	National Heritage Council of Namibia
Reg.	Regulation
S	Section
SPC	Stubenrauch Planning Consultants
TB	Tuberculosis

1 INTRODUCTION

Khorixas is located close to the Petrified Forest and the Twyfelfontein valley, known for its rock art in the Kunene region. Khorixas is the institutional centre for the southern part of the Kunene Region, providing social services for the mainly rural population such as health and education. As the gateway to the highest number of communal conservancies that practice community-based natural resource management as well as community-based tourism, Khorixas fulfils an important logistical function by providing the most essential services to the predominantly self-drive, all-terrain vehicle tourism market. The town also caters for the needs of the surrounding community of communal farmers.

As with many towns in Namibia growth of the urban areas is inevitable and as such urban infill of previously underutilised spaces and areas are often seen as the ideal manner of establishing new business as well as other institutional structures in the town. The Khorixas town Council is receptive of the concept of partnering with private investors to facilitate further development of the town.

It is against this background that Mr Lazarus Kunugab hereinafter referred to as the proponent purchased the subject erven from the Khorixas Town Council with the intention of constructing and operating a service station and shopping complex on the subject erven. The proponent intends to carry out the following activity:

- **Rezoning of Erf 4254, Extension 1, Khorixas from “Service Station” to “Business”;**
- **Consolidation of Erf 4254 and Erf 4253, Extension 1, Khorixas into Consolidated Erf X**
- **Subdivision of Consolidated Erf X into two Portions and the Remainder namely: Portion A and B and the Remainder;**
- **Rezoning of Portion B from “Business” to “Service Station”;**
- **Registration of an Inlet Servitude over Portion V in favour of the Local Authority;**
- **Registration of a 100M Eide Right of Way Servitude over Portion A in favour of Portion B and the Remainder of Portion X**
- **Registration of a 6M Wide Right of Way Servitude over Portion V in favour of Portion A and the Remainder of Portion X**
- **Registration of a 6M Wide Right of Way Servitude over Portion A in favour of Portions B and the Remainder of Portion X**

The objective of the intended development is to address the need for certain amenities and businesses in the town of Khorixas. 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).

The above development triggers 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 EMP is one of the most important outputs of the EA process as it synthesises all of 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 proposed development will be fully functional and maintained.

It should be noted that the service station has been constructed and is operating, although other substructures are yet to be constructed; therefore, the environmental impacts assessed, and mitigation measures have been updated. It should also be noted that, to date, no engineering designs of other substructures have been carried out for the development of the substructures' 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 4-5**.

2 THE PROPOSED DEVELOPMENT

Erf 4253 and 4254, Extension 1, Khorixas are located to the east of the Khorixas CBD. The erven measures **18567m²** and **1995m²** respectively. Please refer to the below locality map and locality plan (**Figures 2-1 to 2-3**).

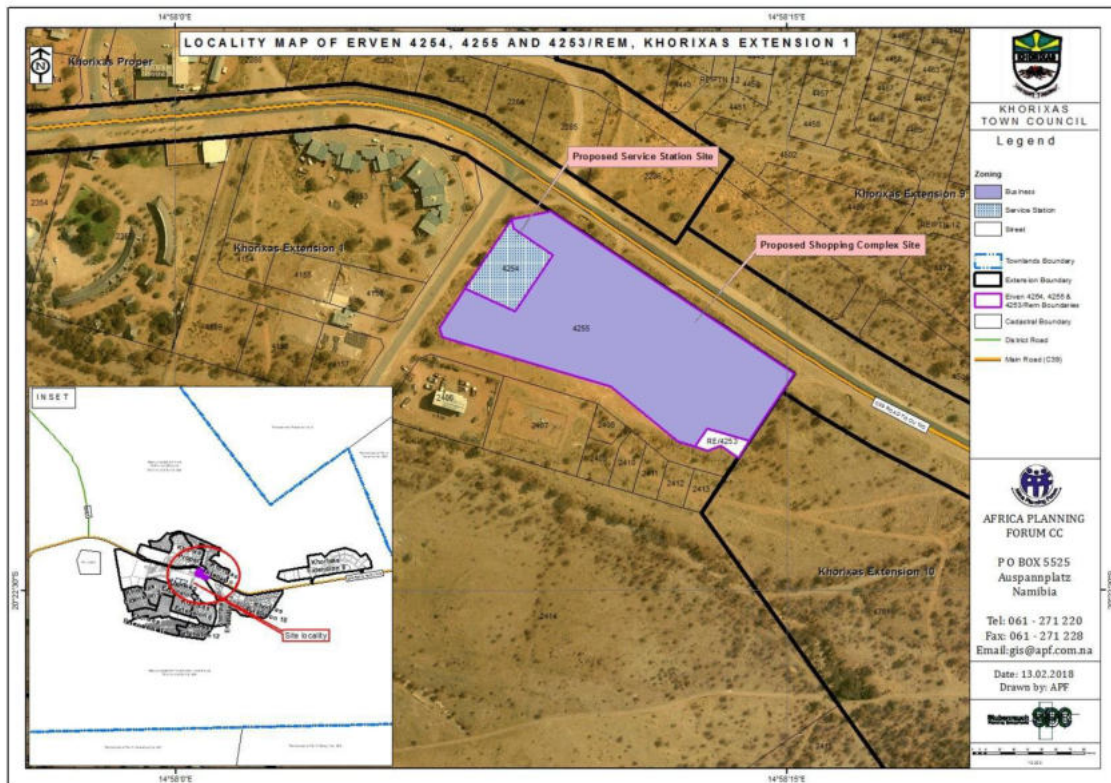


Figure 2-1: Locality Map

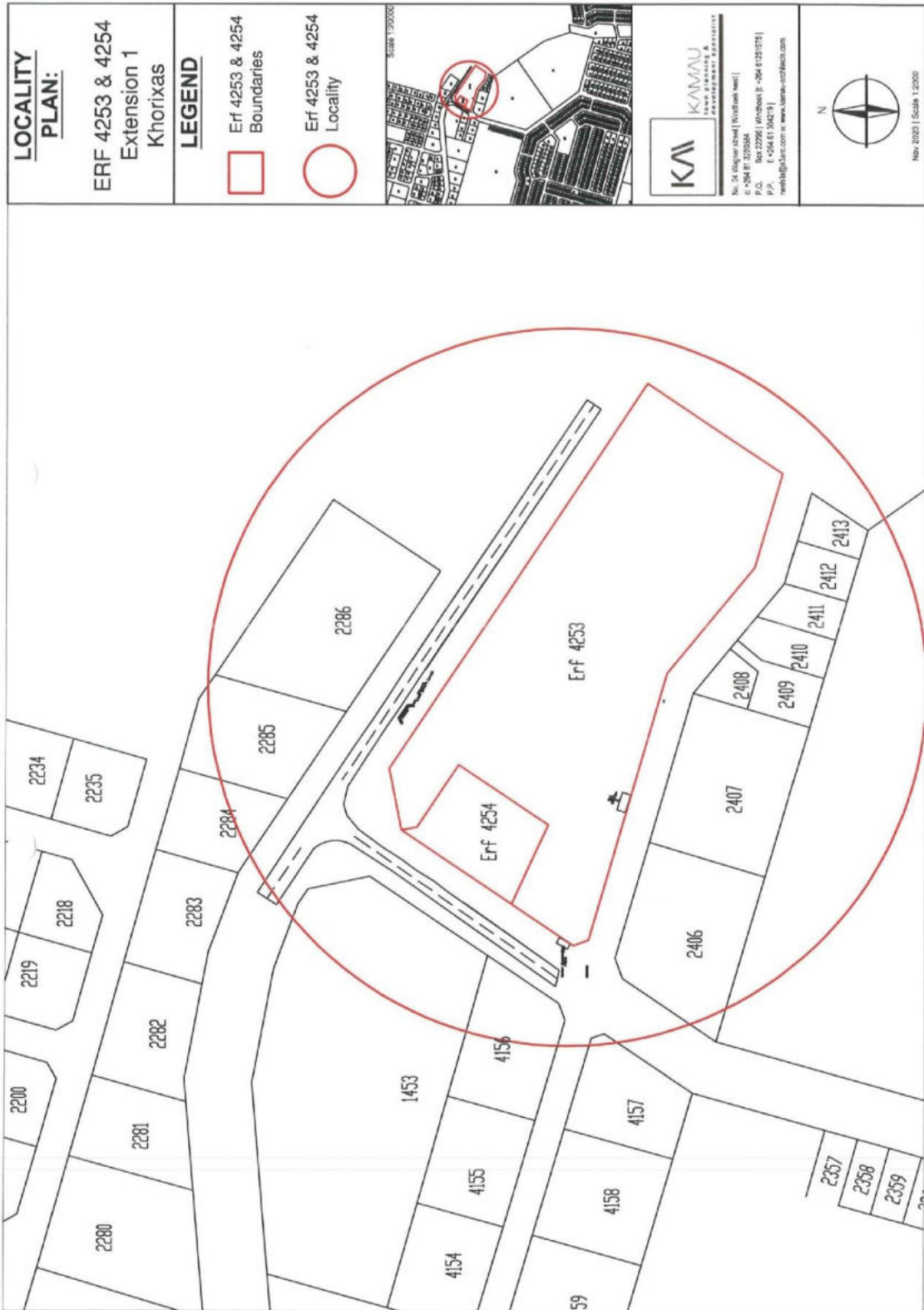


Figure 2-2: Locality Plan



Figure 2-3: Aerial map of Erf 4254 and 4253 Extension 1, Khorixas, and their immediate surroundings.

Erf 4253 is zoned “Business” with a Bulk of 2.0 and is occupied with a shopping mall that accommodates a variety of shops, including Choppies, Lewis and a Pharmacy. The zoning enables the erf to be utilised for “Business buildings, offices, drive in cafes, hotel, hotel pension, driving school, backpackers hotel, bed and breakfast, guest house, self-catering accommodation establishments, residential buildings, block of flats, bottle store, offices, shop, restaurant, convention centre; consent maybe obtained for service industries, dry cleaner and launderette, place of assembly, place of amusement, place of instruction, place of worship, institutional buildings, funeral parlours and chapes, parking garage, gambling house, warehouse and car wash uses, according to Table B of Khorixas Town Planning Scheme.

On the other hand, the Erf 4254 is zoned for Service Station with the land use of Service Station. This zoning permits for the Erf to be used for “Service Station”, car wash, kiosk, and a restaurant as primary uses and consent may be obtained for a workshop and a truck port.

The north, south and east of the erven are currently vacant. To the west of the erven are the SME park and Cenored offices, while existing residential buildings lie northwest of the erven. Other land uses that surround the erven include OK Food Khorixas, Khorixas Home and Hardware CC, !Gowati Lodge, a fuel station and Dodo’s Café north west of the erven. Khorixas Town Council, Ministry of Education, Art and Culture, and the JDK Investment Super Save are to the Southwest of the erven. Extension 1 in which the erven are located consists of mixed land uses, including business, residential and institutional.

Overall, the Proponent, as the owner of both Erf 4253 and Erf 4254, Extension 1, Khorixas, intends to rezone Erf 4254 from "Service Station" to "business" so that it assumes the same land uses as Erf 4253 for the purposes of a consolidation of Portion X. Following the consolidation, Portion X will then be subdivided into two portions Portion A, Portion B, and the Remainder, as a means to remedy an encroachment issue, as the Service Station currently encroaches onto Erf 4253. The subdivided Portions will measure **4986m²**, **3851m²** and **11331m²** respectively. The intention is then to rezone Portion B back to its original land use, which is "Service Station." Thereafter, the proponent then intends to build a hardware store on Portion A, with a potential restaurant planned for the northernmost portion of the property and a yard serving the hardware store on the southwest corner. The proposed land uses are compatible with the current land uses and comply with the current zoning. Furthermore, the above-mentioned proposed right-of-way servitudes are required due to the interdependency of the land uses. This would allow trucks that use the servitudes registered over Portions A and B as points of entry and exit to the hardware store to have more room to maneuver. In addition to the registration of right-of-way servitudes over Portion A and B, an inlet servitude accommodates the flow of the stream over Portion B. The entire plan of the proponent is aimed at enabling and easing the possibility of trading off the other portions in the future.

The proposed development is expected to provide much needed employment opportunities within the town and additionally attract investors for business opportunities within the town at the proposed shopping complex. The proposed development will also bring amenities to the residents in the town which are not currently available within the town.

Furthermore, the approval of this consolidation and the subsequent subdivision application would benefit both the Proponent and Town Council financially, as this would enable the Proponent to commence with the construction and eventually start trading, creating revenue for both the Proponent and the Town Council.

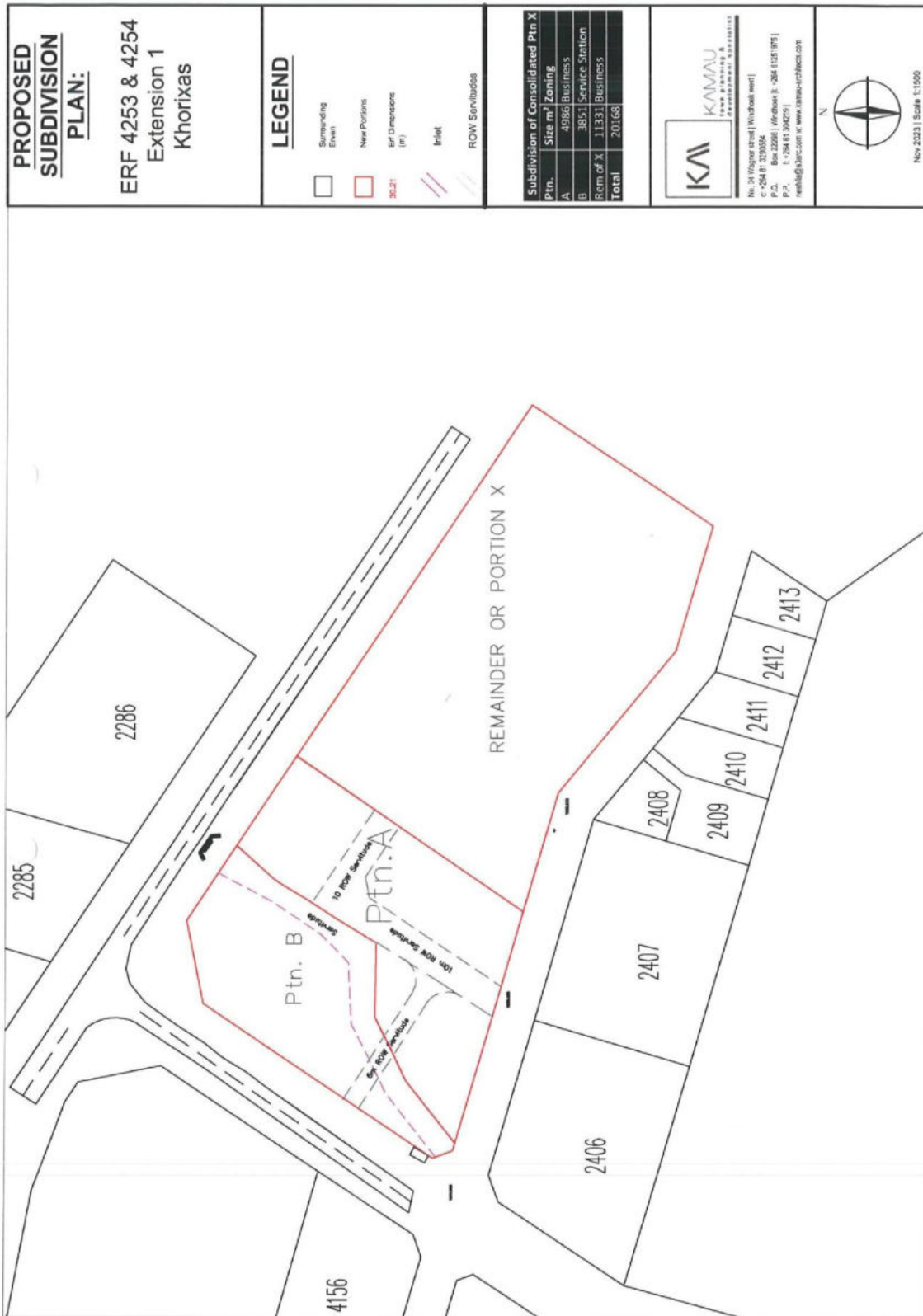


Figure 2-5: Subdivision Plan of Consolidated Portion X

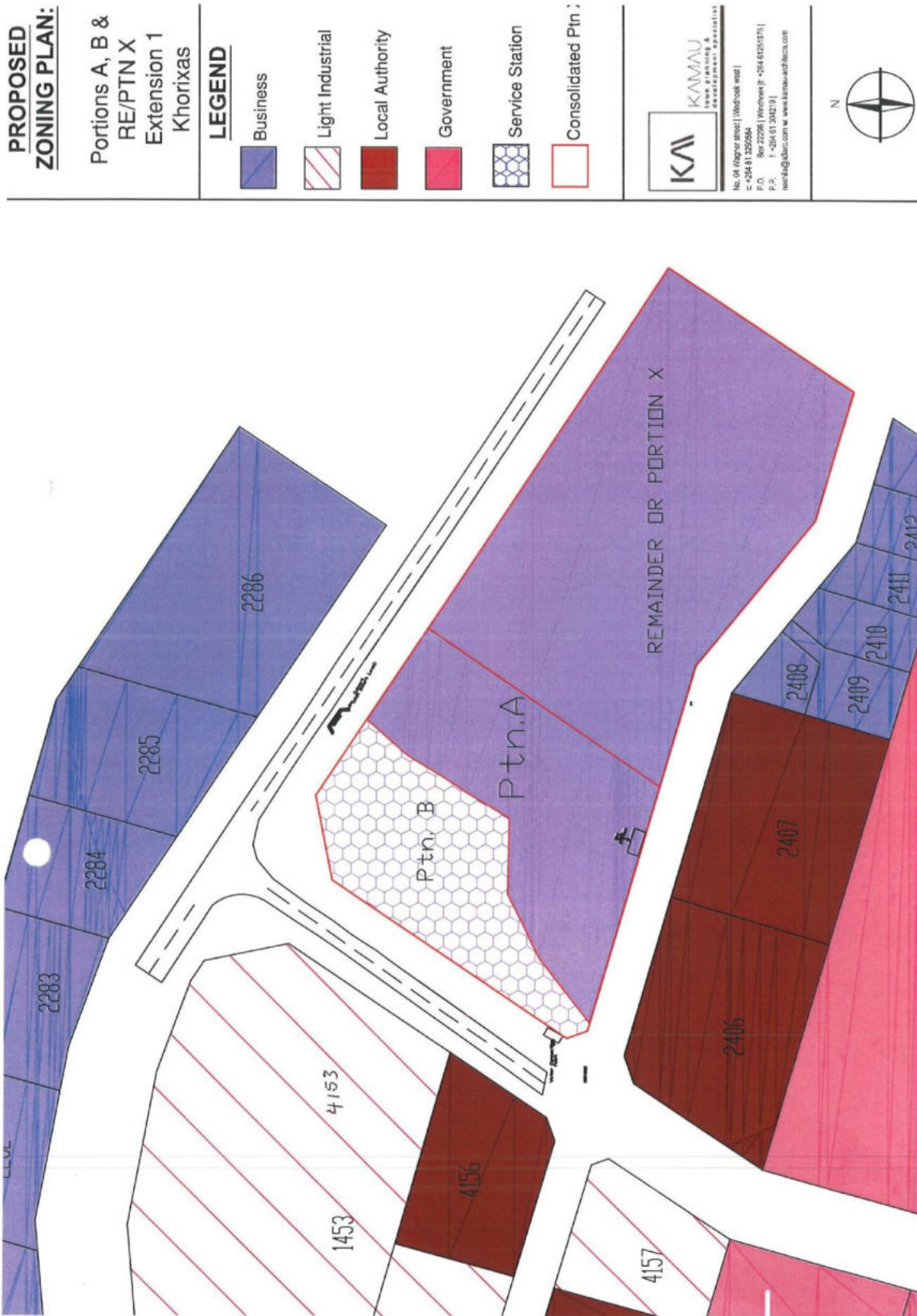


Figure 2-6: Zoning Plan of Subdivided Portion A,B and Remainder

3 ROLES AND RESPONSIBILITIES

The proponent (Mr Lazarus Kunugab) 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:

- Developer’s Representative;

- Environmental Control Officer; and
- Contractor (Construction and Operations and Maintenance).

3.1 DEVELOPER’S REPRESENTATIVE

The developer 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 Developer’s representative (DR). The developer may decide to assign this role to one person for the full duration of these developments or may assign a different DR 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 DR’s responsibilities are as follows:

Table 3-1 Responsibilities of DR

Responsibility	Project Phase
Making sure that the necessary approvals and permissions laid out in Table 4-1 are obtained/adhered to.	<ul style="list-style-type: none"> • Throughout the lifecycle of these developments
Making sure that the relevant provisions detailed in Table 4-2 are addressed during planning and design phase.	<ul style="list-style-type: none"> • Planning and design phase
Monitoring the implementation of the EMP monthly.	<ul style="list-style-type: none"> • Construction • Operation and maintenance
Suspending/evicting individuals and/or equipment not complying with the EMP	<ul style="list-style-type: none"> • Construction • Operation and maintenance
Issuing fines for contravening EMP provisions	<ul style="list-style-type: none"> • Construction • Operation and maintenance

3.2 ENVIRONMENTAL CONTROL OFFICER

The DR should assign the responsibility of overseeing the implementation of the whole EMP on the ground during the construction and operation and maintenance phases to a designated member of staff, referred to in this EMP as the Environmental Control Officer (ECO). The DR/Developer 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 Developer, DR, the contractors, and Interested and Affected Parties (I&APs) with regard to this EMP;
- Conducting site inspections (recommended minimum frequency is monthly) of all construction and/or infrastructure maintenance areas with respect to the implementation of this EMP (monitor and audit the implementation of the EMP);
- Monitor and audit (bi-annually) the implementation of the EMP;

- Assisting the Contractor in finding solutions with respect to matters pertaining to the implementation of this EMP;
- Advising the DR on the removal of person(s) and/or equipment not complying with the provisions of this EMP;
- Making recommendations to the DR with respect to the issuing of fines for contraventions of the EMP; and
- Undertaking an annual review of the EMP and recommending additions and/or changes to this document.

3.3 CONTRACTOR

Contractors appointed by the Developer 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 4-3** applies to contractors appointed during the construction phase and **Table 4-4** 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 4-2**);
- Construction phase management actions (**Table 4-3**);
- Operation and maintenance phase management actions (**Table 4-4**); and
- Decommissioning phase management actions (**Table 4-5**).
- 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 construction and operation of a service station and shopping complex in Khorixas as outlined in initial Environmental Scoping Report and based on the current situation on the subject site. 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 Khorixas townlands and that migrant labourers (if applicable) will be housed in established accommodation facilities within Khorixas.
- No engineering designs have been carried out for the development of the associated services infrastructure for the substructures (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 4-1: Legal provisions relevant to the proposed development below. The legal instrument, applicable corresponding provisions and project relevance details are provided.

Table 4-1: Legal provisions relevant to the 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.	The following listed activities are triggered by the proposed development: Activity 9.4 (Hazardous Substance Treatment, Handling and Storage) Activity 9.5 Construction of filling stations or any other facility for the underground and aboveground storage of dangerous goods,

LEGISLATION/POLICIES	RELEVANT PROVISIONS	RELEVANCE TO PROJECT
		including petrol, diesel, liquid, petroleum, gas, or paraffin. Activity 10.1 (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.
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 must 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 No 5 of 2018	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 proposed development must adhere to the provisions regarding the subdivision and rezoning of land.

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	<ul style="list-style-type: none"> • 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 Health Act 36 of 1919 (SA GG 979).	Contractors and users of the proposed development are to comply with these legal requirements.
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	These guidelines are to be applied when dealing with water and waste treatment

LEGISLATION/POLICIES	RELEVANT PROVISIONS	RELEVANCE TO PROJECT
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 Land Reform.
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. 1 of 1923), Preservation of Trees and Forests Ordinance, 1952 (Ordinance No. 37 of 1952) and the Forest Act, 1968 (Act No. 72 of 1968); and to deal with incidental matters.	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 Department of Forestry.
Petroleum Products and Energy Act, 1990 (Act No. 13 of 1990)	The Act makes provision for impact assessment for new proposed fuel facilities and petroleum products known to have detrimental effects on the environment.	The proposed project involves the use and management of fuel facilities and petroleum products.
Pollution Control and Waste Management Bill	This Bill serves to regulate and prevent the discharge of pollutants to air and water as well as providing for general waste management. The Bill will repeal the Atmospheric Pollution Prevention Ordinance (11 of 1976) (below) when it comes into force.	The proposed development would not entail the discharge to air and or water, but might result in the generation of noise and dust during the construction phase. The potential risk of hazardous substance leakages does occur and should be managed accordingly.
Atmospheric Pollution Prevention Ordinance No 45 of 1965	Part II - control of noxious or offensive gases, Part III - atmospheric pollution by smoke,	The development should consider the provisions outlined in the act. The proponent should apply for an Air Emissions permit from the

LEGISLATION/POLICIES	RELEVANT PROVISIONS	RELEVANCE TO PROJECT
	Part IV - dust control, and Part V - air pollution by fumes emitted by vehicles.	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 DR should ensure that the management actions detailed below should be adhered to during the period before the construction of the services infrastructure starts.

Table 4-2: Planning and design management actions

Aspect	Management Actions	Person responsible
Existing Service Infrastructure	<ul style="list-style-type: none"> • It is advised that the proponent engages the services of an engineering professional to design and construct the service connections to the development as far as water, sewer, electricity and roads are concerned. • It is recommended that alternative and renewable source 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 waste water should be considered wherever possible to reduce the consumption of potable water. • All servitudes are to be respected and not obstructed by the proposed development 	Proponent
Roads	<ul style="list-style-type: none"> • Make ample provision in road design for pedestrian walkways and speed bumps at crossings and busy nodes. • Ensure that road junctions have good sightlines. • Implement traffic control measures where necessary. 	Proponent
Certification/Guidelines	<ul style="list-style-type: none"> • Data center to comply with the below certification standards: <ul style="list-style-type: none"> ○ ISO 9001:2015 (Quality) ○ ISO 27001:2013 (Information Security) ○ ISO 14001:2015 (Environmental Management) ○ SANS 10089:1999. ○ SANS 100131-2 	Proponent, DR, ECO

4.4 CONSTRUCTION PHASE

The management actions listed in Table 4-4 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 4-3: Construction phase management actions

Environmental Feature	Management Actions	Person responsible
EMP training (Lack of EMP awareness and the implications thereof)	<p>All construction workers are to undergo EMP training that should include as a minimum the following:</p> <ul style="list-style-type: none"> • 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, ECO
Conservation of vegetation (Loss of biodiversity)	<ul style="list-style-type: none"> • The layout and development design should incorporate existing trees¹. • The Contractor should compile a Tree Management Plan which should include the following as a minimum: <ul style="list-style-type: none"> ○ 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 paint (or other means so as to be readily visible) and protected; ○ Trees, which are impossible to conserve, need to be identified and their location recorded on a map; ○ The Contractor should apply to the local authority for a permit to remove these trees. ○ Special protection should be accorded to the protected tree species, which are to be found within the development area. ○ A list should be compiled of all trees to be removed detailing the erf on which they are located, the species as well as which trees will be planted to replace these. The nursery where these trees will be sourced from should also be included; ○ Each tree that is removed needs to be replaced with an indigenous tree species after construction; ○ Some of these trees can be obtained at the nearest forestry office or at a commercial nursery. • Only a limited width +/- 5 m on the side of roads may be partially cleared of vegetation. 	Contractor

¹a “tree” is defined as an indigenous woody perennial plant with a trunk diameter ≥150 mm

Environmental Feature	Management Actions	Person responsible
	<ul style="list-style-type: none"> • 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)	<p>Suitable locations for the contractors lay-down areas and materials camp should be identified with the assistance of the DR and the following should be considered in selecting these sites:</p> <ul style="list-style-type: none"> • The areas designated for the services infrastructure should be used as far possible. • Second option should be degraded land. • Avoid sensitive areas (e.g. rivers/drainage lines). 	Contractor, DR
Hazardous waste (Contamination of surface and groundwater sources)	<ul style="list-style-type: none"> • 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. • Spilled cement and/or concrete (wet or dry) should be treated as hazardous waste and disposed of by the end of each day in the appropriate hazardous waste containers. • All hazardous substances (e.g. fuel etc.) or chemicals should be stored in a specific location on an impermeable surface that is bunded - with a volume of 120 % of the largest single storage container or 25 % of the total storage containers, whichever is greater • Refuel vehicles in designated areas that have a protective surface covering and utilise drip trays for stationary plant. 	Contractor
Water, Sewage and grey water (Contamination of surface and groundwater sources and water wasting)	<ul style="list-style-type: none"> • Sewage should not be discharged directly onto open soil. • All sewage must be removed regularly and disposed of at a recognised (municipal) sewage treatment facility. • 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: 	Contractor, ECO

Environmental Feature	Management Actions	Person responsible
	<ul style="list-style-type: none"> ○ Used for dust suppression; ○ Used to water a vegetable garden, or to support a small nursery; ○ Used (reused) to clean equipment. ● Grey water that is not recycled should be removed along with sewage on a regular basis. ● It is recommended that construction takes place outside of the rainy season in order to limit flooding on site and surface and ground water pollution. ● 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 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. ● 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. 	
<p>General waste (Visual impact and soil contamination)</p>	<ul style="list-style-type: none"> ● The construction site should be kept tidy at all times. All domestic and general construction waste produced on a daily basis should be cleaned and contained daily. ● No waste may be buried or burned. 	<p>Contractor</p>

Environmental Feature	Management Actions	Person responsible
	<ul style="list-style-type: none"> • 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. • 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. • All waste should be disposed of at a municipal approved waste disposal site. 	
<p>Topsoil (Loss of topsoil and associated opportunity costs)</p>	<ul style="list-style-type: none"> • When excavations are carried out, topsoil² 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. 	<p>Contractor</p>
<p>Rehabilitation (Visual impact)</p>	<ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> ○ 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. ○ Rehabilitated excavated areas need to match the contours of the existing landscape. ○ 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. ○ Topsoil is to be spread across excavated areas evenly. ○ 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. 	<p>Contractor, DR</p>

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

Environmental Feature	Management Actions	Person responsible
	<ul style="list-style-type: none"> ○ Ripping should be done along slopes, not up and down a slope, which could lead to enhanced erosion. 	
HIV/AIDS and TB training (Lack of awareness regarding implications of risky behaviour)	The Contractor should approach the Ministry of Health and Social Services to co-opt a health officer to facilitate HIV/AIDS and TB education programmes periodically on site during the construction phase.	Contractor
Road safety (Injury or loss of life)	<ul style="list-style-type: none"> ● Demarcate roads 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)	<ul style="list-style-type: none"> ● 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, building material and topsoil stockpiles with danger tape. ● Provide additional warning signage in areas of movement and in “no personnel” areas where workers are not active. ● Borrow pits are to be fenced-off with steel wire fencing. ● Work areas must be set out and isolated with danger tape on a daily basis. ● All building materials and equipment are to be stored only within set out and demarcated work areas. ● Only construction personnel will be allowed within these work areas. ● Fire extinguishers should be available at diesel storage areas. ● Comply with all waste related management actions stated above in this table. ● A qualified traffic controller should be onsite always to direct the movement of other passenger vehicles as construction will be on-going. 	Contractor

Environmental Feature	Management Actions	Person responsible
Ablutions (Non-compliance with Health and Safety Regulations)	<ul style="list-style-type: none"> • Separate toilets should be available for men and women and should clearly be indicated as such. • Portable toilets (i.e. easily transportable) should be available at every construction site: <ul style="list-style-type: none"> ○ 1 toilet for every 15 females. ○ 1 toilet for every 30 males. ○ Sewage needs to be removed on a regular basis to an approved (municipal) sewage disposal site. Alternatively, sewage may be pumped into sealable containers and stored until it can be removed. ○ Workers responsible for cleaning the toilets should be provided with latex gloves and masks. 	Contractor
Open fires (Injury or loss of life)	No open fires may be made anywhere on site.	Contractor
General (Injury or loss of life health and safety)	<ul style="list-style-type: none"> • 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 and be encouraged to wear the relevant personal protective equipment. • 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 or any intoxicating substance. • Building rubble and domestic waste should be stored in skips. • Condoms should be accessible/ available to all construction workers. • Access to Antiretroviral medication should be facilitated. 	Contractor
Dust (Nuisance and health impacts)	<ul style="list-style-type: none"> • A watering truck should be used on gravel roads with the most heavy vehicle movement especially during dry and windy conditions. However, due consideration should be given to water restrictions during times of drought. 	Contractor

Environmental Feature	Management Actions	Person responsible
	<ul style="list-style-type: none"> • 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. 	
Noise (Nuisance impacts)	<p>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.</p>	Contractor
Recruitment of labourers (Negative conflict regarding recruitment)	<p>The Contractor should compile a formal recruitment process including the following provisions as a minimum:</p> <ul style="list-style-type: none"> • 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 and individual labourers to those who are qualified and from the project area and only then look to surrounding towns. • Clearly explain to all job-seekers the terms and conditions of their respective employment contracts (e.g. period of employment etc.) – make use of interpreters where necessary. 	Contractor
Communication plan (Negative conflict with I&APs)	<p>The Contractor or proponent should draft a Communication Plan, which should outline as a minimum the following:</p> <ul style="list-style-type: none"> • 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. 	Contractor, Proponent, DR

Environmental Feature	Management Actions	Person responsible
	<ul style="list-style-type: none"> • 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. 	
<p>General communication (Negative conflict with I&APs)</p>	<ul style="list-style-type: none"> • The DR 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. This list, together with the Communication Plan must be agreed upon and given to the DR before construction commences. • The Communication Plan, once agreed upon by the Developer, shall be legally binding. • All communication with 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 DR prior to the commencement of construction activities. 	<p>DR, Contractor, ECO</p>

Environmental Feature	Management Actions	Person responsible
<p>Archaeology (Loss of heritage resources)</p>	<ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> ○ If operating machinery or equipment, stop work; ○ Demarcate the site with danger tape; ○ Determine GPS position if possible; ○ 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: <ul style="list-style-type: none"> ○ 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. 	<p>Contractor, DR</p>

4.5 OPERATION AND MAINTENANCE PHASE

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

Table 4-4: Operation and maintenance management actions

Environmental Feature	Management Actions	Person responsible
EMP training (Lack of EMP awareness and the implications thereof)	All contractors appointed for maintenance work on the data center must ensure that all personnel are aware of necessary health, safety and environmental considerations applicable to their respective work.	Contractor
Monitoring (EMP non-compliance)	The ECO should monitor the implementation of the EMP: <ul style="list-style-type: none"> • The ECO should inspect the site before construction starts; and • The ECO should inspect the site at the end of the construction period. 	ECO
Water (Surface and groundwater contamination)	<ul style="list-style-type: none"> • Ensure that all properties are connected to a professionally designed and constructed water and wastewater infrastructure. • A no-go buffer area of at least 15 m should be allocated to any water bodies in the area. • No dumping of waste products of any kind in or in close proximity to any surface water bodies. • Contaminated runoff from the various operational activities should be prevented from entering any surface or ground water bodies. • Ensure that surface 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. • Disposal of waste from the various activities should be properly managed. 	ECO
Aesthetics (Visual impacts)	The proponent should consult with a view to incorporate the relevant local/national/international development guidelines which addresses the following: <ul style="list-style-type: none"> • The use of ‘green’ technologies within the architectural designs and building materials of the development. • The incorporation of indigenous vegetation, natural colours and building materials such as wood and stone into property development. 	Proponent

Environmental Feature	Management Actions	Person responsible
Energy efficiency (Waste of scarce resources)	<p>The proponent should consult, with the view to incorporate the relevant local/national/international development guidelines which addresses the following:</p> <ul style="list-style-type: none"> • The use of solar geysers and solar panels for the general lighting and heating of water for buildings. • Use of designs and building materials, which reduce dependency on artificial heating and cooling. • The incorporation of water saving initiatives within the development’s design and plans in order to reduce water demands. 	Proponent
Noise (Noise nuisance impact)	<p>The proponent should consult with the view to incorporate the relevant local/national/international guidelines to manage the generation of noise in the development area.</p>	Proponent
Waste management	<ul style="list-style-type: none"> • Sufficient waste storage containers are available on site. • Waste should be removed from new properties on a regular basis by an authorised waste management company. • All waste should be disposed of at a municipal approved waste disposal site as designated by the KTC. • Hazardous waste is separated from non-hazardous waste. • Hazardous waste should be disposed of at a registered hazardous waste disposal site. • Recycling of packaging and electronic waste should be considered and encouraged. 	Proponent, DR
Hazardous Substances	<ul style="list-style-type: none"> • Storage of the hazardous substances in a bunded area, with a volume of 120 % of the largest single storage container or 25 % of the total storage containers whichever is greater. • Refuel vehicles in designated areas that have a protective surface covering and utilise drip trays for stationary plant. • All fuel storage and handling facilities in Namibia must also comply with strict safety distances as prescribed by SANS 10089. SANS 10089 is adopted by the Ministry of Mines and Energy as the national standard. • All staff be trained with regards to the proper handling of these substances as well as First Aid in the case of spillage or intoxication. • Storage areas for all substances should be bunded and capable to hold 120% of the total volume of a given substance stored on site 	

Environmental Feature	Management Actions	Person responsible
	<ul style="list-style-type: none"> • Underground fuel tankers should be stored in proper containers and include appropriate risk control measures in the case of leakages or pollution. • Underground tankers should be properly lined. • Consider secondary lining suppression in order to minimise the risk of contamination of underground water sources. • Specific safety features and protocols should be implemented in the case of a fire or explosion. • Proper licensed and updated fire-fighting equipment should be installed and easily implemented. • It must further be assured that sufficient water and sand is available for fire-fighting purposes. • Regular inspections should be carried out to inspect and test fire-fighting equipment and pollution control materials at the service station. • The following plans should be onsite and well known to staff and easily directed to the general public in case of an emergency. These include but are not limited to: <ul style="list-style-type: none"> ○ Health and Safety Plan ○ Risk Management Plan ○ Fire and Explosions Management Plan (protection and prevention) 	
Fire and Explosion Risk Management	<ul style="list-style-type: none"> • The developer is to follow the guidelines for Managing the Risks of Fire and Explosion 	Proponent, DR
Emissions	<ul style="list-style-type: none"> • Manage and continuously monitor activities that generate emissions. • Use vapour recovery equipment and techniques to avoid air pollution and minimise fuel loss. • Train fuel area staff in vapour recovery procedures • The development is to be controlled and managed as required by the Public health Act (Act no 36 of 1919) and the Atmospheric Prevention Ordinance (No 11 of 1976). 	Proponent
Occupational Health and Safety	<ul style="list-style-type: none"> • 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 and be encouraged to wear the relevant personal protective equipment. 	Proponent, DR

Environmental Feature	Management Actions	Person responsible
	<ul style="list-style-type: none"> • A member of staff should be trained in fire fighting. • Specific consideration should be given with regards to health and safety in the following areas: <ul style="list-style-type: none"> ○ Ensuring electrical safety ○ Safety when working at heights ○ Fire and explosion ○ Lifting and handling procedures 	

4.6 DECOMMISSIONING PHASE

The decommissioning of these developments is not foreseen. In the event that these developments are decommissioned the following management actions should apply.

Table 4-5: Decommissioning phase management actions

Environmental Feature	Management Actions
Deconstruction activity	Many of the mitigation measures prescribed for construction activity for these developments (Table 4-3 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 4-3 above.

Appendix A – Water Quality Guidelines

THE WATER ACT, 1956 (ACT 54 OF 1956) AND ITS REQUIREMENTS IN TERMS OF WATER SUPPLIES FOR DRINKING WATER AND FOR WASTE WATER TREATMENT AND DISCHARGE INTO THE ENVIRONMENT

1. INTRODUCTION

The provisions of the Water Act are intended, amongst other things, to promote the maximum beneficial use of the country's water supplies and to safeguard water supplies from avoidable pollution.

The drinking water guidelines are not standards as no publication in the Government Gazette of Namibia exists to that effect. However the Cabinet of the Transitional Government for National Unity adopted the existing South African Guidelines (461/85) and the guidelines took effect from 1 April 1988 under the signature of the then Secretary for Water Affairs.

The sections of the Water Act that relate to the discharge of industrial effluents are: - Section 21(1) which states that

- The purification of waste water shall form an integral part of water usage and
- that purified effluents shall comply with the General Standard Quality restrictions as laid out in Government Gazette R553 of 5 April 1962 and
- Section 21(2) which further stipulate that this purified effluent be returned as close as possible to the point of abstraction of the original water.

Where a local authority has undertaken the duty of disposing of all effluents from an industrial process the provisions of Section 21(1) and 21(2) apply to the local authority and not the producer of the effluents. If there is difficulty in complying with these provisions then the applicant may apply for an exemption from the conditions in terms of Section 21(5) and 22(2) of the Water Act. The Permanent Secretary after consultation with the Minister may grant the issuance of a Waste Water Discharge Permit under Sections 21(5) and 22(2) subject to such conditions as he may deem fit to impose.

After independence, the Government of the Republic of Namibia decided that for the interim the existing guidelines will continue to be valid and to remain in use until a proper study has been conducted and new standards have been formulated (Article 140 of Act 1 of 1990).

2. GUIDELINES FOR THE EVALUATION OF DRINKING-WATER QUALITY FOR HUMAN CONSUMPTION WITH REGARD TO CHEMICAL, PHYSICAL AND BACTERIOLOGICAL QUALITY

Water supplied for human consumption must comply with the officially approved guidelines for drinking-water quality. For practical reasons the approved guidelines have been divided into three basic groups of determinants, namely:

- Determinants with aesthetic / physical implications: TABLE 1.
- Inorganic determinants: TABLE 2.
- Bacteriological determinants: TABLE 3.

2.1 CLASSIFICATION OF WATER QUALITY

The concentration of and limits for the aesthetic, physical and inorganic determinants define the group into which water will be classified. See TABLES 1 and 2 for these limits. The water quality has been grouped into 4 quality classes:

- Group A: Water with an excellent quality
- Group B: Water with acceptable quality
- Group C: Water with low health risk
- Group D: Water with a high health risk, or water unsuitable for human consumption.

Water should ideally be of excellent quality (Group A) or acceptable quality (Group B), however in practice many of the determinants may fall outside the limits for these groups.

If water is classified as having a low health risk (Group C), attention should be given to this problem, although the situation is often not critical as yet.

If water is classified as having a higher health risk (Group D), urgent and immediate attention should be given to this matter.

Since the limits are defined on the basis of average lifelong consumption, short-term exposure to determinants exceeding their limits is not necessarily critical, but in the case of toxic substances, such as cyanide, remedial measures should immediately be taken.

The overall quality group, into which water is classified, is determined by the determinant that complies the least with the guidelines for the quality of drinking water.

TABLE 1: DETERMINANTS WITH AESTHETIC / PHYSICAL IMPLICATIONS

DETERMINANTS	UNITS*	LIMITS FOR GROUPS			
		A	B	C	D**
Colour	mg/l Pt***	20			
Conductivity	mS/m !at 25 °C	150	300	400	400
Total hardness	mg/l CaCO ₃	300	650	1300	1300
Turbidity	N.T.U****	1	5	10	10
Chloride	mg/l Cl	250	600	1200	1200
Chlorine (free)	mg/l Cl	0,1- 5,0	0,1 – 5,0	0,1 – 5,0	5,0
Fluoride	mg/l F	1,5	2,0	3,0	3,0
Sulphate	mg/l SO ₄	200	600	1200	1200
Copper	µg/l Cu	500	1000	2000	2000
Nitrate	mg/l N	10	20	40	40
Hydrogen Sulphide	µg/l H ₂ S	100	300	600	600
Iron	µg/l Fe	100	1000	2000	2000
Manganese	µg/l Mn	50	1000	2000	2000
Zink	mg/l Zn	1	5	10	10
pH*****	pH-unit	6,0 – 9,0	5,5 – 9,5	4,0 – 11,0	4,0 – 11,0

* In this and all following tables “l” (lower case L in ARIAL) is used to denote dm³ or litre
 ** All values greater than the figure indicated.
 *** Pt = Platinum Units
 **** Nephelometric Turbidity Units
 ***** The pH limits of each group exclude the limits of the previous group

TABLE 2: INORGANIC DETERMINANTS

DETERMINANTS	UNITS	LIMITS FOR GROUPS			
		A	B	C	D*
Aluminium	µg/l Al	150	500	1000	1000
Ammonia	mg/l N	1	2	4	4
Antimonia	µg/l Sb	50	100	200	200
Arsenic	µg/l As	100	300	600	600
Barium	µg/l Ba	500	1000	2000	2000
Beryllium	µg/l Be	2	5	10	10
Bismuth	µg/l Bi	250	500	1000	1000
Boron	µg/l B	500	2000	4000	4000
Bromine	µg/l Br	1000	3000	6000	6000
Cadmium	µg/l Cd	10	20	40	40
Calcium	mg/l Ca	150	200	400	400
Calcium	mg/l CaCO ₃	375	500	1000	1000
Cerium	µg/l Ce	1000	2000	4000	4000
Chromium	µg/l Cr	100	200	400	400
Cobalt	µg/l Co	250	500	1000	1000
Cyanide (free)	µg/l CN	200	300	600	600
Gold	µg/l Au	2	5	10	10
Iodine	µg/l I	500	1000	2000	2000
Lead	µg/l Pb	50	100	200	200
Lithium	µg/l Li	2500	5000	10000	10000
Magnesium	mg/l Mg	70	100	200	200
Magnesium	mg/l CaCO ₃	290	420	840	840
Mercury	µg/l Hg	5	10	20	20
Molybdenum	µg/l Mo	50	100	200	200
Nickel	µg/l Ni	250	500	1000	1000
Phosphate	mg/l P	1	See below note	See note below	See note below
Potassium	mg/l K	200	400	800	800
Selenium	µg/l Se	20	50	100	100
Silver	µg/l Ag	20	50	100	100
Sodium	mg/l Na	100	400	800	800
Tellurium	µg/l Te	2	5	10	10
Thallium	µg/l Tl	5	10	20	20
Tin	µg/l Sn	100	200	400	400
Titanium	µg/l Ti	100	500	1000	1000
Tungsten	µg/l W	100	500	1000	1000
Uranium	µg/l U	1000	4000	8000	8000
Vanadium	µg/l V	250	500	1000	1000

* All values greater than the figure indicated.

Note FOR Table 2 on phosphate: Phosphates are not toxic and essential for all life-forms. Natural water will, however, seldom contain phosphate; it is generally seen as an indicator of pollution and is usually accompanied by other pollutants. Wherever drinking water is combined with or consists wholly of reclaimed or recycled water, it may be expected to contain phosphate. The general guideline for a concentration level to be aimed at is 1 mg/l as P. But in many cases this may be difficult to achieve technically. For this reason the Department will allow a phosphate concentration level of up to 5 mg/l as P in water intended for human consumption. Please refer also to the "Note on Phosphate" under Section 3: General Standards for Waste/Effluent.

2.2 BACTERIOLOGICAL DETERMINANTS

The bacteriological quality of drinking water is also divided into four groups, namely:

- Group A: Water which is bacteriological very safe;
- Group B: Water which is bacteriological still suitable for human consumption;
- Group C: Water which is bacteriological risk for human consumption, which requires immediate action for rectification;
- Group D: Water, which is bacteriological unsuitable for human consumption.

TABLE 3: BACTERIOLOGICAL DETERMINANTS

DETERMINANTS	LIMITS FOR GROUPS			
	A**	B**	C	D*
Standard plate counts per 1 ml	100	1000	10000	10000
Total coliform counts per 100 ml	0	10	100	100
Faecal coliform counts per 100 ml	0	5	50	50
E. coli counts per 100 ml	0	0	10	10

* All values greater than the figure indicated.

** In 95% of the samples.

NB If the guidelines in group A are exceeded, a follow-up sample should be analysed as soon as possible.

2.3 FREQUENCY FOR BACTERIOLOGICAL ANALYSIS OF DRINKING-WATER SUPPLIES

The recommended frequency for bacteriological analysis of drinking water is given in Table 4.

TABLE 4: FREQUENCY FOR BACTERIOLOGICAL ANALYSIS

POPULATION SERVED	MINIMUM FREQUENCY OF SAMPLING
More than 100 000	Twice a week
50 000 – 100 000	Once a week
10 000 – 50 000	Once a month
Minimum analysis	Once every three months

3 GENERAL STANDARDS FOR WASTE / EFFLUENT WATER DISCHARGE INTO THE ENVIRONMENT

All applications in terms of Section 21(5) and 22(2), for compliance with the requirements of Section 21(1) and 21(2) of the Water Act (Act 54 of 1956) that purified water shall comply with the General Standard as laid out in Government Gazette Regulation R553 of 5 April 1962.

TABLE 5 GENERAL STANDARDS FOR ARTICLE 21 PERMITS (EFFLUENTS)

DETERMINANTS	MAXIMUM ALLOWABLE LEVELS
Arsenic	0,5 mg/l as As
Biological Oxygen Demand (BOD)	no value given
Boron	1,0 mg/l as B
Chemical Oxygen Demand (COD)	75 mg / l as O
Chlorine, residual	0,1 mg/l as Cl ₂
Chromium, hexavalent	50 Ng/l as Cr(VI)
Chromium, total	500 Ng/l as Cr
Copper	1,0 mg/l as Cu
Cyanide	500 Ng/l as CN
Oxygen, Dissolved (DO)	at least 75% saturation**
Detergents, Surfactants, Tensides	0,5 mg/l as MBAS – See also Note 2
Fats, Oil & Grease (FOG)	2,5 mg/l (!gravimetric method)
Fluoride	1,0 mg/l as F
Free & Saline Ammonia	10 mg/l as N
Lead	1,0 mg/l as Pb
Oxygen, Absorbed (OA)	10 mg / l as O*
pH	5,5 – 9,5
Phenolic Compounds	100 Ng/l as phenol
Phosphate	1,0 mg/l as P - See also Note 1
Sodium	not more than 90 mg/l Na more than influent
Sulphide	1,0 mg/l as S
Temperature	35°C
Total Dissolved Solids (TDS)	not more than 500 mg / l more than influent
Total Suspended Solids (TSS)	25 mg/l
Typical faecal Coli.	no typical coli should be counted per 100 ml
Zinc	5,0 mg/l as Zn

* Also known as Permanqanate Value (or PV).

** In Windhoek the saturation level is at approx. 9 mg/l O₂.

Note (1) on phosphate: Phosphates are not toxic and essential for all life forms. Natural water will seldom contain phosphate; it is generally seen as an indicator of pollution and is usually accompanied by other pollutants. Wherever drinking water is combined with or consists wholly of reclaimed or recycled water, it may be expected to contain phosphate. There is no general guideline for phosphate contained in the Regulation 553. But generally it is assumed that eutrophication or algal bloom in dams is promoted by nutrient concentrations as low as 0,01 mg/l as P; generally a phosphate concentration limit for dams of 0,1 mg/l is recommended. All water that is consumed and subsequently discharged, will eventually end up in rivers, dams or groundwater – that is why for potable water, a concentration level of 1 mg/l as P is aimed at. But, again, in many cases of waste and effluent treatment, this may be difficult to achieve technically, or the required waste and effluent treatment infrastructure is not available; as the required infrastructure is sophisticated and expensive. The current situation calls for a compromise and for this reason, this Department will judge each application individually on its merits and allow, in certain cases, a phosphate concentration level of up to 15 mg/l as P

in any effluent or waste stream to be discharged into the environment. This regulation is subject to be reviewed every two years, calculated from the date of approval of this document.

Note (2) on detergents, surfactants and ten sides: The MBAS (or methylene blue active substances) – test does not encompass all surface active compounds currently, commercially available. The limit given is therefore only a guideline. Many of the cleaning agents are toxic to biological life-forms in rivers and dams.

It should be taken into consideration that some commercial products interfere with the effective removal of oil, fat and grease by grease and fat traps, by breaking up such long-chain molecules into shorter ones. These cleaning agents thus effectively allow such components to pass through the traps and land into sections of a treatment plant further down the line and interfere with the process there.

Many cleaning agents contain very powerful disinfectants, and/or biocides. Such substances may interact with biological treatment processes. They may reduce the effectiveness of such treatment or 'kill' it completely, if they land in septic tanks, biofilters or even activate-sludge plants. Their activity may be attenuated by dilution.

4. AUTHORIZATION

Herewith, the Guidelines for the Evaluation of Drinking Water for Human Consumption with regard to Chemical, Physical and Bacteriological Quality, as well as the General Standards for Article 21* Permits, amended for detergents, surfactants, ten sides, as well as phosphates, are confirmed and remain in force until further notice.

Issued under my hand with the authority vested in my office, within the Ministry for Agriculture, Water and Rural Development,

PERMANENT SECRETARY
Dr V Shivute

WINDHOEK,

DATE STAMP

Appendix B: EMP Compliance checklist

CONSTRUCTION PHASE

Issues/Aspects	EMP Conditions	Compliance Rating	Comments
General	<ul style="list-style-type: none"> • A copy of the EMP available on site at all times • Contractors provided with suitable lay-down and materials camp areas • Construction site to be kept tidy at all times • Ablution facilities provided to construction workers (30 m from any surface or groundwater) separate for men (1 toilet for every 30 men) and women (1 toilet for every 15 females) • Recruitment to be done in accordance with Labour Act 		
Vegetation Management	<ul style="list-style-type: none"> • Compilation of Tree Management Plan • Removal of trees should be limited and not to include protected species • Approval to be obtained from the Directorate of Forestry for removal of trees • Clearing of vegetation to be limited to the subject site only 		
Waste Management	<ul style="list-style-type: none"> • Waste from construction vehicles – construction vehicles provided with drip trays, regular inspection and maintenance of vehicles • Waste containers/bins regularly removed from site • Waste regularly taken to nearest landfill • Separate bins for hazardous and domestic/general waste 		

Issues/Aspects	EMP Conditions	Compliance Rating	Comments
Water Management	<ul style="list-style-type: none"> Recycling of grey water 		
Borrow pit Management	<ul style="list-style-type: none"> During excavations – topsoil stockpiled in demarcated area Topsoil used to rehabilitate post-construction degraded areas 		
General Health and Safety	<ul style="list-style-type: none"> HIV/AIDS and TB education programmes provided to contract workers Road safety ensured – driving on demarcated roads only, all vehicles on site roadworthy, drivers to have valid driver’s licence, loads upon vehicles properly secured Excavated areas- demarcated, not left open for long periods 		
Dust	<ul style="list-style-type: none"> Dust suppression means utilised Stockpiles covered with plastic Dust protection masks provided to workers (if complain about dust) 		
Noise	<ul style="list-style-type: none"> Work hours 08h00 to 17h00 		
Communication	<ul style="list-style-type: none"> Communication Plan drafted 		
Archaeology	<ul style="list-style-type: none"> Should a heritage site or archaeological site be uncovered or discovered during the construction phase of the project, a “chance find” procedure to be applied 		

Table 4-6: Compliance rating checklist

Rating (1-5)	Compliance Rating	Description
1	No compliance	0% conditions met
2	Partial compliance	25% conditions met
3	Broad compliance	50% conditions met
4	Substantial compliance	70% conditions met
5	Full compliance	100% All activities conditions met

.....
Environmental Control Officer (ECO)

.....
Date

.....
Contractor

.....
Date

.....
Developer’s Representative (DR)

.....
Date

Appendix C: Environmental Clearance Certificate

(Please refer to the Appendix C in the first application)