



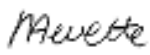
MSINGA MUNICIPALITY



MSINGA LOCAL MUNICIPALITY

Integrated Waste Management Plan for Msinga Local Municipality

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MSINGA LOCAL MUNICIPALITY

INTEGRATED WASTE MANAGEMENT PLAN FOR THE MSINGA LOCAL MUNICIPALITY

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DEFINITIONS

The following definitions are taken either from the recently promulgated Waste Act (59 of 2008) or the Minimum Requirements series:

Best Practicable Environmental Option – the option that provides the most benefit or causes the least damage to the environment as a whole, at a cost acceptable to society, in the long term as well as in the short term;

Building and Demolition Waste – waste, excluding hazardous waste, produced during the construction, alteration, repair or demolition of any structure, and includes rubble, earth, rock and wood displaced during that construction, alteration, repair or demolition;

Business Waste – waste that emanates from premises that are used wholly or mainly for commercial, retail, wholesale, entertainment or government administration purposes;

By-Product – a substance that is produced as part of a process that is primarily intended to produce another substance or product and that has the characteristics of an equivalent virgin product or material;

Clean Production – the continuous application of integrated preventative environmental strategies to processes, products and services to increase overall efficiency and to reduce the impact of such processes, procedures and services on health and the environment;

Communal Landfill is the smallest landfill classification with a capacity of less than 25 tonnes per day;

Contaminated – the presence in or under any land, site, buildings or structures of a substance or micro-organism above the concentration that is normally present in or under that land, which substance or micro-organism directly or indirectly affects or may affect the quality of soil or the environment adversely;

Daily Cover is a daily application and compaction of approximately 15 centimetres of soil intended to control blowing litter, doors, flies, rats and fires, intended for an exposure of less than one week.

Design Drawings are drawings prepared by the landfill designer and include dimensions, specifications and other technical data regarding the construction of the landfill;

Decommissioning – in relation to waste treatment, waste transfer or waste disposal facilities, means the planning for and management and remediation of the closure of a facility that is in operation or that no longer operates;

Disposal – the burial, deposit, discharge, abandoning, dumping, placing or release of any waste into, or onto, any land;

Domestic Waste – means waste, excluding hazardous waste, that emanates from premises that are used wholly or mainly for residential, educational, health care, sport or recreation purposes;

Extended Producer Responsibility Measures – measures that extend a person's financial or physical responsibility for a product to the post-consumer stage of the product, and includes—

- (a) waste minimisation programmes;
- (b) financial arrangements for any fund that has been established to promote the reduction, re-use, recycling and recovery of waste;
- (c) awareness programmes to inform the public of the impacts of waste emanating from the product on health and the environment; and
- (d) any other measures to reduce the potential impact of the product on health and the environment;

Final Cover is an application and compaction of soil on the landfill after it has reached its designed elevation. The final cover soil shall be relatively impermeable and have a thickness of approximately 50 centimetres.

General Waste – waste that does not pose an immediate hazard or threat to health or to the environment, and includes—

- (a) domestic waste;
- (b) building and demolition waste;
- (c) business waste; and
- (d) inert waste;

Hazardous Waste – any waste that contains organic or inorganic elements or compounds that may, owing to the inherent physical, chemical or toxicological characteristics of that waste, have a detrimental impact on health and the environment;

Holder of Waste – any person who imports, generates, stores, accumulates, transports, processes, treats, or exports waste or disposes of waste;

Incineration – any method, technique or process to convert waste to flue gases and residues by means of oxidation;

Incineration is the controlled combustion of solid waste employing closed combustion chambers, controlled combustion air, temperature monitoring and control to insure complete combustion of organic matter with a minimum of undesirable air emissions and wastewater discharges;

Industry – includes commercial activities, commercial agricultural activities, mining activities and the operation of power stations;

Inert Waste – waste that;

- (a) does not undergo any significant physical, chemical or biological transformation after disposal;
- (b) does not burn, react physically or chemically biodegrade or otherwise adversely affect any other matter or environment with which it may come into contact; and
- (c) does not impact negatively on the environment, because of its pollutant content and because the toxicity of its leachate is insignificant;

Intermediate cover is an application and compaction of cover having the same functions as daily cover but applied at a thickness of 30 centimetres, intended to be exposed for a period of one week to one year.

Landfill gas is the gaseous by product of organic decomposition of land filled waste. Landfill gas contains significant concentrations of methane gas which is explosive at concentrations exceeding 5 percent.

Leachate is the liquid by-product of organic decomposition of land filled waste or any liquid which comes in contact with solid waste in a sanitary landfill;

Life Cycle Assessment - a process where the potential environmental effects or impacts of a product or service throughout the life of that product or service is being evaluated;

Medical waste is any waste generated by hospitals, clinics, nursing homes, doctor's offices, medical laboratories, research facilities and veterinarians, which is infectious or potentially infectious;

Minimisation – when used in relation to waste, means the avoidance of the amount and toxicity of waste that is generated and, in the event where waste is generated, the reduction of the amount and toxicity of waste that is disposed of;

Municipality – a municipality established in terms of the Local Government: Municipal Structures Act, 1998 (Act No. 117 of 1998);

Municipal Systems Act – the Local Government: Municipal Systems Act, 2000 (Act No. 32 of 2000);

NEMA – the National Environmental Management Act, 1998 (Act No. 107 of 1998);

Operating Plan consists of drawings, descriptions and other documents regarding the operation of the landfill, placement of waste, building daily cells and lifts, leachate management, landfill gas management and all other functions related to the operation of the landfill.

Operator is the person or organisation responsible for the operation of the landfill. The operator may be the owner, another public agency or private contractor.

Pollution – the meaning assigned to it in section 1 of the National Environmental Management Act;

Perimeter drains are open ditches surrounding the landfill installed to prevent surface water from entering the landfill.

Putrescible Waste - Solid waste that contains organic matter capable of being decomposed by microorganisms and of such a character and proportion as to cause obnoxious odours and to be capable of attracting or providing food for birds or animals.

Picking is the authorised recovery of materials from a functioning waste disposal site, whether this occurs at the working face or a **Materials Recovery Facility** (MRF) at the Landfill site.

Priority Waste – a waste declared to be a priority waste in terms of section 14 of the Waste Act;

Recovery – the controlled extraction of a material or the retrieval of energy from waste to produce a product;

Recycle – a process where waste is reclaimed for further use, which process involves the separation of waste from a waste stream for further use and the processing of that separated material as a product or raw material;

Recycling Centre is a specialized plant that receives, separates and prepares recyclable materials

Recycling Station – Drop-off centres that require the waste producer to carry the recyclables to this central location, either an installed or mobile collection station to be sorted.

Re-use – to utilize articles from the waste stream again for a similar or different purpose without changing the form or properties of the articles;

Scavenging is the unauthorised separation of solid waste for recyclable materials and /or food for human consumption (see also picking);

Solid Waste Management facility is any facility used for the transportation, processing or disposal of solid waste, and includes transfer stations, recycling facilities, composting facilities, waste incinerators, and sanitary landfills;

Sorting is the authorised separation of solid waste materials for the purpose of recycling or disposal, either at the source of generation or at a solid waste management facility;

Storage – the accumulation of waste in a manner that does not constitute treatment or disposal of that waste;

Surface water is all waters in or coming from a water source which is found on the surface of the ground, excluding water under the surface of the ground and sea water;

Sustainable Development – the meaning assigned to it in section 1 of the National Environmental Management Act;

Transfer Station is a facility that receives solid waste from collection vehicles and reloads that waste into larger vehicles for transfer to a disposal or processing facility;

Treatment – any method, technique or process that is designed to —
(a) change the physical, biological or chemical character or composition of a waste; or

- (b) remove, separate, concentrate or recover a hazardous or toxic component of a waste; or
- (c) destroy or reduce the toxicity of a waste, in order to minimise the impact of the waste on the environment prior to further use or disposal;

Vectors are birds, insects, and rodents capable of carrying disease-causing bacteria, viruses or fungi from one host to another.

Waste – any substance, whether or not that substance can be reduced, re-used, recycled and recovered:

- (a) that is surplus, unwanted, rejected, discarded, abandoned or disposed of;
- (b) which the generator has no further use of for the purposes of production;
- (c) that must be treated or disposed of; or
- (d) that is identified as a waste by the Minister by notice in a Gazette, and includes waste generated by the mining, medical or other sector, but—
 - (i) a by-product is not considered waste; and
 - (ii) any portion of waste, once re-used, recycled and recovered, ceases to be waste;

Waste Disposal Facility – any site or premise used for the accumulation of waste with the purpose of disposing of that waste at that site or on that premise;

Waste Management Activity – any activity listed in Schedule 1 or published by notice in the Gazette under section 19, and includes—

- (a) the importation and exportation of waste;
- (b) the generation of waste, including the undertaking of any activity or process that is likely to result in the generation of waste;
- (c) the accumulation and storage of waste;
- (d) the collection and handling of waste;
- (e) the reduction, re-use, recycling and recovery of waste;
- (f) the trading in waste;
- (g) the transportation of waste;
- (h) the transfer of waste;
- (i) the treatment of waste; and
- (j) the disposal of waste;

Waste Management Control Officer – a waste management control officer designated under section 58(1) of the Waste Act;

Waste Management License – a license issued in terms of section 49;

Waste Management Officer – a waste management officer designated in terms of section 10;

Waste Management Services – waste collection, treatment, recycling and disposal services;

Waste Minimization Program – a program that is intended to promote the reduced generation and disposal of waste;

Waste Transfer Facility – a facility that is used to accumulate and temporarily store waste before it is transported to a recycling, treatment or waste disposal facility;

Waste Treatment Facility – any site that is used to accumulate waste for the purpose of storage, recovery, treatment, reprocessing, recycling or sorting of that waste.

ABBREVIATIONS

BA	-	Basic Assessment
BPEO	-	Best Practicable Environmental Option
DAEA	-	Department of Agriculture and Environmental Affairs
DEA	-	Department of Environmental Affairs (formerly DEAT – Department of Environmental Affairs and Tourism)
DM	-	District Municipality
DWA	-	Department of Water Affairs (formerly DWAF – Department of Water Affairs and Forestry)
ECA	-	Environmental Conservation Act
EIA	-	Environmental Impact Assessment
EMI	-	Environmental Management Inspectorate
FBRR	-	Free Basic Refuse Removal
GDP	-	Gross Domestic Product
HCRW	-	Health Care Risk Waste
IDP	-	Integrated Development Plan
IPWM	-	Integrated Pollution and Waste Management
IWMP	-	Integrated Waste Management Plan
KZN	-	KwaZulu-Natal
LED	-	Local Economic Development
LM	-	Local Municipality
MLM	-	Msinga Local Municipality
MRFs	-	Material Recovery Facilities
NEMA	-	National Environmental Management Act
NEMWA	-	National Environmental Management: Waste Act
NWA	-	National Water Act
NWMS	-	National Waste Management Strategy
PTF	-	Public Transport Facilities
SMME	-	Small, Medium, and Micro-sized Enterprise
Stats SA	-	Statistics South Africa
TB	-	Tuberculosis
UDM	-	Umzinyathi District Municipality
WMO	-	Waste Management Officer

MSINGA LOCAL MUNICIPALITY

INTEGRATED WASTE MANAGEMENT PLAN FOR THE MSINGA LOCAL MUNICIPALITY

FINAL REPORT

1. INTRODUCTION

1.1 Background

In South Africa, waste management has traditionally been undertaken on an ad hoc basis to meet community's immediate needs without any meaningful pre-planning. A number of waste disposal sites were located on unsuitable land, without consideration for the possible expansion of nearby communities. Furthermore, communities were not involved in the siting of new waste disposal sites and consequently resisted these developments. These problems have resulted from a lack of integrated planning and adequate enforcement of buffer zones. The management and operation of landfill sites was, and in some cases still is, poor with inadequate control of the waste types disposed (DEA [formerly, DEAT] – May 2000).

The local authorities often did not have sufficient funding, nor adequately trained staff to effectively plan and execute their waste management functions. The level of services varies between different areas, and many people, particularly the previously disadvantaged, do not have access to proper waste management services. The lack of capacity within all tiers of Local and Provincial government, in part due to insufficient funding, as well as the low priority previously accorded to waste management, has made planning for waste management complicated (DEA [formerly, DEAT] – May 2000).

The National Environmental Management: Waste Act (NEMWA) (Act No. 59 of 2008), as promulgated in 2009 requires the development of an Integrated Waste Management Plan (IWMP). Following the Act, the development of an IWMP is now a legal requirement as set out in Section 11 of Chapter 3 of the Waste Act. It requires all spheres of government to develop IWMPs. An IWMP is a basic requirement of all waste management activities in terms of the Waste Act for all government spheres.

1.2 Project Scope

SiVEST was appointed by the Msinga Local Municipality (MLM) (see **Figure 1** below for its location), to compile an Integrated Waste Management Plan (IWMP). The overall objective of the Municipal IWMP is to integrate the waste management powers and functions of the Municipality with the services offered by the Local Municipality. This must be developed in accordance with the Waste Act as well as the Department of Environmental Affairs' IWMP Guidelines. The main aims for the project are;

- Compile a local level IWMP, taking into account existing systems and practices in effect within the municipality,
- Draw attention to existing practices which impact on pollution avoidance, prevention and minimization at source within the Municipality,
- Make appropriate recommendations to manage the impact of pollution and waste on the receiving environment in the Municipality,
- Assess whether waste management takes place in a holistic, integrated and comprehensive manner throughout the wastes life cycle,
- Identify areas of opportunity / need in previously un-serviced rural communities that will need to be considered for possible implementation of waste service delivery.
- Align the IWMP with the IDP process

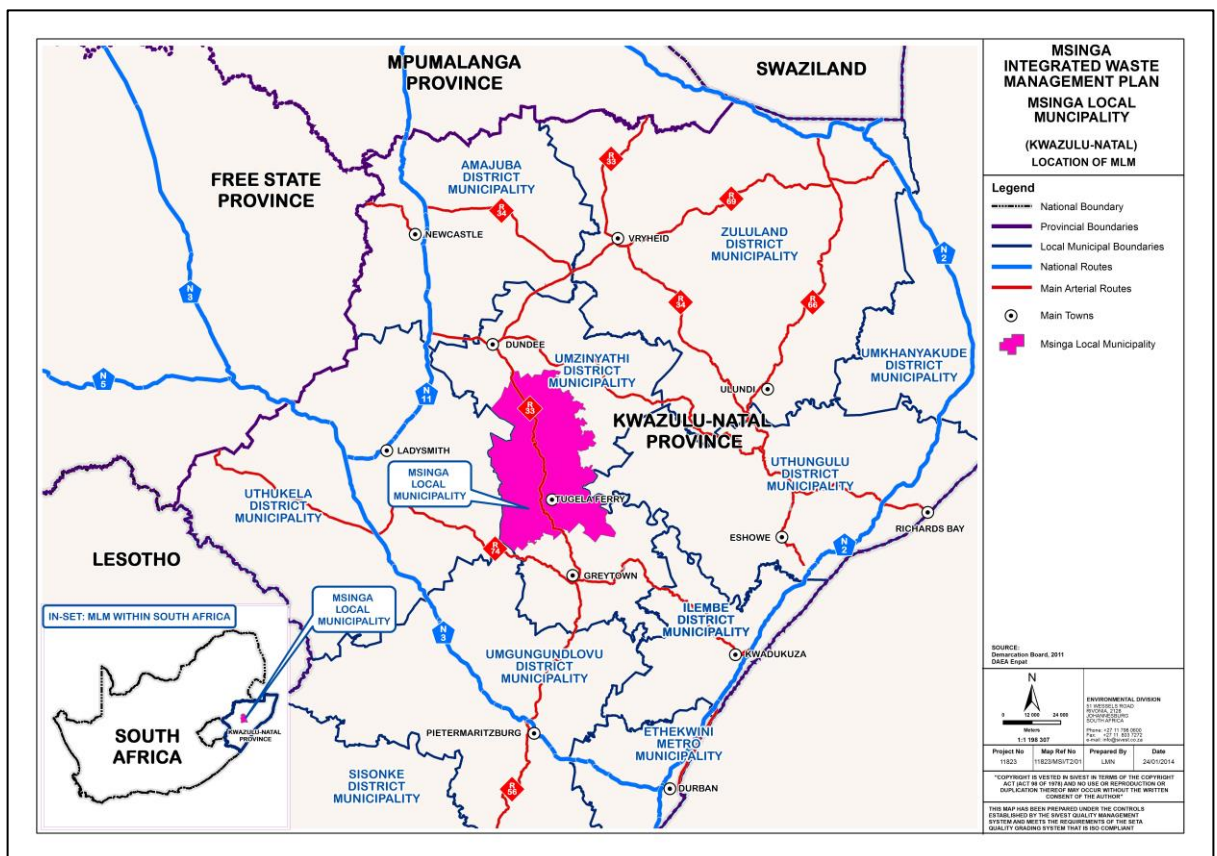


Figure 1: Location of Msinga LM

The Draft National Framework Guidelines or IWMP published by then National Department of Environmental Affairs in 2009 as well as the Guidelines For The Development Of IWMP For Local Governments (DAEA, 2003) will be utilised as the guidelines to undertake this study. The completed, IWMP will comprise four (4) phases, these include:

- Phase 1: Status Quo/Situation Analysis Assessment
- Phase 2: Desired End State
- Phase 3: Development & Evaluation of Alternatives and Scenarios
- Phase 4: Development of an Implementation Strategy

A summary of the scope of works agreed to and covered in each of the above phases is provided below:

1.2.1 Status Quo / Situation Analysis

1.2.1.1 Status Quo Assessment:

- Relevant legislation and policies relevant to waste management
- Project area demographics
- Waste quantities and characteristics
- Existing waste management systems and practices
- Determine existing infrastructure at the municipality
- Existing Private Recycling Initiatives
- GIS Mapping of waste management areas
- The cost for waste management in the Municipality

1.2.1.2 Gap Analysis, Needs Assessments, Objectives

- Future waste generation rates, quantities and characteristics
- Regulatory and Legislation provisions
- Institutional and organizational needs
- Collection needs
- Municipal service delivery issues
- Transportation and transfer
- Recycling and re-use needs
- Waste disposal site requirements
- Financial and Economic Issues
- Education and Awareness
- Socio and Economic Issues
- Develop and Prioritize Goals, objectives and policies

1.2.2 *Desired End State*

- Identify priorities and goals that municipality wishes to attain
- Strategic IWMP goals
- Waste Management programs
- Targets for waste management
- Set of short and long-term goals

1.2.3 *Identification/Evaluation of Alternative Scenarios*

The following activities will form the basis of the Alternative Scenario report;

- Collection or Transfer options
- Transportation options
- Disposal options with costing
- Recycling and minimization
- Other considerations
- Mapping of Alternatives identified.
- Develop costing to various approved options.

1.2.4 *Development of an Implementation Strategy*

The following activities will form the basis of the Implementation Strategy report:

- Responsibilities for the organization, planning and implementation of the IWMP
- Incorporation of the IWMP in to the IDP
- Project implementation program
- Partnerships
- An appropriate public participation program
- Financial management and funding mechanisms
- Legal aspects required and a suitable monitoring and review programme.

2. CURRENT WASTE RELATED STATUS QUO

2.1 STATUS QUO/SITUATION ANALYSIS

2.1.1 Objectives of the Status Quo / Situation Analysis

The status quo (existing situation) analysis is the first phase in the development of an IWMP. It is to qualify and quantify all aspects related to current waste management services and practices carried out by the municipality with the view of using this information as a basis for future planning. It includes:

- An evaluation of the area serviced,
- the waste management services rendered,
- their efficiency,
- cost effectiveness,
- social and
- environmental acceptability,
- compliance with legislation etc. (DAEA KZN IWMP – Guideline Document).

The Status Quo is an important element, as the information obtained forms the basis or starting point for future integrated waste management planning. The information for the Status Quo/Situation Analysis Report was obtained from the MLM. Additional information was obtained from waste and other stakeholders within the area.

The main objective of a status quo / situation analysis is to analyse and quantify all aspects pertaining to the management of waste within Msinga LM (including all its types of settlements within its boundary). This must include:

- Review relevant legislation and policies relevant to waste management
- Insight, from a waste management perspective, into populations and communities within the MLM
- Assess current waste management scenario
- Existing waste management practices in the MLM
- Determine the costs for managing waste in the MLM
- Appraisal of the municipalities existing services to the community

2.1.2 Principles for Waste Management (Literature Review)

The main objective of an IWMP is to integrate the management of general waste within the MLM and where possible also with management practices and services in adjacent and surrounding local municipalities. This is done to:

- Assist the MLM to identify and plan for future waste management needs.
- Minimize costs through the efficient management of infrastructure, equipment, and labour.
- Minimize the negative adverse effects (social and environmental impacts) related to waste thereby improving the quality of life for community members.

IWMP's are preferably developed in conjunction with key municipal stakeholders, adjacent municipalities, and provincial government. Besides the objectives discussed above, the following key principles will need to be taken into account when developing the IWMP.

2.1.2.1 Basic Waste Management Systems

The basic elements of a functional waste management system include the storage of waste, collection, transportation, and final disposal. This is a general outline that may include the addition of items / elements like recycling and re-use to minimize disposal volumes and improve efficiency of use for airspace in a landfill; compaction equipment to improve transportation efficiency (DAEA, 2003).

2.1.2.2 Waste Management Hierarchy

A number of international and accepted approaches to the management of waste have manifested in the form of an accepted hierarchy or philosophies and ethos which can be applied to different situations. The hierarchy describes principles that can be applied and used for any waste management system, to prevent unnecessary waste from industry, minimize the quantities of waste produced, reuse certain materials (i.e. re-treading rubber tires), recover valuable materials (i.e. minerals from slag heaps or metals from scrapped vehicles), composting, physical/chemical treatment or destruction of hazardous waste components.

Consequently the hierarchy method presents a shift from the management of the impacts of waste and managing these, to a more sustainable approach where these impacts are prevented altogether (from the New National Waste Management Strategy, 2011), and ultimately remediation occurs.

2.1.2.3 Priorities and Sustainability of Municipal Services

The choices and priorities for the MLM for service delivery need to be tailored to specific needs that present themselves or are identified by municipal officials. This means that from a local municipal perspective, appropriate recommendations for the management of waste needs to be tendered. For example; the basic waste management system described above would be appropriate for implementation in a MLM where no means of collection, transportation and disposal of waste exists.

This basic format would be more appropriate in a developing / emergent municipality like MLM. Items such as recycling, reuse, prevention etc., may also be recommended and where their implementation is apparent this indicates a higher level of management or resourcefulness where this is occurring. It is more preferable to attain a basic level of service to the community, but a paradigm shift in how waste is thought of, represents a positive step in the right direction. Local needs should be prioritised and appropriate technology applied.

2.1.2.4 Proximity and Regional Self Sufficiency

These are two important concepts to understand;

Proximity: the ideal situation is to manage wastes as close as possible to the area of generation. The transport distances and hence the cost for hauling waste are reduced when managed close to source / generation. This also ensures that waste remains within the areas / authority where they were generated. This could be within a local municipality setting for a waste disposal site.

Regional Self Sufficiency: A regional approach ensures that wastes are managed appropriately within a region or District area. MLM may look at uMzinyathi District Municipality's regional facilities as its District Municipality for this approach. This will necessitate large disposal sites, but also greater haulage distances, skewed transport costs, and the movement of waste far from the areas it is generated in.

2.1.2.5 Best Practicable Environmental Option

The Best Practicable Environmental Option (BPEO) provides appropriate benefit for the least damage to the environment at the most acceptable cost (both short and long term). The

emphasis for this principle focuses on practicality to allow decisions to be made in light of the local situation and also upholding / enhancing environmental protection.

Following is a description of the existing Status Quo Scenario for the MLM. An indication is provided of the existing Legislative Framework, and the current waste management activities taking place in the MLM.

2.2 RELEVANT LEGISLATION & POLICIES RELEVANT TO WASTE MANAGEMENT

Legislation forms the basis for the effective implementation of the IWMP. Following is a brief discussion of how these relate to waste management planning. Reference is also made to the Draft Legal Framework Document for the Integrated Waste Management Planning (DEA (formerly DEAT), 2000). This document outlines responsibilities for the implementation of the IWMP. The above document includes responsibilities for DEA (formerly DEAT) (i.e. promulgation of regulations and guideline documents), Provincial Environmental Departments (i.e. collate local waste management plans from industry and local municipalities), and Local Government (compile IWMP for individual jurisdictions).

A number of important Acts and policy's apply to the management of waste and are summarised below:

2.2.1 Constitution of South Africa

The Constitution (Act No. 108 of 1996) provides for two aspects relevant to waste management in South Africa. The Bill of Rights (section 24) and the institutional regulation of waste management and pollution (DEA, formerly DEAT, undated). In terms of the bill of rights:

"Everyone has the right

- a) to an environment that is not harmful to their health or well-being; and*
- b) to have the environment protected, for the benefit of present and future generations through*
 - reasonable legislative and other measures that -*
 - (i) prevent pollution and ecological degradation;*
 - (ii) promote conservation; and*
 - (iii) secure ecologically sustainable development and the use of natural resources while promoting justifiable economic and social development."*

In terms of the constitution, the Province may prescribe norms and standards for the regulation of waste. The Local Authorities must be responsible for the administration of the above regulations, and where necessary supplement these with bylaws that reflect local requirements. The IWMP is a planning tool similar to the IDP process outlined in the Municipal Systems Act (Act 32 of 2000), and must therefore be reviewed, updated and expanded on a regular basis. The IWMP must be submitted to the DAEA as a standalone document.

2.2.2 National Waste Management Strategy (NWMS)

Department of Water Affairs (DWA) and Department Environmental Affairs (DEA) are responsible for the development of a National Waste Management Strategy 2011 that provides guidelines for local authorities in the preparation of an Integrated Waste Management Plan.

The guidelines ensure that the IWMP's from Local Authorities are developed in the same manner to facilitate ease of incorporation into a provincial Integrated Waste Management Plan. The first generation IWMP for local authorities was developed primarily for the management of general waste. Each of the local Municipalities in KwaZulu-Natal was required to indicate the level of services provided by them to the public. Local municipalities then feed this information to their respective District Municipalities for integration into a District plan. The District municipalities are also responsible to plan, compile, and submit their IWMP to the DAEA for approval.

The IWMP is a planning tool similar to the IDP process as aforementioned and is outlined in the Municipal Systems Act (Act 32 of 2000), and must therefore be reviewed, updated and expanded on a regular basis. The IWMP must be submitted to the DAEA as a standalone document.

Reference is made to the Waste Act (Act 59 of 2008) and the new NWMS (2011) as both have implication to the Msinga IWMP.

2.2.2.1 The New National Waste Management Strategy 2011

The National Waste Management Strategy has been finalised and approved on the 9th of November 2011, most of its activities commenced in the year 2012. The main goals and objectives of the New NWMS are:

Table 1: Overall Goals and Objectives for the NWMS

Goal	Objectives
Securing ecologically sustainable development while promoting justifiable economic and social development	<ul style="list-style-type: none"> To ensure the protection of the environment through effective waste management measures To protect the health and wellbeing of people by providing an affordable waste collection service Grow the contribution of the waste sector to GDP Increase number of jobs within waste services, recycling and recovery sectors Promote SMMEs in waste sector
Avoiding and minimizing the generation of waste	<ul style="list-style-type: none"> Ensure the design and manufacture of products that avoid or minimize waste generation Discourage waste generation through cost reflective and volume based tariffs Increase consumer awareness of waste minimization issues
Reducing, re-using, recycling and recovering waste	<ul style="list-style-type: none"> Increase reuse and recycling rates of products Reduce the percentage (%) of recyclable material to landfill Ensure separation at source in all metropolitan and local municipalities Encourage the establishments of Material Recovery Facilities (MRFs) Encourage waste to energy options Support the diversion of high calorific waste from landfill to recovery options
Promoting and ensuring the effective delivery of waste services	<ul style="list-style-type: none"> Facilitate the provision of at least a basic level of waste service to all Ensure an efficient and effective solid waste management Implement free basic refuse removal policy for indigent households Promote the regionalization of waste management services
Treating and safely disposing of waste as a last resort	<ul style="list-style-type: none"> Stabilize quantity of waste disposed to landfill then reduce this volume Improve landfill management to comply with legislation Increase thermal treatment and conversion of

Goal	Objectives
	waste to energy <ul style="list-style-type: none"> • Ensure the diversion of certain waste tyres from landfill
Remediating land where contamination presents a significant risk of harm to health or the environment	<ul style="list-style-type: none"> • Quantify the extent of contaminated land • Implement contaminated land measures in the Waste Act • Remediate priority areas of contaminated land • Clarify extent of state liability for contaminated land

In addition to the above, how the overall goals and objectives are met are also being dealt with under some process goals and objectives these include the following:

Table 2: Process Related Goals and Objectives for the NWMS

Goal	Objectives
Achieving integrated waste management planning	<ul style="list-style-type: none"> • Reliable information on waste flows and an accurate national waste balance • Establish and implement an effective system of performance based IWMPs at all levels of government • IWMPs approved for key industrial sectors
Sound budgeting and financial management for waste services	<ul style="list-style-type: none"> • Sound financial planning for waste services • Full cost accounting for waste services • Cost reflective and volumetric tariffs implemented • Waste services sustainably financed
Adequate staffing and capacity for waste management	<ul style="list-style-type: none"> • WMOs appointed at all levels of government • Additional technical capacity developed to deal with norms and standards, industry regulation and remediation • EMI capacity expanded to deal with Waste Act • Private sector capacity mobilized to support waste service delivery and community based collection models
Effective compliance with and enforcement of waste regulations	<ul style="list-style-type: none"> • Conduct systematic monitoring of compliance with regulations • and permit conditions • Create a culture of compliance with Waste Act regulations • Establishment of a hotline to report non-compliance • Successful prosecutions of waste offenders.
Effective monitoring and reporting on performance with waste functions	<ul style="list-style-type: none"> • Implement systematic monitoring of key performance indicators by each sphere of government • Reporting on key performance indicators in line with Waste Act • Conduct regular evaluation of performance with waste functions and IWMPs
Ensure that people are aware of the impact of waste on their health, well-being and the environment	<ul style="list-style-type: none"> • Develop national and local awareness campaigns on the social importance of waste management • Promote waste minimization and recycling through education system • Establish an equivalent to the "Blue Drop" award for waste management by

Goal	Objectives
	municipalities

2.2.2.2 Waste Hierarchy and Regulatory Model

The foundation of the hierarchy, and the first choice of measures in the management of waste, is waste avoidance and reduction. Where waste cannot be avoided, it should be recovered, reused, recycled and treated. Waste should only be disposed of as a last resort.

The Waste Act, and consequently the NWMS, in addition addresses those situations in which the waste hierarchy is not implemented successfully, through providing additional measures for the remediation of contaminated land to protect human health and secure the wellbeing of the environment (NWMS, 2011).

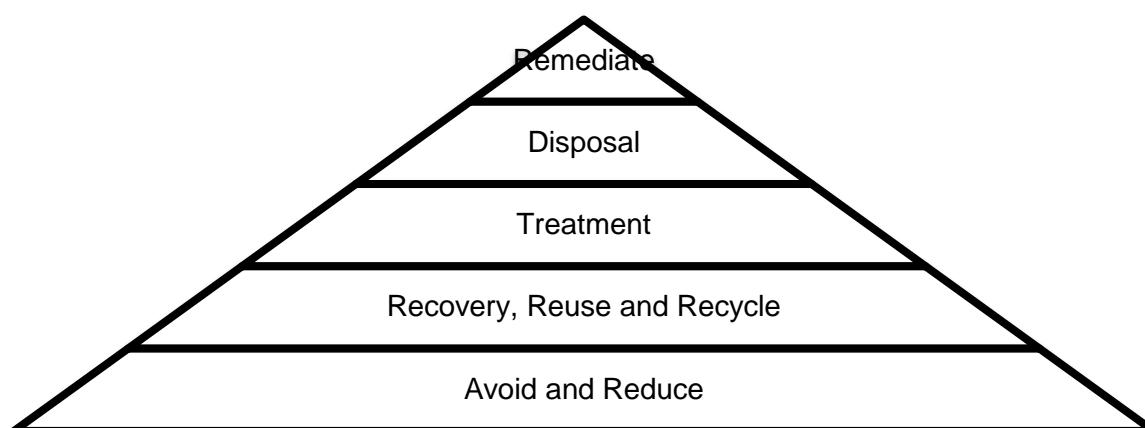


Figure 2: NWMS – Waste Hierarchy

Implementation of the waste hierarchy requires changes in the way products are designed and manufactured in order to promote their re-use and recycling, giving effect to the concept of “cradle-to-cradle” waste management. This is an important advance on the previous “cradle to grave” approach, which entailed producer responsibility for the entire lifecycle of a product until its final disposal. Cradle to cradle management ensures that once a product reaches the end of its life span, its component parts are recovered, reused or recycled, thereby becoming inputs for new products and materials and this cycle repeats itself until the least possible portion of the original product is eventually disposed of.

To achieve the goals and objectives of the NWMS, a tiered and consensual model has been adopted, which seeks the optimal combination of regulation and compliance measures with self-regulatory components, voluntary initiatives, economic incentives, and fiscal mechanisms. This model aims to establish a level of baseline regulation for the waste sector, as a foundation for a co-regulatory system that relies on industry initiative and voluntary compliance. In instances where industry response proves insufficient for dealing with waste challenges or a market failure prevails, more interventionist regulatory tools will be utilised. In line with this model the various mechanisms and measures set out in the Waste Act are viewed as a “tool box” of instruments to be used systematically and strategically in addressing specific issues.

The foundation of the tiered and consensual model is the development of a system of national norms and standards, which creates a common national platform for waste management activities to be undertaken by both public and private sectors. The Waste Act also provides for the development of provincial norms and standards as well as local waste services delivery standards, provided they do not contradict the national standards. The consequences of jurisdictional variation in norms and standards will have economic and administrative implications, which need to be carefully evaluated.

2.2.2.3 Instruments for Implementing the NWMS

The document also talks about various instruments to ensure effective implementation of the NWMS:

- Norms and standards
- Categorisation and classification
- Waste Information System
- Industry Waste Management Plans
- Listing and Licensing of waste management activities
- Priority wastes
- Reduction, reuse, recycling, and recovery
- Storage, collection and transport
- Treatment, processing and disposal
- Extended Producer Responsibility
- Consumer responsibility and protection
- Economic instruments
- Fiscal mechanisms for waste management

The NWMS also discuss a number of troublesome waste categories and describes the negative impacts associated with each particular waste stream as well as proposed norms and standards, for dealing with them. These wastes include:

- Domestic and commercial general waste
- Industrial and mining hazardous waste
- Construction and demolition waste
- Mining waste
- Health care risk waste
- Pesticide waste
- Fly ash and coarse ash waste
- Tyres
- eWaste
- Batteries
- Fluorescent lamps containing mercury
- Lubricating oil

2.2.3 National Water Act (NWA)

The National Water Act provides reform of the laws applicable to water resources, through the various licenses that govern water use. The Act also contains several regulations relating to pollution of water which is of significance to waste management.

Chapter three of the Act provides for protection of water resources, which is related to their utility. Under the act, waste is defined as any solid material with the ability to cause pollution and the Act recognizes the potential for land based activities to affect the status of water resources.

Under Section 19, the responsibility for any adverse effects rests with the "...owner... person in control..." or occupying the land where the adverse effect originated, and is required to take the appropriate action to prevent the occurrences. The Chief Director: Water Use and Conservation, is authorized to direct any offending person to take the necessary steps to remedy the situation. If this is not done, the above mentioned may take such action as it sees fit and recover all costs from the responsible or offending persons.

The siting of landfill and waste disposal sites could have a deleterious effect on water resources, and due consideration should be made for this potential when designing these facilities. The Chief Director Water Use and Conservation should be involved in the initial planning stages for these amenities. In summary, the act requires that all persons (those in

control or the owners of land) take reasonable precautions to prevent pollution of water resources. Measures to prevent pollution include;

- Compliance with established waste management practices,
- Halt or control the cause of pollution,
- Eliminate the source of pollution,
- Control the movement of pollution,
- Remedy the effects of pollution.

2.2.4 White Paper on Integrated Pollution and Waste Management (IPWM – 2000)

The IPWM strategy provides for a paradigm shift to waste prevention from concentrating on end pipe solutions. This policy specifically subscribes to the vision, principle, goals, and the regulatory approach enshrined in NEMA, and is the policy for pollution and waste management for the South African government. Landfills must be seen not only as the final solution to the problem of waste and pollution, but must be considered but one of the steps in “sustainable waste management”, after all has been done to prevent, and minimize that waste. Key issues identified by the policy are that waste disposal sites are a major source of land pollution. Specifically mentioned are those sites disposing of hazardous, medical and veterinary waste. Other problems include poor location and management of sites, leachate, illegal sites and poor Town Planning.

2.2.5 National Domestic Waste Collection Standards, January 2011

The purpose of the document serves to redress past imbalances in the provision of waste collection services, it is imperative that acceptable, affordable and suitable waste collection services be rendered to all South Africans. The provision of waste collection services improves the quality of life of the entire community and ensures a clean and more acceptable place to live and work in. The lack of or poor quality waste collection services can however result in a number of environmental and human health problems.

The National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) stipulates that standards are required to “give effect to the right to an environment that is not harmful to health and well-being,” and that this right have to be applied “uniformly throughout the Republic”. It is recognised that South Africa is a developing country; the purpose of the setting of standards is to ensure a service to all while complying with health and safety regulations without unnecessarily changing current creative collection processes as long as they function well and deliver a service of acceptance standard to all households. These National Domestic Waste Collection Standards are therefore applicable to all domestic waste collection services throughout the country.

2.2.6 National Policy for Provision of Basic Refuse Removal Service to Indigent Households, June 2011

The purpose of the National Policy for Provision of Basic Refuse Removal Service to Indigent Households is to ensure those poor (indigent) households have access to at least basic (essential) refuse removal services from the concerned municipality. Meeting this purpose requires aligning the National Policy for Provision of Basic Refuse Removal Service to Indigent Households with already existing key relevant legislation, Indigent Policies for different municipalities, financial management systems, while being mindful of the need to ensure that there is uniformity when dealing with various cases of indigent households.

2.2.7 KZN Waste Management Policy (KZN WMP) – Final Version 2003

This policy represents the efforts of the province to take on its responsibility as previously prescribed in the ECA (Section 24, Act No. 73, 1998) to make regulations with respect to waste management.

The general objectives are;

- Registration of waste generators and handlers
- Access to information
- An equitable system of governance, for generators and handlers, with a view to eliminating illegal practice.

The policy states that this includes the management of waste on site and only where necessary, the transport to suitable licensed landfill sites. With regards to hazardous and medical waste, the policy states that it is important to identify the need for hazardous and waste disposal sites and address issues like sighting and management "if the need exists".

2.2.8 National Environmental Management Act (NEMA) (Act 107 of 1998)

The IWMP and its associated infrastructure may trigger listed activities identified in the Environmental Impact Assessment Regulations, 2010, promulgated in terms of Section 24(5), 24M and 44 of the National Environmental Management Act, 1998 (Act No. 107 of 1998). As the proposed IWMP may entail the following:

- The construction of new roads or expansion of existing roads,
- water and sewage infrastructure
- recycling and transfer stations

Listed Activities - Government Notice No. R545 may be triggered which require that a full scoping and environmental impact assessment be undertaken before a decision can be made on whether the proposed activity should be granted authorisation. The other listed activities that may be triggered are all identified in Government Notices No. R. 544 and 546 which require a Basic Environmental Assessment before authorisation can be granted.

Table 3: Listed Activities – EIA/BA Triggers

Regulation	Activity
<i>Government Notice R544 of 18 June 2012</i>	
9	The construction of facilities or infrastructure exceeding 1000 metres in length for the bulk transportation of water, sewage or stormwater – (i) with an internal diameter of 0.36 metres or more; or (ii) with a peak throughput of 120 litres per second or more, excluding where: (a) such facilities or infrastructure are for bulk water transportation of water, sewage or stormwater inside a road reserve; or (b) where such construction will occur within urban areas but further than 32m from a watercourse, measured from the edge of the watercourse.
11	Activities in 1:10 year floodline The construction of (i) canals; (ii) channels; (iii) bridges; (iv) dams; (v) weirs; (vi) bulk storm water outlet structures; (vii) marinas; (viii) jetties exceeding 50m ² in size; (ix) slipways exceeding 50m ² in size; (x) buildings exceeding 50m ² in size; or (xi) infrastructure or structures covering 50m ² or

Regulation	Activity
	more where such construction occurs within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse, excluding where such construction will occur behind the development setback line.
18	The infilling or depositing of any material of more than 5m ³ into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock or more than 5m ³ from: (i) a watercourse
22	The construction of a road, outside urban areas, (i) with a reserve wider than 13.5 metres or, (ii) where no reserve exists where the road is wider than 8 metres, or (iii) for which an environmental authorisation was obtained for the route determination in terms of activity 5 in Government Notice 387 of 2006 or activity 18 in Notice 545 in 2010
39	The expansion of (i) canals; (ii) channels; (iii) bridges; (iv) dams; (v) weirs; (vi) bulk storm water outlet structures; (vii) marinas within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse, excluding where such construction will occur behind the development setback line.
<i>Government Notice R545 of 18 June 2012</i>	
18	The route determination of roads and design of associated physical infrastructure, including roads that have not yet been built for which routes have been determined before 03 July 2006 and which have not been authorised by a competent authority in terms of the Environmental Impact Assessment Regulations, 2006 or 2009, made under section 24(5) of the Act and published in Government Notice No. R. 385 of 2006,— i. it is a national road as defined in section 40 of the South African National Roads Agency Limited and National Roads Act, 1998 (Act No. 7 of 1998); ii. it is a road administered by a provincial authority; iii. the road reserve is wider than 30 metres; or (i) the road will cater for more than one lane of traffic in both directions

2.2.9 National Environmental Management: Waste Act 59 of 2008

The Act was signed in to law on 6th March 2009. The Act makes provision for:

- **A National Waste Management Strategy, Norms and Standards:** The Act makes provision for a national waste strategy with norms and standards for national, provincial,

and service delivery at local government level (this must not be in conflict with the National and Provincial standards).

Service standards for Local Municipalities involve compliance with National and Provincial standards, integrating IWMP with IDP, access to services for all citizens, provision of affordable services (in line with current municipal tariff policy as outlined in the chapter 8 of the Municipal Systems Act), providing a sustainable service, and keeping a separate financial statement for all costs related to waste management. Additional local standards for separation, compacting and storage of solid waste requirements in respect of the avoidance and minimization including the re-use, recycling, recovery and treatment of municipal waste.

- **Institutional and Planning Matters:** The Act makes provision to designate Waste Officers at a National, Provincial and Local government level. Also certain organs of state (i.e. DEA) are to prepare Waste Management Plans. The contents of an IWMP are specified in section 12 of the Act, as well as criteria for the implementation of the IWMP (for which annual status / performance reports must be sent to the relevant authority).
- **Waste Management Measures:** Certain priority wastes may be declared if these are believed to have an impact on health or the environment etc. Waste avoidance, reduction, re-use, recycling and recovery waste are general duties of waste generators. Extended producer responsibility is described. A list of waste management activities that may have a detrimental effect on the environment may be promulgated. General requirements for anyone who stores general waste provides waste collection services, transports general waste are listed.

Section 26 and Section 27 make provision to prevent unauthorized disposal of waste, and littering. Requirements for industry waste management plans are described. Measures to deal with contaminated land are described (even if these occurred prior to the act being promulgated), including the keeping of a contaminated land 'register'.

- **Licensing Of Waste Management Activities:** Licenses may be issued for the following activities by the minister, where the waste management activities listed below involve the establishment, operation, cessation or decommissioning of a facility at which hazardous waste has been or is to be stored, treated or disposed of including (see section 43 of the Act);
 - a) *importation and exportation of waste;*
 - b) *where any activity is likely to generate waste;*
 - c) *accumulation and storage of waste;*
 - d) *collection and handling of waste;*
 - e) *reduction, re-use, recycling and recovery of waste;*
 - f) *trading in waste;*
 - g) *transportation of waste;*
 - h) *transfer of waste;*
 - i) *treatment of waste; and*
 - j) *disposal of waste;*

Provisions for waste management activities that arise from international obligations, national departments, and provincial environmental department are also made. The procedures for licensing and considerations for implementation of licenses are outlined.

- **Waste Information:** Provision to establish a national and provincial waste information system.

This must include the quantity and type or classification of waste generated, stored, transported, treated, transformed, reduced, re-used, recycled, recovered and disposed of; a register of waste management activities that are licensed, holders of licenses, locality where the above waste management activities will commence.

- **Compliance and Enforcement:** Waste management inspectors (appointed in terms of NEMA) may require completion and submission of waste impact reports especially where persons waste management activities likely to have a detrimental effect on health or the environment, including social conditions, economic conditions, ecological conditions or cultural heritage.

Contraventions and fines are listed in the Act. These vary from R10, 000,000.00 (10 year imprisonment), 5,000,000.00 (5 years), R1, 000.00 (20 days), imprisonment for various offences etc.

- **Listed Activities:** Under the Waste Act, a number of waste related activities that could have a detrimental effect on the environment are identified. These are listed in the **Table 4** below:

Table 4: Listed Activities – Waste Act

	CATEGORY A – BA	CATEGORY B – EIA
STORAGE OF WASTE	1. The storage, including the temporary storage, of general waste at a facility that has the capacity to store in excess of 100m ³ of general waste at any one time, excluding the storage of waste in lagoons. 2. The storage including the temporary storage of hazardous waste at a facility that has the capacity to store in excess of 35m ³ of hazardous waste at any one time, excluding the storage of hazardous waste in lagoons. 3. The storage including the temporary storage of general waste in lagoons. 4. The storage of waste tyres in a storage area exceeding 500m ² .	1. The storage including the temporary storage of hazardous waste in lagoons.
REUSE, RECYCLING AND RECOVERY	5. The sorting, shredding, grinding or bailing of general waste at a facility that has the capacity to process in excess of one ton of general waste per day. 6. The scrapping or recovery of motor vehicles at a facility that has an operational area in excess of 500m ² . 7. The recycling or re-use of general waste of more than 10 tons per month. 8. The recovery of waste including the refining, utilization, or co-processing of the waste at a facility that has the capacity to process in excess of three tons of general waste or less than 500kg of hazardous waste per day, excluding recovery that takes place as an integral part of an internal manufacturing process within the same premises.	2. The reuse and recycling of hazardous waste. 3. The recovery of hazardous waste including the refining, utilization or co-processing of waste at a facility with a capacity to process more than 500kg of hazardous waste per day excluding recovery that takes place as an integral part of an internal manufacturing process within the same premises or unless the Minister has approved re-use guidelines for the specific waste stream.
TREATMENT OF WASTE	9. The biological, physical or physico-chemical treatment of general waste at a facility that has the capacity to process in	4. The biological, physical or physico-chemical treatment of hazardous waste at a facility that has the capacity to receive in

	CATEGORY A – BA	CATEGORY B – EIA
	excess of 10 tons of general waste per day.	excess of 500 kg of hazardous waste per day.
	10. The processing of waste at biogas installations with a capacity to process in excess of five tons per day of bio-degradable waste.	5. The treatment of hazardous waste using any form of treatment regardless of the size or capacity of such a facility to treat such waste.
	11. The treatment of effluent, wastewater or sewage with an annual throughput capacity of more than 2 000 cubic metres but less than 15 000 cubic metres.	6. The treatment of hazardous waste in lagoons.
	12. The remediation of contaminated land.	7. The treatment of effluent, wastewater or sewage with an annual throughput capacity of 15000 cubic metres or more.
	13. The extraction, recovery or flaring of landfill gas.	8. The incineration of waste regardless of the capacity of such a facility.
DISPOSAL OF WASTE	14. The disposal of inert waste in excess of 25 tons and with a total capacity of 25 000 tons, excluding the disposal of such waste for the purposes of leveling and building which has been authorized by or under other legislation.	9. The disposal of any quantity of hazardous waste to land.
	15. The disposal of general waste to land covering an area of more than 50m ² but less than 200m ² and with a total capacity not exceeding 25000 tons.	10. The disposal of general waste to land covering an area in excess of 200m ² .
	16. The disposal of domestic waste generated on premises in areas not serviced by the municipal service where the waste disposed does not exceed 500kg per month.	
STORAGE, TREATMENT AND PROCESSING OF ANIMAL WASTE	17. The storage, treatment or processing of animal manure at a facility with a capacity to process in excess of one ton per day.	
CONSTRUCTION, EXPANSION OR DE-COMMISSIONING OF FACILITIES & ASSOCIATED STRUCTURES & INFRASTRUCTURE	18. The construction of facilities for activities listed in Category A of this Schedule (not in isolation to associated activity).	11. The construction of facilities for activities listed in Category B of this Schedule (not in isolation to associated activity).
	19. The expansion of facilities or changes to existing facilities for any process or activity, which requires an amendment of an existing permit or license or a new permit or license in terms of legislation governing the release of pollution, effluent or waste.	
	20. The decommissioning of activities listed in this Schedule.	

Refer to **Section 3.8** above for EIA Requirements for infrastructural related activities in NEMA associated with waste.

2.2.10 Minimum Requirements for Waste Disposal

The minimum requirements series consists of three pertinent documents that regulate activities around the management of waste. These include;

- Minimum Requirements for the Handling Classification and Disposal of Hazardous Waste,
- Minimum Requirements for Waste Disposal by Landfill,
- Minimum Requirements for Monitoring at Waste Management Facilities.

The Minimum Requirements for Waste Disposal by Landfill guides the process of site selection, permitting, investigation, assessment and mitigation of impacts, landfill design, site preparation, operation, monitoring, rehabilitation and closure. Upon establishing a preferred site in accordance with the above requirements a "section 20" permit is normally issued. This responsibility has now been devolved to the National Department of Environmental Affairs (DEA) from DWA.

The Minimum Requirements for Waste Disposal by Landfill represents the definitive guideline for the establishment of waste disposal sites under the Environmental Conservation Act. In terms of the permitting requirements for waste disposal the procedure is covered in great detail in the document. Particular attention must be paid to the permitting procedure, which must be followed to the letter to avoid falling short of any of the requirements.

Minimum Requirements for the Handling Classification and Disposal of Hazardous Waste looks at the principles of good waste management. The document describes a system for the classification of various waste types, treatment for the various wastes, the hazard rating for any residues and the prescribed disposal mechanisms.

2.2.11 Municipal Systems Act (Act 32 of 2000): Service Delivery

A municipality must give effect to the provisions of the Constitution and give priority to the basic need of the local community; promote the development of the local municipality; and ensure all member of the local community have access to at least a 50 minimum level of basic municipal services. Municipal services must be equitable and accessible. They must be provided in a manner that is conducive to the prudent, economic, efficient and effective use of available; and the improvement of standards of quality over time. Furthermore, the municipal services must be financially and environmental sustainable, and be regularly reviewed with a view to upgrading, extension and improvement.

The Act provides a broad requirement for service delivery (waste disposal) in local municipalities. In terms of section 75 (1) of the Act a municipality must;

- Give priority to basic needs,
- Promote local community development,
- Provide a basic level of service for all community members,

These services must be;

- Equitable and accessible,
- Promote prudent, economic, efficient use of municipal resources,
- Sustainable (financially and economically),
- Be subject to review and improvement.

Tariff policy regulated in section 74 of the above Act must apply;

- All people must be treated equitably in the application of tariffs,
- The levy for services must be in proportion to consumption of services,
- Poor household should at least have basic services (investigate subsidies),

- Tariffs must reflect the costs to provide the service (capital, operating, maintenance, administration, and interest),
- Tariffs must be financially sustainable,
- Local economic development can be promoted by setting special charges for industrial and commercial users,
- Any cross subsidies must be fully disclosed,
- Recycling, and other principles of environmental management must be promoted for the efficient, effective, and economical use of municipal resources,
- Tariff policies may vary between different users provided these are not unfair or discriminatory.

2.2.12 Msinga Municipal Waste Bylaws

MLM does not have any bylaws specific to waste management. The Standard By-Laws of the Natal Provincial Administration were first published in 1892 under Provincial Notice 91 of 1982 are outdated and do not specifically address issues surrounding waste management in total. Bylaws should be drafted for the MLM that specifically pertains to waste and all issues that surround waste management.

2.2.13 Umzinyathi District IWMP

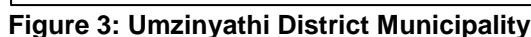
Msinga LM falls under the jurisdiction of Umzinyathi District Municipality (UDM) (see **Figure 3**). The UDM IWMP (2006) indicates that many of the shortfalls within MLM in terms of waste are the same facing the entire district (at least during the time of implementing the IWMP in 2006); see **Appendix A** for UDM IWMP.

2.2.13.1 Population

The UDM is situated in the central region of KwaZulu-Natal in South Africa. UDM comprises the LMs of uMvoti, Msinga, Nquthu and Endumeni. The population within the Umzinyathi District Municipality is approximately 449 731. Within each LM, the major population centres (refer to **Figure 3**) are as below:

- uMvoti LM
 - Urban Areas
 - Greytown
 - Kranskop
 - Muden
 - Traditional Areas
 - Amakhabela
 - Bomvu
 - Mthembu
 - Cela Nhlanguwini
- Msinga LM
 - Urban Areas
 - Pomeroy
 - Tugela Ferry
 - Keates Drift
 - Traditional Areas
 - Cwaka
 - Ngubevu
 - Msinga Top
 - Mhlangana

- Mabaso
- Mchunu
- Mthembu
- Majozi
- Ngubane
- Zondi
- Nquthu LM
 - Urban Areas
 - Nquthu Village
 - Nondweni Village
 - Traditional Areas
 - Zondi
 - Molefi
 - Mangwe Buthanani
 - Emandleni
 - Khiphinkunzi
 - Sizamile
 - Jama
 - Vulindlela
- Endumeni LM
 - Urban Areas
 - Dundee
 - Glencoe
 - Wasbank
 - Rural Areas
 - Kwa Telaphi
 - Burnside
 - Malonjeni
 - Tayside
 - Vegkop
 - Uithoek
 - Villages
 - Talaphi
 - Ebusi



In 2006, the Umzinyathi DM estimated the waste generation for entire district. The model used estimates until the year 2012. Growth rates used were applied using Per Capita Waste Generation Figures as defined in the Minimum Requirements Documents (refer to **Table 5** below). It takes into consideration, economic growth; population. These growth rates do not take any recycling activities into account and is likely to be an overestimate of the actual growth in waste generation.

Local Municipality	Pop. (2006)	Pop. (2011)	Generation Rate	2006	2008	2010	2012
uMvoti	9229		0.3	28269.7	29469.4	30720.2	32024
Msinga	168000	161894	0.3	52516.8	57020.9	61911.2	67220.9
Nquthu	145035		0.4	58977	60951.3	62991.7	65100.4
Endumeni	44402		1.2	53815.2	54896.9	56000.3	57125.9
Total	449731			193578.7	202338.5	211623.4	221471.2

Endumeni Local Municipality is found north-west of Msinga LM (see **Figure 5**); it falls within (along with Msinga Local Municipality), the jurisdiction of Umzinyathi District Municipality. In the year 2011, the ELM developed its own IWMP that was done primarily using the Umzinyathi District Municipality IWMP as its foundation.

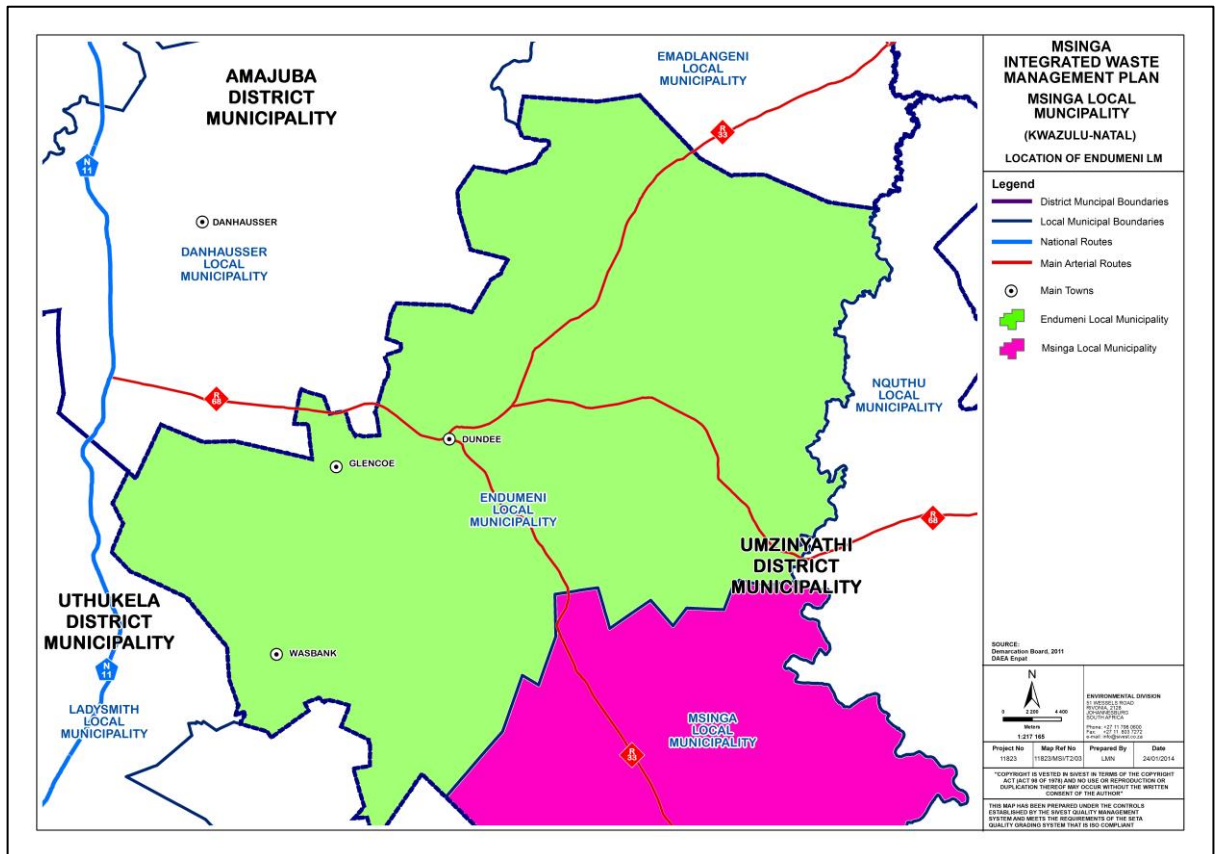


Figure 4: Location of Endumeni LM

2.3 MSINGA LOCAL MUNICIPALITY DEMOGRAPHICS

Four factors have an impact on the amount of waste generated in a particular area, namely the:

- Number of people residing in each community or urban suburb/area and how the individual population is expected to change in the future.
- Per capital waste generation rate (based on calculated or weighbridge values, where available).
- Income level per community or urban suburb
- Types and number of industrial and commercial activities (KZN DAEA, 2003)

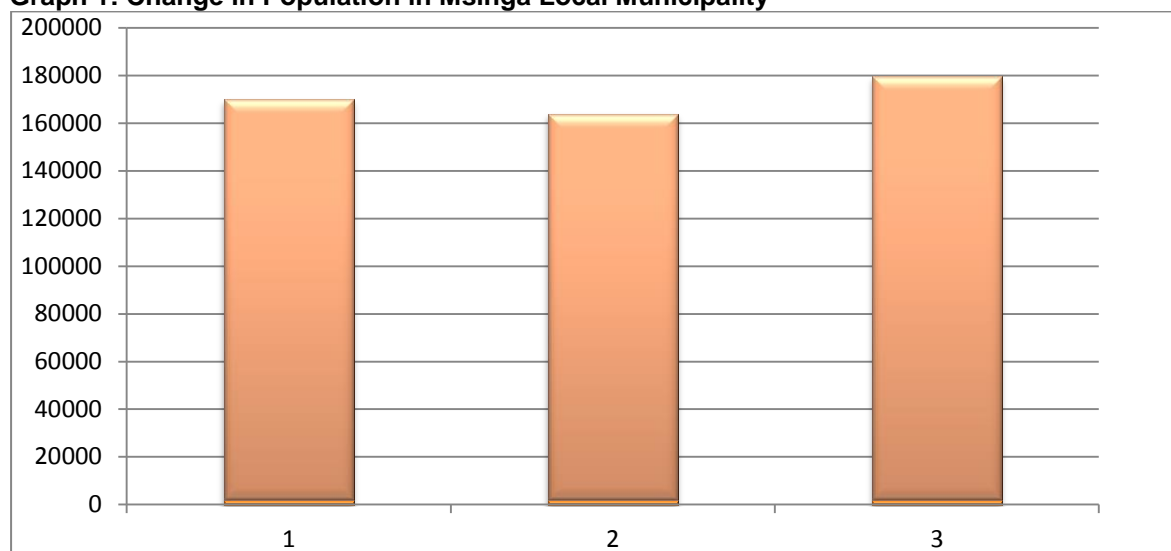
The main purpose of this section is to determine the number of people in the subject area, their income levels in the community, the economic activities they are engaged in, and how these will change with time. This information will also assist in identifying the Gaps in the current waste management systems in the municipality and developing Alternative Scenarios. Information depicted and used below for this section is according to Primarily Stats SA Census Data 1996, 2001, 2011, 2007 Community Statistics, Msinga IDP (2011/2012), and Umzinyathi IDP. It may be subjective and is as accurate at the point of collection and collation. Note that the information is a representation of the sample population during the gathering of the information.

2.3.1 Current Population, Age Breakdown and Growth Estimates

Graph 1 below shows the population growth for the MLM (177 577 in terms of the Stats SA Census 2011). The MLM comprises of 17 wards. In 2001, the estimated population was 168 000, approx. 4.2% increase from 1996. The growth between 1996 and 2001 was 4.20%.

The 2007 data according to the 2011/2012 Municipal IDP, the figures have dropped to 161 894 people with a total of 32 592 households. The Stats SA Census 2011 reveal that there has been a growth of 0.6% with the population now at 177 577. The MLM constitutes of 99.6% blacks, the remainder of the population constitutes to the whites (0.2%), Indian and Coloureds (0.1%), (Stats SA Census, 2011). The MLM accounts for a third of the uMzinyathi District Municipality's population as depicted in **Table 6**.

Graph 1: Change in Population in Msinga Local Municipality



Source: Stats SA: Census, 2001 (1), 2011 (3); Community Survey 2007 (2); Msinga IDP

Table 6: uMzinyathi District Municipality Population Distribution

uMzinyathi District Municipality					
	Edumeni	Nquthu	Msinga	Mvoti	Totals
Population	64 862	165 307	177 577	103 093	510 839
Population %-age	13	32	35	20	100
Households	13 755	32 169	37 724	26 019	104 535

Source: Stats SA: Census 2011

2.3.1.1 Gender Profiles

According to Stats SA: Census 2011, the current population gender profile can be broken down into approximately 77 069 (43.4%) male and 100 508 (56.6%) females. The high percentage of male absenteeism in the employment age group 20 to 64 years could be considered an indication of a weak economy, as men have always expected to leave the area to seek employment as there are limited opportunities in MLM.

2.3.1.2 Age Profiles

As can be seen from the table below, the majority of the population (50.8%) is located in the 15 to 64 year age cohort, followed closely by 43.7% of the population in the 0-14 year age cohort. Information provided by Stats SA indicates that the average age in the municipality is 24 years and that there is a very high dependency ratio.

Table 7: Population by Age Group, Average Age and Dependency Ratio (in %)

Msinga Local Municipality				
Age 0-14	Age 15-64	Age 65+	Average Age	Dependency Ratio
43.7	50.8	5.5	24	96.8

Source: Stats SA: Census 2011

Approximately 43% of the total municipal population are between the ages of 0-14 years of age. This presents an opportunity to target this large and growing segment of society at schools and places of learning especially for future community based waste management strategies etc. In addition to this, opportunities from waste must also be considered from the perspective of job creation for this developing population segment.

2.3.2 Population Distribution and Densities

The main aim of this section is to provide a sense of where the main population congregations exist within the MLM. The MLM is composed of approximately 37 724 households as per 2011 Census.

2.3.2.1 Spatial Analysis Considerations for the Municipality

The population of MLM equates to a population density of 71 people per square kilometre and the population is largely concentrated around the towns of Tugela Ferry (including Msinga Top area), Keates Drift and Pomeroy. Other significant settlement areas are located along the eastern boundary of the MLM known as the Mkhuphula/Dolo node, western boundary known as the Mashunka/Nhlalakahle node and the north-eastern boundary known as the Mazabeko node. In terms of wards, the number of household per ward ranges from a minimum of 1337 to a maximum 2622 households. The municipality comprises of 17 wards in totals.

The rural areas are characterized by extensive commercial and subsistence farming, mainly crop production and cattle farming.

Service delivery to the following settled areas (see **Figure 5**) will be investigated:

- Keates Drift
- Cwaka
- Mhlangana
- Tugela Ferry
- Ngubevu/Msinga Top
- Pomeroy
- Helpmekaar
- Rorke's Drift

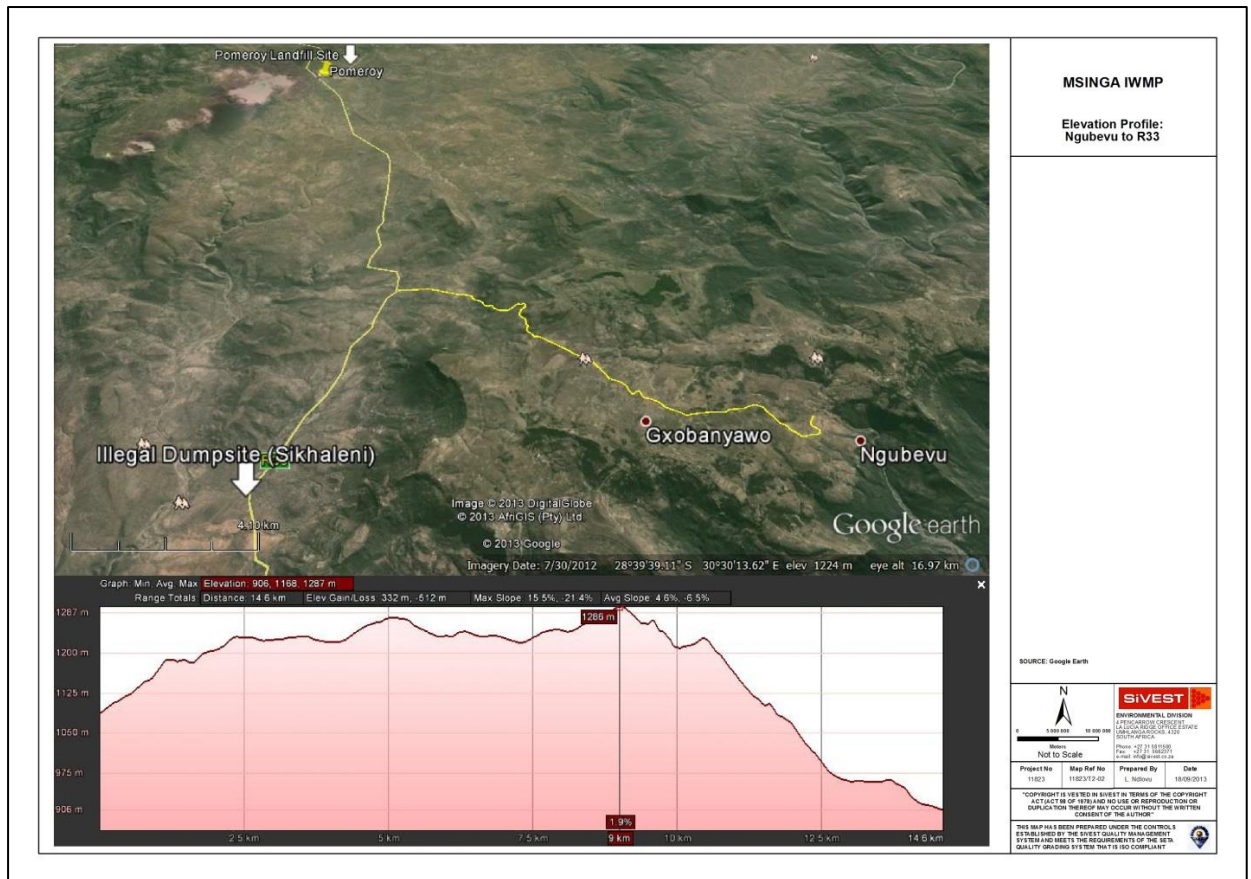


Figure 6: Elevation Profile (in metres) for road linking Ngubevu (Msinga Top area) and Pomeroy Landfill Site

2.3.3 Municipal Service Delivery Priorities

A summary of municipal backlogs and IDP priorities are listed in the 2011-2012 municipal IDP. This section of the 2010-2011 IDP indicates the following backlogs:

- At least 6% of the MLM has access to any form of water.
- The Sanitation schemes are referred to in the IDP as “completely unreliable”
- Only 8.6% of the households have access to electricity.
- There is currently one legal landfill site within the MLM located in Pomeroy. Only 2.6% have the refuse removed weekly
- Approximately 71% of the economically active population earn no form of income
- Majority of the housing is informal dwelling.

The following priorities are noted:

- Water and Sanitation.
- Landfill sites and Cemeteries.
- Electricity.
- Provision of roads and storm water.
- Refuse removal and waste management.
- Cattle Dips
- Health and Education facilities
- Sports and Recreational facilities
- Provision of housing and land.
- Provision for basic service delivery.
- Provision for infrastructure development.
- Provision for affordable housing.

In terms of the above the obvious priority provision for waste management service delivery is noted in the 2011-2012 IDP. In addition to this it must be pointed out that provision for delivering a waste management service needs to accompany the forward planning currently proposed for the Housing Sector Plan, similar to other services like sanitation, electricity and water etc. Related to this is the need for additional roads for effective waste removal. Provision to be made for some form of recycling of tar as is the case with service providers / contractors for City of Johannesburg, and eThekweni Municipal roads projects must be explored.

2.3.4 Socio-economic Categories, Income and Education

This section aims to provide an understanding of Individual and Household population dynamics including income, existing skills base, and education.

2.3.4.1 Individual Income

Over 35.4% (Census 2011) of the population earns less than R800 per month. Census data for individual income in 2011 is provided in **Table 8** below. As indicated in the 2011/2012 IDP these low income levels are indicative of reduced ability to pay for municipal services, including waste removal. The low levels of income for the MLM population therefore calls for strategic economic development and poverty alleviation interventions. There is therefore a need to supplement household income through poverty alleviation programmes and Local Economic Development Strategies. In additions, waste projects identified need to be angled towards supplementing LED projects.

Table 8: Population by Income Category (Average Annual Income)

Income	Percentage
No income	11.8
R 1 – R 4 800	7.6
R 4 801 – R 9 600	16
R 9 601 – R 19 600	28.9
R 19 601 – R 38 200	22.4
R 38 201 – R 76 400	6.6
R 76 401 – R 153 800	3.4
R 153 801 – R 307 600	1.9
R 307 601 – R 614 400	0.9
R 614 001 – R 1 228 800	0.1
R 1 228 801 – R 2 457 600	0.1
R 2 457 601 +	0.1

Source: Stats SA: Census 2011; Msinga IDP 2011/2012

2.3.4.2 Skills Base, Education and Training

Significant portions of MLM formed part of the former KwaZulu which tended to be neglected in terms of economic development. Most of the area is also rural and associated with a lack of development, poverty and poor service provision. Approximately 71% of the population earn no income, which contributes to the cycle of poverty found in the area. Male out-migration, indicative of low employment opportunities in MLM is contributing to community instability.

The MLM area has an advantage in terms of its favourable location near the R33 and the abundant natural features that provide potential tourism assets especially around Rorke's Drift. Agricultural and government sector services in MLM are the largest employment opportunities.

The IDP 2011/2012 states that no residents (of the survey sample population) indicated that they have any form of higher education. This reinforces the assumption that once people

leave the MLM to further their studies, they very rarely return to the MLM to exercise their acquired skills. This also has a major impact on the development of potential entrepreneurs.

The information below also indicates that some of the adult population (4.8%) have no form of schooling, a further 58.3% have primary schooling as their highest qualification, and approximately 8% have a 12.

Table 9: Educational Levels in Msinga Local Municipality

Level	%age
No Schooling	4.8
Some Primary	51.5
Completed Primary	6.8
Some Secondary	27.6
Certificate with Grade 12	8.4
Higher Education	0.4
Not Applicable	0.6

Source: Stats SA: Census 2011

According to the Department of education's Circuit Office in Tugela Ferry, there are 172 schools (refer to **Appendix B**) serving a school going population of 61 605 pupils in MLM. This would indicate that 14 000 children between the ages of 5 to 19 years are not attending school. The majority of schools are located within the rural villages and settlements.

2.3.5 Health and Welfare

2.3.5.1 Health and Healthcare Facilities

The Church of Scotland Hospital, situated at Tugela Ferry, is the only hospital within the municipal area and is centrally located and relatively accessible to the majority of the population. Other hospitals within reach of the general population are located in Dundee, Nquthu and Greytown.

A community health care centre is currently under construction in Pomeroy. There is a recently completed Gateway Clinic at the Church of Scotland Hospital in Tugela Ferry. Both projects are being funded by the Department of Health.

There are fifteen (15) satellite clinics that serve the rural areas (refer to **Appendix C**), two mobile clinics serve 31 points of varying sizes on a regular basis.

2.3.5.2 Welfare

The offices of the Department of Welfare and Population are situated in Tugela Ferry and the bulk of their work is related to foster care and child support, disability and pensioner grants, poor relief, social development, crèches etc.

There are approximately 43 pension payout points distributed throughout the municipal area. In almost every case, the payouts take place in an open area, with no or very limited infrastructure available at these points.

2.3.6 Current and Projected Developments and Infrastructure

A description of infrastructure and future planning for residential, commercial, and industrial developments was investigated using the IDP. The purpose of this section is to identify specific projects that may have an impact on future waste production.

2.3.6.1 Proposed/Current projects:

The following projects are currently proposed and/or under construction:

- Pomeroy Community Health Centre (see **Appendix D**)

2.3.6.2 Advertised projects:

The following projects are currently being advertised:

- Tugela Ferry Shopping Centre (see **Appendix D**)
- Pomeroy Shopping Centre (see **Appendix D**)

2.3.6.3 IDP Priorities:

The following IDP priorities are likely to impact on the municipality's ability to manage waste:

- Roads and Stormwater,
- Job Stimulation and Local Economic Development,
- Housing and Land reform process,
- Gaps in Refuse Removal system.

2.3.6.4 Housing projects

The following housing developments are included in the IDP. It is important to establish if planning has been made in these areas for a waste service:

- Pomeroy – 500 units
- Mthembu – 500 units
- KwaLatha – 500 units
- KwaDolo – 500 units
- Ezibomvini – 500 units
- Emvundleni – 500 units

2.3.6.5 Department of Agriculture and Environmental Affairs Projects

The following projects are being undertaken by DAEA:

- Fencing Projects – Ngwalane, Halodi, Nxamalala, Mbangweni, Mooi River, Keates Drift, Msinga Jikelele
- Electrification – KwaDolo

2.3.6.6 Department of Health Projects

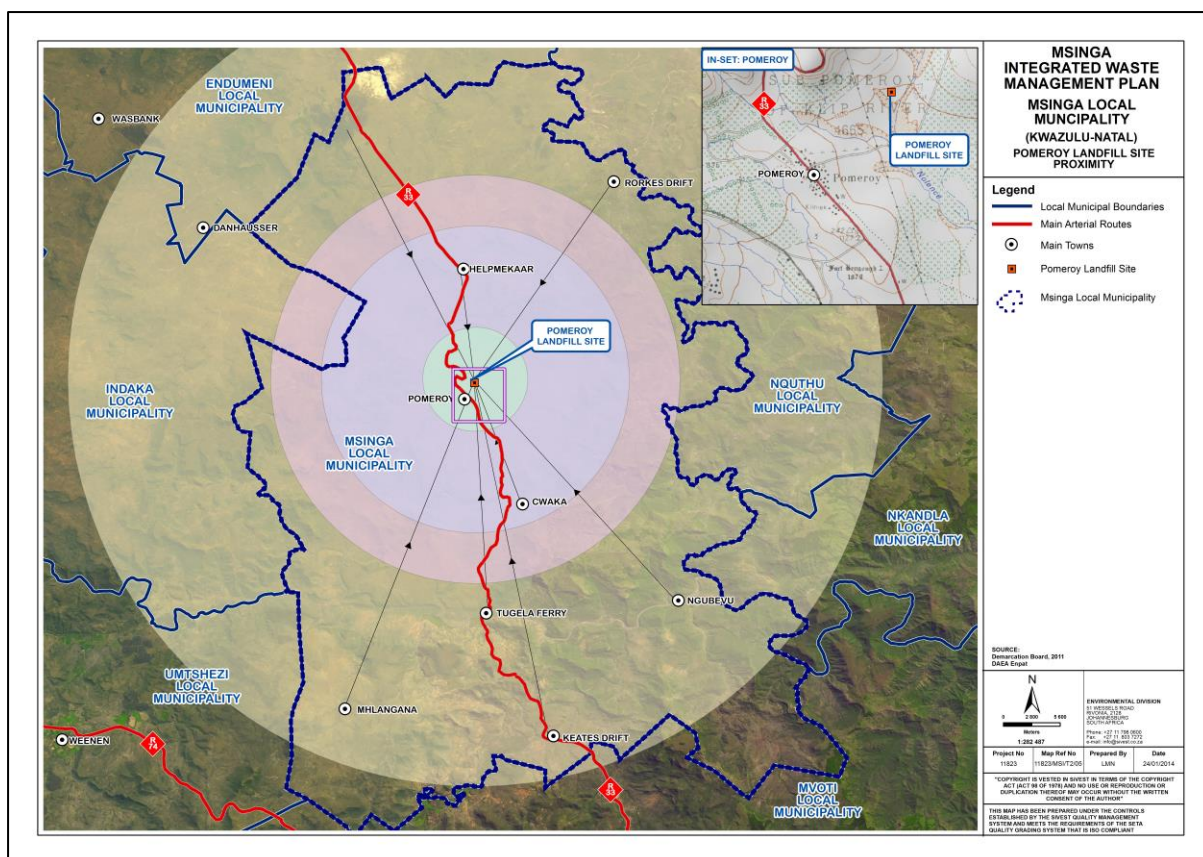
The following projects are being undertaken by Department of Health:

- New Clinics – Mashunka, Mkhuphula, Mumbe, Ngabayena, Msizini
- Upgrades/Expansions – Church of Scotland, new paediatric and TB wards (see **Appendix D**)

2.3.6.7 Public Transport Facilities

The following Public Transport Facilities (PTF) occurs within the MLM:

There are taxi ranks at all the towns' centres; some are informal and other formal. It will be important to establish if there is a formal waste service for these areas since taxi ranks are also magnets for formal and informal trade activities, which in themselves generate various wastes. Taxi ranks are found in all the major towns/settlements. Refer to **Figure 7** below for proximity of these areas in relation to the landfill site in Pomeroy



Where these areas do not have a waste collection service, provision for a skip or other collection mechanism should be made.

2.4 WASTE QUANTITIES AND CHARACTERISTICS

This section focuses on quantifying and qualifying the general waste stream currently generated within the MLM. The objectives of quantifying and qualifying the waste stream are to assign management costs to the different general waste types and categories generated and identify the amount of waste for which a service is not yet established.

2.4.1 Waste Types and Categories

The following broad waste types are known to be generated within the MLM:

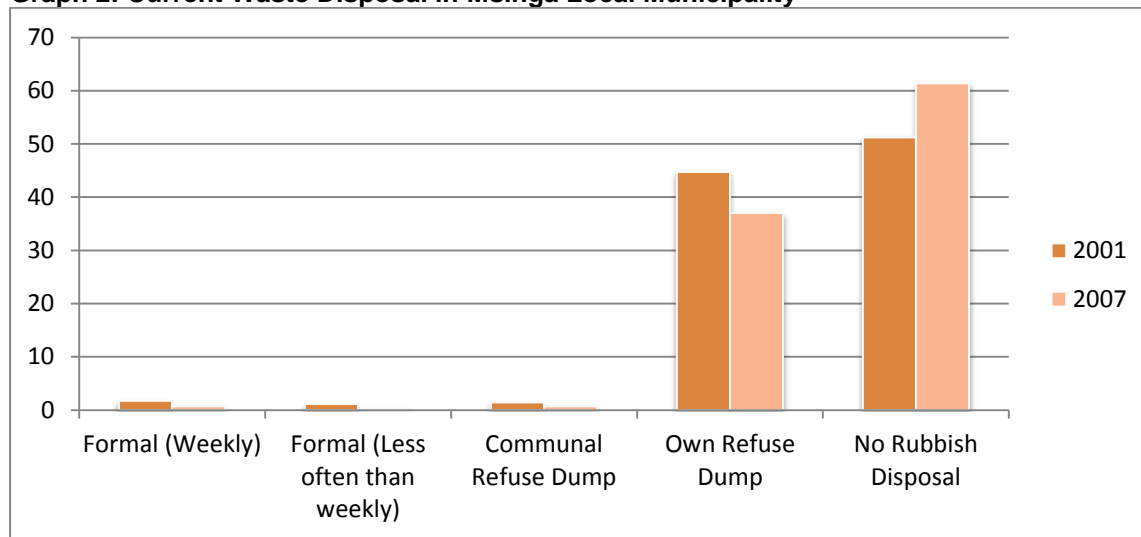
- Household waste,
- Garden Refuse,
- Medical Waste,
- Building waste (rubble),
- Putrescible waste,
- Street sweeping,
- Illegal dumping,
- Hazardous waste,
- Recyclable materials (Paper, glass, plastic, cardboard),

2.4.1.1 Households and Domestic Waste

The majority of households within the MLM use their own refuse dump. Waste is collected from approximately only less than 2% of homes at least once a week by the MLM. Consumable goods packaging was not observed at farming / rural homesteads. However relatively affluent homes produced a large amount of packaging in the form of wrapping and paper. Burning at waste pits in farming areas is assumed to be a common occurrence.

A number of homesteads in rural areas were observed to have their own waste pits. Domestic waste in the more urban areas was observed to contain a large amount of recyclable materials. However, in the rural areas the reverse was true.

Graph 2: Current Waste Disposal in Msinga Local Municipality



The provision of refuse removal services in MLM is very limited. According to the information in **Graph 2**, less than 0.5% of all household in the MLM receive a regular formal refuse removal service. As much as 61.4% of households make use of their own refuse dumps, and a further 37% does not access to any form of waste disposal service. A further aspect of concern is that the availability of refuse removal services has not improved in the MLM in the last decade.

The challenge facing the MLM are limited financial capacity of the municipalities and ability to further extend existing refuse removal services and the limitation of formalised and registered landfill sites in the MLM.

2.4.1.2 Business Waste

The town centres generate domestic waste which is collected and stored at a depot point near the shops in MLM, and the other main nodes that occur within the MLM. In most of the town centres the shops consisted of a Spar, Hardware and petrol station. Most of the wastes include packaging and cartons from the retail trade sector within the urban areas of the MLM. There appears to be a small recycling industry gathering these waste materials at the depot and landfill sites. This therefore points to the obvious question of how to remove these materials from the general waste stream. It would be more efficient to remove those useful components before they reach the landfill site. The volumes recovered will tend to be higher and the quality of the recovered material is usually better.

2.4.1.3 Building Waste

This includes building rubble from construction and spoil material from road construction activities in the MLM. In most instances building rubble is not disposed of to waste disposal sites, and this could be utilised as secondary cover materials when available. Scope also

exists for reusing this waste back in the construction industry. Scope exists for recycling the tar / asphalt from resurfacing projects instead of disposing of these waste materials.

2.4.1.4 Medical Waste

Medical waste is disposed of by a private contractor, Compass Medical Waste. Their main treatment facility is in Pinetown, and utilises a temperature / pressure treatment to sterilise medical wastes. In addition to private surgeries, consulting rooms, and veterinary practices, the existing Hospital and clinics have medical waste collected on a regular basis. Strict provisions to manage transporters hauling medical waste are being enforced by DAEEA.

2.4.1.5 Illegal Dumping

Illegal dumping is reported to be a problem in localised areas within the MLM.

The current strategies to deal with illegal dumping include:

- Providing a waste collection service in areas previously not serviced.
- Public Awareness (Reduce Reuse Recycle).
- Public private initiatives - Clean up campaigns including those organized with religious organizations (Mormon Helping Hands Outreach).
- Sign posting areas where frequent dumping occurs.
- Identifying known hot spots.
- Policing / managing known dumping hot spots.

The MLM will need to consider continued implementation of the above strategies, including a more vigorous policing of known hotspots and possibly a hotline to report vehicles seen dumping.

2.4.2 *Quantifying the Amount of General Waste Generated in the MLM*

There are reportedly no accurate records for the waste generated within the MLM or of the waste disposed of at any of the Landfill site(s). Therefore it is difficult to quantify the precise amount of waste generated from the MLM. It is however possible to project the total amount of waste generated within an area based on per-capita waste projection rates. This will be attempted below to quantify the amount of waste generated within the MLM.

2.4.2.1 Projections Based on Population Statistics

Due to the lack of data in the MLM on the amounts of waste generated, a per-capita projection of waste generated was estimated according to the KwaZulu-Natal Department of Agriculture and Environmental Affairs, IWMP Guideline Document (2003). In terms of section 3 of that document the listed waste generation rates will be used for the MLM, these are related to the broad income groups in section 3.3 of the IWMP guideline document. The following rates will be assumed as per the above report:

- Informal - Residential Areas Which Initially Develop As Unplanned And Un-Serviced Areas
- Very Poor - Annual Income Range: None to R12 000 - 0.03 Kg of waste /Person/day
- Low - Annual Income Range: R12 001 to R42 000 - 0.35 Kg of waste /Person/day
- Middle - Annual Income Range: R42 001 to R72 000 - 0.61 Kg of waste /Person/day
- High - Annual Income Range: R72 001 and Higher - 0.61 Kg of waste /Person/day

For the segments of the population that failed to provide a response related to income levels (refer to **Table 10**) or are designated as Institutions an average waste generation rate of 0.35 Kg/Person/day, is assumed.

Table 10: Population by Income Category and Projected Waste Generation

Income Levels	Msinga Local Municipality Population	Income Category	Waste Generation Rate (Kg/Person/day)	Kg per Day	Tons per Year
No income	114783	Very Poor	0.03	3443.49	1256.88
R1 - R400	8904	Very Poor	0.03	267.12	97.50
R401 - R800	7609	Very Poor	0.03	228.27	83.32
R801 - R1 600	21694	Very Poor	0.03	650.82	237.55
R1 601 - R3 200	1943	Very Poor	0.03	58.29	21.24
R3 201 - R6 400	2267	Very Poor	0.03	68.01	24.82
R6 401 - R12 800	1781	Very Poor	0.03	53.43	19.50
R12 801 - R 102 400	0	Middle Income	0.35	0	0
R102 401 or more	0	High	0.61	0	0
Response not given	971	Assumed Rate	0.35	29.13	10.63
Institutions	1943	Assumed Rate	0.35	58.29	21.26
TOTAL	161894				1772.7

ve indicates that approximately **1,772.7** tons of general waste is generated within the MLM on an annual basis. This is assuming waste is generated for 365 days a year. The above methodology represents an income based approach to estimating waste production for a given area. This is in corroboration with the primarily rural nature of the municipality.

2.4.3 Waste Management and Generation Areas

The purpose of this section is to categorize the major distinct areas that generate waste in the MLM.

The eight main nodes (see **Figure 5** in **Section 2.3.2.1** above) that generate waste include the following town centres:

- Keates Drift
- Mhlangana
- Tugela Ferry
- Ngubevu/Msinga Top
- Pomeroy
- Helpmekaar
- Rorke's Drift
- Cwaka

In terms of the above, eight specific and distinct areas relating to waste management can be considered. This will form the basis for analysis of waste management and recommendations in the following sections of this study. The character of these waste generation areas are summarised below.

2.4.3.1 Urban and Built-up Areas

The general character of waste generated in these areas includes:

- Domestic waste from residential areas
- Green / organic waste
- Retail and packaging waste.
- Medical waste.

2.4.3.2 Lodges and Tourist Destinations

The general character of waste generated in these areas (mainly in Rorke's Drift) includes:

- Domestic waste from residential areas
- Green / organic waste
- Retail and packaging waste.
- Medical waste.

2.4.3.3 Rural and Farming Areas

Most of the rural and farming areas dispose their own waste and waste removal services are not being provided to these areas.

2.5 EXISTING WASTE MANAGEMENT SYSTEMS AND PRACTICES

This section provides feedback on the existing waste management systems in the LM. This includes a description of the collection and cleansing services, the transport and transfer of the waste, waste minimization and recycling systems / initiatives, and finally the disposal of waste.

2.5.1 *Municipal Organisational Structure*

Waste management falls under the Technical Services: Executive Director Mr SL Sokhela who is responsible for Community Services in the MLM. A copy of the new municipal organogram is provided below.

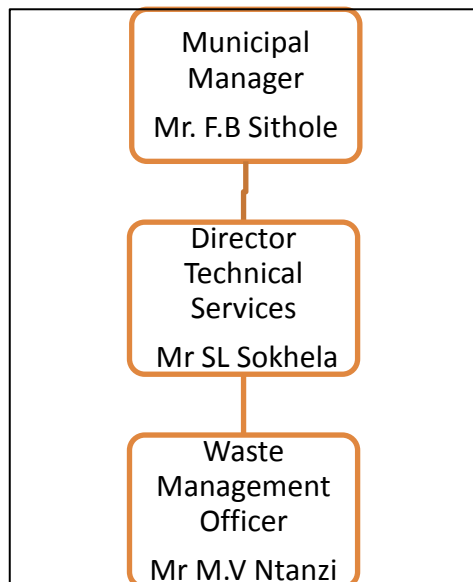


Figure 8: Msinga Local Municipal Organogram

Waste management falls under the Waste Management Officer, Mr MV Ntanzu. The Waste Management Officer is responsible for all the towns and villages within the MLM.

2.5.2 *Municipal Labour*

There is one site security guard who is responsible for the one landfill site. The labour force is then completed by drivers (who are considered casual workers), and general workers who assist with waste collection, street sweeping etc.

Eighty percent of time is dedicated to waste litter picking, street sweeping, verge cutting and storm water drain cleaning. Twenty percent of the time is used for other non-waste functions such as moving furniture, cleaning grass and organising and placing of drums.

2.5.3 *Financing of Waste Management*

The current general expenditure for waste includes the following:

- Labour
- Maintenance of equipment e.g. trucks; brush cutters
- Fuel
- Waste material e.g. refuse bags and ash bins
- Safety equipment e.g. gloves and mask

Below is a breakdown of the current budget for waste management in MLM:

Table 11: Waste Management Costs in MLM

Item	Amount
Integrated Waste Management Plan	R 236 966.00
Refuse Collection and Transportation	R 680 000.00
Food-for-Waste	R 1 152 000.00
Recycling Facility Plant	R 300 000.00
TOTAL	R 2 368 966.00

2.5.4 *Municipal Fleet*

The waste management department has one tipper truck used to collect waste in along the R33 Arterial Route between the towns of Tugela Ferry and Pomeroy. The fleet is dated and in need of repair or replacement.

2.5.5 *Collection and Cleansing Services*

The National Domestic Waste Collection Standards should be used as a guideline for the acceptable standards for waste collection for different settlements types within MLM. A number of waste services are rendered to the public in the LM. Regular waste removal service is provided to the urban areas of Tugela Ferry and Pomeroy, however there is still a high incidence of litter and waste heaps being burnt on the road-sides and behind business premises. The traditional areas of MLM do not receive a waste removal service and they need to be incorporated in the waste disposal service area. The residents in the traditional areas dispose of domestic waste either in informal pits or by burning their waste. This is usually done in close proximity of the homestead or dwelling. MLM has eight towns (identified as development Nodes) as listed below (refer to **Figure 5** in **Section 2.3.2.1** for their location and **Figure 7** in **Section 2.3.6.7** for the proximity to the Pomeroy Landfill Site):

- Keates Drift
- Mhlangana
- Tugela Ferry
- Ngubevu/Msinga Top area
- Pomeroy
- Helpmekaar
- Rorke's Drift
- Cwaka

In terms of real backlogs, the Umzinyathi Backlog Study (2007) indicates that the backlog is as depicted in **Table 12** below:

Table 12: Waste Collection Backlog per Household

Category	Number of Households
----------	----------------------

Served	839
Not Served (Backlog)	31 697
Total Backlog in %age	97.4%

The waste department collects waste in just two of the above towns (Tugela Ferry and Pomeroy) using only one truck. The biggest obstacle being faced at the moment is that the truck is old and is costing MLM considerable amount of money to repair since it requires maintenance on a regular basis. Multiple dumping occurs throughout the municipality and there is one landfill site that is not managed in terms of the Minimum Requirements Series (See **Section 2.2.10**).

2.5.5.1 Street Sweeping

Street sweeping happens in the towns of Keates Drift, Tugela Ferry and Pomeroy, all along the R33 Arterial Route on a daily basis.

2.5.5.2 Truck Routes for collection of waste from Depot sites Side Waste in Msinga

Waste is collected from the town centres of Tugela Ferry, along the R33 Arterial Route and transported to the Pomeroy area for disposal.

2.5.6 Transportation and Transfer

The MLM utilises one vehicle in delivering a waste management service to the public. Vehicles utilised include:

- Tractor trailer units (with and without compactors) for kerb side collections.

In terms of the above, the vehicle has to travel long during their daily rounds.

A number of problems hamper the delivery of waste services to the public. These include:

- Poor road network and un-tarred roads.
- Informal trading and illegal activities at some taxi ranks and busy road intersections.
- Illegal dumping – tends to occur sporadically in different areas that are not being monitored, including on the banks of the Tugela River, road-side in the veld, and directly outside or behind the business facilities. This increases the transport costs of waste.
- Large distances from areas of waste generation to waste disposal sites as a result of no functional transfer stations strategically placed along the routes.

The type and more importantly the location of the transfer stations within MLM should be investigated.

2.5.7 Current Waste Minimisation, Re-use and Recycling Initiatives

In MLM, currently there are no waste minimisation schemes or initiatives. The only existing waste initiative is that of voluntary waste collection. This includes collection of paper, and plastics. There is a need for formal waste minimisation campaigns within MLM for education and awareness generation with the public.

2.5.7.1 "Incentive Scheme"

As investigated, there is an incentivised scheme that a large number of the female population participates in. This involves keeping the main roads clean as they sweep and collect any refuse found there. They also perform similar tasks in common areas. Such waste is then collected by truck. In return, after a certain period a truck full of food will distribute the food among those who were participated.

Many of the affected families only have this sort of scheme as means of getting food. The scheme operates throughout Msinga Municipality, especially in Keates Drift and Tugela Ferry

2.5.8 Waste Disposal

This section details waste disposal within the MLM. The majority of households reportedly do not receive any form of refuse removal (Stats SA, Community Survey 2007). Current labour consists of a number of casual workers who work mainly in towns of Keates Drift, Tugela Ferry and Pomeroy to collect refuse, grass cutting and unblock storm water drain cleaning.

The dumping sites are as follows (refer to **Appendix D**).

- Sidakeni area (Ward 04) illegal site (See **Figure 9** for Msinga Wards Map): This dumping site must be closed and converted to a new transfer station
- Keates Drift unpermitted (illegal) site (Ward 11): this dumping site must be close and the waste must transported to a nearby new proposed transfer station site.
- Pomeroy landfill site (Ward 17): this dumping site needs to be rehabilitated, fenced, and must be made to meet environmental requirements and regulations.

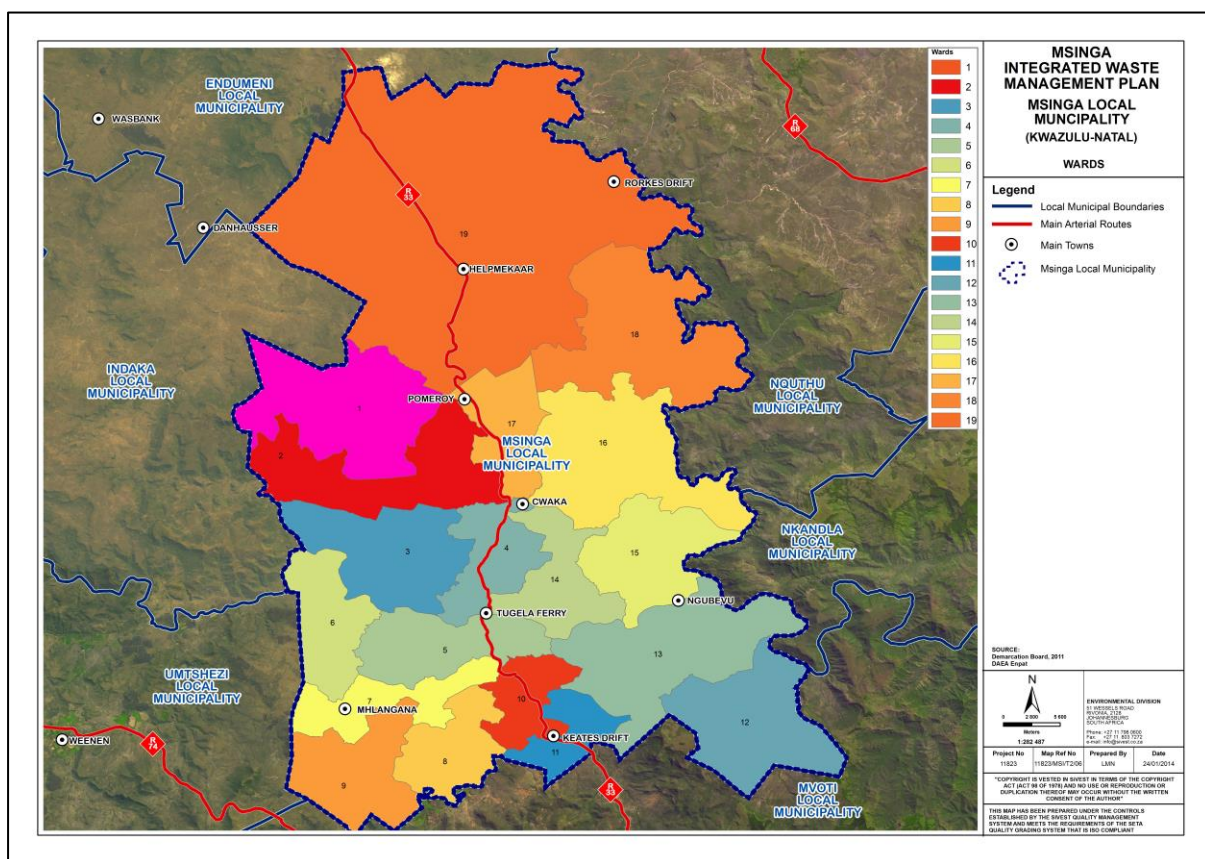


Figure 9: Wards in MLM

Source: Demarcation Board 2011

2.5.8.1 Pomeroy Landfill Site

The Pomeroy waste disposal site is situated on an isolated road off the R33 Arterial Route in the Pomeroy area. This is not an ideal location in terms of:

- Visual amenity (proximity to the road),
- Near a major tributary of the Tugela River
- Waste water (leachate) drains into the river,
- There is no cover material.

The landfill site is fenced however waste material is being blown out of the site. People are dumping waste material outside the boundary of the site, as well as animals (i.e. goats) are found eating the waste in the landfill.

At present, the Pomeroy Landfill is meant to operate at a B- grading. It is the recommendation of SiVEST that this should in fact be a B+ graded facility, according to service requirements, Currently, the facility is providing inadequate design and infrastructure, and needs significant improvement. The level of service relating to the separation and treatment of waste also needs vast improvement. Presently waste is dumped in a single large heap and only some glass is separated into separate piles, the waste is not covered over with fill.

Table 13: MLM Site Visit: Pomeroy Landfill Site Audit

Site Parameters Investigated	Findings
Name of disposal site	Pomeroy Landfill Site
Geographic location of landfill site	S 28.546 (28° 32' 45.5994") E 30.434 (30° 26' 2.4")
Area covered by disposal site	2 hectares
Year of contraction/extension	Not available
Resources available on site	Excavator as required One site security guard for the landfill site Fencing installed along the entrance boundary
Registration/permit certificate	Yes, refer to Appendix E
Type and quantity of waste	Domestic / General waste
Description of neighbouring areas	Main road to Pomeroy town Vacant land
Signposting and road access	Signage by entrance
Disposal site type (i.e. general or hazardous)	General
Access control collection of disposal tariffs	No Access control
Method of land filling (e.g. trench system)	Not available
Co-disposal (e.g. liquid and solid waste)	No
Disposal of health care waste	No
Excavation for cover	No
Drainage	Yes
Control of nuisances (e.g. burning of waste, litter, odours, vermin and dust)	Fires are being burned
Salvaging activities	Permitted on site - Informal
Waste reclamation	Permitted on site - Informal
Leachate and gas management	Leachate management system
Rehabilitation	No rehabilitation taking place
Final cover	Not available
Public participation	None
Plans for extending/closing the disposal site	To be determined
Annual Auditing	No

2.5.8.2 Proposed MLM Waste Disposal Site

The MLM is in the process of investigating formalising all the existing identified illegal dumpsites to being transfer stations and working on the existing landfill site to meet environmental regulation standards

2.5.8.3 Proposed Regional (District) Landfill Site

The Umzinyathi District Municipality is in the process of establishing a new (proposed) landfill site to serve the waste management needs of the southern region of the district. The proposed landfill site is to be located in Greytown, within uMvoti Local Municipality which is found south of the Msinga Local Municipality jurisdiction.

3. GAPS AND NEEDS

3.1 GAPS ANALYSIS AND NEEDS ASSESSMENT

A number of gaps and needs (**Table 14:** Gaps Analysis and Needs Assessment below) are immediately apparent concerning waste management in the municipality. Foremost of these are the challenges presented by the new Waste Act (Act 59 of 2008) and the NWMS 2011.

Below are the headings for the identified gaps and needs in Msinga LM:

- Legislation and Regulatory Issues
- Institutional and Organizational Needs
- Waste Collection & Municipal Service Delivery Issues
- Waste Minimization and Recycling initiatives
- Technical and Operational Issues
- Waste Management in the Municipality
- Waste Treatment and Disposal Issues
- Waste Management Education and Awareness
- Financial Resources
- Waste Information Management

ISSUES	GAPS AND NEEDS	RECOMMENDATIONS
	<i>3.1.1 Legislation and Regulatory Issues</i>	
3.1.1.1 National Waste Management Strategy	<ul style="list-style-type: none"> The Goals and Objectives of the NWMS are not applied with the MLM (See Section 3.2) 	<ul style="list-style-type: none"> The obligations and responsibilities as applied to the MLM must be reviewed.
3.1.1.2 Bylaws	<ul style="list-style-type: none"> Municipality does not have any bylaws to manage waste management activities. 	<ul style="list-style-type: none"> The municipality needs to gazette Bylaws with the following waste management focus areas: <ul style="list-style-type: none"> ➤ Consideration for the establishment of a waste information system as per the Waste Act. Information from the permitted landfill or generators of waste to be fed on to National Database. ➤ Providing access to municipal waste services in areas previously un-serviced and consider Free Basic Refuse Removal (FBRR) policy. The municipality will need to determine in a Phased and Prioritized manner how to include other areas on this service (see also Waste Act Section 9(2) c). ➤ Describe the various waste types and requirements for the general management for business, residential, industrial, garden, building rubble, and health care risk in the municipality (to promote separation at source, recycling etc. and to develop municipal standards). Include a description of general waste for collection by the municipality, and an indication of those for which a private company will need to be engaged. ➤ Waste generator obligations (i.e. storage of waste do's and don'ts etc.) as above. ➤ Liability to pay for waste services rendered to householders. ➤ Bylaw requirements for the transportation and transfer of waste in line with national norms. ➤ Provision to control illegal dumping and abandoned articles in Bylaws.

ISSUES	GAPS AND NEEDS	RECOMMENDATIONS
3.1.1.3 Waste Act	<ul style="list-style-type: none"> The municipality does not have bylaws related to waste (See Section 9.1 and 9.5 of the Waste Act). 	<ul style="list-style-type: none"> Municipalities must implement Waste Management Bylaws (See Section 9.1 and 9.5 of the Waste Act).
	<ul style="list-style-type: none"> There are currently no standards for the management of waste in the municipality (See Section 9.3 of the Waste Act). 	<ul style="list-style-type: none"> The municipality must either set local standards or adopt provincial / national norms and standards for the following activities – <ol style="list-style-type: none"> For the separation, and storage of solid waste collected by the municipal service or disposed of at a municipal waste disposal facility; For the management of solid waste disposed of by the municipality or at a waste disposal facility owned by the municipality, (including avoidance and minimization of the generation of waste and the re-use, recycling and recovery of solid waste); The directing of solid waste that is collected as part of the municipal service or that is disposed of by the municipality or at a municipal waste disposal facility to specific waste treatment and disposal facilities; and Local standards in respect of the control of litter. Develop a standard to inform how recyclable waste from Lodges or Game Camps is handled (including the temporary storage, and removal of recyclable waste). Local standards for special events such as soccer matches/community events at any of the proposed or existing sports fields/community halls or centres.
	<ul style="list-style-type: none"> The municipality does not have an IWMP (See Section 12.1 of the Waste Act). 	<ul style="list-style-type: none"> The municipality will need to adopt and implement the IWMP and incorporate / adopt these findings in to the municipal IDP for implementation. The municipality will need to report annually on the implementation of the IWMP as specified in Section 13.3 of the Waste Act, and in the prescribed manner as laid out in the Act.

ISSUES	GAPS AND NEEDS	RECOMMENDATIONS
	<ul style="list-style-type: none"> The municipality does have staff responsible for all matters relating to waste management but the requirements of the Waste Act regarding the designation of a Waste Officer still requires implementation (See Section 10.3 of the Waste Act). The municipality does not provide containers for the recycling of waste materials (Section 23.2 of the Waste Act). 	<ul style="list-style-type: none"> The municipality will need to designate a responsible Waste Officer from the waste department to be responsible for provisions in line with Waste Act Requirements. This is to include the coordination of waste activities as described in the Act. The municipality must provide containers for the recycling of waste materials (Section 23.2 of the Waste Act). Areas to consider for recycling include: <ul style="list-style-type: none"> ➤ Tugela Ferry, ➤ Keates Drift, ➤ Pomeroy The above areas are the major towns whereby the population is the most dense Public areas and institutions such as schools and municipal/government centres should have recycling stations
3.1.1.4 Municipal Rates	<ul style="list-style-type: none"> A very small proportion of the municipal population reportedly pays rates. This will affect the level of service delivered to the public from the municipality and the ability of public to pay for waste services. These also include <ul style="list-style-type: none"> ➤ Businesses in the areas of Tugela Ferry and Pomeroy ➤ All government institutions The municipality does not provide a waste service to the majority of the municipality (especially traditional areas). Additionally, the municipality must deliver such services to other areas. 	<ul style="list-style-type: none"> Strategies are required to increase the levies and rates base. This provision has already been identified by the Municipality. The municipality is to consider the implementation of a FBRR system. This should be linked with the municipality's indigent register for those households that cannot afford to pay for this waste service.
		<ul style="list-style-type: none"> Investigate the possibility of FBRR / Food for Waste programs
3.1.2 Institutional and Organisational Needs		

ISSUES	GAPS AND NEEDS	RECOMMENDATIONS
3.1.2.1 Msinga IDP	<ul style="list-style-type: none"> Existing IDP forum meetings used to plan development in the municipality are a useful municipal platform to integrate development planning needs, however there is a need to provide a platform where other National / Provincial institutional development planning (i.e. Department of Public Works construction of schools, clinics, hospitals, prisons etc.) can be filtered down to the municipality especially in terms of where these development initiatives will require some waste service delivery. 	<ul style="list-style-type: none"> It is critical that there is a seamless planning process for new housing developments in the municipality such that service providers like waste, water and sanitation are brought on board early on in the planning process for these developments. Provision for waste management to be discussed at these meetings is to be made.
3.1.2.2 Proposed/under construction project	<ul style="list-style-type: none"> The following proposed Department of Health projects are to be provided with a waste service: <ul style="list-style-type: none"> ➤ New clinics – Mashunka, Mkhuphula, Mumbe, Ngabayena, Msizini ➤ Upgrades/Expansion – Church of Scotland, new paediatric and TB wards. 	<ul style="list-style-type: none"> Medical waste is handled by a private contractor. Waste should be separated for recycling purposes Staff (i.e. nurses); especially in remote clinics should be encouraged to practise waste separation. Make use of wheelie bins in healthcare facilities such as clinics
	<ul style="list-style-type: none"> There are a number of New Proposed Developments in Msinga LM. These include: <ul style="list-style-type: none"> ➤ Tugela Ferry and Pomeroy shopping centres ➤ The following are proposed housing development projects: <ul style="list-style-type: none"> ▪ Pomeroy (500 units) ▪ Mthembu (500 units) ▪ KwaLatha (500 units) ▪ KwaDolo (500 units) ▪ Ezimbovini (500 units) ▪ Emvundleni (500 units) 	<ul style="list-style-type: none"> There will be a need for more waste staff to service additional waste generation area as and when required, the existing staff complement are to be reviewed on an annual basis, to ensure that these are providing a suitable service to the public. Provision should be also be made for <ul style="list-style-type: none"> ➤ Additional vehicles ➤ Increase in frequency of waste collection ➤ More street bins and containers ➤ Frequent street sweeping
3.1.3 Waste Collection & Municipal Service Delivery Issues		

ISSUES	GAPS AND NEEDS	RECOMMENDATIONS
3.2 Tugela Ferry	<ul style="list-style-type: none"> There are no skips available in the town centre. A small number of street sweepers have been employed to clean the verges, pick up litter etc. This essentially occurs after peak hours (twice a day). There are drums (waste receptacles) along the streets. A truck operates only along the R33 collecting waste which is disposed of to the licensed Pomeroy landfill site. 	<ul style="list-style-type: none"> Provide skips and a skip truck in the town as well as the surrounding low-cost areas in Tugela Ferry Need to provide street bins (steel poles and ash bins). Engage street sweepers during pension pay-outs. Provision for transfer station (temporary waste storage for later disposal at Pomeory landfill) and recycling centre
3.3 Keates Drift	<ul style="list-style-type: none"> There are no street bins provided in Keates Drift. 	<ul style="list-style-type: none"> Need to provide street bins (steel poles and ash bins).
	<ul style="list-style-type: none"> There is also a need for additional sweepers in the area. 	<ul style="list-style-type: none"> Engage street sweepers during pension pay-outs. Waste removal services for this area (e.g. tractor trailer type trucks to remove waste)
	<ul style="list-style-type: none"> There is an illegal waste disposal site servicing this area. 	<ul style="list-style-type: none"> The illegal site needs to be closed and make provision for a transfer station and recycling centre
3.4 Pomeroy	<ul style="list-style-type: none"> The Tin bins provided in the area have started to rust. The town gets waste collection service, and they don't do a door to door service in the town. There is one truck that operates along the R33 (Pomeroy to Tugela Ferry). 	<ul style="list-style-type: none"> Need to provide street bins (steel poles and ash bins) in the town. Engage street sweepers during pension pay-outs in the town as general practise.
	<ul style="list-style-type: none"> There is an existing licensed landfill site. 	<ul style="list-style-type: none"> Provision to make the existing licensed landfill site to meet environmental standards. Thus will allow the landfill to satisfy the condition set by its permit. Consider outsourcing waste collection services with private recyclers
	<ul style="list-style-type: none"> Lack of security in the landfill 	<ul style="list-style-type: none"> Provide stringent security at the landfill site

ISSUES	GAPS AND NEEDS	RECOMMENDATIONS
3.5 Sikhahleni	<ul style="list-style-type: none"> An illegal dumpsite found in this area. No bins or any other formal waste removal services. 	<ul style="list-style-type: none"> Close the illegal dumping and implement a formal transfer station.
3.6 Rorke's Drift	<ul style="list-style-type: none"> No formal waste service exists. 	<ul style="list-style-type: none"> Incorporate a formal waste service Rates must be imposed for waste services for lodges.
	<ul style="list-style-type: none"> No street bins 	<ul style="list-style-type: none"> Provide street bins which need to be collected from the area
	<ul style="list-style-type: none"> No recycling occurs 	<ul style="list-style-type: none"> Any other non-recyclable waste, then municipality to provide waste disposal facilities (Pomeroy landfill) for lodges to dispose of waste. Due to the nature of the business (scattered and secluded facilities); each lodge must have portable skip to be provided for, for later removal to landfill site. This provision will need to be discussed and work shopped with lodges. Municipality must link recyclers to lodges, and indicate these as preferred municipal service providers. Develop standards to deal with lodge waste/recyclers as indicated previously
3.7 Msinga Top area, Cwaka and Mhlangana	<ul style="list-style-type: none"> These are traditional areas, no formal waste services in these areas. 	<ul style="list-style-type: none"> Need to provide street bins (steel poles and ash bins) with staff appointed to empty them frequently. Skips at designated areas with dense population for waste to be temporarily stored and removed to transfer station or landfill site.
	3.7.1 Technical and Operational Issues	
3.7.1.1 Staff and Fleet	<ul style="list-style-type: none"> Lack of security personnel at Pomeroy landfill 	<ul style="list-style-type: none"> Security personnel needed at the landfill
	<ul style="list-style-type: none"> There is only a small number of general workers who assist with waste collection, street sweeping, etc. who are paid through the Food-for-Waste scheme thus not officially employed by MLM 	<p>There is a need to formalise employment of the general workers</p>

ISSUES	GAPS AND NEEDS	RECOMMENDATIONS
	<ul style="list-style-type: none"> Lack of trained staff in waste and environmental issues 	<ul style="list-style-type: none"> The municipality has a Waste Officer that coordinates all activities related to waste management in terms of the Waste Act. The municipality will need to appoint an EMI (Environmental Management Inspectorate) who will be an environmental enforcing official.
	<ul style="list-style-type: none"> There is only one dilapidated truck and just one driver. 	<ul style="list-style-type: none"> Additional drivers required for expansion to existing transport fleet. The Msinga Local Municipality needs to ensure that a full staff compliment is maintained to provide a waste service to the community. Any shortfalls in the number of staff will affect Waste Service delivery to the public. Increase number of vehicles. Second truck needs to be purchased. Strategies for an efficient, affordable and sustainable waste collection system is needed to fully utilize the fleet resources that they have and need to have
	3.7.2 Waste Management in the Municipality	
3.7.2.1 Public Transport Facilities	<ul style="list-style-type: none"> For the bus and taxi rank projects, it should be kept in mind that these activities are also magnets for formal and informal trade activities, which in themselves generate a varied composition of wastes. Therefore, the municipality must also make adequate provision for a waste service at these public transport facilities. 	<ul style="list-style-type: none"> Register / formalise informal traders to increase responsibility for management of waste. Waste collection service, provision for a skip or other waste mechanism should be made.
3.7.2.2 Building and Construction waste	<ul style="list-style-type: none"> This includes building rubble from construction and spoil material from road construction and other activities in the municipality. 	<ul style="list-style-type: none"> Where this occurs, construction waste is to be used as cover at the landfill site. Illegal dumping to be discouraged. Building material may be accepted for free at landfill to offset lack of cover material
	3.7.3 Waste Minimization and Recycling Initiatives	

ISSUES	GAPS AND NEEDS	RECOMMENDATIONS
3.7.3.1 Recycling, Reuse, Recovery And Waste Minimization Initiatives	<ul style="list-style-type: none"> The municipality does not have any recycling policy for either its municipal staff nor for the municipality as a whole 	<ul style="list-style-type: none"> The municipality needs to consider the implementation of a policy to govern recycling, waste minimization, and reuse activities.
	<ul style="list-style-type: none"> Domestic waste at all the landfill sites was observed to contain large amounts of recyclable material despite the recycling activities. This included plastics and paper grades. 	<ul style="list-style-type: none"> Recovery operations for plastic and paper at the landfill site / recycle centre need to be improved to increase the amounts of recyclable materials recovered from the landfill site.
	<ul style="list-style-type: none"> General waste at households was observed to contain a large amount of recyclable material. This included plastic and paper grades. 	<ul style="list-style-type: none"> Recovery of recyclable materials needs to be encouraged at homes and business focal sources. This will reduce the amounts of recyclable waste to landfill site. Public education campaigns required to promote and educate on benefits of recycling. Municipality needs to consider additional public-private initiatives to encourage waste recycling and reuse. This could include promoting recycling of waste in outlying settlement areas and having these removed initially by the municipality. Eventually this activity could be contracted out or 'sold' to a private recycler. The municipality needs to conduct a detailed study to understand the percentages of recyclable materials that form a part of the general waste stream from residential and business areas. This study should also consider what system to employ for removal of these wastes from residential areas to central areas in the municipality, and hence sale to other areas.
	<ul style="list-style-type: none"> There are no accurate records of the quantities of waste generated in different areas of the municipality. It is therefore not possible to set recycling, reuse, recovery and minimization targets. 	<ul style="list-style-type: none"> An accurate method of recording waste dropped off at the landfill sites needs to be established (weighbridge at the landfill) the existing Pomeroy site.

ISSUES	GAPS AND NEEDS	RECOMMENDATIONS
3.7.3.2 Existing Initiatives - “Food-for-Waste Incentive Scheme”	<ul style="list-style-type: none"> For the majority of MLM, there is no existing waste minimizing initiative except for the Keates Drift-Tugela Ferry area whereby a large number of (mostly) female population participate in. This involves sweeping and keeping the main roads clean. They also perform such tasks in common areas. Then the waste is collected by truck. In return, after a certain period, the participants are incentivized with food parcels. 	<ul style="list-style-type: none"> The municipality must encourage such waste scheme and find ways to formalise them. Schools should also participate in such schemes and can be incentivized by things that can motivate them (i.e. soccer balls, books etc.). MLM should also investigate ways to involve other departments/organisations (including food retail stores). These can provide much needed support.
3.7.4 Waste Treatment and Disposal Issues		
3.7.4.1 Pomeroy Landfill Site	<ul style="list-style-type: none"> The Pomeroy waste disposal site is situated in isolation on a road off the R33 Arterial Route in the Pomeroy. It is not an ideal location in terms of: 	<ul style="list-style-type: none"> The site needs to be incrementally rehabilitated, as areas of the landfill are fenced, and must be made to meet environmental requirements and regulations.
	➤ Visual amenity (proximity to the road),	<ul style="list-style-type: none"> Signage is needed from the main road showing directions to landfill
	➤ Near a major tributary of the Tugela River	<ul style="list-style-type: none"> Impermeable sheeting Prevent waste water from reaching the water table as well as the nearby watercourse
	➤ Waste water (leachate) drains onto the river	<ul style="list-style-type: none"> Leachate pond management
	➤ There is no cover material	<ul style="list-style-type: none"> Cover material to prevent waste from blowing all over the place.
	<ul style="list-style-type: none"> The landfill site is fenced however waste material is being blown out of the site. People are dumping waste material outside the boundary of the site. There are also animals (i.e. goats) found eating the waste materials in the landfill. 	<ul style="list-style-type: none"> The fencing work needs to be improved
	<ul style="list-style-type: none"> No landfill audit reports 	<ul style="list-style-type: none"> External and Internal audits need to be conducted

ISSUES	GAPS AND NEEDS	RECOMMENDATIONS
3.7.4.2 Illegal Dumping	<ul style="list-style-type: none"> Illegal dumping is reported to be a problem in various areas within the municipality. 	<p>The following General Provisions to apply to areas where illegal dumping takes place.</p> <ul style="list-style-type: none"> Measures to counter act illegal dumping to be considered (instituting waste collection service in affected area, developing bylaws, law enforcement activities, education and awareness). Providing a waste collection service in areas previously not serviced. Public Awareness (Reduce Reuse Recycle) via schools, shopping centres, pension pay-out points. Public private initiatives - Clean up campaigns including those organised with religious organisations, recycling forums. Sign posting areas where frequent dumping occurs. Identifying known hot spots. Policing / managing known dumping hot spots.

ISSUES	GAPS AND NEEDS	RECOMMENDATIONS
3.7.4.3 General Landfill Provisions		<ul style="list-style-type: none"> • An accurate method of record keeping needs to be implemented at the landfill site. This will assist in providing more accurate information on waste disposal for the municipality and assist in planning additional infrastructure requirements. • Daily and weekly cover requirements as specified in the Minimum Requirements Series must be enforced for the landfill site. • A more stringent level of control of people disposing of waste on site needs to be enforced such that waste is only disposed of in designated areas of the landfill site. This will also prevent having waste that remains uncovered for periods because it was disposed of away from the working face. • There is a need for more comprehensive control of illegal disposal of HCRW at the landfill. • Education of public including medical practitioners is essential. • Additional education of staff working at the landfill site is also required to enforce what types of waste will or will not be accepted on site. • Daily compaction of the waste is required to control litter, rodents, dust control and odour. • Landfill site needs to be signposted.
	3.7.5 Waste Management Education, Campaigns and Awareness	
3.7.5.1 Educational Awareness, Schemes and Campaigns	<ul style="list-style-type: none"> • Waste campaigns are not heavily encouraged at schools 	<ul style="list-style-type: none"> • Schools should be at the forefront in waste minimisation and waste management campaigns as they will help practise measures adopted in their homes and as they grow up • Introduce incentives for schools to partake in campaigns and waste management schemes • Recycling drives that encourages the learners to bring recyclables to schools • Provision for recycling stations

ISSUES	GAPS AND NEEDS	RECOMMENDATIONS
	<ul style="list-style-type: none"> Municipality 	<ul style="list-style-type: none"> Build capacity and raise the skill profile of the trained staff Develop and implement a communication and public awareness programme Develop, implement and Promote inter-municipal waste information workshops Ensure that the public and private sectors understand their specific roles and cooperate and participate in the waste management issues
	<ul style="list-style-type: none"> General Public 	<ul style="list-style-type: none"> Change the historical mind-set around illegal dumping and littering Establish successful awareness campaigns and organisations Ensure a high level of commitment and understand from both the public and industry to strive for a clean environment
	3.7.6 Financial Resources	
3.7.6.1 Waste Budget	<ul style="list-style-type: none"> Lack of funds for waste related services 	<ul style="list-style-type: none"> Develop and implement payment tariff system Develop sound budgeting (including proper financial management) for waste services Look to external funding from other organisations and institutions
	3.7.7 Waste Information Management	
3.7.7.1 Waste Information System	<ul style="list-style-type: none"> Lack of waste information collection, capturing and recording system 	<ul style="list-style-type: none"> Develop a Municipal Waste Information System
	<ul style="list-style-type: none"> Lack of information management and dissemination systems 	<ul style="list-style-type: none"> Collect information on environmental impact and resources in general

4. THE DESIRED END STATE

4.1 AIM OF THE DESIRED END STATE

The desired end state entails identifying priorities and goals that a municipality wishes to attain with regards to waste management. Using the information collected on the historical and present waste management situation, strategic goals for the IWMP should be developed. These should aim to address the gaps and the needs of the community and more importantly should respond to the Waste Act requirements. A program on how these will be attained is developed as an implementation plan. The strategic goals must be set based on the relevant waste legislation, regulations and policies and should be guided by the waste management hierarchy principles. Further, it should also include the setting of specific, achievable targets for waste management such as collection, recycling, recovery and disposal. The setting of goals, objectives and targets must also take into consideration the municipal response to the goals and targets set in the National Waste Management Strategy.

The National Waste Management Strategy provides a set of goals that municipalities must achieve over a period of five years in order to give effect to the Waste Act. It contains an action plan with targets to be achieved by 2016. It is important that there should be a target date if the municipal strategic goals and targets are to be attained within five (5) years from the date the IWMP has been approved by council. **Table 15** below illustrates how strategic goals can be divided into goals requiring immediate attention or short, medium or long term goals.

Table 15: Terms for Strategic Goals

Terms	Duration
Immediate	1 Year
Short	2-3 Years
Medium	3-5 Years
Long	5-10 Years

Long term goals relate to targets that extend beyond the 5-year period of implementing an IWMP.

4.2 GOALS AND OBJECTIVES

There are several focus areas that have been identified to be addressed for the compilation of an IWMP for MLM. Based on the Gaps and Needs identified, summarised below are the Strategic Goals and Objectives, as well as targets that it has set out to achieve in each sector. These have been set out in a table format as explained further in **Table 16** below:

Table 16: Information on the Headings

1. Goal:	Final result that needs to be achieved
2. Objective:	Detailed outline of the specific objective to be met to achieve the goal.
3. Target:	Timeframe for completion of the objective (years). Usually given as the time for completion from acceptance of this IWMP by the municipal council.
4. Progress:	What has been done to date
5. Focus Area:	Specific tasks that will be undertaken to meet the above objectives.

4.2.1 Legislation and Regulation, Organisational and Institutional

Legislation forms the basis for the effective implementation of the IWMP. This also deals with the capacity of the MLM as an institutional and organisational body to ensure the successful implementation of the IWMP.

Table 17: Legislative, Regulatory, Organisational and Institutional

Goal	
Successful implementation and review of the waste management plan from an organisational, regulatory and institutional perspective with all targets set up by the IWMP being realised.	
Objectives	
Establish an organisational structure in line with all the waste management planning requirements and activities.	
To implement appropriate mechanisms for monitoring and enforcement of the waste management by-laws. These may include:	
<ul style="list-style-type: none"> • Monthly inspection of the town streets, • Bi-monthly inspections of the landfill and transfer stations, • Quarterly inspections of the major waste generators, such as large commercial businesses (wholesalers, butcheries etc.), hospitals, and clinics, • Biannual inspections of the tribal courts, schools, libraries, police stations etc, 	
Ensure that enforcement methods are efficient, well-coordinated and effective. This will be achieved by developing a compliance scoresheet for each type of waste generator, regular monitoring as per above item, as well as developing punitive measures for non-compliance.	
Ensure that activities of all relevant municipal staff and departments are well-coordinated and aligned.	
Ensure that there is sufficient capacity and capability in the municipality for planning, contract management, and monitoring or enforcement.	
Review and incorporate additional by-laws required for the implementation of the IWMP.	
Targets	
Target	Term
Via the IWMP process, determine the required number of EMI's for the municipality to enforce by-laws and other waste transgressions. Presently, one full-time EMI has been identified.	Immediate
Appointment of an EMI as per the Waste Act (To be reviewed based on case / workload annually to determine if additional EMI's are required).	Immediate
Obtain Council approval for effective monitoring and enforce waste by-laws	Short
Review/Amend waste by-laws as applicable	Medium
Progress	
Appointment of a suitable and qualified Waste Management Officer as required by the Waste Act	
Focus Area	
The MLM (and Waste Management department that needs to be established) needs to familiarise themselves with the Waste Act, as well as the published DEA NWMS to ensure that the newly adopted legislation is being met and enforced	
Where required, additional municipal by-laws need to be written.	

4.2.2 Waste Collection and Municipal Service Delivery

This relates to the municipality's ability to deliver waste collection service across the entire MLM. Provisions for an appropriate, affordable and sustainable collection service to all people within the MLM and ensure that they live in a healthy and clean environment free of illegal dumping.

Table 18: (Waste Collection and Municipal Service Delivery

Goal	
To provide an appropriate, affordable and sustainable waste collection service to all people within the MLM and ensure that they live in a healthy and clean environment free of illegal dumping.	
Objectives	
To extend quality and sustainable waste management services to all urban and semi-urban areas within the MLM, as well as tribal courts, clinics and schools in rural and traditional areas.	
Initiate and implement appropriate waste collection services to rural and tradition areas, informal settlements, and high-density low income and informal trading areas.	
<p>Target areas would include:</p> <ul style="list-style-type: none"> • Low cost housing in the following areas <ul style="list-style-type: none"> – Pomeroy – Tugela Ferry – Keates Drift • Traditional Areas <ul style="list-style-type: none"> – Cwaka – Msinga Top – Mhlangana – Mabaso – Mchunu – Mthembu – Majozi – Ngubane – Zondi 	
Minimise illegal dumping and littering through providing disposal and collection points in high traffic areas, providing education, and thereafter enforcing by-laws.	
Ensure that all private waste collection and transportation companies are registered with the municipality.	
Targets	
Target	Term
Develop an effective, efficient, sustainable and affordable waste collection strategy that services the entire MLM	Immediate
Develop and enforce a penalty system for illegal dumping activities	Short, relative to above target
Regular (weekly) waste collection service for 50% of households (including indigents)	Medium
Regular (weekly) waste collection service for 75% of households (including indigents)	Long
Regular (weekly) waste collection service for 100% of households (including indigents)	Long
Progress	
Waste collection service along the R33 Arterial between Tugela Ferry and Pomeroy	
Focus Area	
Strategically expand the Waste Management Programme to some rural and traditional areas that do not currently receive any waste collection service.	
Obtain funding in order to source additional servicing personnel and waste collection vehicles in order to meet increased demand.	

4.2.3 Technical and Operational

This will involve addressing possible fleet shortages; refuse receptacle placement and route planning. This area also involves the identification of human resource shortcomings and alteration to employee structures.

Table 19: Technical and Operational

Goal	
Employ the necessary labour (skilled and unskilled) to handle waste management for the MLM. Provide effective waste management service by having adequate and reliable transport fleet that covers MLM in best routes possible. Identify refuse receptacles for storage of waste, and areas in which to locate them (including recycling containers).	
Objectives	
Determine Effective structure (municipal organogram) and extension of Human Resources for waste management	
Ensure that the necessary staff have the correct level of training to perform their roles	
Fleet for waste management to be capable of servicing the entire MLM	
Identify specific areas for Transfer stations and other refuse receptacles (including type)	
Targets	
Target	Term
Develop strategic planning for waste management in the MLM	Immediate
Compile a staff training program to ensure that staff are trained to the correct level to handle waste management services	Short
Implement the necessary strategic planning for fleet, transfer station and waste related infrastructure throughout the identified areas in the MLM	Medium
Implement the necessary strategic planning for fleet, transfer station and waste related infrastructure throughout the entire MLM	Long
Progress	
Appointment of a service provider to develop an IWMP	
Focus Area	
Municipality (and its existing staff) should be aware of waste management practices	

4.2.4 Waste Minimisation and Recycling Initiatives

This area involves the identification of specific waste minimisation strategies, whether it is separation and collection at the source, privatisation of recycling activities, and development of collection points throughout MLM as well as public awareness and education strategies.

It is important to structure waste minimisation and recycling initiatives in accordance with the NWMS 2011 strategy of waste minimisation. Below is the official NWMS Waste Hierarchy adopted:

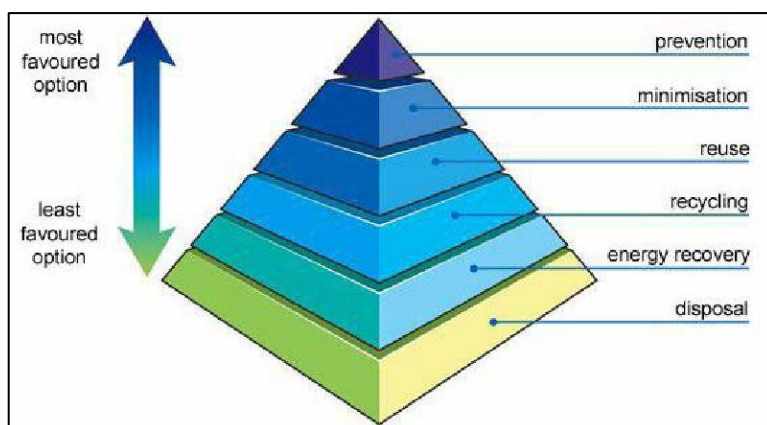


Figure 10: NWMS Waste Hierarchy

Table 20: Waste Minimisation and Recycling Initiatives

Goal	
To implement sustainable recycling within the MLM giving due consideration to social, environmental and economic factors.	
Objectives	
Encourage, educate and promote separation at source, waste minimisation and recycling	
Reduce waste quantities disposed of at landfill sites	
Evaluate and implement appropriate mechanisms to formalise salvaging at the working face of the landfill site	
Ensure that waste minimisation and recycling procedures and practices are adopted by all sectors of society	
Create sustainable employment through local entrepreneur development in waste recycling partnerships	
Encourage private recyclers	
Comply with and enforce government and local policies, strategies and legislation related to waste minimisation and recycling.	
Targets	
Target	Term
Encourage awareness and educate about waste minimisation and recycling	Immediate
Waste minimisation and recycling initiatives at schools, clinics, and other government/municipal centres or buildings	Short
Co-operation of local/private recycling companies to participate in waste recycling in MLM	Short
A target of 25% reduction of domestic and commercial waste (only recyclables) streams disposed to landfill	Short
Focus Area	
MLM's position in waste minimisation and recycling needs to be defined and expanded	
Awareness and promotional campaigns	

4.2.5 Waste Treatment and Disposal

This area relates to the development, upgrading and legislation of disposal infrastructure. This includes the identification of new transfer stations, the permitting of existing unauthorised facilities into transfer stations and the upgrading of the current infrastructure as well as the improvement of management practices to ensure that it complies with legislative requirements.

Table 21: Waste Treatment and Disposal

Goal	
Ensure sufficient long term waste disposal capacity that is environmentally (including legislation) and publicly (socially) acceptable, also ensure that the existing landfill (and future landfills) are appropriately rehabilitated in such a manner so as to minimise the impact on the environment and nearby communities.	
Objectives	
To ensure at least 25 years or more of licensed landfill airspace to serve the current and projected waste disposal needs of the Municipality	
Ensure that the existing Pomeroy landfill meets environment regulation standards and is compliant with the conditions of its permit. This also include rehabilitation works	
Consider the long-term approach for waste disposal beyond 25 years. Identify options to meet future waste disposal needs and develop an optimum strategy for timeous implementation.	
Targets	
Target	Term
Identification of transfer station sites	Immediate
Closure and rehabilitation of all illegal dump sites	Short
Research and identify future landfill sites to meet any increase in demand for waste disposal	Long
Progress	
Closure of illegal dump site in Keates Drift	
Focus Area	
Develop strategies for future waste management planning and implementation	

4.2.6 Waste Management Education, Campaign and Awareness

This ensures that the population within MLM is informed and made aware of waste management and all related planning issues.

Table 22: Education, Campaigns and Awareness

Goal	
Ensure that the population within MLM are informed and made aware of waste management issues in general and of the IWM system and that municipal staff involved with waste management and related issues is competent to implement the plan successfully.	
Objectives	
Develop and implement a communication and public awareness programme	
To build capacity and raise the skill profile of the municipal staff	
Ensure that the public and private sector understand their specific roles and cooperate and participate in the waste management issues	
To have a relatively high level of commitment and understanding from the public and from industry to strive for a clean environment	
To have a number of successful awareness campaigns established within MLM	
Change the historical mind-set around illegal dumping and littering	
Targets	
Target	Term
Recruit environmental/waste educational personnel	Immediate
Develop education and awareness strategies and training material to increase awareness of public	Short
Develop a schools competition programme to encourage school's involvement on waste management issues	Short
50% of the MLM population exposed to information and been made aware of waste management and waste management planning issues by the MLM	Short
100% of the MLM population exposed to information and been made	Medium

aware of waste management and waste management planning issues by the MLM	
Progress	
Capacity building through the Food-for-Waste programme	
Focus Area	
Increase awareness in urban areas as well as broaden the awareness campaigns into all previously un-serviced areas.	

4.2.7 Waste Information Management

This area covers the need for effective record keeping and the development of an information system that allows for the distribution and sharing of available accurate information as well as co-operation of various stakeholders within the municipality.

Table 23: Waste Information Management

Goal	
To have accurate waste information available and an effective waste information management system in accordance with the National Waste Information Regulations.	
Objectives	
To develop an information system to capture relevant data for current operation and future planning, in order to optimise waste management and budgeting	
Establish a monitoring and information system that tracks waste generation, collection, reuse, recycling, reprocessing and disposal in terms of waste flow and facilitate the movement of waste	
Assist in delivery of information on waste services	
Request the retrieval of waste management related information from the private sectors, including types, volumes and frequencies of waste generated	
Participate and contribute to inter-municipal waste information workshops	
Targets	
Target	Term
To have a fully operational Waste Information Management System in place, including any domestic, commercial and industrial database, finances and up-to-date information. Such a system can be used for current operations as well as future planning purposes.	Short
Review Waste Information Management System	Medium
Progress	
Complete study of current waste generation quantities and categories	
Focus Area	
Complete and implement a fully functional Waste Information Management System. A system that is updated regularly (monthly)	

4.2.8 Financial Resources

This area relates to existing and required financial structures and strategies.

Table 24: Goals, Objectives and Targets (Financial Resources)

Goal	
Provide cost effective waste management service	
Objectives	
Develop and implement (and/or improve) payment of service tariffs	
Standardise a tariff structure that is applicable in various degrees around MLM	
Develop sound financial planning (full cost accounting) for financially sustainable waste services.	

Targets	
Target	Term
Conduct full cost accounting for waste services	Immediate
Set and implement tariffs for waste collection and disposal	Short
Allocate budget for waste services from equitable share funding for indigent households	Short
Review and implement tariffs for waste collection and disposal	Medium
Continually review and implement tariffs for waste collection and disposal	Long
Focus Area	
The MLM needs to look at existing tariffs systems and implement by-laws that relate to waste and waste tariff services	
Look to external funding from other organisations/institutions	
Scrutinise budgetary requirements and current operational budget and approach external funder if/when required.	

5. ALTERNATIVES AND SCENARIOS

5.1 IDENTIFYING ALTERNATIVES AND SCENARIOS

The aim of this phase is to identify different alternatives and approaches that will be employed to achieve the desired end state. It is crucial to explore different approaches that can be employed for all aspects to waste management. Msinga Local Municipality must indicate the best possible way of attaining the goals by weighing the costs against the benefits of each.

There are factors that need to be considered for the identification of these alternatives and scenarios for best attaining the desired end state. These include:

- The Waste Act (Act 59 of 2008) requirements should be considered,
- Labour (personnel) capacity and
- Financial resources,

These should decide which of the requirements will be attained in the short-, medium- to long-term and what the implications would be if no action (the “do nothing”) is taken.

During the consultation phase in the development of an IWMP, it is important to make stakeholders aware of the Waste Act requirements so that if there are trade-offs to be made; they too can be involved in prioritising these.

After developing and evaluating alternatives, a service provider must select the best suitable alternative/s for implementation and should determine the costs and final viability of the suggested/proposed alternatives with regard to waste collection, waste transport, waste disposal and waste recycling or waste minimization proposals within a specific period of time. The cost of each of the proposed waste management systems must be established.

These include costs for:

- Additional Personnel (wages, salaries, etc.)
- Transport (fuel, repairs, etc.)
- Operating and maintenance
- Administration and staff training
- Environmental impact abatement and penalties
- Interest and depreciation
- Establishment of waste information system

5.2 ALTERNATIVE ACTION ITEMS

Following the identification of the Gaps and Needs, each recommendation has Alternative Action items that are required to meet each of the recommendations. Therefore, Alternative Action items were developed by work-shopping the recommendations which stem from the Gaps and Needs Analysis. Consequently, these Alternative Actions are the ‘wish list’ or preferred Scenario options for Msinga Municipality. These Alternative Actions were also developed with the technical personnel (personnel responsible for waste service delivery) from Msinga Municipality and should therefore be implementable by the municipality. The Alternative Actions are also financially viable within the overall timeframes supplied by municipal personnel, where budget will be made available or motivated by the responsible department in each municipality.

Meeting the objectives of the Alternative Action items indicated, are normally a requirement of national policy or legislation for the GAP and NEEDS. However, a number of Alternative Actions may have been identified in sequence i.e. The municipality will need to first develop policy and then bylaws to address a particular objective.

5.3 CRITICAL ITEMS TO BE ADDRESSED BY THE MUNICIPALITY

5.3.1 Critical Action Items

- The Pomeroy Landfill site to operate at a B+ grading.
- Establish a recycling plant at the Pomeroy landfill site. The plant will make a provision to remove recyclable materials from the waste stream coming to the landfill through a mini recycling facility (MRF). The landfill will also need rehabilitation. This project could potentially reduce total waste being landfilled and therefore extend the life of the site further.
- A need for ongoing training of staff at landfill in terms of what waste can be accepted.
- Basic requirements as relates to DWAF Minimum Requirements Series for the operation of the site. This is currently not taking place and a number of infractions of these requirements are occurring.
- Commence with the establishment of recycling drop off centres.
- Institute procedure to accurately record weight / mass of waste being dumped at landfill.
- Municipality to engage in a general review (and development) of tariffs for the services provided.
- Establish functioning Waste Information System (WIS).
- Adopt provisions of this IWMP.
- Report on implementation of the IWMP.
- Appoint an Environmental Monitoring Inspector (EMI) in terms of legislation.
- Municipality to develop waste management bylaws to govern the practical application of the IWMP.
- Conduct recycling study to understand quantities of recyclable waste being generated in the LM and develop policy for recycling. Study to set waste recovery targets based on potential amounts of recoverable waste, and indicate how to involve schools, clinics and in the district.
- Msinga LM to create planning forum to co-ordinate EIA's, IDP and proposed developments, to ensure that they conform to waste management requirements.

5.4 IMPLICATIONS OF THE “DO NOTHING” BASELINE

The “do nothing” baseline provides insight into the consequences of failing to implement the provisions of the IWMP. The “Do nothing scenario” is described in more detail in the KZN DAEA IWMP Guideline Document. Please refer below **Table 1** for the Implications of the “Do Nothing” baseline should any of the identified objectives not be met.

5.4.1 Legal Issues

5.4.1.1 National Waste Management Strategy

Table 25: Implications for the “Do Nothing” Baseline

Objectives to be met	Implications for the “Do Nothing” Baseline (Failure to Implement)
<ul style="list-style-type: none"> • The Goals and Objectives of the NWMS 	<ul style="list-style-type: none"> • Subsequent IWMP not being approved/ratified by Provincial Department. • Strategic/development principles for better waste management not being implemented in MLM.

5.4.1.2 Bylaws

Objectives to be met	Implications for the “Do Nothing” Baseline (Failure to Implement)
<ul style="list-style-type: none"> • Bylaws to be drafted (See Section 9.1 and 9.5 of Waste Act) covering the following: <ul style="list-style-type: none"> ➤ Provision to control illegal dumping and abandoned articles in Bylaws ➤ Liability to pay for waste services rendered to householders/companies and institutions. ➤ Describe the various waste types and requirements for the general management for business, residential, industrial, garden, building rubble, and health care risk in the municipality (to promote separation at source, recycling etc. and to develop municipal standards). Include a description of general waste for collection by the municipality, and an indication of those for which a private company will need to be engaged. ➤ Bylaw requirements for the transportation and transfer of waste in line with national norms. • Consideration for establishment of WIS. 	<ul style="list-style-type: none"> • Contravention of the waste act. • Failure to set up regulatory mechanisms to control waste management in the LM. • Poor control of waste at each household/companies and institutions. • Failure to implement an effective separation strategy at source.

5.4.1.3 Waste Act

Objectives to be met	Implications for the “Do Nothing” Baseline (Failure to Implement)
<ul style="list-style-type: none"> • Development of standards for the management of waste in the municipality (See Section 9.3 of the Waste act). These should cover: <ul style="list-style-type: none"> ➤ For the separation, and storage of solid waste collected by the municipal service or disposed of at a municipal waste disposal facility; ➤ For the management of solid waste disposed of by the municipality or at a waste disposal facility owned by the municipality, (including avoidance and minimisation of the generation of waste and the re-use, recycling and recovery of solid waste); ➤ The directing of solid waste that is collected as part of the municipal service or that is disposed of by the municipality or at a municipal waste disposal facility to specific waste treatment and disposal facilities; and ➤ Local standards for special events (including) soccer matches at any of the 	<ul style="list-style-type: none"> • Contravention of the waste act. • Failure to set up regulatory mechanisms to control waste management in the LM. • Poor control of waste at each household/companies and institutions. • Failure to implement an effective separation strategy at source.

proposed or existing halls/sports fields	
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5.4.1.4 Integrated Waste Management Plan

Objectives to be met	Implications for the “Do Nothing” Baseline (Failure to Implement)
<ul style="list-style-type: none"> • The municipality to develop an IWMP (See Section 12.1 of the Waste Act): • The municipality will need to adopt and implement the broad findings of the IWMP and incorporate these findings in to the municipal IDP for implementation. • The municipality will need to report annually on the implementation of the IWMP as specified in Section 13.3 of the Waste Act, and in the prescribed manner as laid out in the Act. 	<ul style="list-style-type: none"> • Contravention of the Waste Act.

5.4.2 Waste Collection and Municipal Service Delivery

5.4.2.1 Tugela Ferry

Objectives to be met	Implications for the “Do Nothing” Baseline (Failure to Implement)
<ul style="list-style-type: none"> • Provide skips in the town of Tugela Ferry • Roll out waste collection service in Tugela Ferry to areas that fall outside the area between the Municipal Library and Church of Scotland Hospital along the R33. • Need to provide street bins (steel poles and ash bins or other alternative study design). • Engage street sweepers during pension pay-outs as well as daily in Tugela Ferry to areas that fall outside the area between the Municipal Library and Church of Scotland Hospital along the R33. • Provision for transfer station (temporary waste storage for later disposal at Pomeroy landfill) and recycling centre 	<ul style="list-style-type: none"> • Accumulation of waste. • Pollution of the general living environment. • Dirty streets / health hazard. • Incidents of pollution during pension payouts

5.4.2.2 Keates Drift

Objectives to be met	Implications for the “Do Nothing” Baseline (Failure to Implement)
<ul style="list-style-type: none"> • Need to provide street bins (steel poles and ash bins or other alternative study design). • Engage street sweepers during pension pay-outs as well as daily sweeping by the commercial node of Keates Drift. • Waste removal services for this area (e.g. tractor trailer type trucks to remove waste) • The illegal site needs to be closed and make provision for a transfer station and recycling centre 	<ul style="list-style-type: none"> • Accumulation of waste. • Pollution of the general living environment. • Dirty streets / health hazard. • Incidents of pollution during pension payouts

5.4.2.3 Pomeroy

Objectives to be met	Implications for the “Do Nothing” Baseline (Failure to Implement)
<ul style="list-style-type: none"> • Need to provide street bins (steel poles and ash bins or other alternative study design) in the town. • Engage street sweepers during pension pay-outs in the town as general practise. • Provision to make the existing licensed landfill site to meet environmental standards. Thus will allow the landfill to 	<ul style="list-style-type: none"> • Accumulation of waste. • Pollution of the general living environment. • Dirty streets / health hazard. • Incidents of pollution during pension payouts • Contravention of the EIA Regulations

satisfy the condition set by its permit. <ul style="list-style-type: none"> Consider outsourcing waste collection services with private recyclers Provide stringent security at the landfill site 	
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5.4.2.4 Sidakeni

Objectives to be met	Implications for the “Do Nothing” Baseline (Failure to Implement)
<ul style="list-style-type: none"> Need to provide street bins (steel poles and ash bins or other alternative study design) in the town. Engage street sweepers during pension pay-outs in the town as general practise. Provision to make the existing licensed landfill site to meet environmental standards. Thus will allow the landfill to satisfy the condition set by its permit. Consider outsourcing waste collection services with private recyclers Provide stringent security at the landfill site 	<ul style="list-style-type: none"> Accumulation of waste. Pollution of the general living environment. Dirty streets / health hazard. Incidents of pollution during pension payouts Contravention of the EIA Regulations

5.4.2.5 Rorke’s Drift

Objectives to be met	Implications for the “Do Nothing” Baseline (Failure to Implement)
<ul style="list-style-type: none"> Incorporate a formal waste service Rates must be imposed for waste services for lodges. Provide street bins (steel poles and ash bins or other alternative study design) which need to be collected from the area Any other non-recyclable waste, then municipality to provide waste disposal facilities (Pomeroy landfill) for lodges to dispose of waste. Due to the nature of the business (scattered and secluded facilities); each lodge must have portable skip to be provided for, for later removal to landfill site. This provision will need to be discussed and work shopped with lodges. Municipality must link recyclers to lodges, and indicate these as preferred municipal service providers. Develop standards to deal with lodge waste/recyclers as indicated previously 	<ul style="list-style-type: none"> Accumulation of waste. Pollution of the general living environment. Dirty streets / health hazard. Incidents of pollution during pension payouts

5.4.2.6 Msinga Top area, Cwaka, Mhlangana

Objectives to be met	Implications for the “Do Nothing” Baseline (Failure to Implement)
<ul style="list-style-type: none"> Need to provide bins (steel poles and 	<ul style="list-style-type: none"> Accumulation of waste.

ash bins or other alternative study design) at areas that are within 300m radius from school, clinic, tribal court or any other node; with staff appointed to empty them frequently. <ul style="list-style-type: none"> • Skips at designated areas with dense population for waste to be temporarily stored and removed to transfer station or landfill site 	<ul style="list-style-type: none"> • Pollution of the general living environment. • Dirty streets / health hazard. • Incidents of pollution during pension payouts
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5.4.2.7 Proposed/under Construction Projects

Objectives to be met	Implications for the “Do Nothing” Baseline (Failure to Implement)
<ul style="list-style-type: none"> • More waste staff to service additional waste generation area as and when required, the existing staff complement are to be reviewed on an annual basis, to ensure that these are providing a suitable service to the public. • Provision should be also be made for <ul style="list-style-type: none"> ➢ Additional vehicles ➢ Increase in frequency of waste collection ➢ More street bins and containers • Frequent street sweeping 	<ul style="list-style-type: none"> • Accumulation of waste. • Pollution of the general living environment. • Dirty streets / health hazard. • New developments remaining under serviced.

5.4.2.8 Building and Construction Waste

Objectives to be met	Implications for the “Do Nothing” Baseline (Failure to Implement)
<ul style="list-style-type: none"> • Where this occurs, construction waste is to be used as cover at the landfill site. • Illegal dumping to be discouraged. 	<ul style="list-style-type: none"> • Unnecessary accumulation of construction waste. • Increased illegal dumping.

5.4.3 Waste Minimisation and Recycling Initiatives

5.4.3.1 Recycling, Reuse, Recovery And Waste Minimization Initiatives

Objectives to be met	Implications for the “Do Nothing” Baseline (Failure to Implement)
<ul style="list-style-type: none"> • The municipality to provide containers for the recycling of waste materials (Section 23.2 of the Waste Act). • Areas to consider for recycling centres include: <ul style="list-style-type: none"> ➢ Tugela Ferry, ➢ Keates Drift ➢ Pomeroy ➢ Rorke’s Drift • The municipality needs to consider the implementation of a policy to govern recycling, waste minimization, and reuse 	<ul style="list-style-type: none"> • Contravention of the Waste Act. • Hap-hazard and unplanned waste recycling practices. • Under recovery on recyclable waste materials. • Public failing to realise why recycling is beneficial. Hence failing to come on board with recycling strategy.

Objectives to be met	Implications for the “Do Nothing” Baseline (Failure to Implement)
<p>activities.</p> <ul style="list-style-type: none"> • Recovery operations for plastic and paper at the landfill site / recycle centre need to be improved to increase the amounts of recyclable materials recovered from the landfill site. • Recovery of recyclable materials needs to be encouraged at homes and business focal sources. This will reduce the amounts of recyclable waste to landfill site. • Public education campaigns required to promote and educate on benefits of recycling. • Municipality needs to consider additional public-private initiatives to encourage waste recycling and reuse. This could include promoting recycling of waste in outlying settlement areas and having these removed initially by the municipality. Eventually this activity could be contracted out or ‘sold’ to a private recycler. • The municipality needs to conduct a detailed study to understand the percentages of recyclable materials that form a part of the general waste stream from residential and business areas. This study should also consider what system to employ for removal of these wastes from residential areas to central areas in the municipality, and hence sale to other areas. • An accurate method of recording waste dropped off at the landfill sites needs to be established (weighbridge at the landfill) the existing Pomeroy site. 	

5.4.4 Waste Treatment and Disposal Issues

5.4.4.1 Pomeroy Landfill Site

Objectives to be met	Implications for the “Do Nothing” Baseline (Failure to Implement)
<ul style="list-style-type: none"> • The site needs to be incrementally rehabilitated, as areas of the landfill are completed and fenced, and must be made to meet environmental requirements and regulations. • Signage is needed from the main road showing directions to landfill • Impermeable sheeting • Prevent waste water from reaching the water table and nearby watercourse 	<ul style="list-style-type: none"> • Contravention of the EIA regulations. • Site may be closed and decommissioned.

<ul style="list-style-type: none"> • Leachate pond management • Strategically cover material to prevent waste from blowing all over the place. • The fencing work needs to be improved • External and Internal audits need to be conducted 	
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5.5 PUBLIC PARTICIPATION

Public participation may be necessary for the councils of the municipality to have the Msinga IWMP approved. The IWMP will either need to go out for comment to the public for comments or be submitted as part of the IDP process.

An Executive Summary of the IWMP can be left at public libraries (such as the Msinga Municipal Library in Tugela Ferry) and an advert can be placed in a local paper announcing the project and availability of the Report. The implementation report should also be made available to waste contractors in the area for their comments.

5.5.1 Public Awareness and Communication

Two specific clauses of South Africa's Constitution must be considered, namely:

- Section 24 of the Bill of Rights guaranteeing environmental rights for the people of South Africa; and
- Section 32 covering the Constitutional right concerning access of the public to information held by the state or persons concerning the state of the environment, and how it affects their health and well-being.

Coupled with these (as supported by National Environmental Management Act (NEMA, 1998) and National Environmental Management: Waste Act (NEMWA, 2008), the White Paper on Integrated Pollution Control and Waste Management (2000) has the stated vision: *"To ensure sustainable and equitable use of air, water, and soil/land by empowering all South Africans to participate through a holistic approach to the creation, maintenance and management of a clean and healthy environment as envisaged by the Constitution."*

In order to manage waste correctly (optimally), people need to have access to information to enable them to participate from a base of knowledge and expertise. All citizens of South Africa must adopt a culture of waste avoidance or minimisation, in order to create the context within which waste reduction can be achieved to ensure the sustainable use of natural resources. Where this cannot be avoided waste needs to be re-used or recycled. Disposal is the last option. Environmental education and capacity building are vital to create the context within which the need for waste reduction and correct disposal can be understood, promoted and practiced.

5.5.2 Suggestions for Public Awareness & Communication

An Awareness Campaign is crucial to make people aware of the Integrated Waste Management plan for the Municipality. This awareness campaign needs to have the full support of the Municipality and other Government Departments; including the Department of Environmental Affairs, Department of Health and the Department of Education.

This campaign needs to look at an integrated approach to community awareness; this can include one or more of the following campaigns:

- Site visits by schools, community groups and businesses to the recycling centre.

- Awareness programs at schools, crèches, hostels etc.
- Town and school clean up campaigns, with prizes for the most waste collected.
- Awareness through plays, pantomimes, dances and song.
- Teaching of community members to use waste as a resource in their homes and to make crafts, which can be sold.
- Encouraging schools to establish recycling centres and use as much of the waste for arts, crafts, gardening and functional gadgets.
- Environmental Clubs.

5.5.3 *Public Information*

The establishment of a library with information on recycling, waste minimization and integrated waste management is recommended. In the event of the public looking for information, a central office should have a selection of books on the above subjects and numerous national and international publications on waste issues. This could either be located at the existing library or the Environmental Department municipal offices.

5.5.4 *Participation*

In order to enhance the public environmental awareness campaigns some recommendations are made below:

- The environmental advisory unit within the Department of Environmental Affairs should be engaged, as their contribution to the programme could be invaluable,
- The establishment of environmental youth clubs is seen as an integral part of the programme that has a potential to draw youth involvement into implementing environmental outreach programmes,
- Community meetings, roadshows, interaction through local radio stations and door-to-door distribution of information are tools that should be implemented to encourage recycling activities,
- Local schools should be encouraged to participate in recycling activities and environmental education should be included in the school curriculum.
- Ward Councilors could be encouraged to revive or set up environmental desks where street representatives could be allocated.
- Meeting with traditional leadership to encourage their ownership and communication of such initiatives into the rural areas.
- Publication of articles in local newspapers, printing of posters and information leaflet.

5.6 **ALTERNATIVES AND SCENARIOS**

The Goals and Objectives identified in the previous section must now be evaluated and alternative solutions developed to meet them. From the various alternative solutions developed, a number of feasible scenarios (taking into account various aspects of the waste management cycle) will be compiled. These scenarios will then be evaluated in terms of a number of criteria to ensure that the most suitable scenario is selected for implementation

5.7 **ACHIEVING PROPER WASTE MANAGEMENT IN MSINGA LOCAL MUNICIPALITY**

In attaining enrolment for proper waste management for the entire of the municipality, the following should be considered.

5.7.1 Collection Services

The three main aspects of collection services are:

- The waste receptacles,
- Collection frequency, and
- Position of receptacles.

5.7.1.1 Waste Receptacles

There are a number of waste receptacles that can be used such as 85 litre bins, 240 litre trolley bins, skip containers, etc. The receptacle will be dependent on the volume of waste generated at the collection point, the type of waste, the type of collection vehicle and the cost of the service to the community. In densely populated areas such as larger cities, the 240 litre wheelie-bin system is fairly common. This is due to the fact that there is generally more waste in these areas requiring larger waste receptacles. These wheelie-bins are emptied mechanically into the collection vehicle. There is however a cost implication since these containers are fairly expensive and costs must somehow be recovered, usually directly influencing the cost of the service. It is however a once off capital cost which might be weighed against the continuously monthly cost of bin liners.

The most commonly used system is the black bag system. Usually a bin liner (black bag) is placed in an 85 litre container (dustbin) and used for disposal purposes. The bag is then removed from the bin and placed on the sidewalk for collection. Bags can be picked up by hand and dropped into the collection vehicle.

In more rural areas almost any type of receptacle is used, depending on how formal the collection system is. In some rural or less affluent areas skip containers are placed at strategic points. The community may then be responsible to bring their waste and dispose of it in the skip containers from where it is collected. The level of co-operation from the community usually determines the success of such a system.

For commercial collection, i.e. restaurants, shops, etc., a vast number of receptacles is used. In most instances the type of receptacles are determined by the type and volume of waste disposed of as well as the type of service rendered. In smaller towns the municipality usually renders the service and they provide the receptacles. In larger towns there are sometimes private contractors collecting waste from commercial collection points. SiVEST witnessed glass bottle waste collection outside a home in Pomeroy.



Plate 1: Glass bottle collection in Pomeroy

Generators of industrial waste usually dispose of their waste themselves, or use a private contractor. The receptacles used are usually skip containers.

To summarise, the type of receptacle will be dependent on what the community can afford, the volumes of waste generated, the type of waste and the special needs of the community.

5.7.1.2 Collection Frequency

The collection frequency is dependent on the volumes of waste generated, the availability of the equipment and the level of service. The norm is that domestic collection is done once a week in most areas. Commercial collection is dependent on the volumes generated and the types of waste. A restaurant, for instance, will have their waste removed up to four times a week should the volumes require it. This is due to the fact that most of their waste is food residue that can cause an odour and pest problem within a day or two.

5.7.1.3 Placement of Receptacles

In most instances domestic waste receptacles are placed on the pavement on the day of collection. This allows for easy access to the receptacle and saves on actual collection time. In some instances, collection of commercial receptacles is done from the actual premises.

5.7.2 Waste Management Equipment

The type of equipment is usually determined by the cost of the service to the residents, the condition of the collection roads (surface, alignment, etc.), the distance to the landfill and the number of collection points serviced per day.

5.7.2.1 Cost of Equipment

There is a wide range of collection equipment that can be utilised for collection equipment. This can range from a tractor and trailer system (+/- R 360 000) up to a top of the range REL (+/- R 1 100 000). It is vital that the right equipment is utilised for the right conditions and type of service required. This will be clarified in the following points.

5.7.2.2 Conditions of Collection Roads

The road condition that the collection vehicle has to drive plays a major factor when deciding on a particular collection vehicle. If one has to compare a rural road full of potholes to a road in a city suburb, a tractor and trailer would be more suitable in the rural application as opposed to a state of the art 20 m³ REL, which is not built to drive on poorly maintained roads. The maintenance cost would be above normal for an REL to drive these roads on a daily basis due to wear and tear on components. A tractor and trailer, which is a much more robust type of system, will be better suited to such conditions. In an urban environment a tractor and trailer will be less suited as the landfill is usually far from the collection areas and will take too long to drive to the landfill and back.

5.7.2.3 Distance to the Landfill

As discussed above, distance to the landfill plays an important role. For instance if the landfill is 20 km from the collection area, a tractor and trailer will spend most of the time driving from the collection area to the landfill and back. A general rule is that a tractor and trailer combination should not drive further than 7 km from the collection area to the landfill. For distances above 7 km, alternative types of vehicles should be considered.

There is a collection system using a mobile compactor with a demountable container. This can be used in various applications. Once the container is full, it is demounted and left for a 'Roll-on Roll-off' truck to collect. The collection vehicle therefore does not waste any time driving to the landfill and back.

Another possible application will be in a regional context where the vehicle collects waste in a certain area, leaves the container at a designated point and moves on to the next area. The container will then be collected by a "Roll-on Roll-off" truck for disposal at the landfill.

5.7.2.4 Number of Collection Points

The number of collection points becomes critical in an urban area where a 20 m³ REL collects up to 1 200 service points per day. A collection vehicle's sole purpose should be to collect waste and not spend time driving from the collection area to the landfill and back. Aspects such as compaction also play an important role. A 20 m³ REL can collect up to 60 m³ of waste at a time because of a one to three (1:3) compaction ratio, while a tractor/trailer combination can collect only 5 m³ to 10 m³ at a time before it has to offload. The tractor/trailer therefore has to make a lot more trips to the landfill than a 20 m³ REL. The REL therefore has more time for the collection and service of more points. It must also be noted that the "runners", collecting and loading the collection vehicle, are idling while the vehicle is on the road to the dumpsite and back.

5.7.2.5 Landfill Equipment

On the larger landfills a landfill compactor, loader, water container and tipper will be found to ensure effective operating conditions. For smaller landfills a TLB will handle waste effectively enough and on communal landfills where the trench system is used, a machine is only required part time. The type of equipment will depend on the type of operation (trench, cell, etc.) and the volume of the waste generated.

Compaction is usually an important factor since this allows for more waste to be disposed of at a landfill thereby prolonging the life of the landfill. Economics however play an important role, since the volume of waste has to justify the type of equipment. It is of no use using a 30-ton landfill compactor, capable of handling over 500 tons of waste per day, on a landfill only receiving 10 tons per day. Such a machine cost in the region of R 2 600 000 and operating cost is in the region of R 180.00/hour without the cost of the operator or maintenance costs.

From the above it is evident that the choice of equipment is very important to ensure the correct equipment is used for the correct application.

The following pictures represent some of the equipment mentioned above.



Plate 2: 12m³ REL



Plate 3: Wheelie Bin sizes

5.7.3 Waste Collection and Municipal Service Delivery

5.7.3.1 Goal

To provide an appropriate, affordable and sustainable waste collection service to all people within the MLM and ensure that they live in a healthy and clean environment free of illegal dumping.

Objective 1:

To extend access to quality and sustainable waste management services to all areas within the MLM.

Objective 2:

Initiate and implement appropriate waste collection services to rural and tradition areas, informal settlements, and high-density low income and informal trading areas. This should happen at all times during the day to create awareness about waste management issues within the community and thereby empower communities to take responsibility for the cleanliness of their surrounding environment

Msinga Municipality is currently delivering a refuse removal service in almost all the urban areas (i.e. Pomeroy and Tugela Ferry). The rural/traditional areas however do not receive a regular waste removal service and they need to be incorporated in the waste disposal service area. New residential developments are planned within the Local Municipal area where refuse collection will have to be rendered in future.

It is essential that in conjunction with the Planning Department that future residential and business area expansion are catered for in terms of refuse removal. This will allow the Municipality to, at an early stage, determine the possible costs involved and therefore will be able to adjust their budget accordingly. This will allow the Msinga LM to service the new areas when they are developed.

Objective 3:

To minimise illegal dumping and littering through sustained clean-up programmes, education and by-law enforcement.

It is imperative that the Msinga LM as a municipality develops and implements a system to minimises or stops illegal dumping within its jurisdiction. The major problem facing the MLM is that they do not have the specific manpower to police the illegal disposal of waste. Within the serviced areas it is easier to regulate illegal dumping and introduce a penalty system for offenders. There are several actions the Msinga LM can take to minimise illegal dumping and introduce such a penalty system.

The first is that the MLM must compile a standard set of By-Laws which can be used by each Local Municipality. The Bylaws must allow the Municipality to issue spot fines for residents caught dumping waste in illegal areas. This will to a certain degree reduce and prevent illegal dumping within the town boundaries. The disadvantage is that it will not reduce dumping outside the town boundary and it will increase the pressure on already limited human resources.

A second option will be to introduce community awareness whereby a community watch movement is introduced. This will limit the pressure on the human resources of the municipality as neighbourhood watch systems are put in place. Incentives such as discount on regular fees for "clean" neighbourhoods can be introduced to encourage these activities.

A third option is the provision of garden/domestic refuse skips (**Plate 3**) at strategic locations throughout the town to minimise travelling distances for the general public. The Municipality can then remove the refuse on a monthly basis or on ad hoc basis when needed.

It is recommended that a combination of the above be implemented to find an effective solution to illegal waste. The standard new bylaws will provide the municipality to officially produce policies and strategies that will benefit the community. Through community awareness and a neighbourhood watch system the residents will have all the information regarding the disposal of waste in their area. They will also be aware of the incentive scheme to prevent illegal dumping from taking place within their surrounds. To prevent illegal dumping outside of town garden refuse skips should be placed at strategic location to provide convenient access to a dumping facility.



Plate 4: Examples of different size refuse skips

















BIN SIZES			
	BIN SIZES	WHEELIE BINS	6' x 4' BOX TRAILERS
	 2m ² MICK'S SKIPS 1300 660 940	=  x 8 or  x 2	
	 3m ² MICK'S SKIPS 1300 660 940	=  x 12 or  x 3	
	 4m ² MICK'S SKIPS 1300 660 940	=  x 16 or  x 4	
	 6m ² MICK'S SKIPS 1300 660 940	=  x 24 or  x 6	

Plate 5: Refuse skip sizes relative to wheelie bins and trailers



Plate 6: Examples of Recycling Bins

5.7.4 Technical and Operational

5.7.4.1 Goal

Provide effective waste management service by having adequate and reliable transport fleet that covers MLM in best routes possible. Identify refuse receptacles and employ the necessary labour (skilled and unskilled) to handle waste management for the entire MLM.

Objective 1:

Effective Structure and Extension of Human Resources

Msinga Local Municipality at the moment has a shortage of personnel in both the refuse removal and landfill management areas. The Pomeroy Landfill site is not manned and will necessitate that the MLM makes provisions to have personnel at the sites for proper management of the sites.

MLM should assess their staffing needs on a regular basis and ensure that the staff complement complies with service delivery requirements taking into consideration the possible expansion of the service delivery area.

Succession planning and restructuring should be done to accommodate the sick and the old to ensure continued service delivery.

Objective 2:

Necessary staff training

The delivery of an effective refuse delivery service and efficient waste management within the Municipal Areas depends on the ability of the staff to perform their specific functions. It is therefore a non-negotiable that staff is trained to perform their specific duties. Depending on the level of training required, general labourer versus compactor operator, it has to be decided whether to provide in-house training or whether to provide the employee with specialised training. In-house training should only be attempted if the capacity and knowledge exist within the Municipality. Based on the fact that for lower levels employees the knowledge is available within the Municipality, it is recommended that specialists be obtained to provide more specialised training.

Objective 3:

Fleet for waste management to be capable of servicing the entire MLM

Msinga LM does not have sufficient equipment to deliver an effective service in their existing municipal area. They purchased a Mercedes Iveco truck in 2004 for refuse collection.

It is therefore recommended that a vehicle replacement plan be compiled to ensure that future planning for the replacement of the vehicles is done at the appropriate time. MLM should inspect the vehicle(s) and establish a lifespan for each of the vehicles based on the general wear and tear of the vehicle. This will be influenced by the specific route and conditions of the road that the vehicle has to travel. The current condition of the vehicles should also be taken into account. This investigation will determine which vehicles are due for replacement first and municipality will be able to budget for such vehicles. Due to cost concerns the municipality will also be able to divide the capital cost of the vehicles over more than one financial year. The replacement of old and unreliable vehicle(s) is a matter of urgency as this may in future undermine the effectiveness of the current refuse removal system.

With the purchase of the new vehicles it is essential that the municipality negotiate with the various suppliers for the maintenance of the vehicles. The older vehicles are still maintained by the municipality, but the phased replacement of the vehicles will allow for the regular service of the vehicles by the supplier. This will prolong the lifespan of the vehicles as well as ensuring that they are more reliable.

Objective 4:

Transfer stations and other refuse receptacles should be strategically placed in major towns and other common areas.

5.7.5 Waste Minimisation and Recycling Initiatives

5.7.5.1 Goal

Objective 1:

To implement sustainable recycling within the MLM giving due consideration to social, environmental and economic factors.

There are no recycling activities within the entire municipal area. The municipality has to encourage recycling by providing measures to increase the convenience of recycling for the average person. Recycling activities tend to fail due to the effort required from the community. MLM therefore can place recycling containers at central and visible locations to maximise exposure and convenience. Community awareness about recycling and recycling initiatives must also be increased through advertisements and the distribution of flyers and letters.

There is also a national initiative that will put a levy on the purchase of new and retread tyres. This levy will go into a national fund that will be responsible for the disposal and possible recycling of used tyres

Objective 2:

Ensure that waste minimisation procedures and practices are adopted by all sectors of society.

Waste minimisation and recycling at source is more effective than recycling since it reduces the removal and transport costs. It is therefore recommended that waste sorting and minimisation be encouraged amongst the businesses in the Municipal areas. It is recommended that a system be implemented whereby businesses within the community are billed for waste removal based on the number of receptacles or mass collected from their premises. They therefore effectively

receive a discount for in house recycling activities, as it will limit the number of receptacles collected.

Objective 3:

Develop business opportunities from waste collection and encourage private recyclers

The provision of permits and creation of incentives for private businesses to undertake waste collection and separation should be investigated and promoted, including waste metals, glass, paper and plastic.

The development of arts and crafts initiatives with indigent members of the community to create artworks or crafts from waste material, and then to be provided with avenues and markets where these items could be sold, e.g. table place mats or animal figures from chip packets. The creation of picture frames from bottle tops, etc.

Incentivise indigent members of the community to be remunerated with food parcels or funds, for the collection and separation of waste, and potentially the transport of this waste to the transfer stations.

5.7.6 Waste Treatment and Disposal

5.7.6.1 Goal

Objective 1:

Ensure that the existing Pomeroy landfill meets environment regulation standards and is compliant with the conditions of its permit. This also include rehabilitation works

The Pomeroy Landfill site is properly fenced with a guard house at the entrance gate to control access. The guard house, however, does not have power, or ablution facilities. No Waste personnel are present on the site to supervise operations. Waste is deposited over a large area and not compacted or covered. Very little waste separation takes place. Animals, especially goats, as well as crows and ravens, are also feeding on the site. The site should be operated in accordance with its permit conditions and the Minimum Requirements.

Objective 2:

Consider the long-term approach for waste disposal beyond 25 years. Identify options to meet future waste disposal needs and develop an optimum strategy for timeous implementation.

Identify Transfer station

Transfer Stations, just as is the case with landfill sites, need an Operational Manual for effective management of the site. Operation Manuals need to be compiled for the identified transfer stations. The Operational Manual for transfer stations will differ from the operational manual for a landfill site due to the fact that the transfer station will not permanently store waste. It is recommended that an appropriate consultant be appointed for the compilation of the Operations Manuals.

5.7.7 Waste Management Education, Campaign and Awareness

5.7.7.1 Goal

Ensure that the population within MLM are informed and made aware of waste management issues in general and of the IWM system and that municipal staff involved with waste management and related issues is competent to implement the plan successfully.

Objective 1:

Develop and implement a communication and public awareness programme

Msinga Local Municipality presently does not have any formal community awareness campaigns that are directed at informing the general community with regards to disposal and recycling.

A top down approach by the LM rely heavily on non-payment penalties to ensure that residents comply with legislation. Recycling and waste minimisation initiatives however, are not included in the normal service delivery and can only be effectively achieved with the co-operation of the residents.



Plate 7: Goat feeding on waste in Keates Drift



Plate 8: Goats feeding on waste in Pomeroy



Plate 9: Cow feeding on waste in Pomeroy

It is therefore vitally important that the community is made aware of initiatives, waste recycling activities and the advantages of waste minimisation and recycling by the MLM. This can either be achieved by advertisements and notices in the local newspapers or by providing information regarding these initiatives on the municipal bills distributed each month. The municipality can also conduct a road show to all the towns to demonstrate to and inform people of waste related issues.

5.7.8 Waste Information Management

5.7.8.1 Goal

To have accurate waste information available and an effective waste information management system

Objective 1:

To develop an information system to capture relevant data for current operation and future planning, in order to optimise waste management and budgeting

The main objective would be to develop and maintain a Waste Information System (WIS). This system would allow for the keep of comprehensive records of waste disposal and collection on which informed decision-making can be based and to comply with the reporting requirements of the relevant authorities such as DEA.

The costs involved in the development of a WIS will vary depending on the structure and contentiousness of the area. The National Department of Environmental Affairs have developed a generic WIS that may be provided to the various municipalities for implementation.

Objective 2:

Participate and contribute to inter-municipal waste information workshops

The current difference in service delivery management within the KwaZulu-Natal Province necessitates that frequent information sharing sessions be held to share capacity building information. Another option is to provide quarterly reports regarding waste management. It is proposed that the information sharing sessions would be the preferred option since it would allow for discussions on problems encountered and not only provide information. These quarterly meetings should be attended by various LMs (especially within UDM), the District Municipality as well as representatives from the relevant KwaZulu-Natal Provincial Departments as well as DEA.

5.7.9 Financial Resources

5.7.9.1 Goal

Provide cost effective waste management service

Objective 1:

Develop and implement (and/or improve) payment of service tariffs

Formal households as well as businesses currently serviced are billed on a monthly basis in conjunction with their water and electricity bills. Penalties for non-payment of accounts should therefore easily be enforced by withholding services. This however is an administrative problem that generally takes a long time.

The inclusion of more areas however, may increase the likelihood of non-payment by residents. A possible option is a pre-paid system similar to the one used for electricity. The system can be a coupon-based system where coupons can be bought in advance for a specific month. The negative aspect is that non-payment and subsequent non-delivery of services will lead to an increase in the instances of illegal dumping in the area. It is recommended that the pre-paid system be used in accordance with strategies to prevent illegal dumping in the municipal areas. It would also be possible for the Municipalities to retrieve some of the lost service fees from the Equitable Share.

Objective 2:

Standardise a tariff structure that is applicable in various degrees around MLM

Objective 3:

Develop sound budgeting for waste services

Many local municipalities such as Msinga LM are at the moment experiencing a lack of payment of tariffs, which needs to be rectified to provide a cost effective waste management service. As such Msinga LM must ensure that sufficient financial resources are available to provide a proper waste disposal service to the communities. It is recommended that alternative sources of funding be investigated for various strategies that need to be implemented. It is also recommended that the current finance system within the local municipalities be restructured to a closed account system i.e. waste related income and expenses separate, to evaluate actual costs and financial requirements. Service delivery can be structured so as to obtain funding from various sources i.e. job creation activities, SMME's, etc.

6. IMPLEMENTATION STRATEGY

6.1 WASTE DISPOSAL STRATEGY FOR THE MUNICIPALITY

The municipality does have a Licensed / Permitted landfill site located in Pomeroy. It will be important to agree to and begin working towards a common goal with regards to an implementation strategy. Below is **Figure 11** that depicts Pomeroy landfill site in relation to the main settlement areas.

which need to be implemented by the Municipality, in order to establish an effective Waste Management system for the municipality.

This information is based on in-depth interviews with the local municipality. Action items are further presented in three main periods. This includes 0-1 years for short-term implementation, 1-2 years for medium term implementation, and 2-5 years as requiring long term implementation.

The Action items are also subdivided into Action Items for various departments within the Msinga Local Municipality (i.e. revision of bylaws would be a responsibility of the legal department as well as planning and technical services department).

An indication is also provided where cooperative governance can play a role in the Implementation of the IWMP. This could be in the form of shared service agreements etc.

6.2.1 *Integration into the Municipalities IDP*

Msinga Local Municipality will need to integrate this IWMP into its IDP's. This process will involve a formal acknowledgement of the IWMP by the local Municipality.

The following schedule for proposed executive committee meetings is noted:

Table 27: Date for Executive Committee Meeting

Municipality	Date of Council Meeting
Msinga Local Municipality	11 December 2013

6.2.2 *Waste Information System (WIS)*

Chapter 6 of the Waste Act establishes the following requirements in terms of the WIS:

- It must record waste volumes not only on the generation of waste, but at every point in the hierarchy of waste management measures and quantify data in terms of the categories established in the National Waste Classification System.
- It must provide a register of licenses granted for Section 19 listed activities that includes the license holder, the location, and the activity.

As stated, the precise functionality of the WIS needs to be developed.

6.2.3 *Financial Management & Funding Mechanisms*

A breakdown of the funding required for each of the projects reported in the Alternative Actions section is presented in the **Table 28** below. A cost estimate for environmental / planning approvals, capital infrastructure is provided. Cost breakdowns for each of the projects was work shopped and determined with the local municipality.

6.2.4 *Funding and Partnerships*

Very few funding mechanism are available to the local municipality. This is a problem as waste is often low on the agenda and priority wish list of politicians. These are however a number of mechanisms worth noting:

- The Municipal Infrastructure Grant (MIG) is a capital subsidy that supplements the funding of infrastructure programmes on municipal budgets, in order to address backlogs in municipal infrastructure required for the provision of basic services including waste services (National Waste Management Strategy – Draft Doc, 2010).

- The process for evaluating service delivery mechanisms is set out in Section 78 of the Municipal Systems Act, 2000, and the procedure for establishing Public Private Partnerships is regulated in terms of the Municipal Finance Management Act, 2003. National Treasury has issued detailed guidelines for the utilization of PPPs by municipalities.
- Other Funding Mechanisms worth investigating:
 - Carbon Credit from Waste – A project in Durban where organic waste is used to generate 10MW of electricity from waste generated by three residential suburbs. Through the fermentation process methane is generated and this is used to feed in to the cities grid. The project generates carbon credits through the Clean Development Mechanism (CMD). See also www.cdm.unfccc.int
 - EU Local Competitiveness Fund – this tool is funded by the EU for Local Economic Development projects specifically in the Eastern Cape. A number of waste related projects were funded through this mechanism; however, extension of this funding source to KwaZulu-Natal needs to be investigated.

6.2.5 Legal Aspects Required

An indication of bylaw amendments necessary to implement a feasible waste management strategy is provided through-out **Table 28**. Bylaw amendments are provided for the local municipality in the District.

A number of policy reviews necessary are also provided, i.e. development of a Recycling policy, Free Basic Refuse Removal, the registration of waste operators / transporters etc.

6.2.6 Monitoring And Review

Legislation requires an annual report back to the Provincial Government on the achievement of projects / objectives be submitted. Municipalities must report on Implementation of IMWP (Section 13.3 of the Waste Act) annually. This information must be in line with Section 46 of the Municipal Systems Act, including:

1. How the IWMP has been implemented
2. Waste management initiatives undertaken
3. Measures taken to implement efficient waste service delivery
4. Level of compliance with the IWMP
5. Level of compliance with any waste management standards (once determined)
6. Waste management monitoring activities
7. Measures to amend the plan and
8. Incorporation of any other amendments as required by the minister.

Compliance with the IWMP can be monitored by the Waste Officers from the local municipality, and a coordinated response provided to the province. Monitoring must follow closely with the implementation of the IDP. Monitoring should include aspects such as:

- Volumes and rates of waste generated, recycled and disposed.
- Quality of collection services and implementation of new ones.
- Achievement of recycling and composting initiatives.
- Trends in illegal dumping and littering.
- Effectiveness of legislation, regulations, ordinances and / or by-laws.
- Complaints received and corrective actions regarding poor waste management.
- Communities' perceptions and opinions on level of service as well as waste management in general (number of recycling receptacles / garden sites, education, willingness to pay, etc.). Management and control of salvaging at landfill sites.
- Compliance of landfill sites with permit conditions, RODs, etc.
- Finances, such as expenditure and income, payment for services, and recovery of costs, unit costs, etc.

It is strongly recommended that this IWMP be reviewed in terms of the National Waste Management Strategy.

7. SUMMARY OF ALTERNATIVE ACTION ITEMS

7.1 IMPLEMENTATION OF ALTERNATIVE ACTION ITEMS

Alternative Action items have been derived from the GAP and NEEDS analysis conducted in the Status Quo phase. For each need determined previously, an ALTERNATIVE ACTION is determined to bring address each need. In some cases no alternatives are possible e.g. where a law needs to be complied with. Therefore no alternatives will be provided in the above situation. However where a need has several logical pathways to bring about fruition to the need, these are indicated as alternative action items as described below:

Provision below has been made for the listing of alternatives. The following table consists of the following headings explained below:

Table 28: Information on the Headings

Needs, Gaps and Issues Raised:	A summary of the broad issues identified.
Objective to be Met:	Detailed outline of the specific objective or GAP / NEED to be determined.
Overall Timeframe:	Timeframe for completion of the objective (years). Usually given as the time for completion from acceptance of this IWMP by the municipal council.
Alternative Action:	Alternatives recommended for the resolution of the identified need. The first Action item is preferred/preferable.
Responsible Department:	Specific department to be charged with implementation of the action item
Capital & planning costs:	Budgets proposed for delivery of that action item.

Table 25: Responsibilities and Organisational Structure Required	Overall Timeframe	Objectives to be met	Alternative Action 1	Alternative Action 2	Alternative Action 3	Responsible Municipal Department	Proposed Budgets Capital & Planning costs Only	Comments
		7.1.1 Legal Issues						
7.1.1.1 National Waste Management Strategy	1 YR	The Goals and Objectives of the NWMS	Update provisions of NWMS into the MLM IWMP	None	None	MLM: Technical Services Department	~ R 15 000.00 set aside for this task by external consultant	The obligations and responsibilities as applied to the municipality must be reviewed in line with this strategy.
7.1.1.2 Bylaws	2 YRS	Bylaws to be drafted (See Section 9.1 and 9.5 of Waste Act) covering the following:	Draft Bylaws		None	MLM: Technical Services Department	~ R 75 000.00 to be budgeted for the drafting process.	
		Bylaw requirements for the transportation and transfer of waste in line with national norms.	Review and accept generic Bylaws on Waste for MLM	Develop Bylaws on Waste for MLM		MLM: Corporate Services		
		Consideration for establishment of WIS.	R 75 000.00	R 150 000.00				
		Provision to control illegal dumping and abandoned articles in Bylaws	1 YR	1 YR				
		Liability to pay for waste services rendered to householders						
		Describe the various waste types and requirements for the general management for business, residential, industrial, garden, building rubble, and health care risk in the municipality (to promote separation at source, recycling etc and to develop municipal standards). Include a description of general waste for collection by the municipality, and an indication of those for which a private company will need to be engaged.						

Table 25: Responsibilities and Organisational Structure Required	Overall Timeframe	Objectives to be met	Alternative Action 1	Alternative Action 2	Alternative Action 3	Responsible Municipal Department	Proposed Budgets Capital & Planning costs Only	Comments
		Providing access to municipal waste services in areas previously un-served and consider FBRR policy. The municipality will need to determine in a Phased and Prioritized manner how to include other areas on this service (see also Waste Act Section 9(2)c).						
7.1.1.3 Standards	1 YR	Development of standards for the management of waste in the municipality (See Section 9.3 of the Waste act). These should cover:	Adopt and tailor make in line with national standards ~ R 30 000.00	Develop local standards from scratch	None	MLM: Technical Services Department	R 30 000.00 0-1 YR	
		For the management of solid waste disposed of by the municipality or at a waste disposal facility owned by the municipality, (including avoidance and minimization of the generation of waste and the re-use, recycling and recovery of solid waste);	0-1 YR	~R 100 000.00 1-2 YRS		MLM: Development Planning Department		
		The directing of solid waste that is collected as part of the municipal service or that is disposed of by the municipality or at a municipal waste disposal facility to specific waste treatment and disposal facilities; and				MLM: Corporate Services Department		
		Local standards in respect of the control of litter.						
		Develop a standard to inform how recyclable waste from Lodges or Game Camps is handled (including the temporary storage, and removal of						

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Table 25: Responsibilities and Organisational Structure Required	Overall Timeframe	Objectives to be met	Alternative Action 1	Alternative Action 2	Alternative Action 3	Responsible Municipal Department	Proposed Budgets Capital & Planning costs Only	Comments
		recyclable waste).						

Table 25: Responsibilities and Organisational Structure Required	Overall Timeframe	Objectives to be met	Alternative Action 1	Alternative Action 2	Alternative Action 3	Responsible Municipal Department	Proposed Budgets Capital & Planning costs Only	Comments
		Local standards for special events (including) soccer matches at any of the proposed or existing halls/sports fields						
7.1.1.4 IWMP	0-0.6 YRS	The municipality to develop an IWMP (See Section 12.1 of the Waste Act):	Adopt an IWMP and review the progress to achieving the Goals on an annual basis as per Waste Act requirements.	None	None	MLM: Technical Services Department	~ R30 000.00 to review IWMP on an annual basis and report to province.	IWMP to be adopted by council. Review of IWMP on an annual basis.
		The municipality will need to adopt and implement the broad findings of the IWMP and incorporate these findings in to the municipal IDP for implementation						
		The municipality will need to report annually on the implementation of the IWMP as specified in Section 13.3 of the Waste Act, and in the prescribed manner as laid out in the Act.						
7.1.1.5 Recycling	0-1 YR	The municipality to provide containers for the recycling of waste materials (Section 23.2 of the Waste Act). Areas to consider for recycling centres include: ➤ Tugela Ferry, ➤ Keates Drift ➤ Pomeroy ➤ Rorke's Drift	Provide recycling containers (skips) to listed areas	None	None	MLM: Technical Services Department	~ R 10 000.00 for each additional skip.	Provision of recycling containers to be linked to waste collection activities for recycling and also fleet upgrades. Design includes slab and welded mesh structure. Roof provided to protect against elements and control contamination of storm water. Dimensions to be 3mx3mx3.5m = 31.5m ²

Table 25: Responsibilities and Organisational Structure Required	Overall Timeframe	Objectives to be met	Alternative Action 1	Alternative Action 2	Alternative Action 3	Responsible Municipal Department	Proposed Budgets Capital & Planning costs Only	Comments
		7.1.2 Waste Collection and Municipal Service Delivery						
7.1.2.1 Tugela Ferry	0-1 YR	Provide skips and a skip truck in the town as well as the surrounding low-cost areas in Tugela Ferry	Extend existing skip truck service to the low cost areas around Tugela Ferry	None			~ R 10 000.00 for each skip. R 2,800.00 for 4 recycle wheelie bins.	
		Need to provide street bins (steel poles and ash bins).	Provide additional bins around the town centre.					
		Engage street sweepers during pension pay-outs.	Get casual workers to sweep streets during high concentration (i.e. pension pay-outs)					
		Provision for transfer station (temporary waste storage for later disposal at Pomeory landfill) and recycling centre	Provide a fully-functional transfer station and recycling centre.					
7.1.2.2 Keates Drift	0-1 YR	Need to provide street bins (steel poles and ash bins)	Provide street bins.	None			~ R 10 000.00 for each skip. R 2,800.00 for 4 recycle wheelie bins.	
		Engage street sweepers during pension pay-outs	Get casual workers to sweep streets during high concentration (i.e. pension pay-outs)					
		Waste removal services for this area (e.g. tractor trailer type trucks to remove waste)	For Keates Drift, waste collection services needs to be implemented and frequently.					
		The illegal site needs to be closed and make provision for a transfer station and recycling centre	None					

Table 25: Responsibilities and Organisational Structure Required	Overall Timeframe	Objectives to be met	Alternative Action 1	Alternative Action 2	Alternative Action 3	Responsible Municipal Department	Proposed Budgets Capital & Planning costs Only	Comments
7.1.2.3 Pomeroy	1-2 YR	Need to provide street bins (steel poles and ash bins) in the town.	Provide street bins.	None	Soft ash bins with steel poles for street bins 20 bins @ R500 = R10,000			
		Provide stringent security at the landfill site.	Ensure that the landfill has security personnel present at all times.	MLM: Technical Services Department MLM: Technical Services Department				
		Provision to make the existing licensed landfill site to meet environmental standards. Thus will allow the landfill to satisfy the condition set by its permit.	Pomeroy Landfill should in fact be a B+ graded facility, according to service requirements.	MLM: Corporate Services Department				
			None	MLM: Development Planning Department				
			Waste separation.					
			Provide a cover material for the waste to prevent it from blowing everywhere.					
			Annual Auditing (internal and external)					
		None						
Consider outsourcing waste collection services with private recyclers	Conduct an assessment into the provision of waste service to determine whether or not the municipality should provide the service in-house or outsource							

Table 25: Responsibilities and Organisational Structure Required	Overall Timeframe	Objectives to be met	Alternative Action 1	Alternative Action 2	Alternative Action 3	Responsible Municipal Department	Proposed Budgets Capital & Planning costs Only	Comments
		Engage street sweepers during pension pay-outs in the town as general practiced.	Get casual workers to sweep streets during high concentration (i.e. pension pay-outs)					
7.1.2.4 Sidakeni		Close the illegal dumping and implement a formal transfer station.	Close the site and rehabilitate.				~ R 10 000.00 for each skip. R 2,800.00 for 4 recycle wheelie bins.	xxx
7.1.2.5 Rorke's Drift	0-1 YR	<ul style="list-style-type: none"> Incorporate a formal waste service Rates to be imposed for waste services for lodges. Provide street bins which need to be collected from the area Any other non-recyclable waste, then municipality to provide waste disposal facilities (Pomeroy landfill) for lodges to dispose of waste. Due to the nature of the business (scattered and secluded facilities); each lodge must have portable skip to be provided for, for later removal to landfill site. This provision will need to be discussed and work shopped with lodges. Municipality must link recyclers to lodges, and indicate these as preferred municipal service providers. Develop standards to deal with lodge waste/recyclers as indicated previously Develop and incentivized 	Provide lodges with portable skip and recycle bins for collection.	Waste to be separated. Organic waste to be composted. Recyclable waste to be placed in recycle bins. Regular waste to be placed in small skip. Skip and recycle bin waste to be loaded and transported to Helpmekaar transfer station as and when needed.			~ R 10 000.00 for each skip. R 2,800.00 for 4 recycle wheelie bins.	

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Table 25: Responsibilities and Organisational Structure Required	Overall Timeframe	Objectives to be met	Alternative Action 1	Alternative Action 2	Alternative Action 3	Responsible Municipal Department	Proposed Budgets Capital & Planning costs Only	Comments
		members in the local community to generate arts and crafts out of waste products, for sale in the curio shops of the lodges.						

Table 25: Responsibilities and Organisational Structure Required		Overall Timeframe	Objectives to be met	Alternative Action 1	Alternative Action 2	Alternative Action 3	Responsible Municipal Department	Proposed Budgets Capital & Planning costs Only	Comments
7.1.2.6 Msinga Cwaka Mhlangana	Top, and		Need to provide street bins (steel poles and ash bins) with staff appointed to empty them frequently.	Provide street bins that will also require emptying regularly	None	None	MLML Technical Services Department	Soft ash bins with steel poles for street bins 20 bins @ R500 = R10,000	
			Skips at designated areas with dense population for waste to be temporarily stored and removed to transfer station or landfill site.	Provide skips for these areas.	Provide street bins that will also require emptying regularly		MLM: Corporate Services Department MLM: Development Planning Department MLM: Finance Department	~ R 10 000.00 for each skip. R 2,800.00 for 4 recycle wheelie bins.	
7.1.2.7 Proposed/under construction project		0-1 YR S	Increase the number of waste staff to service additional waste generation area as and when required, the existing staff complement are to be reviewed on an annual basis, to ensure that these are providing a suitable service to the public.	Include new developments in Existing Waste collection process. Review staff compliment on an annual basis to ensure good service delivery.	None	None	MLM: Technical Services Department	Internalized Costs	There will be a future need for more staff to service additional waste generation area as and when required, the existing staff complement are to be reviewed on an annual basis, to ensure that these are providing a suitable service to the public
7.1.2.8 Building Construction waste	and	0.2 YR S		Where this occurs, construction waste is to be used as cover at the landfill site. Illegal dumping to be discouraged. 0-6 MNTHS	Update Bylaws to this effect. 0-2 YRS	None	MLM: Technical Services Department	Internalized Costs	This includes building rubble from construction and spoil material from road construction and other activities in the municipality.
		7.1.3 Technical and Operational Issues							

Table 25: Responsibilities and Organisational Structure Required	Overall Timeframe	Objectives to be met	Alternative Action 1	Alternative Action 2	Alternative Action 3	Responsible Municipal Department	Proposed Budgets Capital & Planning costs Only	Comments
7.1.3.1 Technical Staff and Fleet	0.1 YR S	The municipality will need to appoint an EMI (Environmental Management Inspectorate) who will be an environmental enforcing official.	Appoint the current Waste Officer as an EMI	Appoint a new EMI	None	MLM: Technical Services Division	Internalized Costs	
		Additional drivers required for expansion to existing transport fleet. The Msinga Local Municipality needs to ensure that a full staff compliment is maintained to provide a waste service to the community. Any shortfalls in the number of staff will affect Waste Service delivery to the public.	Appoint additional permanent staff drivers.	Consider having some drivers to be casually employed				
		Increase number of vehicles. Second truck needs to be purchased	Assess current waste collecting truck, make provisions for new truck(s).				Refer Appendix F	
		Strategies for an efficient, affordable and sustainable waste collection system is needed to fully utilize the fleet resources that they have and need to have	Refer Appendix F	None			Refer Appendix F	
	7.1.4 Waste Minimization and Recycling Initiatives							

Table 25: Responsibilities and Organisational Structure Required	Overall Timeframe	Objectives to be met	Alternative Action 1	Alternative Action 2	Alternative Action 3	Responsible Municipal Department	Proposed Budgets Capital & Planning costs Only	Comments
7.1.4.1 Recycling, Reuse, Recovery And Waste Minimization Initiatives	0-2 YR S	The municipality needs to consider the implementation of a policy to govern recycling, waste minimization, and reuse activities.	Draft and Develop recycling policy for municipality – incorporate education campaign. R 20,000.00 0–1 YR	None	None	MLM: Technical Services Department Department of Education Department of Agriculture and Environmental Affairs	~ R 45 000.00	The municipality does not have any recycling policy for either its municipal staff nor for the municipality as a whole.
		Recovery operations for plastic and paper at the landfill				Umzinyathi District Municipality		Domestic waste at all the landfill sites was observed to contain large amounts of recyclable material despite the recycling activities. This included plastics and paper grades
		Recovery of recyclable materials needs to be encouraged at homes and business focal sources. This will reduce the amounts of recyclable waste to landfill site.						Recycling and separation at source is to be encouraged and the municipality is to provide specific receptacles as suggested in this report towards this goal. General waste at households was observed to contain a large amount of recyclable material. This included plastic and paper grades.

Table 25: Responsibilities and Organisational Structure Required	Overall Timeframe	Objectives to be met	Alternative Action 1	Alternative Action 2	Alternative Action 3	Responsible Municipal Department	Proposed Budgets Capital & Planning costs Only	Comments
		<p>Municipality needs to consider additional public-private initiatives to encourage waste recycling and reuse. This could include promoting recycling of waste in outlying settlement areas and having these removed initially by the municipality. Eventually this activity could be contracted out or 'sold' to a private recycler.</p> <p>Public education campaigns required to promote and educate on benefits of recycling.</p> <p>The municipality needs to conduct a detailed study to understand the percentages of recyclable materials that form a part of the general waste stream from residential and business areas. This study should also consider what system to employ for removal of these wastes from residential areas to central areas in the municipality, and hence sale to other areas.</p> <p>An accurate method of recording waste dropped off at the landfill sites needs to be established (weighbridge at the landfill) the existing Pomeroy site.</p>	<p>Educational and Awareness campaign to achieve buy in from the public.</p> <p>R 25,000.00</p> <p>0-1 YR</p>					<p>There are no accurate records of the quantities of waste generated in different areas of the municipality. It is therefore not possible to set recycling, reuse, recovery and minimization targets.</p>
		7.1.5 Waste Treatment and Disposal Issues						

Table 25: Responsibilities and Organisational Structure Required		Overall Timeframe	Objectives to be met	Alternative Action 1	Alternative Action 2	Alternative Action 3	Responsible Municipal Department	Proposed Budgets Capital & Planning costs Only	Comments
7.1.5.1 Pomeroy Landfill Site			The site needs to be incrementally rehabilitated, as areas of the landfill are fenced, and must be made to meet environmental requirements and regulations.	Rehabilitation must occur and site must be made to meet environmental requirements.	Consider other alternative sites for landfill to meet any increase in demand	Consider using landfill sites from other LMs should the demand increase			
			Signage is needed from the main road showing directions to landfill	Put up signage	None				
			Impermeable sheeting	Add an impermeable sheeting					
			Prevent waste water from reaching the water table as well as the nearby watercourse	Appoint a specialist to assess this and identify ways to improve, and then implement.					
			Leachate pond management						
			Cover material to prevent waste from blowing all over the place.	Add cover material to prevent waste from blowing					
			External and Internal audits need to conducted	Conduct annual audit					
			The fencing work needs to be improved	Rehabilitate the fence around the site					

8. REFERENCES

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Appendix A:

**UMZINYATHI DISTRICT MUNICIPALITY
INTEGRATED WASTE
MANAGEMENT PLAN**



Appendix B:
**LIST OF SCHOOLS IN
MSINGA LOCAL MUNICIPALITY**

Name of School	EMIS
Tugela Ferry Circuit	
Barnhill	105968
Cosh Primary	116624
Dayiswyo	120472
Emsizini	134643
Ezibomvini	143153
Holwane	158249
Igugu P	159581
Impophomo P	303585
Khanyisani P	341473
Kusakusa P	325671
Lobethal Independent	305250
Mabaso S	415029
Mahlokohloko S	415066
Mawele	202834
Mbondweni P	204684
Mbusweni P	337292
Mnjani P	447034
Mpikayizekanye	216746
Msawenkosi P	440374
Ndabankulu P	224146
Ngubevu P	228919
Nocomboshe	233655
Nomaqhulu P	440448
Ntshishili	240574
Nyandu P	241610
Overtoun	245495
Pano JS	334110
Bhambatha Ward Circuit	
Bhambatha S	341917
Dlangamandla P	414400
Dolo C	122507
Ehlanzeni P	127613
Emkhuphula P	133163
Engcuba P	136382
Esibila P	140045
Isimanyama P	140748
Fabeni JP	143930
Fisokuhle P	440263

Name of School	EMIS
Gqobhela P	446849
Holisizwe P	446923
Jangeni P	171051
Keates drift P	172568
Kubuyakwezwe P	446590
Kwandunge H	182114
Kwazenzele H	184112
Latha P	185666
Macingwani S	444664
Makhandana P	194250
Mbomvu P	303733
Mertourn P	208014
Mfenebude P	208532
Mfunzi P	208865
Muntu H	220668
Mzwenkosi P	222370
Nkayiskana P	440411
Nogawu	233877
Nomafu	234321
Nomfomela P	234987
Ntabende P	446627
Nyoniyezwe H	241943
Phakwe P	247382
Somashi H	272949
umbonje H	287120
Zizi P	446812
Endumeni South	
Alva P	123062
Amoibe P	103082
Craigmillar P	126281
Dilizela H	121249
Douglas public	152403
Ebuhlebemfundo	165494
Elendsberg	129574
Esweni P	142006
Gede JP	202871
Giba P	217190
Hollywood P	242350
Lewis P	186295
Lotto P	337958

Name of School	EMIS
Mambeni P	338217
Maweni P	118437
Mbizimbelwe P	204499
Nkonza P	303659
Nyonyana P	241980
Oscarsberg P	244718
Phathizwe H	247974
Phowane LP	325489
Qalindlela P	338032
Shiyane	262182
Sibonginhlanhla JS	325489
Pomeroy Circuit	
Bathembu H	106153
Batshazwayo H	106264
Celimfondo H	115366
Ixenyant P	122063
Imohamo	132928
Emzweni P	186295
Gubezela P	239464
Ndiozana H	162541
Phuphuma P	167055
Jahle H	170640
Landelan P	440300
Landulwa P	344063
Madudula H	191401
Mandleni P	196359
Manqoba S	101121
Mhlabangule P	210086
Mkhuphulangwenya	212343
Mpompolwane P	121249
Mpungane P	647071
Mqamu P	217708
Msibihthi S	337921
Msinga H	218670
Msitha P	218707
Mumbe P	129574
Mzamoyewthu P	148555
Nkamba P	231422
Nsimbini P	195619
Ntayezulu P	20557

Name of School	EMIS
Ntokozweni P	322307
Ntunjani P	440559
Obisini P	291671
Swebane P	279165
Themane P	281311
Velaphi H	447108
Zamokuhle P	415103



Appendix C: LIST OF HEALTH FACILITIES IN MSINGA MUNICIPALITY



health

Department:
Health

PROVINCE OF KWAZULU-NATAL

CHURCH OF SCOTLAND HOSPITAL
PUBLIC RELATIONS OFFICE
R33 MAIN DUNDEE ROAD, TUGELA FERRY, 3010
PRIVATE BAG X502, TUGELA FERRY, 3010
Tel: 033 493 1000 ext. 4021, Fax: 033 493 1124
Email: Mahlang.Nhlankanipho@kznhealth.gov.za
Website www.kznhealth.gov.za/coshospital.htm

Enquires: COSH CLINICS
Date: 20 Jan 2014

To: Mlungisi Ntanzu
Msinga Municipality
0334930761

Re: List of Clinic under Church of Scotland Hospital

Church of Scotland Hospital is the mother hospital for the following clinics:

CLINIC	WARD	WARDS SHARING THE CLINIC.
• Collesie Clinic	• Ward 16	-
• Cwaka Clinic	• Ward 4	• Ward 2,4,17
• Ethembeni Clinic	• Ward 10	• Ward 11
• Gateway Clinic	• Ward 5	• Ward 4, 14
• Gunjana Clinic	• Ward 2	• Ward 1,3
• Mandleni Clinic	• Ward 3	-
• Mawele Clinic	• Ward 15	-
• Mazabeko Clinic	• Ward 18	• Ward 16
• Mbangweni Clinic	• Ward 7	• Ward 10, 6 and 8.
• Mhlangana Clinic	• Ward 7	• Ward 9 and 6
• Mumbe Clinic	• Ward 1	-
• Ngubevu Clinic	• Ward 15	-
• Nocomboshe Clinic	• Ward 15	• Ward 16
• Noyibazi Clinic	• Ward 17	• Ward 16,1,3,2,18 and 19
• Qinelani Clinic	• Ward 18	• Ward 17
• Rorke's Drift	• Ward 19	• Ward 18



Appendix D:
SITE PHOTOGRAPHS



Plate 1: Illegal Dumping Site in Keates Drift



Plate 2: Proposed Transfer Station Site in Keates Drift



Plate 3: Pre-School near Proposed Transfer Station Site in Keates Drift



Plate 4: Msinga Library in Tugela Ferry



Plate 5: Advertised Development of Shopping Centre in Tugela Ferry



Plate 6: Msinga Municipal Offices



Plate 7: Burning of Waste near Tugela River



Plate 8: Tugela Ferry Town



Plate 9: Expansion of Church of Scotland



Plate 10: Illegal Dump Site in Ward 11



Plate 11: Illegal Dump Site in Ward 11



Plate 12: Illegal Dump Site in Ward 11



Plate 13: Pomeroy Town



Plate 14: Advertised Development of a Shopping Centre in Pomeroy



Plate 15: Illegal Dump Site in Pomeroy



Plate 16: Construction of New Health Centre in Pomeroy, 1km from Landfill



Plate 17: Landfill Site in Pomeroy



Plate 18: Waste Classification (glass bottles) in Landfill



Plate 19: Leachate Dam next to Landfill



Appendix E:
**POMEROY LANDFILL SITE
WASTE PERMIT**



Appendix F:
SPECIALIST STUDIES
Solid Waste Engineering
