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Environmental Management Plan for the Osona Village Master Plan, Okahandja, Otjozondjupa Region

EMP

APP-003762

Final

June 2024

Preferred Land Development Holdings (Pty) Ltd

GCS Project Number: 23-0368

Client Reference: OVD EMP



Environmental Management Plan for the Osona Village Master Plan, Okahandja, Otjozondjupa Region

Environmental Management Plan

Version – Final

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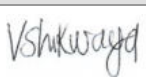
Author	Victoria Shikwaya		June 2024
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1 OVERVIEW

1.1 Project Background

The Osona Village Development (OVD) is located approximately 10 km south of Okahandja, adjacent to the B1 road and north-west of the Osona Military base. The OVD provides a satellite urban area which complements the existing urban area of Okahandja. The objective of the development is to engage pro-actively in the land delivery process while complimenting the urban development of Okahandja. Please refer to **Figure 1-1** for the locality of the development.

Figure 1-1: Location of Osona Village (Google Earth)

Osona Village Proper, Extension 1 and 2 obtained environmental clearance in 2015, Osona Village Extensions 3 and 4 obtained environmental clearance in 2017 and the overall Osona Village Master Plan which encompasses the entire development obtained environmental clearance in 2018 (**Appendix A**) which expired in December 2021. The renewal of the ECC for the proposed development was submitted by GCS Water and Environmental Engineering Namibia (Pty) Ltd (GCS) in 2021, and the ECC was granted as per letter dated 30 November 2021 (**Appendix A**). Construction has since commenced within the OVD.

The Environmental Clearance Certificate (ECC) conditions state that regular environmental monitoring and evaluations on environmental performance should be conducted. Furthermore, targets for improvement should be established and monitored throughout this process. As such monthly environmental monitoring has been conducted on site since 2018. The latest monitoring report is attached as **Appendix B**.

The ECC is only valid for three years (until 30 November 2023) and as such Preferred Land Development Holdings (Pty) Ltd (The proponent or PLDH) has appointed GCS Water and Environmental Engineering (Pty) Ltd (GCS) to apply to the Ministry of Environment, Forestry and Tourism (MEFT) for the renewal of the ECC.

1.2 Purpose of the EMP

Regulation 8 of the Environmental Management Act's (EMA) (7 of 2007) Environmental Impact Assessment Regulations (2012) requires that a draft Environmental Management Plan (EMP) be included as part of the scoping Environmental Assessment (EA) process. A 'management plan' is defined as:

"*…a plan that describes how activities that may have significant environments effects on the environment are to be mitigated, controlled and monitored*."

An EMP is one of the most important outputs of the EA process as it synthesises all the proposed mitigation and monitoring actions, set to a timeline and with specific assigned responsibilities. It provides a link between the impacts identified in the Environmental Impact Assessment (EIA) Process and the required environmental management on the ground during project implementation and operation. It is important to note that an EMP is a legally binding document and a person who contravenes the provisions of this EMP may face imprisonment and/or a fine. This EMP is a living document and should be amended to adapt to project changes and/or environmental conditions and feedback from compliance monitoring.

The purpose of this document is therefore to guide environmental management throughout the following life-cycle stages of the proposed development, pre-operation (planning and design), construction, operation, and decommissioning.

The following phases are addressed in this EMP:

- **Planning and design (Pre-operation)** - the period, prior to the commencement of the construction phase, during which preliminary legislative and administrative arrangements are carried out in preparation of the proposed activities;
- **Construction** – the period during which construction of the proposed services, roads and associated infrastructure will be ongoing;
- **Operation** - the period during which the townships, proposed services, roads, and associated infrastructure will be operational.
- **Decommissioning** – The proposed activities are expected to be a permanent activity and is thus not anticipated to be decommissioned in future. As such the decommissioning impacts for the proposed activity is not discussed.

1.3 Environmental Assessment Practitioner (EAP)

GCS Water Environmental Engineering Namibia (Pty) Ltd ("GCS" hereafter) have been appointed as independent environmental consultants to apply for the renewal of the Environmental Clearance Certificate (ECC). This includes the updating of the existing EMP for the development (which was developed by Africa Planning Forum cc in 2018 and updated by GCS in 2021). The updated EMP is to be submitted with the ECC renewal application to apply for the renewal of the ECC. The application will be submitted to the Environmental Commissioner at the Department of Environmental Affairs (DEA) of the Ministry of Environment, Forestry and Tourism (MEFT). The EMP will also be used by Contractors as well as the Proponent in guiding them during the proposed operations to ensure that impacts on the environment are limited or avoided altogether.

1.4 Legal Requirements

The contents of the EMP must meet the requirements Section 8 (j) of the EIA Regulations. The EMP must address the potential environmental impacts of the proposed activity on the environment throughout the project life cycle. It must also include a system for assessment of the effectiveness of monitoring and management arrangements after implementation. PLDH therefore has the responsibility to ensure that the proposed activity as well as the EIA process conforms to the principles of EMA and must ensure that any contractors appointed by them also comply with such principles.

Table 1-1 below lists the requirements of an EMP as stipulated by Section 8 (j) of the EIA Regulations.

Table 1-1: Applicable and relevant Namibian legislations and guidelines for the EA process

Legislation	Permit/Approval/Requirement	Contact Details
Environmental Management Act 2007 Environmental Impact Assessment (EIA) Regulations (EIAR) (GG No. 4878)	Amendments (required every 3 years) to this EMP will require an amendment of the ECC for these developments. Activities listed in Government Notice (GN) No. 29 of GG No. 4878 require an ECC.	Mr Damian Nchindo Department of Environmental Affairs, Ministry of Environment, Forestry and Tourism Tel: 061 284 2701
Water Act 54 of 1956	Prohibits the pollution of underground and surface water bodies (S23 (1)). Liability of clean-up costs after closure/abandonment of an activity (S23 (2)).	Mr Witbooi (Department of Water Affairs): Tel: (061) 208 7226

Legislation	Permit/Approval/Requirement	Contact Details
Water Resources Management Act No.11 of 2013	The act provides for the management, protection, development, use and conservation of water resources; and provides for the regulation and monitoring of water services and to provide for incidental matters. The objects of this Act are to: Ensure that the water resources of Namibia are managed, developed, used, conserved and protected in a manner consistent with, or conducive to, the fundamental principles set out in Section 66 - protection of aquifers, Subsection 1 (d) (iii) provide for preventing the contamination of the aquifer and water pollution control (Section 68).	
Forestry Act 12 of 2001	The Act provides for the management and use of forests and related products / resources. It offers protection to any living tree, bush or shrub growing within 100 metres of a river, stream or watercourse on land that is not a surveyed erven of a local authority area. In such instances, a licence would be required to cut and remove any such vegetation. These provisions are only guidelines.	If there are trees within the proposed footprint of the project area that need to be removed, the proponent should notify the Okahandja Forestry Department of the number and/or type of trees to be removed and apply for permit to remove protected tree species.

Legislation	Permit/Approval/Requirement	Contact Details
Namibia 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	Mr Tobias Newaya Ministry of Urban and Rural Development tnewaya@murd.gov.na
Roads Ordinance 17 of 1972	• Section 3.1 deals with width of proclaimed roads and road reserve boundaries • Section 27.1 is concerned with the control of traffic on urban trunk and main roads • Section 36.1 regulates rails, tracks, bridges, wires, cables, subways or culverts across or under proclaimed roads • Section 37.1 deals with Infringements and obstructions on and interference with proclaimed roads.	Ms Elina Lumbu Roads Authority Specialised road Legislation, Advise & Compliance lumbue@ra.org.na

1.5 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 Impact Assessment (EIA) conducted for the proposed development by Africa Planning Forum cc in 2018. No specialist studies were included as part of the assessment; and
- The mitigation measures recommended in this EMP document is based on the risks/impacts in the scoping report which were identified based on the provided project description and site investigation. Should the scope of the project change, the risks will have to be reassessed and mitigation measures provided accordingly.

1.6 Report Structure

This EMP lays out the management actions for the proposed township establishment activities. The EMP addresses the following phases:

- **Planning and design (Pre-construction)** - the period, prior to the commencement of the construction phase, during which preliminary legislative and administrative arrangements are carried out in preparation of the proposed activities;
- **Construction** – the period during which construction of the proposed services, roads and associated infrastructure will be ongoing;
- **Operation** - the period during which the townships, proposed services, roads, and associated infrastructure will be operational.
- **Decommissioning** – The proposed activities are expected to be a permanent activity and is thus not anticipated to be decommissioned in future. As such the decommissioning impacts for the proposed activity is not discussed.

2 PROJECT DESCRIPTION

2.1 Background

The Osona Village Development consists of the townships Osona Village Proper to Extension 17. The overall concept of the Osona Village development can be seen in **Figure 2-1** and **Figure 2-2 below**. This outlines the land uses catered for within the larger Osona Village Development such as residential, schools, CBD etc. It additionally indicates the A1 bypass and how it is incorporated within the development.

Figure 2-1: Map of Overall Osona Village Development (SPC, 2023)

Figure 2-2: Google Image of Osona Village Development

2.2 Project Update

As at the end April 2024 there were 150 houses under construction at Osona Village. The number of completed houses amounted to 2028 houses. Construction is still ongoing at the site. **Figure 2-3** below depicts the number of property developers that have active construction sites at Osona Village. It additionally shows the number of active developments on site which refer to each development per developer.

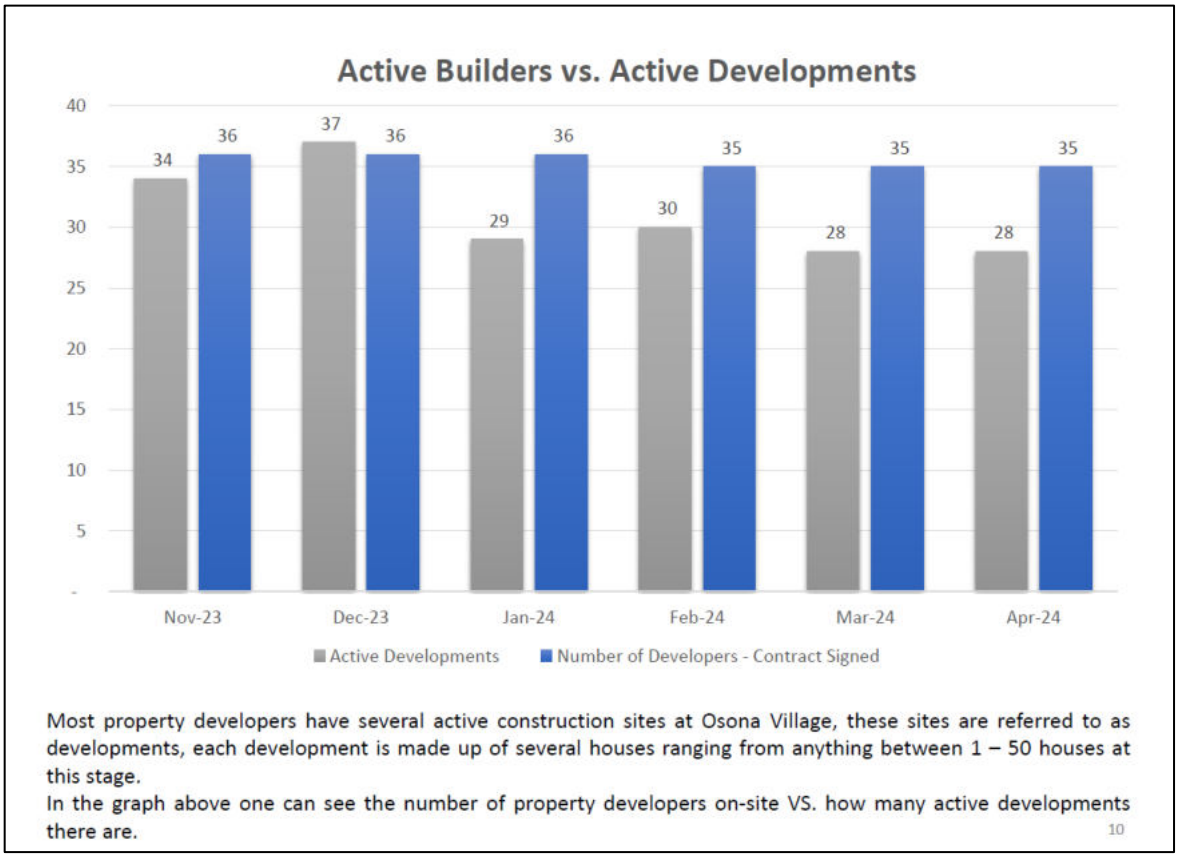

Figure 2-3: Active Builders vs Active Developments at Osona Village

The graph below depicts the number of houses completed, number of transfers registered in the Deeds office and the total number of houses occupied for the period November 2023 until April 2024.

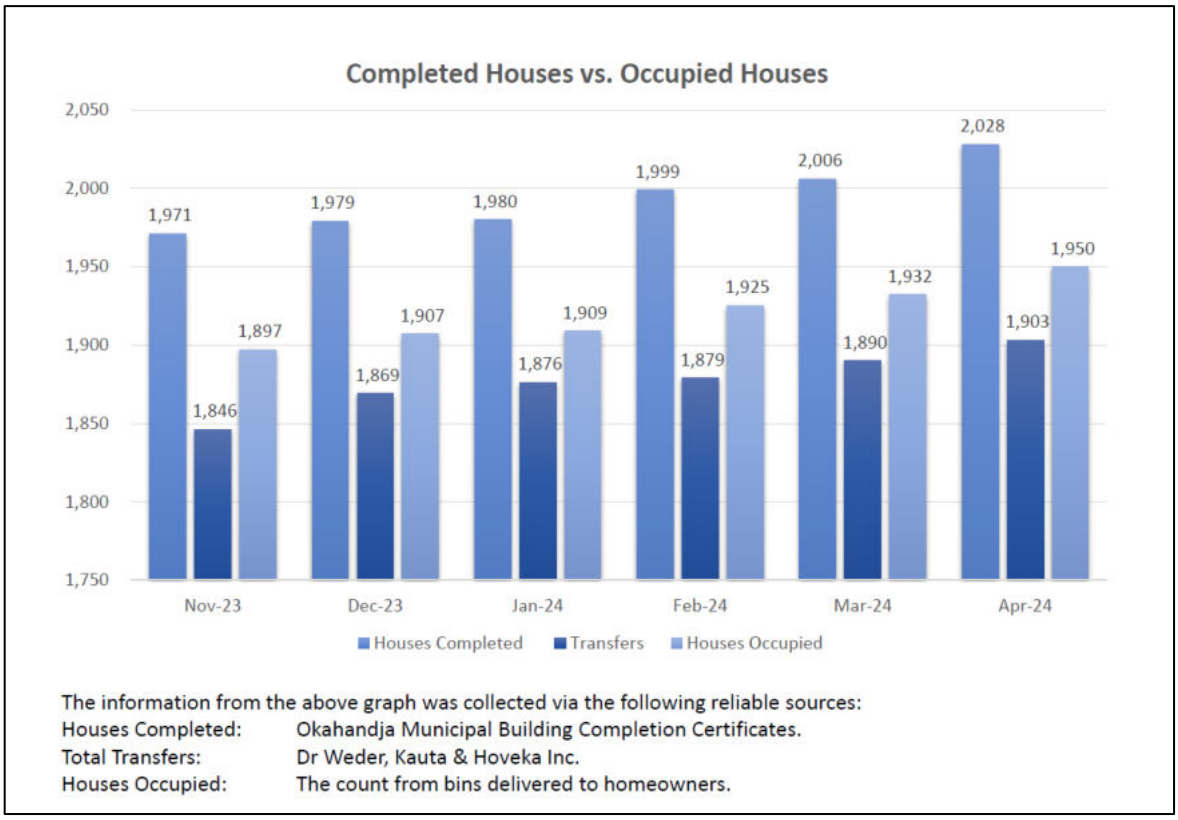

Figure 2-4: Completed vs Occupied houses at Osona Village

The Osona Village Development has grown significantly over the past three years as can be seen in **Figure 2-5** below which depicts the growth analysis for the period from April 2018 until April 2024.

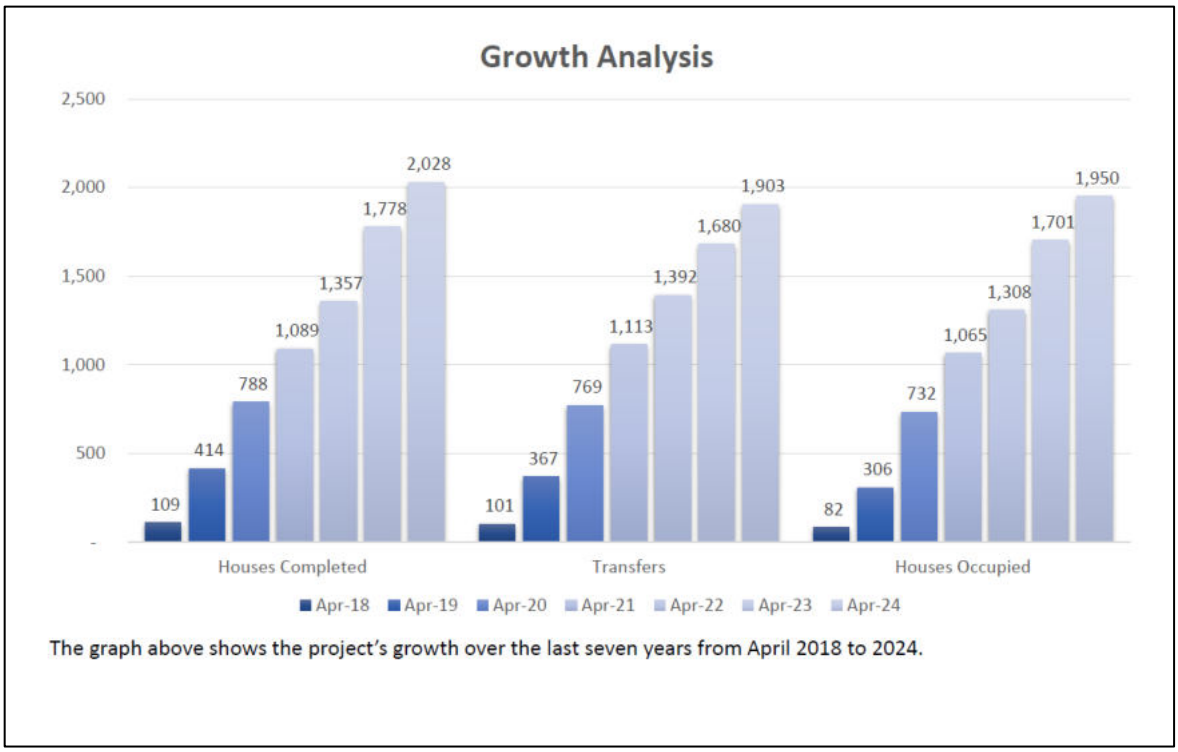

Figure 2-5: Growth Analysis for Osona Village from April 2018 until April 2024

2.3 Engineering services

Professional engineers have been appointed to design and install the bulk services infrastructure at Osona. Water is supplied to the development from the nearby reservoir by NamWater. Electricity is supplied to Osona by NamPower from the NamPower Osona Military Base substation. Osona currently operates a Wastewater Treatment Plant (WWTP) onsite.

2.4 Project Future Developments

Within the development there are pockets of undetermined erven which at the time of the layout planning, the proponent was not certain how to develop these. However, the proponent has resolved to develop these into additional townships within Osona. These however still fall within the footprint of the overall Osona Village Development and should therefore be considered as part of the development. No additional impacts other than those outlined within the scoping report are expected for these additional townships and thus these developments are proposed to be covered under the OVD Masterplan ECC.

3 ROLES AND RESPONSIBILITIES

PLDH (the Proponent) is ultimately responsible for the implementation of the EMP. The Proponent may delegate this responsibility at any time, as they deem necessary, from planning and design to operation and maintenance phase and decommissioning phase (if considered). The delegated responsibility for the effective implementation of this EMP will rest on the following key individuals which may be fulfilled by the same person:

- Proponent's Representative
- Environmental Control Officer

3.1 Proponent's Representative

If the Proponent does not personally manage all aspects of the planning and design, construction and operation and maintenance phase activities and decommissioning, referred to in this EMP, they should assign this responsibility to a suitably qualified individual referred to in this plan as the Proponent's Representative (PR). The Proponent may decide to assign the role of a PR to one person for both phases. Alternatively, the Proponent may decide to assign a separate PR for each component i.e., planning and design, construction, operation and maintenance and decommissioning phase. The PR's responsibilities are included in **Table 3-1** below.

Table 3-1: Responsibilities assigned to the Proponent's Representative for planning and design, construction, operation and maintenance and decommissioning phases

Responsibility	Project Phase
Managing the implementation of this EMP and updating and maintaining it when necessary	Throughout the lifetime of the project
Management and monitoring of individuals and/or equipment on-site in terms of compliance with this EMP	Throughout the lifetime of the project
Issuing fines for contravening EMP provisions	Throughout the lifetime of the project

3.2 Environmental Control Officer

The Proponent should assign the responsibility of overseeing the implementation of the whole EMP on the ground from the planning and design phase to operation and maintenance and decommissioning phase to a designated person, referred to in this EMP as the Environmental Control Officer (ECO). The Proponent may decide to assign this role to one person for both phases or may assign separate individual ECOs to oversee EMP implementation during each phase. The ECOs will have the following responsibilities:

- Management and facilitation of communication between the Proponent, PR and Interested and Affected Parties (I&APs) with regard to this EMP;
- Conducting site inspections (recommended minimum frequency is monthly during construction and bi-annually during operation) of all areas with respect to the implementation of this EMP (monitor and audit the implementation of the EMP);
- Advising the PR on the removal of person(s) and/or equipment not complying with the provisions of this EMP;
- Making recommendations to the PR 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.

4 ENVIRONMENTAL MANAGEMENT PLAN ACTIONS

4.1 Key Potential environmental impacts to be managed

From the EA, the following key potential impacts have been identified per project phase and are summarised in **Table 4-1** below. The full impact description is presented in the tables under subchapter 3.2 to 3.5 as well as in the Scoping Report.

Table 4-1: Summary of key potential environmental impacts per project phase

	Project Phase	**Potential impacts identified in the EA**
1	Pre-Construction	Flooding, traffic, existing services, and hazardous substances.
2	Construction	Biodiversity, surface and groundwater contamination, soil erosion and safety, heritage, health and safety, traffic, dust, noise, waste, municipal services, storage, and utilisation of hazardous substances.

	Project Phase	Potential impacts identified in the EA
3	Operation	Visual (sense of place), noise, emissions, and social impacts.

The aim of the management actions 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.

Management actions recommended to manage the potential impacts rated in the EA carried out for the proposed development are presented in the following tables. The management actions were compiled based on the three project phases:

- Planning and design phase (pre-construction) (**Table 4-2**);
- Construction (**Table 4-3**);
- Operation and maintenance phase management actions (**Table 4-4**).

The responsible persons at PLDH should assess these commitments in detail and should acknowledge their commitment to the specific management actions detailed in the table of the next subchapters.

4.2 Phase 1: Planning and Design Management Actions

The management requirements detailed in **Table 4-2** need to be carried out before any activities commence on site while necessary preliminary legislative and administrative arrangements are made in preparation for the proposed activities on site.

Table 4-2: Planning and design management actions

Aspect	Management Actions
Proposed Service Infrastructure	• While it will be incumbent on the new owners to apply for municipal services 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 in conjunction with the Town Council to ensure that the supply of engineering services is sufficient for the proposed development. • 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 wastewater should be considered wherever possible to reduce the consumption of potable water.
Roads	• 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.
Flooding	• Appoint professional engineers to develop a detailed storm water management design as part of the infrastructure service provision of the developments.

4.3 Phase 2: Construction Phase Management Actions

The management actions for the construction phase during which the construction activities will take place are listed in **Table 4-3**.

Table 4-3: Construction phase management actions

Environmental Feature	Impact	Management Actions
EMP training	Lack of EMP awareness and the implications thereof.	All construction workers are to undergo EMP training that should include as a minimum the following: • Explanation of the importance of complying with the EMP. • Discussion of the potential environmental impacts of construction activities. • Employees' roles and responsibilities, including emergency preparedness. • Explanation of the mitigation measures that must be implemented when particular work groups carry out their respective activities.
Conservation of vegetation	Loss of biodiversity	• The layout and development design should incorporate existing trees and shrubs[1] (this applies during construction of roads and services as well as construction of buildings). • The Contractor should adhere to the Plant Management Plan which includes the following as a minimum: o Endemic trees and plants 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;

[1]a "shrub" is defined as an indigenous bush, that is a small to medium-sized woody plant. It is distinguished from a tree by its multiple stems and shorter height, usually less than 6 m tall.

Environmental Feature	Impact	Management Actions
		○ Endemic plants/trees, which are impossible to conserve, need to be identified and their location recorded on a map; ○ The Contractor should apply to the Okahandja department of Forestry for a permit to remove these endemic and/or protected plants/trees. ○ Special protection should be accorded to the protected endemic species, which are to be found within the development area. ○ A list should be compiled of all endemic plants/trees to be removed detailing the erf on which they are located, the species as well as which plants will be planted to replace these. The nursery where these plants/trees will be sourced from should also be included; ○ Each endemic plant/trees that is removed needs to be replaced with an indigenous plant/tree species after construction; ○ Some of these endemic plants/trees can be obtained at the National Botanical Research Institute (NBRI) or at a commercial nursery. • Contractors should be made aware of the protected species list which outlines all plants/trees that may not be removed without a permit from the local department of Forestry. • No erf owner is allowed to remove a tree from their erf. Should a tree be found to obstruct the housing design, the proponent's representative should be made aware of it. The owner is to engage the local department of Forestry to obtain permission to remove the tree.

Environmental Feature	Impact	Management Actions
		• Only a limited width +/- 5 m on the side of roads may be partially cleared of vegetation. • Workers are prohibited from collecting wood or other plant products on or near work sites. • No alien species may be planted on or near work areas.
Lay-down areas and materials camp	Loss of biodiversity	Suitable locations for the contractors lay-down areas and materials camp should be identified with the assistance of the DR and the following should be considered in selecting these sites: • 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).
Hazardous waste	Contamination of surface and groundwater sources.	• All heavy construction vehicles and equipment on site should be provided with a drip tray. • All heavy construction vehicles should be maintained regularly to prevent oil leakages. • Maintenance and washing of construction vehicles should take place only at a designated workshop area.
Water, Sewage and grey water	Contamination of surface and groundwater sources and water wasting	• The wash water (grey water) collected from the cleaning of equipment on-site should not be left standing for long periods of time as this promotes parasite and bacterial proliferation. Grey water should be recycled: o Used for dust suppression; o Used to water a vegetable garden, or to support a small nursery;

Environmental Feature	Impact	Management Actions
		○ Used (reused) to clean equipment. • Grey water that is not recycled should be removed on a regular basis. • The mitigation measures to minimise the impacts of flooding and surface and groundwater pollution as outlined in this EMP should be implemented on site, especially during the rainy season. • 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.

Environmental Feature	Impact	Management Actions
		• 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	• All construction sites should be kept tidy at all times. All domestic and general construction waste produced on a daily basis should be cleaned and contained daily. • All construction sites are to construct a waste structure in which general waste can be disposed of. • No waste may be buried or burned. • Waste containers (bins) should be emptied regularly and removed from site to a recognised (municipal) waste disposal site. All recyclable waste needs to be taken to the nearest recycling depot where practical. • A sufficient number of separate bins for hazardous and domestic/general waste must be provided on site. These should be clearly marked as such. • 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.

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

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

Environmental Feature	Impact	Management Actions
		○ 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 road construction phase.
Road safety	Injury or loss of life	• 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.
Safety around work sites	Injury or loss of life	• Excavations should be left open for the shortest time possible. • Excavate short lengths of trenches and box areas for services or foundations in a manner that will not leave the trench unattended for more than 24 hours. • Demarcate excavated areas and topsoil stockpiles with danger tape.

Environmental Feature	Impact	Management Actions
		• 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.
Ablutions	Non-compliance with Health and Safety Regulations	• Each construction site should provide a toilet for the workers on that site. • 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: o 1 toilet for every 15 females. o 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 environmentally-friendly detergents, latex gloves and masks.
Open fires	Injury or loss of life	No open fires may be made anywhere on site.

Environmental Feature	Impact	Management Actions
General health and safety	Injury or loss of life	• A fully stocked first aid kit should permanently be available on-site as well as an adequately trained member of staff capable of administering first aid. • All workers should have access to the relevant personal protective equipment (PPE). • Sufficient potable water reserves should be available to workers at all times. • No person should be allowed to smoke close to fuel storage facilities or portable toilets (if toilets are chemical toilets – the chemicals are flammable). • No workers should be allowed to drink alcohol during work hours. • No workers should be allowed on site if under the influence of alcohol. • 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.
Dust	Nuisance and health impacts	• A watering truck should be used on gravel roads with the heaviest vehicle movement especially during dry and windy conditions. However, due consideration should be given to water restrictions during times of drought. • The use of waterless dust suppression means (e.g., lignosulphonate products such as Dustex) should be considered.

Environmental Feature	Impact	Management Actions
		• 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.
Recruitment of labourers	Negative conflict regarding recruitment	• The Contractor should compile a formal recruitment process including the following provisions as a minimum: o 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.). o Recruitment should not take place at construction sites. o Ensure that all sub-contractors are aware of recommended recruitment procedures and discourage any recruitment of labour outside these agreed upon procedures. o Contractors should give preference in terms of recruitment of sub-contractors and individual labourers to those who are qualified and from the Osona Village area and only then look to surrounding towns.

Environmental Feature	Impact	Management Actions
		• 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	• The Contractor or proponent should draft a Communication Plan, which should outline as a minimum the following: o 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. o How these I&APs will be consulted on an ongoing basis. o 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.
General communication	Negative conflict with I&APs	• 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.

Environmental Feature	Impact	Management Actions
		• 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 DR prior to the commencement of construction activities.

Environmental Feature	Impact	Management Actions
Archaeology	Loss of heritage resources	• Should a heritage site or archaeological site be uncovered or discovered during the construction phase of the project, a "chance find" procedure should be applied in the order they appear below: o If operating machinery or equipment, stop work; o Demarcate the site with danger tape; o Determine GPS position if possible; o Report findings to the construction foreman; o Report findings, site location and actions taken to superintendent; o Cease any works in immediate vicinity; o Visit site and determine whether work can proceed without damage to findings; o Determine and demarcate exclusion boundary; o Site location and details to be added to the project's Geographic Information System (GIS) for field confirmation by archaeologist; o Inspect site and confirm addition to project GIS; o Advise the National Heritage Council of Namibia (NHCN) and request written permission to remove findings from work area; and o Recovery, packaging and labelling of findings for transfer to National Museum. • Should human remains be found, the following actions will be required:

Environmental Feature	Impact	Management Actions
		o Apply the chance find procedure as described above; o Schedule a field inspection with an archaeologist to confirm that remains are human; o Advise and liaise with the NHCN and Police; and o Remains will be recovered and removed either to the National Museum or the National Forensic Laboratory.

4.4 Phase 4: Operational Phase Management Actions

The table below (**Table 4-4)** presents the management action for operational phase.

Table 4-4: Operational phase management actions

Environmental Feature	Impact	Management Actions
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.
Monitoring	EMP non-compliance	• The ECO should monitor the implementation of the Property Development EMP: • The ECO should inspect the site before construction starts; and • The ECO should inspect the site at the end of the construction period.
Water	Surface and groundwater contamination	• 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.

Environmental Feature	Impact	Management Actions
Garden and Public Open Space maintenance	Surface and groundwater contamination	• The use of fertilizers in gardens should be limited and should be applied in accordance to the directions given on the packaging. • Encourage organic farming techniques which use less fertilizer. • Discourage the overuse of fertilizers in lawns, gardens and public spaces.
Aesthetics	Visual impacts	• The proponent should consult with a view to incorporate the relevant local/national/international development guidelines which addresses the following: • 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.
Energy efficiency	Waste of scarce resources	• The proponent should consult, with the view to incorporate the relevant local/national/international development guidelines which addresses the following: • 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.

Environmental Feature	Impact	Management Actions
Noise	Noise nuisance impact	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.
Waste	Waste management	• 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. • Waste should be disposed of at a municipal approved waste disposal site. • Hazardous waste is separated from non-hazardous waste. • Hazardous waste should be disposed of at a registered hazardous waste disposal site.
Stormwater	Stormwater management	Management systems of these needs to be implemented for effective stormwater runoff.
Conservation of trees	Tree protection	• 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 Okahandja Department of Forestry requesting permission to remove such trees. Only once a permit has been received from the Department of Forestry may the owner of the erf remove affected trees.

Environmental Feature	Impact	Management Actions
Health and safety		• 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.
Waste Management	Pollution	• All waste should be placed in the appropriate waste containers on a daily basis. • 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.
Effluent	Soil and groundwater contamination	• Monthly monitoring of effluent water quality is to be conducted. • Bi-annual monitoring of groundwater and surface water resources (as applicable). • Effluent is to be tested on a bi-weekly basis at a reputable laboratory against the recommended standards for effluent water quality (or as determined by the effluent discharge permit from Ministry of Agriculture, Water and Land Reform).

4.5 Recommendations for Monitoring

In order to prevent and minimize the above-mentioned environmental impacts, the following site monitoring measures need to be done:

- Monitor whether provisions as set out in the EMP has been complied with.
- Non-compliance is to be recorded and discussed at monthly site meetings and timeous remedial actions taken.

5 CONCLUSION

Based on the recommendation given in this EMP, GCS is confident that the proposed activities, as described in the scoping report may be granted the renewal of the Environmental Clearance Certificate, provided that the EMP is implemented and that all the legal requirements pertaining to this development are complied with.

APPENDIX B: MONITORING REPORT

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Environmental Compliance Monitoring for the Osona Village Development Construction and Operations

Report

Version - Final

June 2024

Preferred Land Development Holdings (Pty) Ltd

GCS Project Number: 24-0368

Client Reference: Environmental Monitoring: June 2024



Environmental Compliance Monitoring for the Osona Village Development Construction and Operations

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1. INTRODUCTION

1.1 Background

The Osona Village Development is located approximately 10 km south of Okahandja, adjacent to the B1 road and north-west of the Osona Military base. The Osona Village Development provides a satellite urban area which complements the existing urban area of Okahandja. The objective of the development is to engage pro-actively in the land delivery process while complimenting the urban development of Okahandja. Please refer to **Figure 1-1** for the locality of the development.

Figure 1-1: Location of Osona Village

Osona Village Proper, Extension 1 and 2 obtained environmental clearance in 2015, Osona Village Extensions 3 and 4 obtained environmental clearance in 2017 and the overall Osona Village Master Plan which encompasses the entire development obtained environmental clearance in 2018. The environmental clearance conditions state that regular environmental monitoring and evaluations on environmental performance should be conducted. Furthermore, targets for improvement should be established and monitored throughout this process.

Consequently, GCS Water and Environmental Engineering Namibia (Pty) Ltd (GCS) has been appointed by Preferred Land Development Holdings (Pty) Ltd (PLDH or the proponent) to conduct the required monthly environmental monitoring to ensure compliance with the provisions outlined in the Environmental Management Plan (EMP). Environmental Monitoring has been conducted on site on monthly basis since October 2018. The environmental compliance monitoring report is herewith prepared and will be submitted to the Ministry of

Environment, Forestry and Tourism: Department of Environmental Affairs (MEFT: DEA) for auditing. This report presents the results for the monitoring for the construction and operations within the development as conducted in May 2024.

1.2 Aims of the site visit

The aims of the environmental monitoring site visit conducted on **16 May 2024** were to ensure that:

- The site activities comply with the management objectives committed to in the EMP;
- The provisions outlined within the EMP are being implemented successfully on site;
- To provide recommendations to improve the environmental compliance of the overall development; and
- To outline action plans within the report to be executed.

2. SCOPE OF WORK

The scope of work entailed:

- Site inspection for compliance to both environmental and safety regulations;
- Compilation of the Environmental Monitoring Report;
- Submission of the Environmental Monitoring Report to MEFT: DEA for auditing.

The scope of work was completed as per the methodology in the subsequent section.

3. METHODOLOGY

The monitoring was divided into three (3) phases, namely: desktop study (which entailed review of the existing Environmental Impact Assessment Report and Environmental Management Plan), Site visit (inspection of the site) and reporting and submission to the MEFT: DEA.

1.3 Phase 1: Desktop study

The Environmental Impact Assessment (EIA) Report of April 2018 (Africa Planning Forum, 2018) was reviewed as well as the Environmental Management Plan (EMP) in order to determine the management objectives committed to in the EMP. The monthly environmental monitoring reports were reviewed to identify the items which are currently non-compliant and those which require improvement. An environmental checklist was then developed, to guide the May 2024 site visit.

1.4 Phase 2: Site visit and Inspection

A site visit and inspection were conducted by GCS staff on the 16th of May 2024. A site walkover was undertaken of all construction sites, as well as the sites on which properties had been developed.

1.5 Phase 3: Reporting and submission to the MEFT: DEA

This Environmental Monitoring Report includes the following:

- Comparison of what was recommended in the EMP to what is currently being done / implemented on site.
- Comparison of what has been recommended in the previous monitoring meetings to what is currently being done / implemented on site.
- Report on the progress made since the first monitoring on site.

The results of the monitoring are presented in Section 4. After the compilation of Environmental Monitoring Report, GCS will submit the report to MEFT: DEA for auditing.

4. MONITORING FINDINGS

The findings of the monitoring/audit are included in **Table 4-3** of this Report. The findings also include practical recommendations whereby the various non-compliance issues can be corrected.

All findings were ranked according to the criteria indicated in the table below. The colour coding assigned to the rankings is used to visually indicate areas of compliance, minor non-compliance, moderate non-compliance, and major non-compliance. Furthermore, to indicate which conditions are not applicable to the on-site activities and which are repeat conditions that have already been scored. Each colour coding has a value (score) attached to it.

Table 4-1: Compliance ranking

RANKING	SCORE
Compliant	2
Minor non-compliance	1
Noted/Not Applicable	0
Repeat Condition	-
Moderate non-compliance	-1
Major non-compliance	-2

All findings were ranked according to the following criteria:

Noted/Not Applicable:

- The specific condition is not relevant to the current on-site activities.

Repeat Condition:

- The specific condition is a repeat of a previous condition.

Compliant:

- PLDH complies with the conditions as stated in the EMP.

Non-compliance:

- **Minor Non-compliance:**
  - Isolated observations demonstrating that full compliance to the environmental requirements on site have not been, or will not be, fully achieved.
- **Moderate Non-compliance:**
  - There is a substantial failure to meet the environmental requirements for the project, there is a possibility of substantial environmental degradation and/or pollution, and/or objective evidence was observed raising doubt as to the integrity of data or records inspected.
- **Major Non-compliance:**
  - There is a critical failure against legal requirements or management response that presents an immediate or significant risk that could result in prosecution and/or adverse legal findings due to failure to meet regulatory requirements; result in immediate injury or serious injury; result in prolonged business outage; and/or could result in serious damage to the project's reputation.

The findings of the audit were entered into the audit spreadsheet which tabulates the percentage of compliance to the regulatory requirements. The table can be interpreted as follows:

- **Maximum Score** – represents the score if 100% compliance is achieved; i.e., the number of conditions minus the conditions which are not applicable or repeated, multiplied by the score allocation of 2.
- **Compliance, minor non-compliance, moderate non-compliance and major non-compliance** – represent the number of times the specific rating was triggered;

- **Score** – represents the sum of the ratings (rating times the corresponding score); and
- **Percentage (%) compliance** - represents the score divided by the maximum score.

It must be noted that duplicate conditions are not scored due to the fact that this will negatively influence the scoring results. Duplicate conditions are marked as a Repeat Condition.

From the findings, it can be concluded that the OVD construction and operations is overall compliant (90% compliant) with the implementation of the EMP. Most conditions have been met fully, while other conditions have been partially met. Where non-compliances were recorded, the auditor contextualised the non-compliance in terms of the intensity. This equates to an objective view of the seriousness of the non-compliance and then leads to recommendations where minor to moderate non-compliances have been observed. Some of the non-compliances assessed have action plans that are either being compiled or are in place and will seek to reduce and eliminate the non-compliances. The summary of the findings is provided in **Figure 4-1** below.

Osona Village Development EMP Compliance Audit Results

Scoresheet	% Compliance	Score	Maximum Score	Compliance	Noted/ Not Applicable	Repeat Condition	Minor Non-Compliance	Moderate Non-Compliance	Major Non-Compliance
OVD	90%	154	172	72	17	8	13	3	0

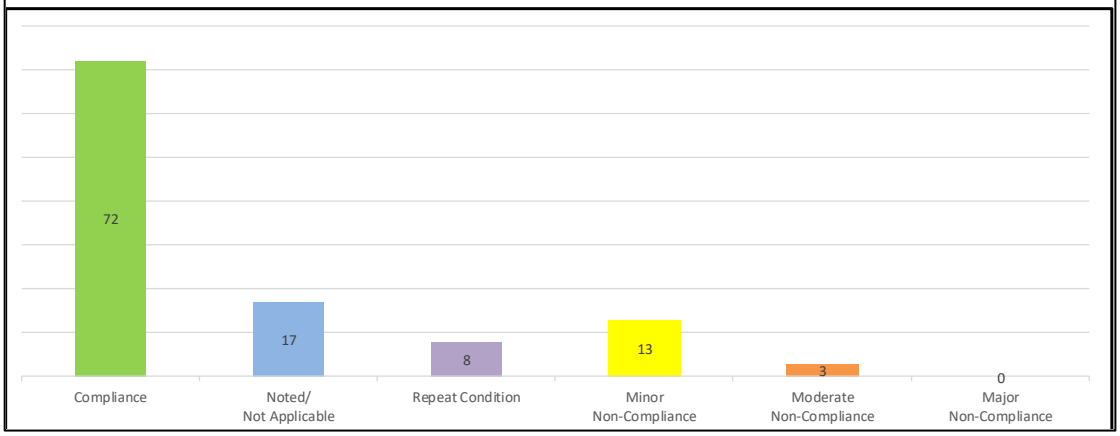


Figure 4-1: EMP Compliance Summary

Table 4-2: EMP Compliance Audit Findings.

Osona Village Development Environmental Compliance Monitoring						
No	**Conditions**		**Status**	**Score**	**Observations**	**Recommendations**
APPENDIX I						
A	**Proposed Service Infrastructure**	**Responsible**			**Comment Here**	
1	While it will be incumbent on the new owners to apply for municipal services 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 in conjunction with the Town Council to ensure that the supply of engineering services is sufficient for the proposed development.	OPMC	Compliance	2	PLA Africa is appointed for the design and installation of the bulk engineering services.	No recommendations applicable
2	It is recommended that alternative and renewable source of energy be explored and introduced into the proposed development to reduce dependency on the grid.	OPMC	Minor non-compliance	1	Solar geysers are installed on most properties on site. Electrcity dependent on the Nampower grid.	The use of renewable energy resources should be explored as far as reasonably possible.
3	Solar geysers and panels should be considered to provide for general lighting and heating of water and buildings.	OPMC	Compliance	2	Solar geysers are installed on most properties on site.	No recommendations applicable
4	Water saving mechanisms should be considered for incorporation within the developments in order to further reduce water demands.	OPMC	Compliance	2	Water saving is considered important to the development. The use of water savings taps and shower heads is encouraged. Furthermore, prepaid water meters are installed which allow for early leak detection.	Water saving should continue to be encouraged on site and initiatives explored.
5	Re-use of treated waste water should be considered wherever possible to reduce the consumption of potable water.	OPMC	Moderate non-compliance	-1	The effluent from the sewage plant on site is aimed to the be used for watering gardens, parks etc. however the quality of the water needs to be within the recommended standards to be discharged into the environment.	The quality of the water needs to be within the recommended standards to be discharged into the environment.
B	**Roads**					
6	Make ample provision in road design for pedestrian walkways and speed bumps at crossing and busy nodes.	PLA	Minor non-compliance	1	No speed bumps or pedestrian crossings observed on site.	Currently there does not seem to be a need for these, however as the roads become busier, pedestrian walkways and speed humps are to be incorporated as needed within the development.
7	Ensure that road junctions have good sightlines.	PLA	Compliance	2	Roads have been designed by professional engineers with the recommendations in the EMP considered.	No recommendations applicable
8	Implement traffic control measures where necessary.	OPMC	Compliance	2	Traffic signs have been placed around site to control the flow of traffic.	No recommendations applicable
C	**Flooding**					

Osona Village Development Environmental Compliance Monitoring						
No	**Conditions**		**Status**	**Score**	**Observations**	**Recommendations**
9	Appoint professional engineers to develop a detailed storm water management design as part of the infrastructure service provision of the developments.	OPMC	Compliance	2	Stormwater management has been considered during the design of the roads which has been done by a professional engineer.	No recommendations applicable
D	**EMP Training**					
10	All construction workers are to undergo EMP training that should include as a minimum the following: • Explanation of the importance of complying with the EMP. • Discussion of the potential environmental impacts of construction activities. • Employees' roles and responsibilities, including emergency preparedness. • Explanation of the mitigation measures that must be implemented when particular work groups carry out their respective activities	OPMC, PLA	Compliance	2	The contractors are informed of the provisions of the EMP and their need for compliance during the contractors meeting held once a month.	No recommendations applicable
E	**Conservation of vegetation**					
11	The layout and development design should incorporate existing shrubs.	OPMC	Compliance	2	Existing trees and shrubs are considered during the street and housing design and construction.	No recommendations applicable
12	The Contractor should compile a Plant Management Plan which should include the following as a minimum: o Endemic plants 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; o Endemic plants, which are impossible to conserve, need to be identified and their location recorded on a map; o The Contractor should apply to the local authority for a permit to remove these endemic plants; o Special protection should be accorded to the protected endemic species, which are to be found within the development area; o A list should be compiled of all endemic plants to be removed detailing the erf on which they are located, the species as well as which plants will be planted to replace these. The nursery where these plants will be sourced from should also be included; o Each endemic plant that is removed needs to be replaced with an indigenous plant species after construction; o Some of these endemic plants can be obtained at the National Botanical Research Institute (NBRI) or at a commercial nursery.	OPMC	Compliance	2	The tree and plant management plan for the site involves the following: When an erf is purchased the trees on the erf which may not be removed are identified and the buyer is informed thereof. In the areas where roads and services are being constructed only the affected areas are cleared. The trees which are not to be removed are identified and kept. No protected trees may be removed without a permit from the Okahandja department of forestry. OPMC is keeping record of all trees on site which are to be protected and communicates this to the contractor prior to construction.	No recommendations applicable

Osona Village Development Environmental Compliance Monitoring						
No	**Conditions**		**Status**	**Score**	**Observations**	**Recommendations**
13	Only a limited width +/- 5 m on the side of roads may be partially cleared of vegetation.	Contractor	Compliance	2	Vegetation has been cleared to make way for the installation of services. The larger trees have been preserved as far as possible.	No recommendations applicable
14	Workers are prohibited from collecting wood or other plant products on or near work sites.	Contractor	Compliance	2	No construction workers were observed collecting fire wood on site.	This should be closely monitored daily by the PR.
15	No alien species may be planted on or near work areas.	Contractor	Compliance	2	No alien species were observed on site.	No recommendations applicable
F	**Lay-down areas and materials camp**					
16	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: • 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	Compliance	2	The contractors camps are in suitable locations on site and are enclosed.	The contractors' camps should be rehabilitated upon completion of the project.
G	**Hazardous waste**					
17	All heavy construction vehicles and equipment on site should be provided with a drip tray.	Contractor	Compliance	2	Stationary construction vehicles and equipment observed on site have drip trays installed underneath.	No recommendations applicable.
18	All heavy construction vehicles should be maintained regularly to prevent oil leakages.	Contractor	Compliance	2	Construction vehicles are maintained regularly.	This is to be monitored on site.
19	Maintenance and washing of construction vehicles should take place only at a designated workshop area.	Contractor	Compliance	2	There is no designated wash bay. Maintenance and washing of construction vehicles don't take place on site.	All construction site camps are to have a designated workshop area where maintenance and washing of construction vehicles can take place. Those that do not have may not wash or work on their construction vehicles on site.
H	**Water, Sewage and grey water**					
20	The wash water (grey water) collected from the cleaning of equipment on-site should not be left standing for long periods of time as this promotes parasite and bacterial proliferation. Grey water should be recycled: o Used for dust suppression; o Used to water a vegetable garden, or to support a small nursery; o Used (reused) to clean equipment.	Contractor	Compliance	2	No grey water was observed to be standing on site.	No recommendations applicable
21	Grey water that is not recycled should be removed on a regular basis.	Contractor	Compliance	2	No grey water was observed to be standing on site.	No recommendations applicable

Osona Village Development Environmental Compliance Monitoring						
No	**Conditions**		**Status**	**Score**	**Observations**	**Recommendations**
22	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.	Contractor	Noted/Not Applicable	0	Construction takes place all year round.	Mitigation measures to minimise the impacts of flooding and surface and groundwater pollution should be implemented as per the EMP, especially during the rainy season.
23	No dumping of waste products of any kind in or in close proximity to water bodies.	Contractor	Compliance	2	No waste was observed near any water bodies.	No recommendations applicable
24	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.	Contractor	Minor non-compliance	1	There are some tracks observed off-road which indicate that off-road driving does occur on site. However this mainly within the developed areas in the project site.	No recommendations applicable
25	Ensure that oil/ fuel spillages from construction vehicles and machinery are minimised and that where these occur, that they are appropriately dealt with.	Contractor	Compliance	2	No oil/fuel spillages was observed on site.	No recommendations applicable
26	Drip trays must be placed underneath construction vehicles when not in use to contain all oil that might be leaking from these vehicles.	Contractor	Compliance	2	Stationary construction vehicles and equipment observed on site have drip trays installed underneath.	No recommendations applicable
27	Contaminated runoff from the construction sites should be prevented from entering the surface and ground water bodies.	Contractor	Compliance	2	No run-off from construction sites was observed on site.	This is to be monitored on site.
28	All materials on the construction site should be properly stored.	Contractor	Compliance	2	Construction materials are stored within the contractors camps.	No recommendations applicable
29	Disposal of waste from the sites should be properly managed and taken to the designated landfill site.	Contractor	Moderate non-compliance	-1	Waste is observed on certain construction sites.	Each construction site must have a waste structure. Once the waste structure becomes full the waste needs to be removed to a landfill site.
30	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.	Contractor	Compliance	2	All construction sites have appropriately located ablution facilities.	No recommendations applicable
31	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.	Contractor	Minor non-compliance	1	Some construction camps have designated washing areas whereas some do not.	All construction site camps are to have a designated workshop area where maintenance and washing of construction vehicles can take place. Those that do not have may not wash or work on their construction vehicles on site.

Osona Village Development Environmental Compliance Monitoring						
No	**Conditions**		**Status**	**Score**	**Observations**	**Recommendations**
I	**General waste**					
32	The road 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.	Contractor	Minor non-compliance	1	The sites are generally observed to be tidy. Some sites do not have waste structures and have been instructed to get these to ensure that all waste is contained.	Each construction site must have a waste structure. Once the waste structure becomes full the waste needs to be removed to a landfill site.
33	No waste may be buried or burned.	Contractor	Compliance	2	No burned or buried waste was observed on site.	No recommendations applicable
34	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.	Contractor	Compliance	2	Waste receptacles are emptied once a week and taken to the Okahandja landfill.	Contractors should be encouraged to empty the waste containers at the nearest landfill as soon as they become full.
35	A sufficient number of separate bins for hazardous and domestic/general waste must be provided on site. These should be clearly marked as such.	Contractor	Compliance	2	Skips are available on site for building rubble. Domestic waste is collected in waste bins from each household. Bins for hazardous waste are clearly marked as such.	No recommendations applicable
36	Construction labourers should be sensitised to dispose of waste in a responsible manner and not to litter.	Contractor	Compliance	2	The site is generally tidy, with minor windblown waste observed.	Construction workers are sensitized of waste management during the monthly site meetings.
37	No waste may remain on site after the completion of the project.	Contractor	Compliance	2	No waste is observed at the sites at which construction has been completed.	No recommendations applicable
J	**Topsoil**					
38	When excavations are carried out, topsoil should be stockpiled in a demarcated area.	Contractor	Compliance	2	Topsoil was stockpiled at a demarcated area.	This is to be monitored on site.
39	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	Noted/Not Applicable	0	This will be considered when the construction phase is completed.	No recommendations applicable
K	**Rehabilitation**					
40	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).	Contractor	Noted/Not Applicable	0	This will be considered when the construction phase is completed.	No recommendations applicable
41	In the event that no post-construction uses are requested, all excavated/degraded areas need to be rehabilitated as follows: o Excavated areas may only be backfilled with clean or inert fill. No material of hazardous nature (e.g. sand removed with an oil spill) may be dumped as backfill; o Rehabilitated excavated	Contractor	Noted/Not Applicable	0	This will be considered when the construction phase is completed.	No recommendations applicable

Osona Village Development Environmental Compliance Monitoring						
No	**Conditions**		**Status**	**Score**	**Observations**	**Recommendations**
	areas need to match the contours of the existing landscape; o The rehabilitated area should not be higher (or lower) than nearby drainage channels. This ensures the efficiency of revegetation and reduces the chances of potential erosion; o Topsoil is to be spread across excavated areas evenly; o 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; o Ripping should be done along slopes, not up and down a slope, which could lead to enhanced erosion.					
L	**HIV/AIDS and TB training**					
42	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 road construction phase.		Repeat Condition	-		No recommendations applicable
M	**Road safety**					
43	Demarcate roads clearly.	Contractor	Repeat Condition	-		No recommendations applicable
44	Off-road driving should not be allowed.	Contractor	Repeat Condition	-		No recommendations applicable
45	All vehicles that transport materials to and from the site must be roadworthy.	Contractor	Compliance	2	Vehicles observed driving on site did not appear to be damaged.	No recommendations applicable
46	Drivers that transport materials should have a valid driver's license and should adhere to all traffic rules.	Contractor	Compliance	2	Contractors must ensure this is enforced by their workers.	This is to be monitored on site.
47	Loads upon vehicles should be properly secured to avoid items falling off the vehicle	Contractor	Compliance	2	No lose loads upon vehicles were observed on site.	This is to be monitored on site.
N	**Safety around work sites**					
48	Excavations should be left open for the shortest time possible.	Contractor	Compliance	2	Most excavations on site have been lined with danger tape/ fencing and a warning sign has been secured around it to alert residents and contractors.	No recommendations applicable
49	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.	Contractor	Compliance	2	Trenches were observed at construction sites where foundations have been dug. However, these are not significantly deep and will be closed as the construction progresses.	This is to be monitored on site.
50	Demarcate excavated areas and topsoil stockpiles with danger tape.	Contractor	Compliance	2	Danger tape and a warning sign has been secured around excavation to alert residents and contractors.	No recommendations applicable
51	All building materials and equipment are to be stored only within set out and demarcated work areas.	Contractor	Repeat Condition	-		No recommendations applicable
52	Only road construction personnel will be allowed within these work areas.	Contractor	Compliance	2	Only construction personnel allowed within work areas.	This is to be monitored on site.

Osona Village Development Environmental Compliance Monitoring						
No	**Conditions**		**Status**	**Score**	**Observations**	**Recommendations**
53	Comply with all waste related management actions stated above in this table.	Contractor	Repeat Condition	-		No recommendations applicable
54	A qualified traffic controller should be onsite always to direct the movement of other passenger vehicles as construction will be on-going.	OPMC	Noted/Not Applicable	0		No recommendations applicable
O	**Ablutions**					
55	Separate toilets should be available for men and women and should clearly be indicated as such.	Contractor	Minor non-compliance	1	Separate toilets are not available as majority of construction workers are males.	Should female construction workers be appointed on site, separate toilets should be made available.
56	Portable toilets (i.e. easily transportable) should be available at every construction site:	Contractor	Compliance	2	Each construction site has a functioning toilet.	No recommendations applicable
57	1 toilet for every 15 females.	Contractor	Minor non-compliance	1	Separate toilets are not available as majority of construction workers are males.	Should female construction workers be appointed on site, separate toilets should be made available.
58	1 toilet for every 30 males.	Contractor	Compliance	2	Each construction site has a functioning toilet.	No recommendations applicable
59	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.	Lemur	Compliance	2	The toilets are connected to the sewage on site. Sewage is treated within the sewage treatment plant on site.	No recommendations applicable
60	Workers responsible for cleaning the toilets should be provided with environmentally-friendly detergents, latex gloves and masks.	Contractor	Compliance	2	Appropriate cleaning materials and protective clothing is provided to cleaning staff responsible for cleaning toilets.	No recommendations applicable
P	**Open fire**					
61	No open fires may be made anywhere on site.	Contractor	Compliance	2	No open fires were observed on site.	This is to be monitored on site.
Q	**General health and safety**					
62	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.	Contractor	Minor non-compliance	1	This has been mentioned to contractors at the monthly meetings as part of the health and safety requirements.	Contractors should ensure that they have first aid kits available on site.
63	All workers should have access to the relevant personal protective equipment (PPE).	Contractor	Moderate non-compliance	-1	Most construction workers were observed not wearing any PPE.	Contractors and the construction workers must adhere to the requirements regarding PPE in terms of the labour act.
64	Sufficient potable water reserves should be available to workers at all times	Contractor	Compliance	2	Potable water is available on site.	No recommendations applicable
65	No person should be allowed to smoke close to fuel storage facilities or portable toilets (if toilets are chemical toilets – the chemicals are flammable).	Contractor	Compliance	2	Smoking is not permitted in these areas.	No recommendations applicable

Osona Village Development Environmental Compliance Monitoring						
No	**Conditions**		**Status**	**Score**	**Observations**	**Recommendations**
66	No workers should be allowed to drink alcohol during work hours.	Contractor	Compliance	2	Consumption of alcohol is not permitted on site during work hours.	No recommendations applicable
67	No workers should be allowed on site if under the influence of alcohol.	Contractor	Compliance	2	Construction workers are not allowed on site if under the influence of alcohol	No recommendations applicable
68	Condoms should be accessible/ available to all construction workers.	Contractor	Compliance	2	When possible, condoms are made available at the OPMC Customer Care Centre	No recommendations applicable
69	Access to Antiretroviral medication should be facilitated.	Contractor	Compliance	2	Developers are informed that where necessary, OPMC can assist workers in getting access to Antiretroviral medication if needed.	No recommendations applicable
70	Building rubble and domestic waste should be stored in skips.	Contractor	Repeat Condition	-		No recommendations applicable
R	**Dust**					
71	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	Noted/Not Applicable	0	No significant dust levels were observed on site.	This is to be monitored on site.
72	The use of waterless dust suppression means (e.g. lignosulphonate products such as Dustex) should be considered.	Contractor	Noted/Not Applicable	0	No significant dust levels were observed on site.	This is to be monitored on site.
73	Cover any stockpiles with plastic to minimise windblown dust.	Contractor	Noted/Not Applicable	0	No significant dust levels were observed on site.	This is to be monitored on site.
74	Dust protection masks should be provided to workers if they complain about dust.	Contractor	Noted/Not Applicable	0	No significant dust levels were observed on site.	This is to be monitored on site.
S	**Noise**					
75	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	Compliance	2	Work hours are restricted between 08h00 and 17h00	This is to be monitored on site.
T	**Recruitment of labourers**					
76	The Contractor should compile a formal recruitment process including the following provisions as a minimum: • Adhere to the legal provisions in the Labour Act for the recruitment of labour (target percentages for gender balance, optimal use of local labour and SME's, etc.).	Contractor	Compliance	2	Construction workers are not recruited on site.	No recommendations applicable

Osona Village Development Environmental Compliance Monitoring						
No	**Conditions**		**Status**	**Score**	**Observations**	**Recommendations**
	• 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.					
77	• Contractors should give preference in terms of recruitment of sub-contractors and individual labourers to those who are qualified and from the Osona Village area and only then look to surrounding towns.	Contractor	Compliance	2	Contractors mostly recruit from the towns of Okahandja and Windhoek.	No recommendations applicable
78	• 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	Compliance	2	Contractors do explain the TOR to job seekers.	No recommendations applicable
U	**Communication plan**					
79	The Contractor or proponent should draft a Communication Plan, which should outline as a minimum the following: • How Interested and Affected Parties (I&APs), who require ongoing communication for the duration of the construction period, will be identified and recorded and who will manage and update these records. • How these I&APs will be consulted on an ongoing basis. • Make provision for grievance mechanisms – i.e. how concerns can be lodged/ recorded and how feedback will be delivered as well as further steps of arbitration in the event that feedback is deemed unsatisfactory.	OPMC	Minor non-compliance	1	No formal communication plan is in place but is in process of being drafted.	The communication plan should be finalised and made available.
V	**General communication**					
80	The DR must appoint an ECO to liaise between the Contractor, I&APs, Developer.	OPMC	Compliance	2	OPMC performs this function supported by GCS (the appointed ECO)	No recommendations applicable
81	The Contractor shall at every monthly site meeting report on the status of the implementation of all provisions of the EMP.	Contractor	Compliance	2	Monthly site meetings are held to report on the implementation of the EMP.	No recommendations applicable
82	The Contractor should implement the EMP awareness training as stipulated above in this table.	Contractor	Repeat Condition	-		No recommendations applicable
83	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.	Contractor	Compliance	2	OPMC performs this function supported by GCS (the appointed ECO)	No recommendations applicable

Osona Village Development Environmental Compliance Monitoring						
No	**Conditions**		**Status**	**Score**	**Observations**	**Recommendations**
84	The Communication Plan, once agreed upon by the Developer, shall be legally binding	OPMC	Noted/Not Applicable	0		No recommendations applicable
85	All communication with the I&APs must take place through the ECO.	OPMC	Noted/Not Applicable	0		No recommendations applicable
86	A copy of the EMP must be available at the site office and should be accessible to all I&APs.	OPMC/ Contractor	Compliance	2	A copy of the EMP is available at the customer care centre.	No recommendations applicable
87	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.	OPMC	Minor non-compliance	1	This is to be addressed in the communication plan which is to be drafted and submitted to the ECO.	This is to be addressed in the communication plan which is to be drafted and submitted to the ECO.
88	The Contractor should liaise with the Developer regarding all issues related to community consultation and negotiation before construction commences.	Contractor	Minor non-compliance	1	This is to be addressed in the communication plan which is to be drafted and submitted to the ECO.	This is to be addressed in the communication plan which is to be drafted and submitted to the ECO.
89	A procedure should be put in place to ensure that concerns raised have been followed-up and addressed.	OPMC	Minor non-compliance	1	This is to be addressed in the communication plan which is to be drafted and submitted to the ECO.	This is to be addressed in the communication plan which is to be drafted and submitted to the ECO.
90	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.	OPMC	Minor non-compliance	1	This is to be addressed in the communication plan which is to be drafted and submitted to the ECO.	This is to be addressed in the communication plan which is to be drafted and submitted to the ECO.
W	**Archaeology**					

Osona Village Development Environmental Compliance Monitoring						
No	**Conditions**		**Status**	**Score**	**Observations**	**Recommendations**
91	• Should a heritage site or archaeological site be uncovered or discovered during the construction phase of the project, a “chance find” procedure should be applied in the order they appear below: o If operating machinery or equipment, stop work; o Demarcate the site with danger tape; o Determine GPS position if possible; o Report findings to the construction foreman; o Report findings, site location and actions taken to superintendent; o Cease any works in immediate vicinity; o Visit site and determine whether work can proceed without damage to findings; o Determine and demarcate exclusion boundary; o Site location and details to be added to the project’s Geographic Information System (GIS) for field confirmation by archaeologist; o Inspect site and confirm addition to project GIS; o Advise the National Heritage Council of Namibia (NHCN) and request written permission to remove findings from work area; and o Recovery, packaging and labelling of findings for transfer to National Museum.	Contractor	Noted/Not Applicable	0	No heritage or archaeological sites have been uncovered on site.	This is to be monitored on site.
92	• Should human remains be found, the following actions will be required: o Apply the chance find procedure as described above; o Schedule a field inspection with an archaeologist to confirm that remains are human; o Advise and liaise with the NHCN and Police; and o Remains will be recovered and removed either to the National Museum or the National Forensic Laboratory.	Contractor	Noted/Not Applicable	0	No human remains have been observed on site.	This is to be monitored on site.
X	**EMP training**					
93	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.	OPMC	Compliance	2	These are addressed during the monthly contractors meetings.	No recommendations applicable
Y	**Property development**					
94	The Property Development EMP (see Appendix A) should be included as part of the title deed for every erf sold.	OPMC	Noted/Not Applicable	0		
Z	**Monitoring**					

Osona Village Development Environmental Compliance Monitoring						
No	**Conditions**		**Status**	**Score**	**Observations**	**Recommendations**
95	The ECO should monitor the implementation of the Property Development EMP: • The ECO should inspect the site before construction starts; and • The ECO should inspect the site at the end of the construction period.	OPMC	Compliance	2	Monthly site visits and meetings are held to monitor EMP compliance.	No recommendations applicable
	Water					
96	Ensure that all properties are connected to a professionally designed and constructed water and wastewater infrastructure.	OPMC	Compliance	2	All properties are connected to water and sewage infrastructure designed by professional engineers	No recommendations applicable
97	A no-go buffer area of at least 15 m should be allocated to any water bodies in the area.	OPMC	Compliance	2	This is adhered to on site.	This should be considered for future development within the site.
98	No dumping of waste products of any kind in or in close proximity to any surface water bodies.	OPMC	Compliance	2	Waste products are not dumped within proximity to surface water bodies.	No recommendations applicable
99	Contaminated runoff from the various operational activities should be prevented from entering any surface or ground water bodies.	OPMC	Compliance	2	Contaminated run-off was not observed to enter any surface or groundwater bodies.	No recommendations applicable
100	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.	OPMC	Compliance	2	Stormwater management is implemented on site.	No recommendations applicable
101	Disposal of waste from the various activities should be properly managed.	OPMC	Compliance	2	Waste management is implemented on site.	No recommendations applicable
	Garden and Public Open Space maintenance					
102	The use of fertilizers in gardens should be limited and should be applied in accordance to the directions given on the packaging.	OPMC	Noted/Not Applicable	0		No recommendations applicable
103	Encourage organic farming techniques which use less fertilizer.	OPMC	Noted/Not Applicable	0		No recommendations applicable
104	Discourage the overuse of fertilizers in lawns, gardens and public spaces.	OPMC	Noted/Not Applicable	0		No recommendations applicable
	Aesthetics					
105	The proponent should consult with a view to incorporate the relevant local/national/international development guidelines which addresses the following: • 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.	OPMC	Compliance	2	The development has incorporated indigenous vegetation within the design of the area, as many trees have been planted as part of the greening initiative on site. Solar water geysers are installed in the homes to reduce the use of electricity.	No recommendations applicable

Osona Village Development Environmental Compliance Monitoring						
No	**Conditions**		**Status**	**Score**	**Observations**	**Recommendations**
	Energy efficiency					
106	The proponent should consult, with the view to incorporate the relevant local/national/international development guidelines which addresses the following: • 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.	OPMC	Compliance	2	Solar water geysers are installed in the homes on site. Isolation is installed in all new buildings and residential dwellings being constructed. The use of water saving taps and shower heads is encouraged. Furthermore, prepaid water meters are installed which allow for early leak detection.	No recommendations applicable
	Noise					
107	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.	OPMC	Compliance	2	Work hours are restricted between 08h00 and 17h00	This is to be monitored on site.
	Waste					
108	Sufficient waste storage containers are available on site.	OPMC	Compliance	2	Each household has a waste container and some skips are available on site.	No recommendations applicable
109	Waste should be removed from new properties on a regular basis by an authorised waste management company	OPMC	Compliance	2	Waste is removed once a week from the households.	No recommendations applicable
110	Waste should be disposed of at a municipal approved waste disposal site.	OPMC	Compliance	2	Waste is disposed at the Okahandja municipal waste site.	No recommendations applicable
111	Hazardous waste is separated from non-hazardous waste.	OPMC	Compliance	2	Bins for hazardous waste are provided and are clearly marked as such.	Hazardous waste should be disposed of at a registered hazardous waste disposal site.
112	Hazardous waste should be disposed of at a registered hazardous waste disposal site.	OPMC	Compliance	2	Bins for hazardous waste are provided and are clearly marked as such.	Hazardous waste should be disposed of at a registered hazardous waste disposal site.
	Stormwater					
113	Management systems of these needs to be implemented for effective stormwater runoff.	OPMC	Repeat Condition	-		No recommendations applicable
			Total Findings	**113**		

1.6 Sewage Plant Water Quality Summary

Osona has a sewage treatment facility currently operating at the site. Preferred Land Development Holdings (Pty) Ltd applied for an Environmental Clearance Certificate (ECC) for the construction and operation of a sewage treatment plant at Osona village in 2022. The Environmental Assessment (EA) for the proposed development was conducted by GCS in 2022. Following the submission of the final Environmental Assessment Report, the ECC was granted as per letter dated 25 August 2022 (**Appendix B**).

In terms of the monitoring for the existing facility the effluent is tested bi-weekly. Water quality tests have been conducted for the effluent to date and a summary of the results are outlined in **Table 4-3** below.

Table 4-3: Water quality summary based on recommended limits for effluent

Date of sample test	Does not meet the recommended limits for effluent	Does meet the recommended limits for effluent
AUG 2023	X	
SEPT 2023	X	
OCT 2023	X	
NOV 2023	X	
DEC 2023	X	
JAN 2024	X	
FEB 2024	X	
APR 2024	X	
MAY 2024	X	

5. RECOMMENDATIONS

The construction activities and operations at the OVD are mostly compliant (90%) with regards to the management actions presented in the EMP. The following is recommended based on the site audit:

- The contractors' camps should be rehabilitated upon completion of the project construction phase.
- Bi-annual monitoring to be conducted of nearby boreholes and surface water resources.
- Contractors and the construction workers must adhere to the requirements regarding PPE in terms of the labour act.
- Contractors should be instructed to adhere to ensuring that the waste receptacles are emptied to the nearest landfill once they become full.
- Should female construction workers be appointed on site, separate toilets should be made available.
- The use of renewable energy resources should be explored as far as reasonably possible.
- The quality of the water needs to be within the recommended standards to be discharged into the environment.
- OVD is to develop and implement the Communication Plan.

6. CONCLUSION

Monthly environmental compliance monitoring is conducted at the OVD Site. This report outlines the monitoring conducted for the OVD site construction and operations. A site inspection was conducted on the 16 May 2024, to ensure implementation of the environmental management plan. The OVD did not have many significant concerns that were raised. The compliance of the construction and operations on site with the provided action plans will be checked at the next monitoring scheduled for June 2024.

7. REFERENCES

Africa Planning Forum. (2018). Environmental Scoping Report for the Osona Village Master Plan, Okahandja, Otjozondjupa Region.. Windhoek: Unpublished.

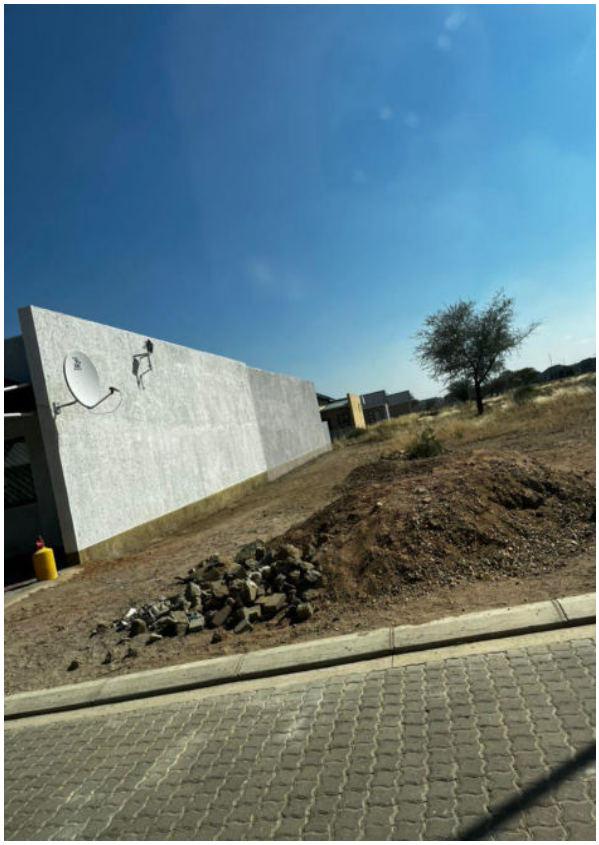
Africa Planning Forum. (2018). Environmental Management Plan for the Osona Village Master Plan, Okahandja, Otjozondjupa Region. Windhoek: Unpublished.

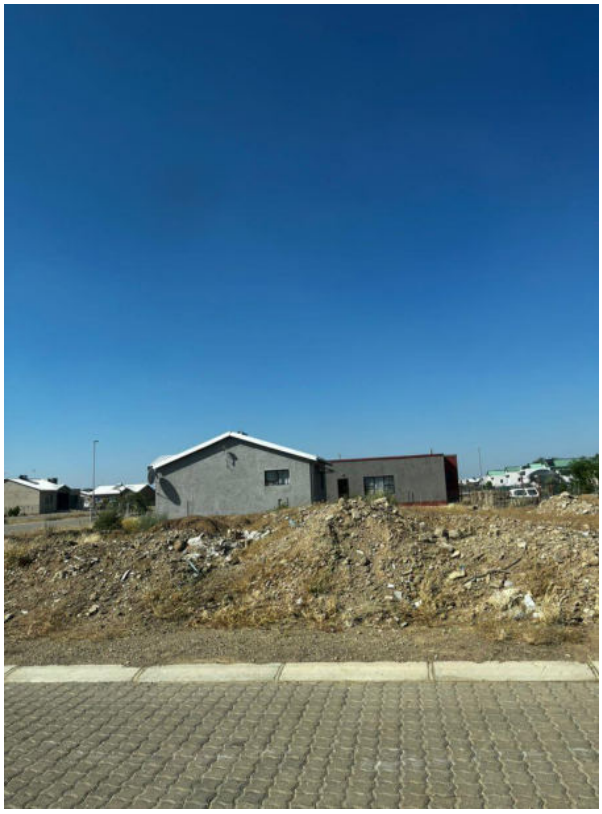
GCS Water and Environmental Engineering. (2021). *Environmental Compliance Monitoring for the Osona Village Development Construction and Operations*. Windhoek. Unpublished

GCS Water and Environmental Engineering. (2021). *Environmental Management Plan for the Osona Village Master Plan, Okahandja, Otjozondjupa Region*. Windhoek. Unpublished

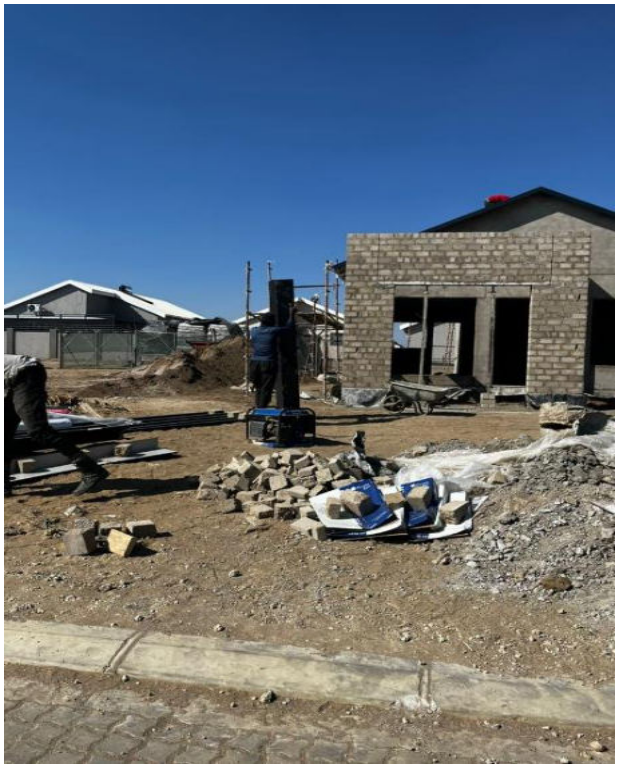
APPENDIX A: PHOTO LOG

Waste/rubble observed on site.





No PPE worn by construction workers.



No lining under cement & Building sand not covered.


APPENDIX B: ECC-Sewage Treatment Plant

ECC – APP3116

REPUBLIC OF NAMIBIA

MINISTRY OF ENVIRONMENT, FORESTRY AND TOURISM

OFFICE OF THE ENVIRONMENTAL COMMISSIONER

ENVIRONMENTAL CLEARANCE CERTIFICATE

ISSUED

In accordance with Section 37(2) of the Environmental Management Act (Act No. 7 of 2007)

TO

Preferred Land Development Holdings (Pty) Ltd
Private Bag 13369, Windhoek

.....

TO UNDERTAKE THE FOLLOWING LISTED ACTIVITY

Proposed Construction and Operation of a Sewage Treatment Plant at Osona Village, Otjozondjupa Region.

MINISTRY OF ENVIRONMENT FORESTRY AND TOURISM
Private Bag 13306
WINDHOEK NAMIBIA
ENVIRONMENTAL COMMISSIONER
REPUBLIC OF NAMIBIA

ENVIRONMENTAL COMMISSIONER

Issued on the date: **2022-08-25**

Expires on this date: **2025-08-25**

(See conditions printed over leaf)

This certificate is printed without erasures or alterations

ECC –

CONDITIONS OF APPROVAL

1. This environmental clearance is valid for a period of 3 (three) years, from the date of issue unless withdrawn by this office
2. This certificate does not in any way hold the Ministry of Environment, Forestry and Tourism accountable for misleading information, nor any adverse effects that may arise from these activities. Instead, full accountability rests with the proponent and its consultants
3. This Ministry reserves the right to attach further legislative and regulatory conditions during
4. the operational phase of the project
5. All applicable and required permits are obtained and mitigation measures stipulated in the EMP are applied particularly with respect to management of ecological impacts.
6. Strict compliance with national heritage guidelines and regulations is expected throughout the life-span of the proposed activity, therefore any new archaeological finds must be reported to the National Heritage Council for appropriate handling of such.

APPENDIX C: 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 1April 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_2S	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 dm^3 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 note below	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: Phospates 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 µg/l as Cr(VI)
Chromium, total	500 µg/l as Cr
Copper	1,0 mg/l as Cu
Cyanide	500 µg/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 µg/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 *Permanganate Value* (or *PV*).
** In Windhoek the saturation level is at approx. 9 mg/l O_2.

Note (1) on phosphate: Phospates 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**