

August 2021

Environmental Management Plan for:

*Township Establishment of the
Logistics Park, creation of
street and installation of bulk
services, Keetmanshoop,
Karas Region.*

APP002869

Prepared for: Keetmanshoop Municipality

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ABBREVIATIONS

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

1 INTRODUCTION

The town of Keetmanshoop is one of the older towns in Namibia and has a relatively well established urban environment. As with many towns in Namibia growth of the urban area will take place and as such urban infill of previously underutilised spaces and areas are often seen as the ideal manner of integrating townships and ensuring urban infill. Through subdivisions and consolidations, the development potential of vacant areas can be increased, and these areas can be made available for investment purposes. The proponent is of the intention to create an industrial development on the subject portion and due to the locality of the portion, which is located close to the existing industrial area, it would be ideal for the proposed development. The Keetmanshoop Municipality hereafter referred to as the proponent is of the intention to undertake the following activities:

- **Township Establishment of the Logistics Park, creation of street and installation of bulk services, Keetmanshoop, Karas Region.**

Stubenrauch Planning Consultants (SPC) has been appointed to update this Environmental Management Plan (EMP) as part of the application for the renewal of the Environmental Clearance Certificate (ECC) for the proposed developments. The EMP was compiled by Africa Planning Forum in 2018 as part of the scoping EA process conducted for the development. Regulation 8 of the Environmental Management Act's (EMA) (7 of 2007) Environmental Impact Assessment Regulations (2012) requires that a draft EMP should be included within a scoping report.

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:

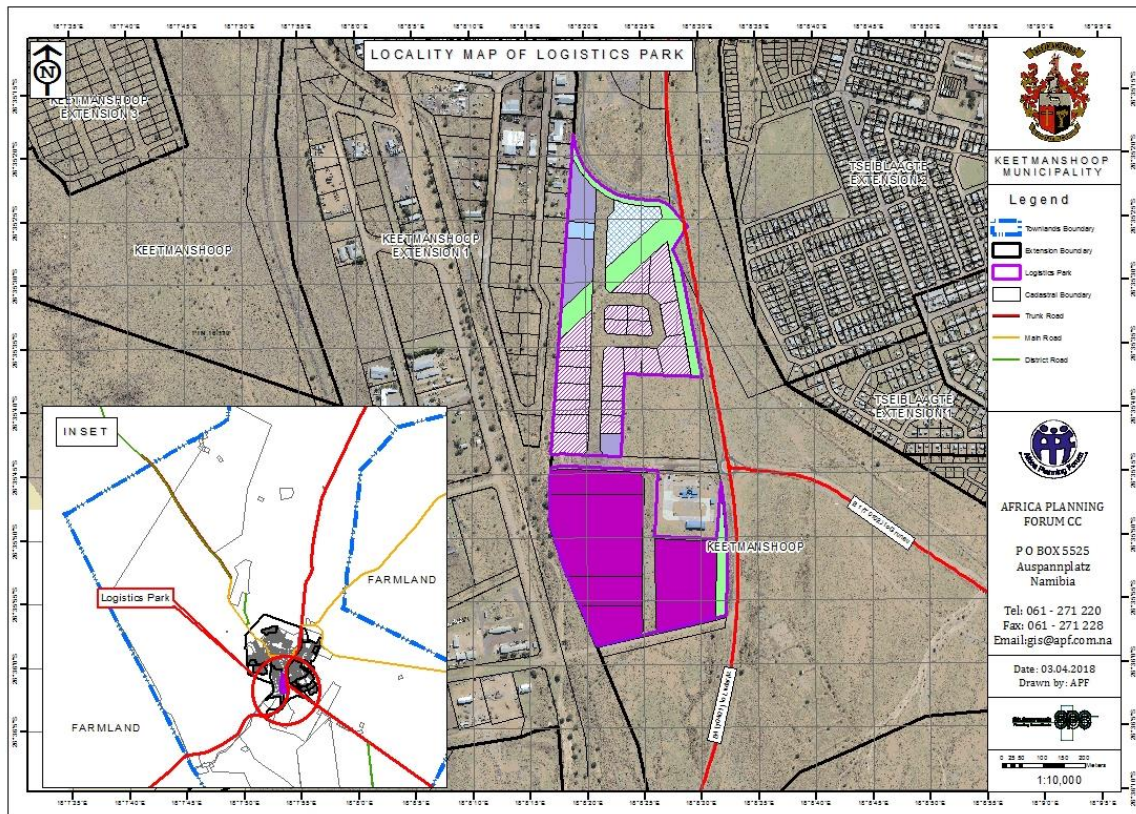
- Planning and Design – the period, prior to construction, during which preliminary legislative and administrative arrangements, necessary for the preparation of erven, are made and engineering designs are carried out. The preparation of construction tender documents forms part of this phase;
- Construction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

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

The decommissioning of these developments is not envisaged; however in the event that this should be considered some recommendations have been outlined in **Table 4-5**.

2 PROJECT DESCRIPTION

The area earmarked for the Logistics Park is situated to the west of the B1 road and south of the new mall. It is situated at the circle leading to Lüderitz and Grünau as depicted in **Figure 1** below.



Erf 2292, Keetmanshoop

Erf 2292 Keetmanshoop is situated to the west of the B1 to Windhoek and south of the new mall in Keetmanshoop. Erf 2292 is zoned “Undetermined” according to the Town Planning Scheme of Keetmanshoop. The erf measures 22.7643 ha in extent and ownership of the erf vests with the Keetmanshoop Municipality. The northern section of the logistics park is to be created through the subdivision of Erf 2292, Keetmanshoop into 32 erven and Remainder. The figure (**Figure 2**) below indicates the proposed layout for Erf 2292, Keetmanshoop.

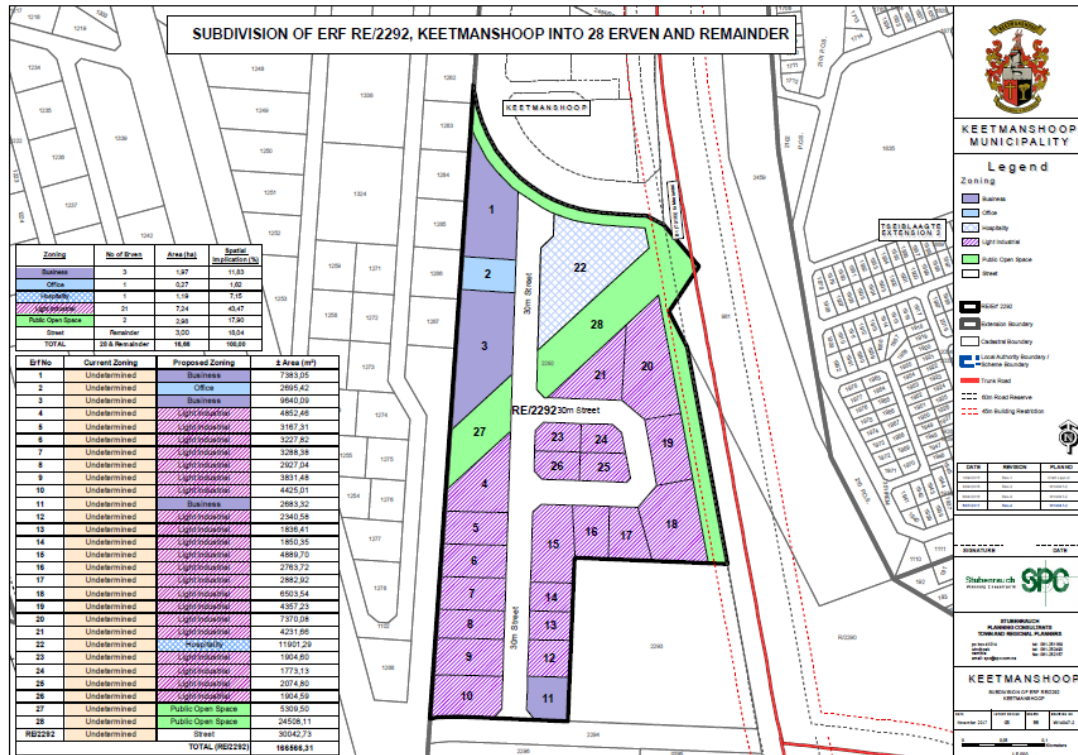


Figure 2: Layout for Erf 2292 - Logistics Park (SPC,2016)

Erf 2296, Keetmanshoop

Erf 2296 Keetmanshoop comprises of approximately 12.91 ha. The site is zoned as “Undetermined” and as such suitable for township development. The southern section of the logistics park is to be created through the subdivision of Erf 2296, Keetmanshoop into 6 erven and Remainder.

Erf 2296 is located to the south of Erf 2292, Keetmanshoop. Due to the accessibility of the industrial area to the B1 Erf 2296 is well positioned for the development of transport related businesses such as an inland container port, distribution centres or warehousing. As such the site was divided into:

- Five “Industrial” erven,
- One Public Open Space (for stormwater management and to prevent/manage direct access from the B1 into the area), and
- Street.

The figure below (Figure 3) indicates the proposed layout for Erf 2296, Keetmanshoop.

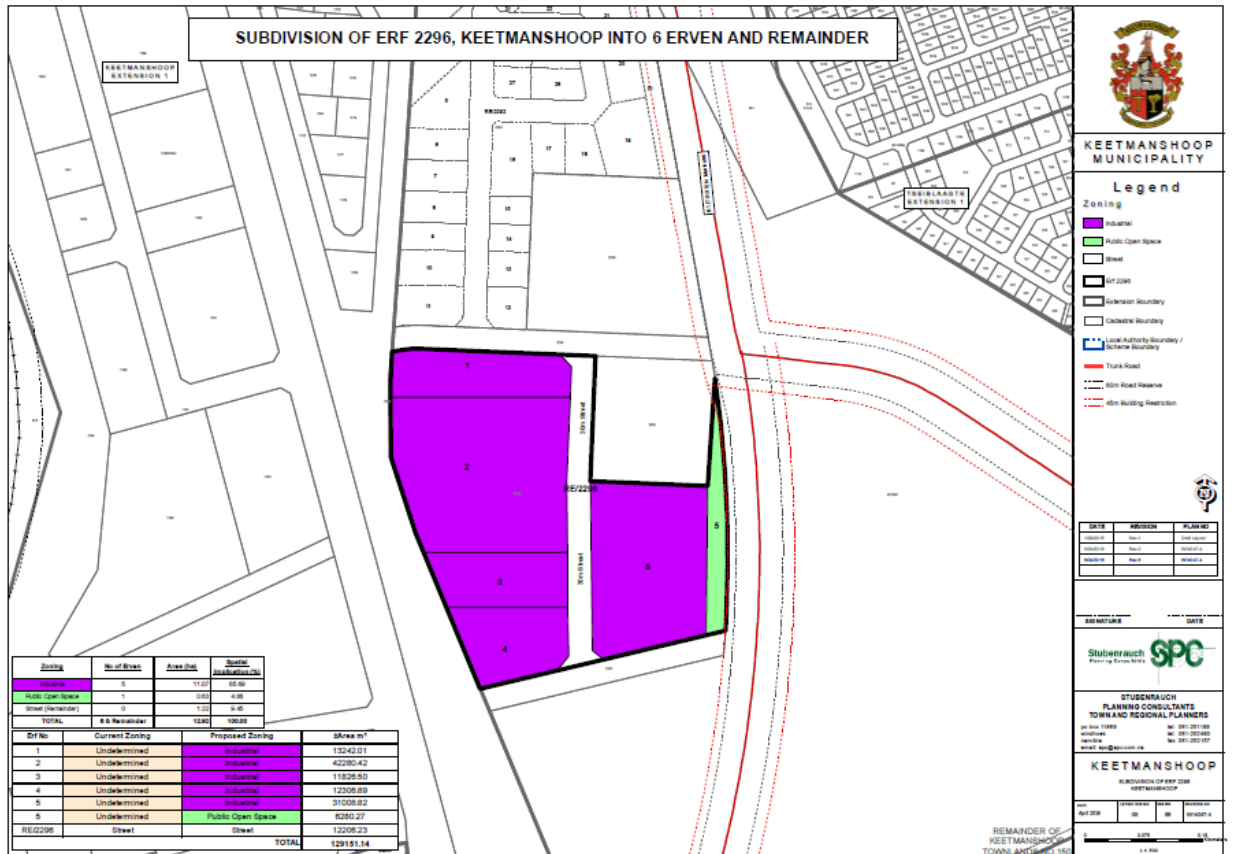


Figure 3: Layout for Erf 2296 - Logistics Park (SPC,2016)

The proposed overall development is to consist of Office, Business, Light Industrial, Industrial, Hospitality and Business zoned erven as indicated on the combined map (Figure 4) below.



Figure 4: Layout Map Logistics Park (SPC, 2016)

3 ROLES AND RESPONSIBILITIES

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

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

3.1 COUNCIL’S REPRESENTATIVE

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

Table 3-1 Responsibilities of CR

Responsibility	Project Phase
Making sure that the necessary approvals and permissions laid out in Table 4-1 are obtained/adhered to.	Throughout the lifecycle of these developments
Making sure that the relevant provisions detailed in Table 4-2 are addressed during planning and design phase.	Planning and design phase
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 CR should assign the responsibility of overseeing the implementation of the whole EMP on the ground during the construction and operation and maintenance phases to a designated member of staff, referred to in this EMP as the Environmental Control Officer (ECO). The CR/Keetmanshoop Municipality 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 Keetmanshoop Municipality, CR, 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);
- Assisting the Contractor in finding solutions with respect to matters pertaining to the implementation of this EMP;
- Advising the CR on the removal of person(s) and/or equipment not complying with the provisions of this EMP;
- Making recommendations to the CR with respect to the issuing of fines for contraventions of the EMP; and
- Undertaking an annual review of the EMP and recommending additions and/or changes to this document.

3.3 CONTRACTOR

Contractors appointed by Keetmanshoop Municipality 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 Township Establishment of the Logistics Park, creation of street and installation of bulk services as outlined in **Figure 9** of the Environmental Scoping Report. SPC will not be held responsible for the potential consequences that may result from any alterations to the above mentioned layout.
- It is assumed that construction labourers will be sourced mostly from the Keetmanshoop townlands area and that migrant labourers (if applicable) will be housed in established accommodation facilities within Keetmanshoop.

- No engineering designs have been carried out for the development of the associated services infrastructure (roads, potable water, storm water, sewerage and electrical reticulations).

4.2 APPLICABLE LEGISLATION

Legal provisions that have relevance to various aspects of these developments are listed in **Table 4-1** 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	<p>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.”</p> <p>Article 95(l) deals with the “maintenance of ecosystems, essential ecological processes and biological diversity” and sustainable use of the country’s natural resources.</p>	Sustainable development should be at the forefront of this development.
Environmental Management Act No. 7 of 2007 (EMA)	<p>Section 2 outlines the objective of the Act and the means to achieve that.</p> <p>Section 3 details the principle of Environmental Management</p>	The development should be informed by the EMA.
EIA Regulations GN 28, 29, and 30 of EMA (2012)	<p>GN 29 Identifies and lists certain activities that cannot be undertaken without an environmental clearance certificate.</p> <p>GN 30 provides the regulations governing the environmental assessment (EA) process.</p>	<p>Activity 10.1 (a) (Infrastructure) The construction of – Oil, water, gas and petrochemical and other bulk supply pipelines.</p> <p>Activity 10.1 (b) The construction of public roads.</p> <p>Activity 10.2 (a) The route determination of roads and design of associated physical infrastructure where it is a public road.</p> <p>Activity 11.2 (Other Activities) Construction of cemeteries,</p>

LEGISLATION/POLICIES	RELEVANT PROVISIONS	RELEVANCE TO PROJECT
		camping, leisure and recreation sites
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 have to adhere to the guidelines provided to manage the aspects of HIV/AIDS. Experience with construction projects has shown that a significant risk is created when migrant construction workers interact with local communities.
Township and Division of Land Ordinance 11 of 1963	The Townships and Division of Land Ordinance regulates subdivisions of portions of land falling within a Local Authority area	In terms of Section 19 such applications is to be submitted to the Townships Board
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 has to comply with provisions of the Local Authorities Act
Labour Act no. 11 of 2007	Chapter 2 details the fundamental rights and protections.	Given the employment opportunities presented by the

LEGISLATION/POLICIES	RELEVANT PROVISIONS	RELEVANCE TO PROJECT
	Chapter 3 deals with the basic conditions of employment.	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.

LEGISLATION/POLICIES	RELEVANT PROVISIONS	RELEVANCE TO PROJECT
Nature Conservation Ordinance no. 4 of 1975	Chapter 6 provides for legislation regarding the protection of indigenous plants	Indigenous and protected plants have to be managed within the legal confines.
Water Quality Guidelines for Drinking Water and Waste Water Treatment	Details specific quantities in terms of water quality determinants, which waste water should be treated to before being discharged into the environment (see Appendix B).	These guidelines are to be applied when dealing with water and waste treatment
Environmental Assessment Policy of Namibia (1995)	The Policy seeks to ensure that the environmental consequences of development projects and policies are considered, understood and incorporated into the planning process, and that the term ENVIRONMENT is broadly interpreted to include biophysical, social, economic, cultural, historical and political components.	This EIA considers this term of Environment.

4.3 PLANNING AND DESIGN PHASE

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

Table 4-2: 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 as far as roads are concerned. 	Proponent
Roads	<ul style="list-style-type: none"> • Make ample provision in road design for pedestrian walkways and speed bumps at crossing and busy nodes • Ensure that road junctions have good sightlines. • Implement traffic control measures where necessary. 	Proponent, Contractor

4.4 CONSTRUCTION PHASE

The management actions listed in **Table 3-3** applies 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	Impact	Management Actions	Person Responsible
EMP training	Lack of EMP awareness and the implications thereof	All construction workers are to undergo EMP training that should include as a minimum the following: <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. 	ECO, CR, Contractor
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; 	Contractor

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

Environmental Feature	Impact	Management Actions	Person Responsible
		<ul style="list-style-type: none"> ○ 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. ● 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 CR 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. 	Contractor, CR

Environmental Feature	Impact	Management Actions	Person Responsible
		<ul style="list-style-type: none"> • Avoid sensitive areas (e.g. rivers/drainage lines). 	
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. 	Contractor
Water, Sewage and grey water	Contamination of surface and groundwater sources and water wasting	<ul style="list-style-type: none"> • 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: <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 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 	Contractor

Environmental Feature	Impact	Management Actions	Person Responsible
		<p>minimised and that where these occur, that they are appropriately dealt with.</p> <ul style="list-style-type: none"> • 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 as designated by the Keetmanshoop Municipality. • Construction workers should be given ablution facilities at the construction sites that are located at least 30 m away from any surface water and ground water resources and should be regularly serviced. • Washing of personnel or any equipment should not be allowed on site. Should it be necessary to wash construction equipment these should be done at an area properly suited and prepared to receive and contain polluted waters. 	
General waste	Visual impact and soil contamination	<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. 	Contractor

Environmental Feature	Impact	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 as designated by the Keetmanshoop Municipality. • 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 	
Topsoil	Loss of topsoil and associated opportunity costs	<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. 	Contractor
Rehabilitation	Visual impact	<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: 	Contractor, ECO

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

Environmental Feature	Impact	Management Actions	Person Responsible
		<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. ○ 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. 	Contractor

Environmental Feature	Impact	Management Actions	Person Responsible
		<ul style="list-style-type: none"> • Loads upon vehicles should be properly secured to avoid items falling off the vehicle. 	
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 and topsoil stockpiles with danger tape. • All building materials and equipment are to be stored only within set out and demarcated work areas. • Only road construction personnel will be allowed within these work areas. • Comply with all waste related management actions stated above in this table. • A qualified traffic controller should be onsite always to direct the movement of other passenger vehicles as construction will be on-going. 	Contractor
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. 	Contractor

Environmental Feature	Impact	Management Actions	Person Responsible
		<ul style="list-style-type: none"> Workers responsible for cleaning the toilets should be provided with environmentally-friendly detergents, latex gloves and masks. 	
Open fires	Injury or loss of life	No open fires may be made anywhere on site.	ECO
General health and safety	Injury or loss of life	<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 the relevant personal protective equipment (PPE). Sufficient potable water reserves should be available to workers at all times. No person should be allowed to smoke close to fuel storage facilities or portable toilets (if toilets are chemical toilets – the chemicals are flammable). No workers should be allowed to drink alcohol during work hours. No workers should be allowed on site if under the influence of alcohol. 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	Impact	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	Work hours should be restricted to between 08h00 and 17h00 where construction involving the use of heavy equipment, power tools and the movement of heavy vehicles is less than 500 m from residential areas. If an exception to this provision is required, all residents within the 500 m radius should be given 1 week’s written notice.	Contractor
Recruitment of labourers	Negative conflict regarding recruitment	<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. 	Contractor

Environmental Feature	Impact	Management Actions	Person Responsible
		<ul style="list-style-type: none"> 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. 	
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. How these I&APs will be consulted on an ongoing basis. Make provision for grievance mechanisms – i.e. how concerns can be lodged/ recorded and how feedback will be delivered as well as further steps of arbitration in the event that feedback is deemed unsatisfactory. 	Contractor, Proponent
General communication	Negative conflict with I&APs	<ul style="list-style-type: none"> The CR must appoint an ECO to liaise between the Contractor, I&APs, Developer. The Contractor shall at every monthly site meeting report on the status of the implementation of all provisions of the EMP. The Contractor should implement the EMP awareness training as stipulated above in this table. 	CR, ECO, Contractor

Environmental Feature	Impact	Management Actions	Person Responsible
		<ul style="list-style-type: none"> • 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 CR before construction commences. • The Communication Plan, once agreed upon by the Developer, shall be legally binding. • All communication with the I&APs must take place through the ECO. • A copy of the EMP must be available at the site office and should be accessible to all I&APs. • Key representatives from the above mentioned list need to be invited to attend monthly site meetings to raise any concerns and issues regarding project progress. • The Contractor should liaise with the Developer regarding all issues related to community consultation and negotiation before construction commences. • A procedure should be put in place to ensure that concerns raised have been followed-up and addressed. • All people on the I&APs list should be informed about the availability of the complaints register and associated grievance mechanisms in writing by the CR prior to the commencement of construction activities. 	

Environmental Feature	Impact	Management Actions	Person Responsible
Archaeology	Loss of heritage resources	<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; 	ECO, Contractor

Environmental Feature	Impact	Management Actions	Person Responsible
		<ul style="list-style-type: none"> ○ Schedule a field inspection with an archaeologist to confirm that remains are human; ○ Advise and liaise with the NHCN and Police; and ○ Remains will be recovered and removed either to the National Museum or the National Forensic Laboratory. 	

4.5 OPERATION AND MAINTENANCE PHASE

The management actions included in **Table 3-4** below apply during the operation and maintenance phase of these developments.

Table 4-4: Operation and maintenance management actions

Environmental Feature	Impact	Management Actions	Person Responsible
EMP training	Lack of EMP awareness and the implications thereof	All contractors appointed for maintenance work on the respective services infrastructure must ensure that all personnel are aware of necessary health, safety and environmental considerations applicable to their respective work.	CR, Contractor
Water	Surface and groundwater contamination	Ensure that surface run-off water accumulating on-site are channeled and captured through a proper storm water management system to be treated in an appropriate manner before disposal into the environment.	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 incorporation of indigenous vegetation into road development. • To mark the area with appropriate road warning signs (e.g. the road curves to the left/right) 	Proponent
Noise	Noise nuisance impact	The proponent should consult with the view to incorporate the relevant local/national/international guidelines to manage the generation of traffic noise in the development area.	Proponent
Hazardous Substances	Surface and groundwater impacts	<ul style="list-style-type: none"> • Storage of Hazardous substances in a bunded area, with volume of 120% of the largest single storage container or 25% of the total storage containers whichever is greatest. 	Contractor, ECO, Proponent

Environmental Feature	Impact	Management Actions	Person Responsible
		<ul style="list-style-type: none"> Vehicles to be refuelled in designated areas that have protective surface covering and utilise drip trays for stationery plant. 	

4.6 DECOMMISSIONING PHASE

The decommissioning of these developments is not foreseen as this subdivision and street creation is envisaged to be permanent. In the event that this infrastructure development is 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 - Property Development Environmental Management Plan

Environmental feature	Mitigation measure	Person Responsible
Conservation of vegetation	<ul style="list-style-type: none"> • All trees listed (with co-ordinates provided) in the title deed for this erf should be conserved as far as practicably possible. These trees should be incorporated into the planning layout of any structures to be erected on this erf. • Where listed trees cannot be accommodated by the planned structures to be built, written motivation should be submitted to the relevant authority requesting permission to remove such trees. Only once a permit has been received from the Directorate of Forestry may the owner of the erf remove affected trees. 	Contractor
Health and safety	<ul style="list-style-type: none"> • No human waste may be expelled on open soil. Every construction site should have at least one portable toilet. • Only one or two security guards may reside/sleep on-site during construction. No other construction personnel may sleep/reside on-site. • No open fires may be made anywhere on-site during the construction period. Heating and cooking facilities (where necessary/applicable) should be provided by the Contractor. 	Contractor
Waste management	<ul style="list-style-type: none"> • The waste container of portable toilets should be emptied on a regular basis to avoid overflows. Waste from portable toilets should be disposed of at municipal wastewater treatment facility. • All waste should be placed in the appropriate waste containers on a daily basis. 	Contractor

Environmental feature	Mitigation measure	Person Responsible
	<ul style="list-style-type: none">• All waste on-site should be removed on a weekly basis.• Concrete should not be mixed on open soil. Concrete should be mixed on an impermeable (i.e. lined) surface.	

Appendix B –Water Quality Guidelines for Drinking Water and Waste Water Treatment

Appendix C – Environmental Clearance Certificate