



REPUBLIC OF NAMIBIA



PERFORMANCE AUDIT REPORT ON SEWERAGE INFRASTRUCTURE MANAGEMENT BY LOCAL AUTHORITIES IN NAMIBIA

WITHIN THE MINISTRY OF URBAN AND RURAL DEVELOPMENT

FOR THE FINANCIAL YEARS: 2013/2014, 2014/2015 & 2015/2016

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REPUBLIC OF NAMIBIA



TO THE HONOURABLE SPEAKER OF THE NATIONAL ASSEMBLY

I have the honour to submit herewith my performance audit report on the audit report on the Sewage Infrastructure Management by Local Authorities In Namibia within the Ministry Of Urban And Rural Development for the financial years 2013/2014, 2014/2015 and 2015/2016 in terms of Article 127(2) of the Namibian Constitution. The report is transmitted to the Honourable Minister of Finance in terms of Section 27(1) of the State Finance Act, 1991, (Act 31 of 1991) to be laid upon the Table of the National Assembly in terms of Section 27(4) of the Act.

A handwritten signature in black ink, appearing to read 'Junias Etuna Kandjeke'.

JUNIAS ETUNA KANDJEKE
AUDITOR-GENERAL

WINDHOEK, APRIL 2018

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LIST OF ACRONYMS

ABBREVIATION	DEFINITION
DEA	Department of Environmental Affairs
DHHPTSC	The Directorate of Housing , Habitat, Planning and Technical Services Coordination
DPHCS	Directorate of Primary Health Care Services
DWAF	Department of Water Affairs and Forestry
ECC	Environmental Clearance Certificate
EMP	Environmental Management Plan
MAWF	The Ministry of Agriculture Water and Forestry
MET	The Ministry of Environment and Tourism
MoHSS	Ministry of Health and Social Services
MURD	The Ministry of Urban and Rural Development
OAG	Office of the Auditor-General
WWEDEP	Wastewater Effluent Disposal Exemption Permit

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GLOSSARY OF TERMS

Average Daily Dry Weather Flow	: is the average total quantity of sewage flow received per day at a Sewage treatment plant or oxidation pond.
Bar Screens	: Removes objects such as rags, paper, plastics, and metals to prevent damage and clogging of downstream equipment and piping in front of every Pond System.
Contractor	: A person or firm that undertakes a contract to provide materials or Labour to perform a service or do a job.
Consultant	: A professional who provides expert advice in a particular area.
Effluent	: Wastewater discharged into a river or sea.
Fecal Coliform Bacteria	: A facultatively anaerobic, rod-shaped, gram-negative, non-sporulating bacterium.
Floodplains	: An area of low-lying ground adjacent to a river, formed mainly of river sediments and subject to flooding.
Gravity Sewerage System	: An underground carriage system specifically for transporting or pipes conveying sewage from an individual building to a common gravity sewer line.
Local Authority	: An area declared under Section 3 of the Local Authorities Act, 1992 (Act No.23 of 1992) to be a Municipality, Town or Village as the case may be.
Oxidation Pond	: Shallow pond designed to treat wastewater through the interaction of sunlight, bacteria, and algae.
Pump Station	: A facility including pumps and equipment for pumping fluids from one place to another.
Sewerage Reticulation	: A system that conveys sewage, it includes components such as receiving drains, manholes, pumping stations, storm overflows, and screening chambers of the combined sewer or sanitary sewer.
Sewer Manhole	: A small covered opening in a paved area allowing access beneath, especially one leading to a sewer.
Treatment Plant	: A facility that makes water more acceptable for a specific end-use.
Vacuum Sewerage System	: A method of transporting sewage from its source to a sewage treatment plant using the difference between atmospheric pressure and a partial vacuum maintained in the piping network and vacuum station collection vessel.

EXECUTIVE SUMMARY

The Office of the Auditor-General is mandated to conduct Performance audits by Section 26(1)(b)(iv) of the State Finance Act, 1991 (Act 31 of 1991, which reads as follows: (The Auditor General) “...*may investigate whether any money in question have been expended in an efficient, effective and economic manner*”.

Furthermore, Section 26(3) of the State Finance Act mandates the Office of the Auditor-General to conduct special audits of which Environmental Audit is one.

The purpose of the audit is to assess whether the Ministry of Urban and Rural Development and key stakeholders are effectively ensuring adequacy of sewerage infrastructure in urban areas for the proper management of sewage and impacts on the environment and human health.

Major findings, conclusions and recommendations identified during the audit are as follows:

Planning

The Directorate of Environmental Affairs (DEA) under the Ministry of Environment and Tourism (MET) did not adequately ensure that all Local Authorities (LAs) visited with the exception of the City of Windhoek develop and submit Environmental Management Plans for their Sewerage systems.

The Department of Water Affairs and Forestry (DWAF) under the Ministry of Agriculture Water and Forestry (MAWF) did not ensure that LAs visited at the time of the audit operates with valid Wastewater Effluent Exemption Disposal Permits.

Construction and Monitoring by Ministry of Urban and Rural Development

The Ministry of Urban and Rural Development (MURD) took approximately 29 and 92 working days to transfer funds to LAs for sewerage infrastructure development projects during the 2014/15 and 2015/16 financial periods.

At the time of the audit, the sewerage infrastructures at the LAs visited were not adequate to cater for all households.

Operation and Maintenance

The Ministry of Urban and Rural Development (MURD) did not monitor LAs to ensure that sewerage infrastructures are well maintained during the periods under review. This resulted in water pollution in the !Gamemab !IIIB fountain in Gibeon.

The DWAF under the MAWF did not adequately monitor LAs to ensure compliance with Wastewater Effluent Disposal Exemption Permit conditions. Furthermore, the DWA could not provide records of inspections conducted at visited Local Authorities.

CONCLUSIONS

The Department of Environmental Affairs (DEA) under the Ministry of Environment and Tourism (MET) did not adequately ensure that Local Authorities (LAs) develop and submit Environmental Management Plans for sewage management.

The Department of Water Affairs and Forestry (DWAF) under the Ministry of Agriculture, Water and Forestry (MAWF) did not adequately ensure that LAs operates with valid Wastewater Effluent Disposal Exemption Permits.

The Directorate of Housing, Habitat, Planning and Technical Services Coordination (DHHPTSC) under the Ministry of Urban and Rural Development (MURD) did not adequately monitor sewerage infrastructure development projects undertaken by the LAs.

- The MURD took an average of 29 and 92 working days to transfer funding for sewerage development projects to LAs during the 2014/15 and 2015/16 financial periods respectively; and
- LAs did not ensure that sewerage infrastructures are adequate to cater for all households.

The DHHPTSC under the MURD did not monitor LAs to ensure that sewerage infrastructures are well maintained.

The DWAF under the MAWF did not adequately monitor LAs to ensure compliance to Wastewater Effluent Disposal Exemption Permit conditions.

RECOMMENDATIONS

The Ministry of Environment and Tourism (MET) should put measures in place to ensure that Local Authorities (LAs) develop and submit Environmental Management Plans for sewage management.

The Ministry of Agriculture, Water and Forestry (MAWF) should put measures in place to ensure that LAs operates with valid Wastewater Effluent Disposal Exemption Permit.

The Ministry of Urban and Rural Development (MURD) must put measures in place to ensure that sewerage infrastructure development projects are adequately monitored.

- The MURD should put measures in place to ensure that funds for sewerage development projects are transferred timely to ensure that payments are processed within the specified timeframe as per the recently adopted Customer Service Charter; and
- The MURD should put measures in place to ensure that sewerage infrastructure at LAs are adequate to cater for all households.

The MURD should monitor LAs on a regular basis to ensure that sewerage infrastructures are well maintained.

The MAWF should monitor LAs regularly to ensure compliance to Wastewater Effluent Disposal Exemption Permit conditions.

Comments received from auditee

Comments have been received from the auditee and are incorporated in chapter 4 of this report.

CHAPTER 1: INTRODUCTION

1.1 Background of the Audit

The need of quality and reliable sewage reticulation systems in Namibia was identified at independence in 1990 as one of the major basic needs. However, since independence the Country has been facing a major rural-urban migration. According to the Namibian 2011 Population and Housing Census Indicators, 43% of the population was residing in urban areas in 2011 compared to 33% in 2001, therefore, outgrowing sewage reticulation systems capacity in urban areas. Additionally, 22% of urban households do not have access to toilet facilities and 1.3% is using a bucket toilets system.

Therefore, the Government developed a Water Supply and Sanitation Policy in 2008 to improve the provision of sanitation services in order to:

- Contribute towards improved health and quality of life;
- Ensure an hygienic environment; and
- Protect water sources from pollution.

Furthermore, Namibia is a signatory to 2030 United Nations Agenda for Sustainable Development Goals since September 2015 and it is therefore a need to work toward ensuring availability and sustainable management of water and sanitation for all as set out in goal 6.

The Namibian Sanitation Strategy of 2010/11-2014/15 identified key sanitation stakeholders and their responsibilities in order to achieve these objectives.

The Local Authorities are responsible for urban sanitation, the Ministry of Urban and Rural Development is responsible for rural and urban sanitation and decentralization; the Ministry of Agriculture, Water and Forestry is responsible for water resources management, water quality and rural sanitation and the Ministry of Health and Social Services is responsible for health education, monitoring and enforcement.

Furthermore, the Ministry of Environment and Tourism is also charged with the responsibility of promoting the sustainable management of the environment.

1.2 Audit Motivation

The audit was motivated by problems that were identified during a preliminary audit phase. The following were identified:

- Households not connected to sewage reticulation system;
- Faulty installation of sewage collection chambers;
- Inadequate maintenance of sewage reticulation systems;
- Failure to collect, treat and dispose-off sewage with valid Environmental Clearance Certificates;
- Non-adherence to the Waste Water Effluent Exemption Disposal Permit conditions; and
- Usage of non-improved sanitation facilities for example bucket system and open defecation.

1.3 The Mandate, Vision, Mission statement, Objectives and Goals of the Ministry of Urban and Rural Development

Mandate

The Ministry is mandated to:

- “To coordinate and manage decentralization in Namibia. This entails transferring power from Central Government to regional and local government in a unitary state, providing advisory services, technical support and capacity building;
- To develop policy guidelines and procedures, evaluating institutional readiness of Line Ministries and Sub-National government and legislation harmonization as well as introduce good governance principles;
- To facilitate the recognition of traditional communities and ensure compliance with provisions of laws/legislations;
- To ensure adequate legislation, policies and standards for Sub-National structures;
- To coordinate and facilitate rural development activities, policies and legislation to ensure sustainable rural livelihoods, reduced poverty, improved living conditions and shelter, mitigate rural-urban migration;
- To ensure appropriate town planning and establishment, infrastructural development and land use management; and
- To ensure effective discharge of all prescribed functions through support services”.

Vision

“To be a leading Institution in the establishment and capacitation of decentralized Sub-National Governments”.

Mission Statement

“The Ministry of Urban and Rural Development is committed to the delivery of services to the satisfaction of all communities through rural development, establishment of an effective, decentralised Regional and Local Government system, housing and physical planning”.

Objectives

The objectives of the Ministry are as follows:

- “To extend participatory democracy;
- To improve public service delivery by sub-national governments; and
- To ensure there are sufficient land available for housing and infrastructure development”.

Goals and strategies

In order to realise these objectives, the Ministry has embarked on the following medium to long term goals and priorities:

- “To improve the technical and financial capabilities of all Regional Councils and Local Authorities in Namibia;
- To improve service delivery at all levels of Government; and
- To expand the infrastructure of the newly proclaimed towns and settlement areas”.

1.4 Organizational Structure

The MURD is headed by the Minister. The Permanent Secretary reports to the Minister and there are five Directorates headed by Directors who report directly to the Permanent Secretary. The four Directorates are as follows: Directorate of Finance, Human Resources, Administration and Information Technology; Directorate of Regional and Local Government and Traditional Authorities Coordination; Directorate Housing, Habitat, Planning and Technical Services Coordination; Directorate of Rural Development Coordination; and Decentralisation.

The Directorate Housing, Habitat, Planning and Technical Services Coordination is divided into five divisions that are headed by Deputy Directors that report to the Director. The five divisions are as follows: the Division Planning, Division Technical Services Coordination, Division Housing, Division Habitat and Division Habitat Research Development Centre. (Attached appendix I).

The audit focused on the Division Technical Services Coordination under the Directorate Housing, Habitat, Planning and Technical Services Coordination.

1.4.1 Division of Technical Services and Coordination

The objectives of the Division of Technical Services and Technical Coordination under the Directorate of Housing, Habitat, Planning and Technical Services Coordination are as follows:

- “To develop and recommend technical and management guideline for the development, operation and maintenance of physical infrastructure for regional councils and local authorities;
- To deal with projects in urban centers;
- To set technical standards for rendering of services (streets, water networks, sewage and drainage and electrical supply); and
- To monitoring and report on all Government funded projects for local authority’s services”.

Furthermore, Local Authorities are responsible for executing sewerage infrastructure development projects funded by the Ministry as stated above.

1.5 FINANCING

The expenditure of the Directorate of Housing, Habitat, Planning and Technical Services Coordination (DHHPT) is as follows:

Table 1: Expenditure for the DHHPT

Financial year	Authorized Expenditure	Actual Expenditure	Variance
	N\$	N\$	N\$
2013/2014	1 069 522 000	797 434 175	272 087 825
2014/2015	1 354 139 800	1 352 844 784	1 295 016
2015/2016*	1 777 435 522	1 738 328 590	39 106 932

Source: Auditor-General's audited financial statements for 2013/14-2015/16

*Not yet tabled

1.6 STAFFING

The staff establishment for the period 2013/14-15/2016 for the DHHPTCS is as follows:

Table 2: Staff establishment for the DHHPTCS

Financial Year	Staff Establishment	Filled Positions	Vacant Positions	% Post Vacant
2013/14	69	43	26	38
2014/15	69	43	26	38
2015/16	15	14	1	7

Source: Staffing figures were extracted from the budget book 2013/14-15/2016

CHAPTER 2: AUDIT DESIGN

2.1 Audit Scope

The audit focused on assessing whether the Ministry of Urban and Rural Development (MURD) and key stakeholders are effective in ensuring that sewerage infrastructures in urban areas are adequate to ensure proper sewage management and lessen impact on the environment and human health.

Three financial years were covered which are 2013/14, 2014/15 and 2015/16 in order to establish a trend as well as for comparisons purposes.

2.2 Areas of Coverage

2.2.1 Audit Objective

To assess whether the MURD and key stakeholders are effectively ensuring adequacy of sewerage infrastructure in urban areas for the proper management of sewage and impacts on the environment and human health.

Sub-objectives:

- To determine whether funds allocated to Local Authorities for construction of sewerage infrastructures are used effectively and for the intended purpose and whether the Ministry does proper monitoring;
- To assess whether the MURD and key stakeholders adequately monitor LAs to ensure compliance with laws and regulations for proper sewage management.

2.2.2 Geographical Limitation

Six regions namely: Khomas, Erongo, Hardap, Kavango East, Kavango West and Oshana regions were visited during the main study.

2.2.3 Audit Limitation

The audit experienced limitation to access information with regard to sewerage and drainage standards. Therefore pump stations were not assessed in this audit.

2.2.4 Audit Questions Assessment criteria and Methodology

The audit questions, assessment criteria and methodology are attached in Appendix No. IV.

2.3 SAMPLING

2.3.1 Physical Observations

Stratified random sampling was applied to select Regions and Local Authorities for physical observations of sewerage infrastructures. (*See Appendix V*).

2.1.1 Documentary Reviews

Random sampling was applied to review documents. (*See Appendix III*)

CHAPTER 3: DESCRIPTION OF THE AUDIT AREA

3.1 SYSTEM DESCRIPTION

The mandate of the Ministry is derived from the Namibian Constitution and Acts which are describe below:

3.1.1 The Namibian Constitution:

Article 95 (e) of the Constitution of the Republic of Namibia states that, "...the State shall actively promote and maintain the welfare of the people by adopting, inter alia, policies aimed at ensurance that every citizen has a right to fair and reasonable access to public facilities and services in accordance with the law."

3.1.2 The Ministry of Urban and Rural Development

The Ministry is mandated by the Local Authorities Act, 1992 (Act No. 23 of 1992), "...to provide for the determination, for purposes of local government, of local authority councils; the establishment of such local authority councils; and to define the powers, duties and functions of local authority councils; and to provide for incidental matters"; and

The Trust Fund for Regional Development and Equity Provisions Act, 2000 (Act No. 22 of 2000) states that the Ministry should, "...establish a Trust Fund for Regional Development and Equity Provisions and a Board of Trustees to manage the affairs of the Fund; to constitute the Board and define the powers, duties and functions thereof; and to provide for incidental matters."

3.2 Stakeholders

3.2.1 The Ministry of Environment and Tourism

The mandate of the Ministry is derived from the Environmental Management Act, 2007 (Act No. 7 of 2007), "...to promote the sustainable management of the environment and the use of natural resources by establishing principles for decision making on matters affecting the environment; to establish the Sustainable Development Advisory Council; to provide for the appointment of the Environmental Commissioner and environmental officers; to provide for a process of assessment and control of activities which may have significant effects on the environment; and to provide for incidental matters."

3.2.2 The Ministry of Agriculture, Water and Forestry

The Ministry through the Department of Water Affairs and Forestry is mandated by the Water Act, 1956 (Act No. 54 of 1956), "...to provide for the management, protection, development, use and conservation of water resources; to provide for the regulation and monitoring of water services and to provide for incidental matters."

3.2.3 The Ministry of Health and Social Services

The Ministry is mandated by the Public and Environmental Health Act, 2015 (Act No. 1 of 2015), "...to provide a framework for a structured uniform public and environmental health system in Namibia; and to provide for incidental matters."

3.2.4 Regional Councils

Regional Councils are mandated by Section 32 of the Regional Councils Act, 1992 (Act No. 22 of 1992), "...to manage and control settlement areas within their jurisdictions."

3.2.5 Local Authorities

Local Authorities are mandated by the Local Authorities Act, 1992 (Act No. 23 of 1992) Section 38 (a), "...for purposes of the provision of Section 30 (1) (b), a Local Authority Council may acquire or construct, and maintain and carry on, a system of sewerage and drainage, including sewage works, public sewer and stormwater drains whether within or outside its area."

3.3 Roles and responsibilities of Ministry of Urban and Rural Development as a key player

Board of Trustees of the Trust Fund for Regional Development and Equity Provisions

Trust Fund for Regional Development and Equity Provisions Act, 2000 (Act No. 22 of 2000) Section 7(2) state that, "...the Board shall-

- (a) take into account, in the exercising of any of its powers or in the allocation of funds to Regional Councils or Local Authority Councils, the respective needs and other relevant factors pertaining to the different regions or to the different local authorities, as the case may be, including infrastructure, general development and population;
- (b) exercise in consultation with the Minister any power referred to in Subsection (1) involving the obtaining of moneys by way of a loan; and
- (c) submit to the Minister a copy of the procedures and policies determined in terms of Subsection (1)(h), or any amendment made thereto, within a period of 30 days after the determination or amendment, as the case may be, of or to such procedures and policies".

Furthermore, Section 6(4) states that "...the Minister shall designate in writing one or more staff members in the Ministry of Regional and Local Government and Housing (*currently the Ministry of Urban and Rural Development*) to assist the Board in the performance of any of its duties or functions, or in the execution of any of its powers".

3.3.1 Planning

3.3.1.1 Environmental Management Plans

Subsection (1) of Section 24 of the Environmental Management Act, 2007 (Act No. 7 of 2007), states that "...for the purpose of this part, the Minister may identify and list by notice in the Gazette or by regulation of state which are exercising functions that may affect the environment".

Subsection (2) and (3) states that, "...every Organ of State identified and listed in terms of subsection (1), must prepare an Environmental Plan in the prescribed form and manner; and "...every Organ of State contemplated in Subsection (1), must in the preparation of an Environmental Plan take into consideration every other Environmental Plan already adopted with a view to achieving consistency among such plans".

Furthermore, Section 3 (2) (e) of the Environmental Management Act, 2007 (Act No. 7 of 2007) states that, "...assessments must be undertaken for activities which may have a significant effect on the environment or the use of natural resources".

3.4.2.1 Environmental Clearance Certificates

Subsection (1) of Section 27 of the Environmental Management Act, 2007 (Act No. 7 of 2007) states that, "...the Minister, after following the consultative process referred to in Section 44, may list, by notice in the Gazette, activities which may not be undertaken without an Environmental Clearance Certificate".

Furthermore, Subsection (2) states that, "...activities listed, under Subsection (1), may include activities in respect of any of the following areas:

- (a) Land use and transformation;
- (b) Water use and disposal;
- (c) Resource removal, including natural living resources;
- (d) Resource renewal;
- (e) Agricultural processes;
- (f) Industrial processes;
- (g) Transportation;
- (h) Energy generation and distribution;
- (i) Waste and sewage disposal; chemical treatment;
- (j) Recreation; and
- (k) Any other area which the Minister considers necessary for the purpose of listing".

Subsection (3) further states that, "...despite any other law to the contrary, a person may not undertake a listed activity, unless the person is a holder of an Environmental Clearance Certificate in relation to the activity"; and

Subsection (4) states that, "...any person who contravenes Subsection (3) commits an offence and is on conviction liable to a fine not exceeding N\$500 000 or to imprisonment for a period not exceeding 25 years or to both such fine and such imprisonment".

3.4.2.1 Waste Water Effluent Exemption Disposal Permit

Subsection (1) of Section 22 of the Water Act, 1956 (Act No. 54 of 1956) states that, "...notwithstanding the provisions of the Public Health Act, 1919 (Act No. 36 of 1919), or any other law, but subject to the provisions of Sub-section (2), -

"...a Local Authority having jurisdiction over the disposal of sewage may, after purifying the effluent derived from the treatment of such sewage in accordance with standards prescribed under Sub-section (1) twenty-one, and with the permission of the Minister, use such effluent for any purpose approved by the Minister or dispose of such effluent for use by any person or discharge such effluent into a public stream".

3.4.2 Construction and Monitoring by MURD

3.4.2.1 Funding of Sewage Development Infrastructure

Section 3 (a-b) of the Trust Fund for Regional Development and Equity Provisions Act of 2000, (Act No. 22 of 2000) states that, "...the object and purpose of the Fund are:

(a) "To financially assist with-

(i) The development of regions and Local Authorities; and

(b) To provide, either at its own initiatives or when so requested by a Regional Council or a Local Authority Council and on the terms and conditions to be determined by the Board, funding for-

(i) Technical assistance, guidance and training in identification, planning, preparation, appraisal, monitoring, evaluation, financing, implementation or management of development projects; and

(ii) The formulation of specific project, needs or proposals in Regions or Local Authorities".

3.4.2.1 Monitoring of Sewage Infrastructural Projects

The objectives of the Division of Technical Services and Technical Coordination under the Directorate of Housing, Habitat, Planning and Technical Services are as follows:

- "...Developing and recommending technical and management guideline for the development, operation and maintenance of physical infrastructure for Regional Councils and Local Authorities.
- Deal with projects in urban centers;
- Set technical standards for rendering of services (streets, water networks, sewage and drainage and electrical supply); and
- Monitoring and report on all Government funded projects for local authority's services".

3.4.2.1 Capacity of Sewerage infrastructures

Section 30 (1) of the Local Authorities Act of 1992, (Act No. 23 of 1992) states that, "...subject to the provisions of subsection (2) (3), a Local Authority Council shall have the power (b) subject to the provision of Part VII, to provide, maintain and carry on a system of sewerage and drainage for the benefit of the residents in its area".

Paragraph 6.3 of goal 6 of the 2030 Agenda for Sustainable Development states that “...by 2030 achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations”.

3.4.2 Operation and Maintenance

3.4.2.1 Maintenance of the Sewerage Systems by LAs

Section 30 (1) of the Local Authorities Act of 1992, (Act No. 23 of 1992) states that, “...subject to the provisions of subsection (2) (3), a Local Authority Council shall have the power (b) subject to the provision of Part VII¹, to provide, maintain and carry on a system of sewerage and drainage for the benefit of the residents in its area”.

Section 38 (1) of the Local Authorities Act of 1992, (Act No. 23 of 1992) further states that, “...for purposes of the provisions of Section 30 (1) (b), a Local Authority Council may (a) acquire or construct, and maintain and carry on, a system of sewerage and drainage, including sewage works, public sewers and stormwater drains whether within or outside its area”.

3.4.2.1.1 Gravity Sewerage System

According to the Water Environmental Research Foundation 2010,² “...a Gravity Sewer System collect wastewater from multiple sources and convey by gravity the wastewater to a treatment plant or other authorized point of discharge. Sewer pipelines are designed so that the slope and size of the pipe is adequate to maintain flow without surcharging manholes or pressurizing the pipe. Pipes are installed with sufficient slope to keep the suspended solids moving through the system. If gravity flow is not possible throughout the system, pump stations are installed at lower elevations of the network in order to pump the sewage up to another gravity pipeline. Manholes are installed at regular intervals to provide maintenance access”.

Furthermore, “...the system needs proper maintenance which includes periodic line repairs and inspection, cleaning out blockages, and repairing areas where significant infiltration is occurring”.

3.4.2.1.2 Vacuum Sewerage System

According to Walski & Barnard (2004),³ “...a Vacuum Sewerage System uses a central vacuum source to convey sewage from individual households to a central collection station. A gravity line carries wastewater down to the collection chamber, when the collection chamber reaches a defined height, the vacuum interface valve opens and the negative pressure sucks the wastewater into the vacuum sewerage pump station and then the pump station fills to a predetermined level, sewage pumps transfer the contents to an oxidation pond”.

Furthermore, “...the system needs instructed workers for maintenance and operation works and pressure in the vacuum sewer system should be tested from time to time”.

¹ Part VII : Sewerage And Drainage

² Water Environmental Research Foundation (WERF), April 2010, *Gravity Sewer Systems*

³ Walski, T.M., and T.E. Barnard (2004), *Wastewater Collection system modeling and design*, Haestad Press.

3.4.2.1 Monitoring by Key Stakeholders

3.4.2.1.1 Cleanliness and Prevention of Health Nuisance, Ministry of Health and Social Services

Section 57 of the Public and Environmental Act, 2015, (Act No. 1 of 2015), states that "...a local authority must take all lawful, necessary and reasonable practical measures to:

- (a) Maintain its Local Authority area at all times in a clean and sanitary condition; and
- (b) Prevent the occurrence of or for remedying or causing to be remedied, a health nuisance or condition liable to be injurious or dangerous to health".

3.4.2.1.1 The Waste Water Effluent Disposal Exemption conditions, Ministry of Agriculture, Water and Forestry

Subsection (2) of the Water Act, 1956 (Act No. 54 of 1956) states that, "...the Minister may in writing, and on such conditions as he may deem fit, exempt from compliance with the provisions of section twenty-one, any local authority which does not dispose of water used for any industrial purpose other than the purification or disposal of sewage".

Subsection (3) further states that, "...any local authority which contravenes or fails to comply with any condition subject to which any exemption has been granted to it under sub-section (2) shall be guilty of an offence".

Average Daily Weather Flow

Paragraph 5.2 of the Code of Practice Volume 2 of the Pond System 2008 states that, "...as minimum flow measuring device, a V-Notch weir to measure flow at the inlet to the Ponds System must be provided. Additionally, a mechanical, electronic or electromagnetic flow measuring devices should also be provided. Flow discharge data is useful for load calculations and to indicate when a system needs extending".

Water Quality

Regulation 553 (1) of the Water Act , 1956 (Act No. 54 of 1956) states that, "...quality standards for any waste water or effluent produced by or resulting from the use of water for industrial purposes in catchment areas draining to the rivers or portion of rivers described in the Schedule."

Paragraph 6.3 of goal 6 of the 2030 UN Agenda for Sustainable Development states that, "...improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally."

Inspections of Oxidation Ponds

Paragraph 5.1 of the Code of Practice Volume 2 of the Pond System 2008 states that, "...bar screens and detritus channels, correctly sized and designed, should be installed in front of every Pond System. The screens must be cleaned daily and utmost care should be exercised that no rags, plastic bags or other large objects are discharged into the first pond. Screenings should be

discarded to the Municipal Dumping Site or buried underneath a layer of soil not less than 800mm deep”.

Paragraph 7.1 of the Code of Practice Volume 2 of the Pond System 2008 states that, “...although unskilled workers have other tasks to attend to, they should be taught to inspect the Ponds System regularly, preferably once every day and report any adverse matter to the authority for example:-

- Clean the screen and detritus channels. Discard to Municipal Waste Site or by bury all screenings, detritus and extraneous materials in prepared pits;
- Check fence and repair immediately;
- Keep the embankments free of vegetation, especially at the verges; and
- Clear floating debris from the pond surfaces”.

Paragraph 8 of the Code of Practice Volume 2 of the Pond System 2008 states that, “...the DWAF will specify the required frequency of sampling in the conditions. Where no frequency is specified, samples must be taken once every six months and analysed for the tests required by DWAF”.

CHAPTER 4: FINDINGS

4.1 PLANNING

4.1.1 Environmental Management Plans

The audit found that the Department of Environmental Affairs (DEA) under the Ministry of Environment and Tourism (MET) did not ensure that LAs develop and submit Environmental Management Plans (EMP's) for sewerage infrastructure during the periods under review as stipulated in Section 2 of the Environmental Management Act, 2007 (Act No. 7 of 2007).

Documentary reviews revealed that all LA's visited at the time of the audit with the exception of the City of Windhoek did not develop EMP's for Sewage Reticulation Systems. This is because the DEA only started sensitizing LAs on the Environmental Management Act, 2007 (Act No. 7 of 2007) during the 2015/16 financial year.

Documentary review revealed that the DEA requested via letters for Rundu, Ondangwa, Ongwediva and Oshakati Town Councils to develop and submit EMP's for Sewage Reticulation Systems during the 2015/16 financial year. However, at the time of the audit, the LAs did not comply.

Furthermore, the DEA could not provide records of compliance orders issued as required by Section 20, Subsection (1),(2),(3) and (4) of the Environmental Management Act, 2007 (Act No.7 of 2007).

4.1.2 Environmental Clearance Certificate

The audit found that the DEA under the MET did not ensure that the LAs visited at the time of the audit with the exception of the City of Windhoek and Walvis Bay Municipality, were assessed and issued with Environmental Clearance Certificates for sewage management. This is contrary to the set principles of environmental management as prescribed in Section 3 (2) (e) of the Environmental Management Act, 2007 (Act No. 7 of 2007) described in paragraph 3.2.1 of this report.

Moreover, the DEA under MET could not provide records of fines issued to LAs that are operating without Environmental Clearance Certificates as required by Section 27 (2) (b) (i) and Subsection 3 of the Environmental Management Act, 2007 (Act No.7 of 2007).

As a result, the audit found indications of inefficient management of sewage by LAs which may further result in underground water pollution. See pictures below.

Picture 1: Untreated sewage disposed-off in an open area next to the Oxidation Ponds at Usakos



Picture 2: Untreated sewage was disposed-off in unlined Oxidation Ponds at Ondangwa and Ongwediva



4.1.3 Wastewater Effluent Disposal Exemption Permit

The audit found that the Department of Water Affairs and Forestry (DWAF) under the Ministry of Agriculture Water and Forestry (MAWF) did not ensure that all LAs operate with valid Wastewater Effluent Exemption Disposal Permits (WWEDEP).

Furthermore, the audit found through documentary review, that the DWAF did not update the database for the WWEDEP on a regular basis.

This has resulted into LAs violating their WWEDEP conditions, which are described in paragraph 3.4.2.1.1 of this report.

Comments by the auditee

The Accounting Officer commented that few LAs that did not have valid permits in their possession at the time of the audit visits, the situation is explainable as follows:

- *Some permits, for example for Arandis, expired in 2014. Permit conditions stipulate that permit holders have the responsibility of submitting renewal applications two (2) months before expiry date of a permit.*
- *In other cases, e.g. Ondangwa Town Council, applications were submitted with missing or incomplete information, thereby hindering smooth processing of applications and timely issuing of permits by DWAF.*
- *In addition, irregularities pertaining to management of wastewater treatment systems may be observed at local authorities. In such cases, issuing of permits is withheld to allow the local authority to rectify irregularities observed.*
- *Furthermore, permits have a validity of 5 years and may have expired prior to the audit. A renewal application may have been in progress already.*

4.2 Construction and Monitoring by MURD

4.2.1 Funding of Sewage Development Infrastructure

Data analyzed revealed that the MURD took an average of 29 and 92 working days to transfer funds for sewerage development projects to LAs during the 2014/15 and 2015/16 financial periods respectively. The audit further found that, during the financial periods under review there were no exclusive standards on the timeframe of transferring funds to the LAs.

This has resulted in project delays and completion due to late payment of contractors and consultants.

Comments by the Auditee

The Accounting Officer commented that in terms of mandatory requirements for requisitioning and securing the approval and transfer of funds for capital projects that have been established by Treasury and have been communicated to all O/M/As including LAs and RCs. LAs are required to provide certain supporting documents (bank balance statements from the bank, certified invoices, etc...) which if not provided will result in the delayed processing or even a disapproval of the request for transfer of funds from Treasury. On a general basis, MURD has encountered delayed submissions or incomplete requests for fund transfer from a number or most of LAs.

MURD does not have an individual bank account in which it keeps and transfers money to LAs and other parties, but only accesses funds under its approved Vote/Budget in the State account by issuing payment or transfer instruction to Treasury/Ministry of Finance. Due to the monthly Treasury authorization Warrant (TAW) funds availability and transfer system that is in place and used by Treasury, it is possible and has happened on many occasions, that, even when projects have been duly budgeted for in a given year, there may not be enough money to settle all invoices submitted for projects or work done due to TAW limits by Treasury. Ministry of Finance

has the final say on the actual release or transfer of funds from the State Account. If MOF detect incompleteness, they may refer the request back. LAs may see this as a “delay”, but it is not, but an important and legal control and accountability enforcement intervention.

4.2.2 Monitoring of Sewerage Infrastructure Development Projects

The Directorate of Housing, Habitat, Planning and Technical Services Coordination (DHHPTSC) could not provide assurance that the quality of material used and work done by contractors contracted by the LAs were inspected because the directorate could not provide inspections reports of the 146 infrastructure development projects worth N\$ 1 750 441 477, undertaken during the periods under review.

The following were also observed at the time of the audit:

- Sewer screeners were not installed at the inlets of the visited Pump Stations, which should protect the downstream plant and equipment from any possible damage, unnecessary wear & tear, pipe blockages and the accumulation of unwanted material that will interfere with the required wastewater treatment processes. Refer to picture 3 below; and
- Sewer manholes constructed in low-lying areas resulted in high inflow of stormwater into sewerage reticulation systems which could cause pipe bursts and subsequently an overflow of sewage into the environment which is contrary to paragraph 40 (1) (2) of the Model Sewage and Drainage Regulation No. 131 of 1996. Refer to picture 3 below.

Picture 3: No Sewer Screeners at Stampriet Pump Station



Picture 4: Sewer Manholes in low-lying areas at Stampriet



4.2.3 Capacity of the Sewerage Infrastructures

At the time of the audit, it was found that sewerage infrastructures at LA’s visited were not adequate to cater for all inhabitants. See table 3 below

Table 3: Sewerage Infrastructure Coverage

Local Authority	Total Number of Households	Number of Households Connected	Number of Households Not Connected	Percentage of Households Not Connected
Town Councils				
Ongwediva Town Council	6471	3204	3267	50%
Usakos Town Council	1867	1686	181	10%
Village Councils				
Kalkrand Village Council	565	460	105	19%
Gibeon Village Council	1178	536	642	55%
Stampriet Village Council	330	235	95	29%

Source: LA’s documents

Furthermore, at the time of the audit it was found that, 53 of the 642 households at Gibeon that are not connected to sewerage systems, were using a bucket system. As a result, the unhygienic environment such as open defecation, pit latrine without slab and usage of a bucket system were observed at the time of the audit which might further result in variety of widespread health problems.

Comments by the Auditee

The Accounting Officer commented that the direct responsibility for the planning, budgeting and development of urban infrastructure is that of local authorities. The reported mismatch between

infrastructure capacity and the community being or which is supposed to be served by such infrastructure can either be due to poor or lack of proper planning and budgeting on the part of LAs due to technical capacity constraints or budgetary constraints at the national level (insufficient budget allocation to MURD/Vote 17), which in turn reduces the ability of MURD to meet all the capital development projects or LAs. The cause could also be a combination of the above-mentioned factors.

LAs are generally expected to initiate and implement activities including sewerage projects that will enable LAs to render services for which they will and receive payments in turn from the community. The income received is supposed to be used among others to firstly maintain existing infrastructure and where possible to develop new ones. Quite often, LAs use monies generated from services for other purposes (operational expenses), and they turn to Central Government to provide money for maintenance.

4.3 Operation and Maintenance

4.3.1 Maintenance of Sewerage Systems

It was found that at the time of the audit Vacuum and Gravity Sewage Reticulation Systems are prevalent among the local Authorities (LAs). It was found that 13 of the 14 LAs visited have a Gravity Sewage Reticulation System whereas one has a Vacuum Sewage Reticulation System and three others a combination of both systems. (See *Appendix V*).

The audit found that the DHHPTSC under the MURD did not monitor LAs to ensure that their sewerage infrastructures are well maintained as per the goals and strategies of the Ministry at the time of the audit.

The following were observed on the two systems:

4.3.1.1 Gravity System

The audit found that 6 of the 13 LAs visited with Gravity Sewage Reticulation Systems were not properly maintained at the time of the audit. This is discussed as follows:

The Technical Department at the Rundu Town Council did not conduct regular maintenance and inspections on the Kaisosi pump station, which was broken at the time of the audit. As a result, untreated sewage was disposed-off in the old Kaisosi oxidation ponds which were decommissioned in 2012.

Furthermore, the ponds were not lined, fenced-off and were located in the floodplains of the Kavango River allowing local residents and animals to have access which may affect their health and impact the underground water.

Physical observation conducted at the time of the audit indicated that the Technical Department at the Usakos Town Council did not conduct regular inspections at the main pump station. Sewer screeners were found missing, a standby pump was not operational and vegetation was growing in the ponds due to cracking of ponds embankments which might further result in untreated

sewage to overflow into the environment, therefore, negatively affecting water resources in the area.

It was established that Ondangwa Town Council outsourced the maintenance of pump stations to a private contractor because they do not have the required expertise to do maintenance of pump stations.

However, the audit found that the contractor appointed by Ondangwa Town Council has not been fully complying with the contract conditions because the Town Council did not monitor them. The contractor did not keep the pump stations clean at all times, keep the oxidation ponds clear of vegetation and maintain the fence oxidation ponds as stipulated in the contract.

4.3.1.2 Vacuum Sewerage System

At the time of the audit, it was found that 3 out of 4 LAs visited with Vacuum Sewerage Reticulation System, namely: Kalkrand, Gibeon and Stampriet Village Councils did not properly maintain their sewage reticulation system due to lack of skills and equipment.

Physical observation conducted at 3 LAs visited also revealed overflowing collection chambers. This is illustrated in pictures below.

Picture 5: Collection Chambers overflowing into the streets of Gibeon and Stampriet



This have resulted in pollution of underground water for example in Gibeon, water sample results from the !Gamemab !IIB fountain collected by the Ministry of Health and Social Services in 2016 indicated that the fountain water was polluted with Fecal Coliform Bacteria.

Comments by the Auditee

According to the Accounting Officer the MURD recognizes the challenge that has been documented in the audit report. The casual factors are many ranging from negligence, to lack of technical capacity and financial constraints on the part of LAs. The Ministry is continuously pre-occupied with working with LAs in assisting with the planning, budgeting and supervision of urban sewerage and that the monthly TAW fund allocation ceiling by Treasury allows. (MURD cannot process invoices if the amounts for the invoices exceed the budget/funds made available to spend.

MURD is unable to commit to ensure that sewerage infrastructure at LAs are adequate to cater for all households due to the following constraints that are beyond its control and as already pointed out herein above:

- *This is the direct responsibility of LAs and provision has to first be initiated by LAs;*
- *Cash-flow and budgetary constraints at national level do not always allow OMAs, including MURD to have sufficient resources to meet all developmental needs, and some of the needs therefore have to be postponed and in general met in an incremental fashion.*

MURD will continue to strive to assist LAs to set up functional monitoring mechanism to ensure regular maintenance in general and to the extent that it's internal Technical Services capacity and its budget allocation allow and with the co-operation of LAs.

4.4 Monitoring by Key Stakeholders

4.4.1 Cleanliness and Prevention of Health Nuisance

The audit found that the Directorate of Primary Health Care Services (DPHCS) under the Ministry of Health and Social Services (MHSS) did not sufficiently monitor LAs to ensure compliance with public health laws and regulations as described in paragraph 3.4.3.2.1 of this report. Furthermore, the DPHCS could not provide proof of inspection conducted at the LAs.

Physical observation conducted at the time of the audit revealed that 57% of the 14 LAs visited did not maintain cleanliness in terms of sewage management in the areas of jurisdiction as described in paragraph 3.4.4.2.1 of this report. This is because the LAs do not properly maintain the Sewage Reticulation Systems.

The following was observed at the time of the audit:

- Sewer manholes were overflowing; and
- The plastic septic tanks and collection chambers were overflowing into the streets.

This is illustrated in the following pictures below:

Picture 6: Overflowing Sewer Manholes at Ondangwa and Divundu



Picture 7: Overflowing Plastic Septic Tanks and Collection Chambers at Kalkrand and Stampriet



4.4.2 WVEDEP Conditions

The audit found that the DWAF under the MAWF did not ensure that all the visited LAs fully comply with WVEDEP conditions during the financial years under review.

The records provided by the DWAF indicated that on average only 48% LAs that were visited were inspected during the three financial years under review, with a decline in the last financial year.

The following indications of non-compliance were found:

Average Daily Weather Flow

The audit found that 71% out of 14 LA's except the City of Windhoek, Swakopmund and Walvis Bay Municipalities and Arandis Town Council, did not keep record of the daily Dry Weather inflow of sewage into their Oxidation Ponds or Treatment Plants for load calculation and system extension.

Physical observation conducted at the time of the audit revealed that Inflow Measuring Devices were not installed at the inlets of Oxidation Ponds.

This could lead to ineffective planning and sewage management, which may result in overflowing of untreated sewage at the Oxidation Ponds into wet lands (oshanas), and open fields therefore, polluting the surrounding environment.

Water Quality

The audit found that 79% of the 14 visited LAs, except Arandis Town Council, City of Windhoek, Swakopmund and Walvisbay Municipalities did not test sewage (effluents) to ensure compliance with the Regional Standards for Industrial Effluents as laid down in the Regulation R553 of 1962.

This is because the DWAF under MAWF did not enforce its mandate by requesting LAs to submit water quality reports once every six months as described by paragraph 8 of the Code of Practice Volume 2 of the Pond System of 2008.

Data analyzed revealed that the visited LAs that are testing sewage did not meet the Regional Standards for industrial effluents, such as Free Saline ammonia, Total Suspended Solids and Chemical Oxygen Demand.

Furthermore, the DWAF could not provide records of LA's that were found guilty of an offence as required by Section 22 (2) of the Water Act of 1956 (Act No. 54 of 1956).

Therefore, non-adherence to the Regional Standards for Industrial Effluents may result in pollution of rivers where these effluents are being disposed-off.

Inspections at the Oxidation ponds

The audit found that 79% out of 14 visited Local Authorities except, the City of Windhoek, Swakopmund and Walvisbay Municipalities did not conduct daily and periodic inspections at the Oxidation Ponds because the responsible artisans were not trained how to conduct regular inspections.

As a result, physical observations conducted at the time of the audit, revealed that at 28% of the 14 LAs visited, Oxidation Ponds fences were vandalized and unrepaired therefore, giving entrance to domestic animals as well as unauthorized people. (See pictures below).

Picture 8: Vandalized Fence at Ondangwa and Rundu



Picture 9: Domestic animals grazing in the Oxidation Ponds at Ondangwa



Furthermore, at the time of the audit, Oxidation Ponds at 50% visited LAs were covered with vegetation because the embankments of Oxidation Ponds are not cleared on a regular basis, at least once every day as required by paragraph 7.1 Code of Practice Volume 2 of the Pond System of 2008.

As a result, vegetation roots might penetrate into the embankments of the Oxidation Ponds, which may further result in pollution of underground water due to seepage of effluent. See picture below.

Picture 10: Oxidation Ponds covered with vegetation at Oshakati and Arandis



Furthermore, the bar screens and detritus channels were not installed at the inlets of the Oxidation Ponds as required by paragraph 5.1 Code of Practice Volume 2 of the Pond System of 2008.

As a result, the absence of the bar screens and detritus channels cause debris to flow into the Oxidation Ponds, causing a bad smell and slows down the evaporation of effluent into the air.

Picture 11: Debris inside the Oxidation Ponds at Ondangwa



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Picture 12: Debris inside the Ponds Systems at Gibeon and Stampriet



Comments by the auditee

The Accounting Officer commented that the few LAs that did not have valid permits in their possession at the time of the audit visits, the situation is explainable as follows:

- *Some permits, for example for Arandis, expired in 2014. Permit conditions stipulate that permit holders have the responsibility of submitting renewal applications two (2) months before expiry date of a permit.*
- *In other cases, e.g. Ondangwa Town Council, applications were submitted with missing or incomplete information, thereby hindering smooth processing of applications and timely issuing of permits by DWAF.*
- *In addition, irregularities pertaining to management of wastewater treatment systems may be observed at local authorities. In such cases, issuing of permits is withheld to allow the local authority to rectify irregularities observed.*
- *Furthermore, permits have a validity of 5 years and may have expired prior to the audit. A renewal application may have been in progress already.*

The Water Environment Division under DWAF conducts Pollution Control and Compliance Monitoring inspections (PCCMs) in all regions annually or in response to environmental incidences/emergencies. This is carried out as part of the Divisions's Annual Work Plan and as per Performance Agreement (PA) of each Hdrologist assigned to specific regions. The PCCMs have the following objectives, amongst others:

- To enforce permit conditions (at local authorities with valid permits) by pointing out to Las irregularities that needed to be rectified urgently as part of the permit and/or action plan a LA may have submitted for conditional approval a permit.*
- To inspect the status and condition of a wastewater treatment plant in order to observe any irregularities, e.g. overflows, leakages, fencing, screening, etc.*
- To take wastewater samples in order to assess treatment efficiency of a wastewater treatment plant.*
- To assist Las to complete wastewater discharge application forms, and*
- To create awareness to Las on the importance of wastewater discharge permits and Water Acts.*

The Accounting Officer commented that most of the time LAs do not respond to such letters nor rectify irregularities. Furthermore, it is worth noting that the operations of the DWAF are guided by the availability of financial resources and particularly affected by budget-cuts as experienced by all government institutions. The frequency of monitoring trips in the regions is therefore affected by economic realities facing government and adjusted accordingly based on priority and availability of funds.

CHAPTER 5 CONCLUSIONS

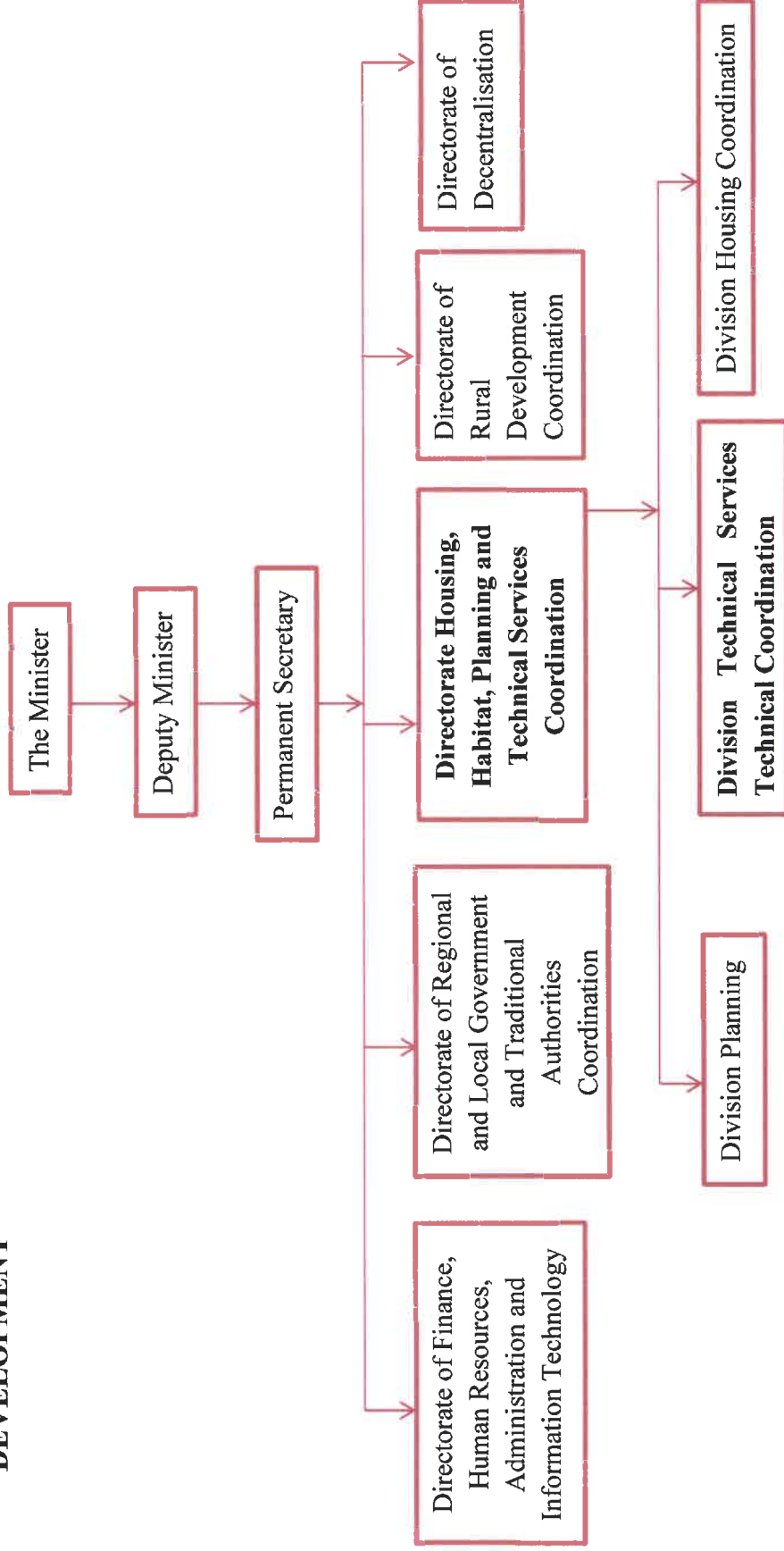
1. The Department of Environmental Affairs (DEA) under the Ministry of Environment and Tourism (MET) does not adequately ensure that Local Authorities (LAs) develop and submit Environmental Management Plans (EMPs) for sewage management.
2. The DEA under the MET does not adequately ensure that LAs obtain Environmental Clearance Certificates for sewage management.
3. The Department of Water Affairs and Forestry (DWAF) under the Ministry of Agriculture, Water and Forestry (MAWF) does not adequately ensure that LAs operates with valid Wastewater Effluent Disposal Exemption Permits.
4. The Ministry of Urban and Rural Development (MURD) does not adequately monitor sewerage infrastructure development projects.
 - The MURD took an average of 29 and 92 working days to transfer funding for sewerage development projects to LAs during the 2014/15 and 2015/16 financial periods respectively.;
 - The DHHPTSC could not provide inspection reports conducted on 146 infrastructure development projects worth N\$ 1 750 441 477, undertaken during the periods under review; and
 - LAs do not ensure that sewerage infrastructures are adequate to cater for all households.
5. The DHHPTSC under the MURD does not monitor LAs to ensure that their sewerage infrastructures are well maintained.
6. The Directorate of Primary Health Care Services (DPHCS) under the Ministry of Health and Social Services (MHSS) does not coordinate or monitor LAs to ensure compliance with public health laws and regulations.
7. The DWAF under the MAWF does not adequately monitor LAs to ensure compliance with Wastewater Effluent Disposal Exemption permit conditions.

CHAPTER 6: RECOMMENDATIONS

1. The Ministry of Environment and Tourism (MET) should put measures in place to ensure that Local Authorities (LAs) develop and submit Environmental Management Plans (EMP's) for sewage management.
2. The MET should put measure in place to ensure that LAs obtain Environmental Clearance Certificates for sewage management.
3. The Ministry of Agriculture, Water and Forestry (MAWF) should put measures in place to ensure that LAs operates with valid Wastewater Effluent Disposal Exemption Permits (WWEDEP).
4. The Ministry of Urban and Rural Development (MURD) must put measures in place to ensure that sewerage infrastructure development projects are adequately monitored.
 - The MURD should put measures in place to ensure that funds for sewerage development projects are transferred timely to ensure that payments are processed within the specified timeframe as per the recently adopted Customer Service Charter.
 - The MURD should put measures in place to ensure that sewerage infrastructure at LAs are adequate to cater for all households.
5. The MURD should put measures in place to monitor LAs on a regular base to ensure that their sewerage infrastructures are well maintained.
6. The Ministry of Health and Social Services should coordinate and monitor LAs to ensure compliance with the public health laws and regulations.
7. The MAWF should monitor LAs regularly to ensure compliance with WWEDEP permit conditions.

APPENDICES

APPENDIX I: THE ORGANISATIONAL STRUCTURE OF THE MINISTRY OF URBAN AND RURAL DEVELOPMENT



APPENDIX II: INTERVIEWS CONDUCTED

NUMBER	POSITION
KHOMAS REGION	
1	Deputy Director: Technical Services, MURD
1	Chief Regional Environmental Officer, MoHSS
1	Chief Engineer: Engineering Services, Windhoek Municipality
1	Deputy Director: Water Environment, MWAFF
HARDAP REGION	
1	Director: Development Planning, Regional Council
1	Chief Regional Environmental Officer, MoHSS
3	Heads of Technical Services Department (Stamriet, Kalkrand, Gibeon)
2	Chief Executive Officers (Kalkrand, Gibeon)
1	Acting Chief Executive Officer (Stamriet)
KAVANGO WEST AND EAST	
1	Director: Development Planning, Regional Council
1	Chief Executive Officer (Divundu)
2	Heads of Technical Services Department (Rundu and Divundu)
1	Acting Finance Manager (Rundu)
OSHANA REGION	
1	Chief Regional Environmental Officer, MoHSS
3	Heads of Technical Services Department (Oshakati, Ondangwa and Ongwediva)
3	Finance Managers (Oshakati, Ondangwa and Ongwediva)
3	Environmental Managers (Oshakati, Ondangwa and Ongwediva)
ERONGO REGION	
1	Chief Regional Environmental Officer, MoHSS
2	Environmental Managers (Walvisbay and Swakopmund)
4	Finance Managers (Walvisbay, Swakopmund, Arandis and Usakos)
4	Heads of Technical Services Department (Walvisbay, Swakopmund, Arandis and Usakos)

APPENDIX III: DOCUMENT REVIEWED

Name of the documents	Purpose of review
Water Act, 1956 (Act No. 54 of 1956)	<ul style="list-style-type: none">• To understand the operations of the MAWF; and• To determine possible audit criteria.
Public and Environmental Health Act, 2015 (Act No. 1 of 2015)	<ul style="list-style-type: none">• To understand the operations of the MoHSS; and• To determine possible audit criteria.
Regional Councils Act, 1992 (Act No. 22 of 1992)	<ul style="list-style-type: none">• To understand the operations of Regional Councils (RC); and• To determine possible audit criteria.
Local Authorities are mandated by Local Authorities Act, 1992 (Act No. 23 of 1992)	<ul style="list-style-type: none">• To understand the operations of Local Authorities (LC); and• To determine possible audit criteria.
Namibian 2011 Population and Housing Census Indicators	<ul style="list-style-type: none">• To determine the population residing in urban areas.
Water Supply and Sanitation Policy of 2008	<ul style="list-style-type: none">• To understand the operations of the MAWF; and• To determine possible audit criteria.
Namibia National Sanitation Strategy 2010/11 – 2014/15	<ul style="list-style-type: none">• To determine stakeholders in the process of sewage collection, treatment and disposal
Inspection reports from the MAWF and the MET	<ul style="list-style-type: none">• To determine the frequency of inspections.
Job descriptions	<ul style="list-style-type: none">• To understand roles and responsibilities of individual employees.

APPENDIX IV: ASSESSMENT CRITERIA, AUDIT QUESTIONS AND METHODOLOGY

AUDIT QUESTIONS	SUB-QUESTIONS	ASSESSMENT CRITERIA	SOURCES OF DATA COLLECTION	OBJECTIVES
<p>1 To what extent does the MURD monitor sewerage infrastructures development projects to ensure that funds allocated to L.A's are used efficiently?</p>	<p>1.1 How does the MURD ensure that L.A's sewerage development projects are fully funded? 1.2 How does the MURD ensure that funds availed to L.A's are used for intended purposes? 1.3 How does the L.A's ensure that they are adequately capacitated in terms of equipment's and human resources to effectively maintain sewerage infrastructures? 1.4 How does the L.A's ensure that sewerage infrastructures are adequate to cater for all households? 1.4.1 How does the L.A's ensure that all households are</p>	<p>The Decentralization Enabling Act of 2000 (Act No. 33 of 2000) Section 5 (6) state that, "for the purpose of promoting compliance with this Act by the regional councils and local authority councils concerned, as the case may be, the Permanent Secretary of a Line Ministry or any staff member authorised thereto by that Permanent Secretary shall: (a) furnish, when so requested by a regional council or a local authority council, as the case may be, that regional council or local authority council, as the case may be, with advice or recommendations relating to the performance; and (b) Supervise the performance by a regional council or a local authority council, as the case may be, of functions devolved to the regional council or the local authority council under section 2". <i>Source: Decentralization Enabling Act of 2000, page 8</i> The Local Authorities Act of 1992 (Act No. 23 of 1992) Section 30 (1) state that "subject to the provisions of</p>	<ul style="list-style-type: none"> ➤ Project identification forms of Local Authorities(LA's); ➤ Financial reports of selected LA's; ➤ Budgets of selected LA's; ➤ Site inspection reports from the MURD; ➤ Population statistics from the Namibia Statistics Agency; ➤ Sewerage coverage maps of LA's; ➤ Staff establishments of the LA's; and ➤ Asset registers at Local Authorities. 	<ul style="list-style-type: none"> ➤ To determine if the MURD effectively ensure that funds are used for intended purposes. ➤ To determine if sewerage infrastructures are adequate to cater for all households. ➤ To determine if LA's are adequately capacitated to effectively maintain sewerage infrastructures.

<p>2 Do the LA's adhere to the laws and regulations with regards to sewage management?</p>	<p>connected to a sewage system?</p>	<p>subsection (2) (3), a local authority council shall have the power (b) subject to the provision of Part VII, to provide, maintain and carry on a system of sewerage and drainage for the benefit of the residents in its area". <i>Source: Local Authorities Act of 1992, page 46</i> The Local Authorities Act of 1992 (Act No. 23 of 1992) Section 38 (1) further state that "for purposes of the provisions of section 30(1) (b), a local authority council may (a) acquire or construct, and maintain and carry on, a system of sewerage and drainage, including sewerage works, public sewers and stormwater drains whether within or outside its area". <i>Source: Local Authorities Act of 1992, page 46</i></p>		
<p>3.1 Do the LA's comply with the Public Environmental Health Act?</p>	<p>Section 57 of the Public and Environmental Health Act, 2015 (Act No. 1 of 2015), states that "a local authority must take all lawful, necessary and reasonable practical measures to: (a) Maintain its local authority area at all times in a clean and sanitary condition; and (b) Prevent the occurrence of or for remedying or causing to be remedied, a health nuisance or condition liable to be injurious or dangerous to health,</p>	<p>Directorate of Primary Health Care Services Annual Report 2013 2014 Diseases outbreaks statistics in the regions; Inspection reports of inspections conducted by the Directorate of Primary Health Care Services at LA's; and Physical observation of sewerage infrastructure at the LA's.</p>	<p>To determine whether the MURD and Key stakeholders effectively monitor LA's to ensure that they comply to laws and regulations to environmental protection against negative impact of sewage; and To determine whether sewerage infrastructures at the</p>	

		<p>and must take proceedings at law against a person causing or responsible for the continuance of a health nuisance or condition”.</p> <p>Section 59 state that “the following is considered to be health nuisances which can be offensive, injurious or dangerous to health and liable to be dealt with in the manner provided in this Part, (b) a stream, pool, lagoon, ditch, gutter, watercourse, sink, cistern, sanitary convenience, urinal, cesspool, cesspit, drain, sewer, dungpit, slop-tank, ashpit or manure heap so foul or in a state or so situated or constructed, or a collection of water which may serve as a breeding place for mosquitoes or other vector”.</p> <p><i>Source: Public and Environmental Health Act, page 38-39</i></p>		<p>LA’s are causing health nuisance.</p>
<p>3.2 Do the Ministry of Agriculture, Water and Forestry effectively monitor local authorities to ensure that they operate with valid waste water effluent exemption permits?</p>		<p>The Water Act of 1956, (Act No.54 of 1956) Section 22 (1) state that, “notwithstanding the provisions of the Public Health Act, 1919 (Act No. 36 of 1919), or any other law, but subject to the provisions of sub-section (2), a local authority having jurisdiction over the disposal of sewage may, after purifying the effluent derived from the treatment of such sewage in accordance with standards prescribed under sub-section (1) of section twenty</p>	<ul style="list-style-type: none"> ➤ The data base of wastewater permits; and ➤ The wastewater permits files of LA’s. 	<ul style="list-style-type: none"> ➤ To determine whether the LA’s are operating with valid wastewater permit.

		<p>one, and with the permission of the Minister, use such effluent for any purpose approved by the Minister or dispose of such effluent for use by any person or discharge such effluent into a public stream”.</p> <p><i>Source: The Water Act of 1956 page 1231</i></p>		
<p>3.3 Does the MAWF ensure that LA's adhere to their Waste Water Effluent Exemption Disposal Permits' conditions?</p>	<p>The Water Act of 1956, (Act No.54 of 1956) Section 22 (2) and (3) state that, “(2) the Minister may in writing and on such condition as he may deem fit, exempt from compliance with the provision of section twenty one, any local authority which does not dispose of water used for any industrial purpose other than purification or disposal of sewage.</p> <p>(3) Any local authority which contravenes or fails to comply with any condition subject to which any exemption has been granted to it under sub-section (2) shall be guilty of an offence”.</p> <p><i>Source: The Water Act of 1956 page 1231</i></p>	<p>➤ LA's wastewater permits and conditions;</p> <p>➤ Water quality reports;</p> <p>➤ Technical reports of sewerage infrastructures at the LA's;</p> <p>➤ Inspection reports of inspections conducted by the Department of Water Affairs (DWA); and</p> <p>➤ Physical observation of sewerage infrastructures at the LA's.</p>		<p>➤ To determine whether LA's are complying with their WWEEP's conditions.</p>

	<p>3.3.1 Are the oxidation ponds lined accurately?</p>	<p>Paragraph 6 of Code of Practice Volume 2: Pond System General Guidelines of 2008, state that, “anaerobic ponds must be fully lined, regardless of the soil conditions and in all instances, with a durable artificial liner such as plastic sheeting, not less than 1 mm thick.” <i>Source: Code of Practice Volume 2: Pond System General Guidelines of 2008, page 20</i></p>	<ul style="list-style-type: none"> ➤ Water Quality reports; ➤ Technical designs of the oxidation ponds; and ➤ Physical observation of oxidation ponds of selected LA’s. 	<ul style="list-style-type: none"> ➤ To determine if oxidation ponds are lined to ensure that the environment is protected from sewage seepage into the ground.
	<p>3.3.2 Are there any debris and vegetation growing in the oxidation ponds?</p>	<p>Paragraph 5.4 of Code of Practice Volume 2: Pond System General Guidelines of 2008, state that, “Ponds should be designed with a freeboard not less than 400mm. The ponds should always be kept free from weed growth and the embankments should be well maintained. Providing stone pitching or a concrete screed on the freeboard and extending at least 200mm into the water will prevent weed growth and wave erosion, thereby saving maintenance cost.” <i>Source: Code of Practice Volume 2: Pond System General Guidelines of 2008, page 19</i></p>	<ul style="list-style-type: none"> ➤ Physical observation of oxidation ponds of selected LA’s. 	<ul style="list-style-type: none"> ➤ To determine if there is vegetation growing in the oxidation ponds that will risk to the stability of the ponds.
	<p>3.3.3 Are the oxidation ponds properly fenced off?</p>	<p>Paragraph 5.6 of Code of Practice Volume 2: Pond System General Guidelines of 2008, state that “The pond system must be completely</p>	<ul style="list-style-type: none"> ➤ Physical observation of oxidation ponds of selected LA’s; and 	<ul style="list-style-type: none"> ➤ To determine whether the oxidation ponds are properly fenced off to prevent animals

		<p>fenced in to prevent people and animals entering the area and ample notices must be provided to warn and keep people out of this area. As a minimum, a “jakkalsproef” fence at least 1.8 m high with double-gate to allow access for trucks must be provided. The gate must be kept properly locked. No animals or people are allowed to swim in any of the ponds”.</p> <p><i>Source: Code of Practice Volume 2: Pond System General Guidelines of 2008, page 20</i></p>	<p>➤ Inspection reports of inspection conducted by the DWA.</p>	<p>and unauthorized people from entering the ponds.</p>
<p>3.3.4 Are the oxidation ponds located 500 m away from the next residential area?</p>	<p>Paragraph 4.1 of Code of Practice Volume 2: Pond System General Guidelines of 2008, state that “most important considerations for selecting a suitable site include: Location: “Ponds may not be built closer than 500 m from the nearest residential area and where anaerobic ponds are included, this distance should ideally be increased to 1.0 km”.</p> <p><i>Source: Code of Practice Volume 2: Pond System General Guidelines of 2008, page 14</i></p>	<p>➤ The town plans of the selected LA’s; and ➤ Physical observation of oxidation ponds of selected LA’s.</p>	<p>➤ To determine whether the oxidation ponds are located far away from the residential areas to prevent vandalism of the infrastructures.</p>	

	<p>3.4 Do the MET effectively monitor LA's to ensure that they are operating with valid Environmental Clearance Certificates?</p>	<p>Section 27 (1) of the Environmental Management Act of 2007 (Act No.7 of 2007) state that, "the Minister, after following the consultative process referred to in section 44, may list, by notice in the Gazette, activities which may not be undertaken without an environmental clearance certificate. (2) Activities listed, under subsection (1), may include activities in respect of any of the following areas (i) waste and sewage disposal; chemical treatment." <i>Source: Environmental Management Act of 2007 (Act No.7 of 2007), page 20</i></p>	<p>Inspection/awareness campaign conducted by the Department of Environmental Affairs; Environmental Clearance Certificates data base of the Department of Environmental Affairs; and The Environmental Clearance Certificates of sewerage infrastructures for the selected LA's.</p>	<p>To determine whether the environmental impact assessment were done before the construction of sewage infrastructures.</p>
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APPENDIX V: LOCAL AUTHORITIES VISITED AND THE TYPE OF SEWERAGE SYSTEMS

LOCAL AUTHORITY	REGION	RETICULATION SYSTEM	SEWERAGE SYSTEM
Windhoek Municipality	Khomas	Gravity	Treatment Plant
Gibeon Village Council	Hardap	Vacuum & Gravity	Oxidation Pond
Stampriet Village Council	Hardap	Vacuum & Gravity	Oxidation Pond
Kalkrand Village Council	Hardap	Vacuum	Oxidation Pond
Walvis Bay Municipality	Erongo	Gravity	Treatment Plant
Swakopmund Municipality	Erongo	Gravity	Treatment Plant
Usakos Town Council	Erongo	Gravity	Oxidation Pond
Arandis Town Council	Erongo	Gravity	Oxidation Pond & Treatment Plant
Rundu Town Council	Kavango	Gravity	Oxidation Pond
Divundu Village Council	Kavango	Gravity	Oxidation Pond
Nkurenkuru Town Council	Kavango	Gravity	Oxidation Pond
Ondangwa Town Council	Oshana	Vacuum & Gravity	Oxidation Pond
Oshakati Town Council	Oshana	Gravity	Oxidation Pond
Ongwediva Town Council	Oshana	Gravity	Oxidation Pond