

MATJHABENG LOCAL MUNICIPALITY



INTEGRATED WASTE MANAGEMENT PLAN (IWMP)

FINAL DRAFT MAY 2022

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1. LIST OF ACRONYMS AND ABBREVIATIONS

| ACRONYM | DESCRIPTION |
|----------------|---|
| CBO | Community Based Organisation(s) |
| DEA | Department of Environmental Affairs |
| DFFE | Department of Forestry Fisheries and the Environment |
| DWA | Department of Water Affairs (Previously known as DWAF) |
| EHP's | Environmental Health Practitioners |
| EIA | Environmental Impact Assessment |
| GIS | Geographical Information System |
| IDP | Integrated Development Plan |
| IndWMP | Industry Waste Management Plan |
| IWMP | Integrated Waste Management Plan |
| MFMA | Municipal Finance Management Act, (No. 56 of 2003) |
| MIG | Municipal Infrastructure Grant |
| MEC | Member of Executive Council |
| MSA | MSA (Act 32 of 2000) |
| NEMWA | National Environmental Management: Waste Act (Act No. 59 of 2008) |
| NGO | Non-Governmental Organisation(s) |
| NWMS | National Waste Management Strategy |
| SAWIS | South African Waste Information System |
| UNEP | United Nations Environment Programme |
| WEEE | Waste of Electric and Electronic Equipment |
| WIS | Waste Information System |
| WMO | Waste Management Officer |

2. EXECUTIVE SUMMARY

It is a requirement for all government spheres responsible for waste management in terms of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) (hereinafter referred to as the “Waste Act”) to develop an Integrated Waste Management Plan (IWMP) for government to properly plan and manage waste. The development of IWMPs is not a new concept as many municipalities and Provinces developed what is termed 'first generation IWMPs' in accordance with the 1999 National Waste Management Strategy (NWMS). Thus, the generation of IWMPs is a mandatory requirement because an IWMP assists municipalities with enforcement of the Waste Act.

It is also the intention of Matjhabeng Local Municipality to manage waste according to the management hierarchy provided for in the guidelines and relevant prescripts. This implies that Integrated Waste Management Plans (IWMP's) will include all aspects of the waste management hierarchy. The Plan is aligned to the guidelines which provide background for the compilation of Integrated Waste Management Plans. The Waste Act requires that Municipalities must integrate their IWMPs into the Integrated Development Plans (IDPs) in order to ensure that waste management services are streamlined with other essential basic services such as water and sanitation, housing, and electricity provision. This is to ensure that waste management should receive a share from the equitable share funding allocation and municipalities should ensure that waste services will be properly budgeted to ensure sustainability in the delivery of waste management services

A robust situational analysis has been conducted for Matjhabeng which did not only cover the description of the population and development profiles of the Municipality. It also considered assessment of the quantities and types of waste types that are generated, a description of the services that are provided or that are available for the collection, minimisation, re-use, recycling, and recovery, treatment and disposal of waste and the population/households who are not receiving waste collection services. The analysis also highlights the institutional, financial, political, legal and physical conditions which have to a certain extent translated into the desired end state. Lastly, the analysis reflected in this plan also depicts the outcomes of the audits conducted in the Solid waste disposal sites in major towns, including the transfer station in Virginia.

The desired end state for the overall management of waste was then also defined in the document with objectives reflected in the strategic and operational plans within this plan. This included the goals and targets to achieve in the implementation of the IWMP. To ensure that the plan is implementable, the desired end state was completed in terms of institutional,

financial, political, legal and physical conditions but aligning to the findings in the disposal site audits and the general situational analysis. Target dates were set within the IDP period of the incoming Local Government administration term (2021 to 2026).

The IWMP hinted on the identification of alternatives to achieve the goals and targets that have been set in the desired end state. The preferred options are subjected to evaluation to assess environmental, technical, social, financial, institutional and organisational arrangements and impacts. This was done to ensure that the Municipality and Council can make an informed decision on what is the best option for the Municipality looking at the above critical conditions impacting on implementation thereof.

Continuous Performance assessment is part of the implementation of this plan, though it appears last in the plan, it is in fact a continuous process throughout the implementation period of five years with regular monitoring and evaluation annually and at the end of the IDP cycle. Annual performance reports will be prepared in terms of section 46 of the Municipal Systems Act (MSA) and will contain information on the implementation of the municipal IWMP, including the information set out in paragraph (a) to (j) of subsection (2) insofar as it relates to the performance of the municipality.

3. LIST OF FIGURES

South Africa has come a long way with regards to the management of waste. Historically, waste was managed by various pieces of legislation that were governed by different government departments and which were often fragmented in nature resulting in gaps and poor waste management practices. The promulgation of the Waste Act (Act No. 59 of 2008) on 1 July 2009 was a key milestone in consolidating waste legislation in a bid to have common goals and understanding of how the country's waste should be managed. The Waste Act adopts the waste management hierarchy approach to dealing with and addressing waste issues in the country, where the emphasis is on waste reduction, if not possible re-use, recycling and composting, recovery to create energy, with disposal as a last resort as illustrated on Figure 1.

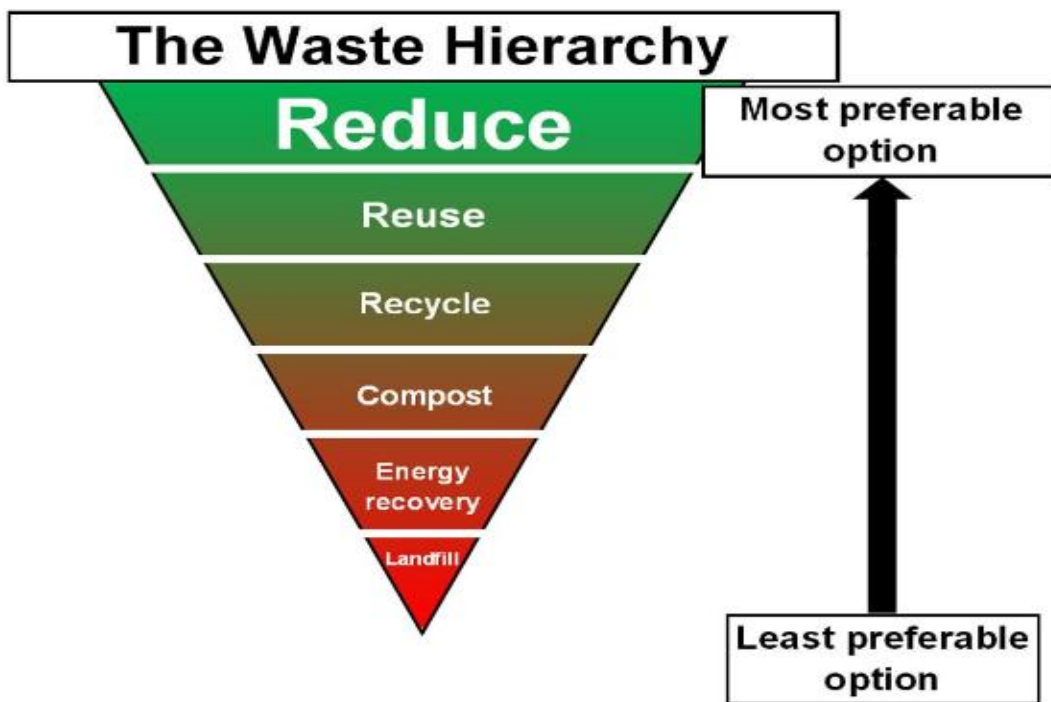


Figure 1: Waste Management Hierarchy

In developing IWMP's all three spheres of government are required to follow the waste management hierarchy approach as depicted in Figure 1 above where possible. The primary objective of IWMPs is to integrate and optimise waste management planning in order to maximise efficiency and minimise the associated environmental impacts and financial costs, and to improve the quality of life for all South Africans. The diagram below (figure 2) summarises the **integrated waste management planning (IWMP)** process

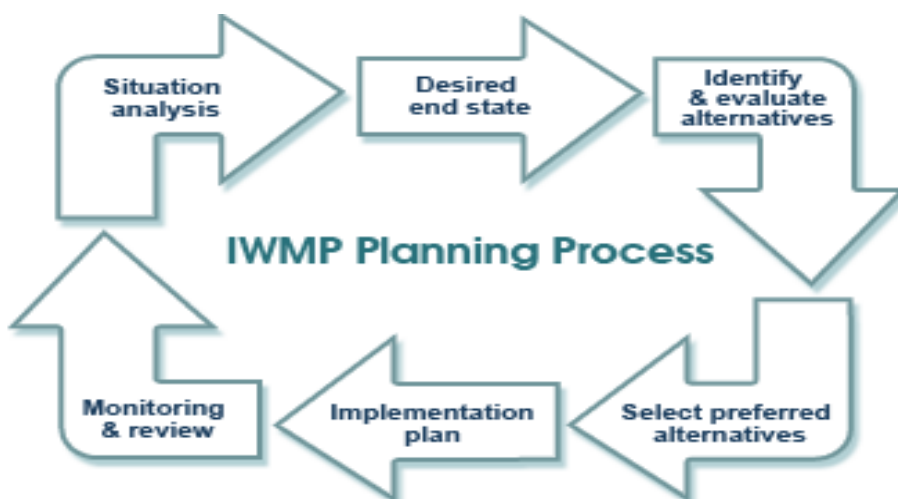


Figure 2: IWMP planning process

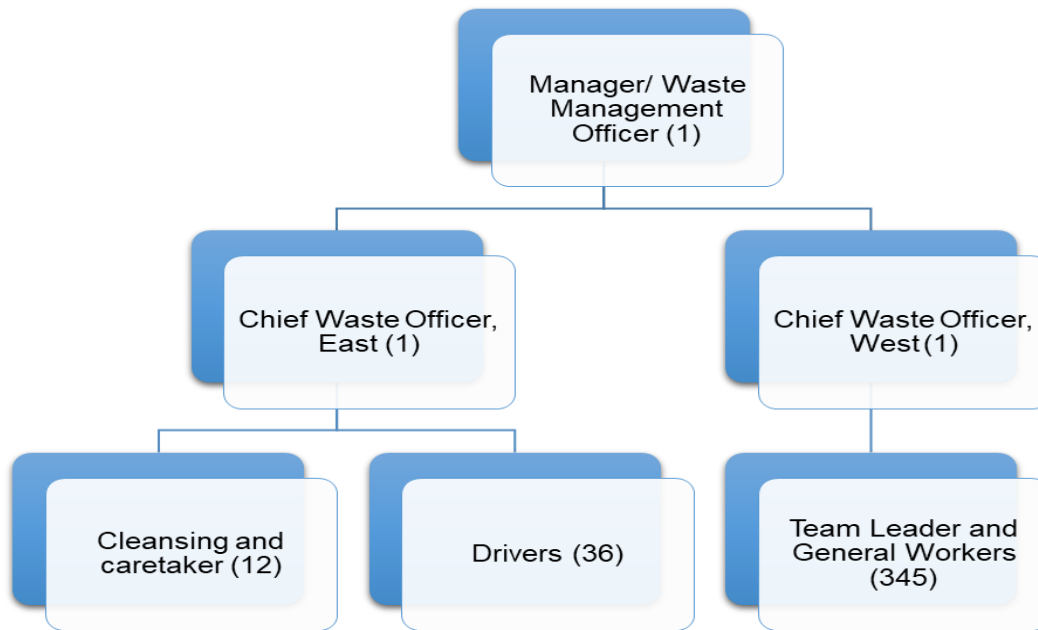


Figure 3: Waste Management Organizational Structure

| POSITION | APPROVED | FILLED | VACANT |
|----------------------------------|----------|--------|--------|
| General worker | 392 | 269 | 123 |
| Landfill site caretaker | 1 | 0 | 1 |
| Landfill site clerical assistant | 2 | 1 | 1 |
| General workman | 1 | 0 | 1 |
| Handy man | 1 | 0 | 1 |
| Team leader | 6 | 0 | 6 |
| Driver grade 1 | 32 | 25 | 7 |
| Driver grade 2 | 14 | 4 | 10 |
| Driver grade 3 | 5 | 1 | 4 |
| Clerical assistant | 2 | 1 | 1 |
| Assistant cleansing officer | 10 | 7 | 3 |
| Landfill site operator | 5 | 1 | 4 |
| Cleansing officer | 2 | 0 | 2 |
| Manager Waste Management | 1 | 1 | 0 |

Table 1: Waste Management Organizational Structure

4. STATUS QUO

4.1. Current population, age breakdown and growth estimates

The main purpose of this section is to determine the number of people in the subject area, their income levels in the community and the economic activities. This information will also assist in identifying the GAPS in the current waste management systems in the municipality and developing Alternative Scenarios. Four factors have an impact on the amount of waste generated in a particular area, namely;

- 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

Primarily Stats SA 2011 census report were utilised for the Population and Household population data discussed below, however in some instances it was necessary to refer to Stats SA 2007 Community Survey as this is the information used in compiling the MLM IDP. Table below shows the population breakdown for the Matjhabeng Municipality (406 461 in terms of the Stats SA 2011 Census report), this represents a slight decrease (from 408 167 as per 2001 Census data) utilised in the 2012-2016 Municipal IDP. The current population is broken down into approximately 201 509 males and 204 952 females.

Population growth rates for the municipality as reported in the 2012-2016 IDP is informed by comparative analysis of official statistics by Stats SA Census 2001 and community Survey 2007 (See tables below) demonstrate that MLM is growing in terms of number of household but register a decline on population. The decline can be attributed to migration while substantial increase in number of households came as result of division of families. This significant increase on the number of households poses waste management service delivery and expansion challenges.

| Classification | Census 2001 | Community Survey 2007 | Census 2011 |
|-----------------------|--------------------|------------------------------|--------------------|
| Persons | 408 167 | 405 031 | 406 461 |
| Households | 120 289 | 131 622 | 122 265 |

Table 2 Population distribution by persons and households

Furthermore 64% of the total municipal population are between the ages of 0-34 years of age (See Table below) Stats SA 2011. The analysis of this information points to the majority of MLM population as youthful. 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.

| Age Group | 0 - 34 | Age Group | 35 – 85+ |
|-------------------------|----------------|------------------|-----------------|
| 0 - 4 | 42 399 | 35 - 39 | 26 386 |
| 5 - 9 | 35 085 | 40 - 44 | 25 440 |
| 10 - 14 | 33 473 | 45 - 49 | 26 281 |
| 15 - 19 | 37 122 | 50 - 54 | 22 511 |
| 20 - 24 | 42 651 | 55 - 59 | 16 100 |
| 25 - 29 | 38 586 | 60 - 64 | 10 755 |
| 30 - 34 | 30 793 | 65 - 69 | 7 138 |
| TTOTAL | 260 112 | 70 - 74 | 5 249 |
| Percentage | 64% | 75 - 79 | 3 516 |
| Percentage = 36% | | 80 - 84 | 1 717 |
| | | 85 + | 1 319 |
| | | TOTAL | 146 349 |

Table 3: MLM Population distribution by Age Group (Census, 2011)

4.2. Population distribution and densities

The main aim of this section is to provide a sense of where the main population congregations exist within the municipality. The majority of settlements are located in the Welkom, Thabong and Riebeeckstad area of the local municipality. The District IWMP indicates that population declined by 0.12% per annum between 2001 and 2007. The 2011 Stats SA census shows a total population of MLM to be 406 461 whilst the District IWMP estimated 403 294 resulting in 3167 or 0.80 margin of error.

| Town | Settlement | 2007 Estimates | 2011 Estimates | 2017 Estimates |
|---------------|-----------------------------------|----------------|----------------|----------------|
| Welkom | Welkom | 33 918 | 33 755 | 33 923 |
| | Thabong | 147 143 | 146 438 | 147 170 |
| | Riebeeckstad | 8 906 | 8 863 | 8 907 |
| Ondendaalsrus | Odendaalsrus | 8 587 | 8 546 | 8 588 |
| | Kutlwanong | 58 537 | 58 256 | 58 547 |
| Virginia | Virginia | 21 035 | 20 934 | 21 038 |
| | Meloding | 47 990 | 47 760 | 47 998 |
| | Rustgevonden | 387 | 385 | 387 |
| Henneman | Henneman | 2 907 | 2 893 | 2 907 |
| | Whites | 408 | 40 | 40 |
| | Phomolong | 18 016 | 17 929 | 18 019 |
| Rural | Matjhabeng | 21 323 | 21 221 | 21 327 |
| Allanridge | Allanridge | 2799 | 2 785 | 2 799 |
| | Nyakalong | 16 720 | 16 640 | 16 723 |
| Mining Area | Erfdeel Mine | 59 | 58 | 58 |
| | Free State Geduld Gold Mine | 606 | 603 | 606 |
| | Jurgenshof Unisel Gold Mine | 1 211 | 1 205 | 1 211 |
| | Virginia Mine | 1 156 | 1 150 | 1 156 |
| | Loraine Mine | 535 | 533 | 536 |
| | Western Holdings Gold Mine | 2 732 | 2 719 | 2 733 |
| | Saaiplaas Mine | 22 | 22 | 22 |
| | President Brand Gold Mine | 169 | 168 | 169 |
| Total | | 405 237 | 403 294 | 405 310 |

Table 4: MLM Population Distribution by settlements

4.3. Socio-economic factors

This section aims to provide an understanding of Individual and Household population dynamics including income, existing skills base, and education. The MLM 2012 – 2016 IDP note that since 2001 the number of people employed has increased and the number of unemployed residents has marginally decreased between 2001 and 2007. However, it is important to note that the 2011 Census indicates an increase in unemployment rate. It can still be that the material condition of the people of MLM is improving due to other factors. Lastly, the 2016-2021 IDP notes that number of people employed has increased and the number of unemployed residents has marginally decreased. This information becomes important in determining affordability levels and potential number of people in a position to pay for municipal services.

| Economic Status | Census 2001 | Census 2011 | Census 2016/2021 |
|------------------------|--------------------|--------------------|-------------------------|
| Employed | 95 687 | 99 650 | |
| Unemployed | 83 180 | 58 524 | |
| Unemployed rate | 32.7 % | 37.0 % | |

Table 5: MLM Employment Rate

4.4. Estimated waste generation for the MLM population

No data is available on waste generation in this municipality, due to lack of periodic waste generation survey. In line with the StatsSA (2011) guidelines, it is estimated that a person generates a half of kilogram to 2.2 kilograms of wastes per day, depending on the income status. It is deduced that the people in the low-income groups generally generates less waste as compared to high income groups.

| Generic Waste Generation figures per Person (kg/d) | | |
|---|----------------------|-----------------------|
| High – Very High | Medium Income | Low – Very Low |
| 2.2 | 1.1 | 0.5 |

Table 5: Generic waste generation figures per person

5. INTRODUCTION

South Africa has come a long way with regards to the management of waste. Historically, waste was managed by various pieces of legislation that were governed by different government departments and which were often fragmented in nature resulting in gaps and poor waste management practices. The promulgation of the Waste Act (Act No. 59 of 2008) on 1 July 2009 was a key milestone in consolidating waste legislation in a bid to have common goals and understanding of how the country's waste should be managed.

The Waste Act adopts the waste management hierarchy approach to dealing with and addressing waste issues in the country, where the emphasis is on waste reduction, if not possible re-use, recycling and composting, recovery to create energy, with disposal as a last resort as illustrated on figure 1.

5.1. Public and Environmental Health

Access to basic refuse removal in Matjhabeng Local Municipality is progressively increasing resulting in more service points covered by the municipality. Whilst this present a positive development in relation to increased access to waste services by business and households, in general the service is inadequate. In terms of various legislation governing public health, environment and the Constitutional obligations of local government, the situation is extremely dire and in fact quite illegal.

The shortage of human resources and equipment for collection of refuse makes the service unreliable and gives no guarantees to the community as to which day their refuse will be collected. This results in instances where residents have to deal with the waste themselves and in most instances, this is done unsuccessfully. The NEMWA 59 of 2008 stipulates that it is the duty of the municipality to ensure that it “exercise its executive authority and perform its duty in relation to waste services, including waste collection, waste storage and waste disposal services by ensuring access for all to such services. As a Municipality we are further obligated to provide waste management services, in accordance with Schedule 5B of the Constitution. We are required to provide additional bins for separation at source and are accountable for diverting organic waste from landfills and composting it, this is our long term projection thinking, to start coming up with systems to realise that expectation within the incoming IDP period. The five municipal waste Disposal facilities are permitted, however it appears they are inadequately engineered and are further not operated in full compliance with the minimum requirements.

The discovery of the estimated 7000 tons of medical waste illegally dumped in several sites within MLM during 2009 necessitates a major turning point for MLM in relation to waste management in general, particularly the need for waste information system and control in partnership with other spheres of government. Given the lack of and poor control where it exists at the landfills other hazardous waste is reaching these sites as evident from our discovery of gas cylinders at the Odendaalsrus landfill.

Consequently, the MLM is strewn with litter in some areas presenting an unsightly appearance. Residents are subjected to serious nuisance factors such as the acrid smell of burning or decaying refuse, fly and rodent infestations that may lead to detrimental health effects that will cause burden to the primary health care system and cause aggravated environmental pollution. Most importantly, public and environmental health is seriously at risk. The fumes emanating from burning refuse are often toxic resulting to air pollution. Ground and surface water can become contaminated with toxic and pollutants emanating from the improperly managed waste. As a result, downstream users and consumers of the ground and surface water can be exposed to these toxins and pollutants with serious negative health consequences making consumers susceptible to waterborne diseases.

5.2. Institutional arrangements

The waste management functions in MLM falls under the Community Services Department. A number of positions are currently vacant in the waste management division of the Department and some are being filled by available staff in acting capacities. The municipality is currently restructuring the organisation's organogram and will fill the positions and these include that of a Waste Management Officer in line with the Waste Management Act of 2008 and the National Waste Management Strategy of 2020. The causal effects of poor service delivery are typical insufficient resources, inadequate policy guidelines and bylaws, inadequate planning, inadequate management and lack of technical expertise and capacity.

5.3. Legislative Framework

The Waste Act adopts the waste management hierarchy approach to dealing with and addressing waste issues in the country, where the emphasis is on waste reduction, if not possible re-use, recycling and composting, recovery to create energy, with disposal as a last resort as illustrated by Figure 1. In developing IWMP's all three spheres of government are required to follow the waste management hierarchy approach as depicted in Figure 1 above where possible.

In order to develop and implement an effective IWMP, it is important to ensure that there is clarity as to the overriding policies thereof. Thus, the following are to be considered as **priority goals**:

- Policies *principles* specified in NEMA, IP&WM and NWMS, i.e. accountability, cradle-to-grave, equity, full cost accounting, good governance, integration, open information, participation and polluter pays;
- Job creation, focusing on previously disadvantaged communities;
- The waste management hierarchy; and
- Waste minimization aspects.

Some of the above goals may be supportive of each other, while others may involve making trade-offs. Resolving such trade-offs involves making political decision, which ideally should be taken in consultation with appropriate stakeholders and guided where possible by earlier agreed principles.

In terms of IWM planning for South Africa, the principle goals and priorities to guide the development and implementation of the plans are given by the requirements of the White Paper on Environmental Management Policy for South Africa (DEAT, 1997) and the National Environmental Management Act (NEMA) (No.59 of 2008), and more specifically within the White Paper for Integrated Pollution & Waste Management for South Africa (DEAT, 2000). The newly published National Waste Management Strategy (DEA, 2010) is a statutory requirement of the recently promulgated National Environmental Management: Waste Act. The new strategy builds on the previous Waste Management Strategy published in 1999, as well as the extensive inputs from stakeholders made during the process of developing the Waste Act.

IWM Planning Responsibilities

The National Waste Management Strategy (NWMS) and the National Environmental Management Act (NEMA) allocates the following responsibilities for IWMPs:

- The *National Department of Environment, Forestry and Fisheries Affairs (DEFF)* must draft and promulgate regulations and guideline documents for integrated waste management planning for all waste types.
- The *Provincial Department (DESTEA)* through its relevant environmental departments must develop hazardous waste management plans and prepare provincial environmental and waste management plans that incorporate the integrated waste management plans submitted by local government and industry. These will be

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submitted to the MEC for approval, which will facilitate interprovincial co-ordination, particularly in relation to planning for facilities for treatment and disposal of waste.

- *Local Government* must develop and submit plans for integrated waste management to the MEC for approval. The approved IWMP must be included in the municipal Integrated Development Plan (IDP).

Waste management plans for *industrial waste* that is disposed of at private and/or dedicated disposal facilities, must be prepared by the *developers/owners* and submitted to the respective provincial environmental departments.

Overview of relevant Policies and Legislation

From point 3.2 it can be seen that the NWMS obliges municipalities to develop an effective IWM system. In order to achieve the policy objectives, the municipalities are required to develop and implement a local waste management plan which articulates strategies and initiatives for IWM.

The IWMP has to translate policy objective into practice and address the deficiencies and gaps in the municipal waste management systems. Shown below is a brief overview of some of the policies and legislation related to municipal IWM:

South African Constitution

The South African Constitution (Act 108 of 1996) is the supreme law of the land. All law, including environmental waste management planning must comply with the Constitution. The Constitution states that the people of South Africa have the right to an environment that is not detrimental to human health, and imposes a duty on the state to promulgate legislation and to implement policies to ensure that this right is upheld.

All organs of state or administration in the national, provincial or local levels of government have similar obligations. The principles of co-governance are also set out in the Constitution and the roles and responsibilities of the three levels of government are defined. According to the Constitution, responsibility for waste management functions is to be devolved to the lowest possible level of government. **Local government therefore is assigned the responsibility for refuse removal, landfill sites and solid waste treatment and disposal.** Provincial government has the exclusive responsibility to ensure that local government carries out these functions effectively. In addition to the Constitution, a number of government policies and statutes are relevant to waste management at the local government level, including but not limited to the following:

- National Waste Management Strategy of 2010

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- National Environmental Management: Waste Act, (Act 59 of 2008)
- Municipal Demarcation Act, (Act 27 of 1998)
- Municipal Structures Act 117 of 1998 & Municipal Systems Act, (Act 32 of 2000)
- The Development Facilitation Act, (Act 67 of 1995)
- National Environment Management: Air Quality Act, (Act 39 of 2004)
- National Water Act (Act 36 of 1998)
- White Paper on Environmental Management Notice, No 749 of 1998
- Minimum Requirements for Waste Disposal by Landfill, 2nd Edition, 1998
- Minimum Requirements for the Handling and Disposal of Hazardous Waste
- National and Provincial Waste Management Strategy and Action Plans
- Local government by-laws and legislation such as the IDP.

Some of these policies are briefly discussed as follows:

National Environmental Management Waste Act (Act, 59 of 2008)

The aim of the new Act is to: *“reform the law regulating waste management in order to protect health and the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development; to provide for institutional arrangements and planning matters; to provide for national norms and standards for regulating the management of waste by all spheres of government; to provide for specific waste management measures; to provide for the licensing and control of waste management activities; to provide for the remediation of contaminated land; to provide for the national waste information system; to provide for compliance and enforcement; and to provide for matters connected therewith”.*

It further states that:

- Everyone has the constitutional right to have *“an environment that is not harmful to their health and wellbeing, and to have the environment protected for the benefit of present and future generations through reasonable legislative and other measures that:*
 - prevent pollution and ecological degradation;
 - promote conservation: and
 - secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development” (RSA, 1996: **Section 24**);

- Waste management practices in many areas of the Republic are not conducive to a healthy environment and the impact of improper waste management practices are often borne disproportionately by the poor;
- Poor waste management practices can have an adverse impact both locally and globally;
- Sustainable development requires that the generation of waste is avoided, or where it cannot be avoided, that it is reduced, re-used, recycled or recovered and only as a last resort treated and safely disposed of;
- The minimisation of pollution and use of natural resources through vigorous control, cleaner technologies, cleaner production and consumption practices, and waste minimisation are key to ensure the environment is protected from the impact of waste;
- Waste under certain circumstances is a resource and offers economic opportunities;
- Waste and management practices relating to waste are matters that:
 - require national legislation to maintain essential national standards;
 - in order to be dealt with effectively, require uniform norms and standards that apply throughout the Republic: and
 - in order to promote and give effect to the right to an environment that is not harmful to health and well-being, have to apply uniformly throughout: and
 - require strategies, norms and standards which seek to ensure best waste practices within a system of co-operative governance.

Municipal Demarcation Act (Act, 27 of 1998)

The Municipal Demarcation Act 27 of 1998 provides criteria and procedures for the determination of municipal boundaries by an independent authority. Section 24 provides that when demarcating a municipal boundary, the Board must aim to establish an area that would enable the municipality to fulfill its Constitutional obligations, including the provision of services in an equitable and sustainable manner, the promotion of social and economic development and the promotion of a safe and healthy environment.

Municipal Structures Act (Act, 117 of 1998)

The main objective of the Municipal Structures Act 117 of 1998 is to provide for the establishment of municipalities in accordance with the requirements relating to categories and types of municipality and to provide for an appropriate division of functions and powers between categories of municipality. It is one of a set of legislation that is aimed at the

transformation of local government into a more financially sustainable and performance orientated sphere of government. Municipalities are categorised either as A, B or C, depending on the level of development. Chapter 5 sets out the functions and powers of the municipalities in accordance with the Constitution.

Municipal Systems Act (Act, 32 of 2000)

The Municipal Systems Act describes the core principles, mechanisms, and processes that are necessary to enable municipalities to move progressively towards the social and economic development of communities, as well as to ensure an efficient access to basic services for all. Its primary focus is on the internal systems and administration of the municipality. The Act enables the process of decentralisation of functions through assigning powers of general competence to local Government. Municipal by-laws are regulated to achieve harmony with national and provincial legislation. As service authorities, municipalities remain responsible for the effective delivery of services and must provide an appropriate policy and regulatory framework. The process to be followed in planning, drafting and adopting the Integrated Development Plan is effectively set out in the Act.

The Development Facilitation Act (Act, 67 of 1995)

The Development Facilitation Act, (Act 67 of 1995) sets out a planning and land development system, which ensures that national, provincial, and local government policies are implemented. Section 28 describes the requirements for Land Development Objectives, which must be developed by each local authority. One of the objectives of Land

Development Objectives is to create a new system of planning that encourages sustained utilisation of the environment, particularly with regard to the environmental consequences of developments.

National Environmental Management: Air Quality Act (Act, 39 of 2004)

The National Environmental Management: Air Quality Act (Act, 39 of 2004) is in the process of replacing the Atmospheric Pollution Prevention Act (APPA), with the aim to reform the law regulating air quality in order to protect the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development while promoting justifiable economic and social development; to provide for national norms and standards regulating air quality monitoring, management and control by all spheres of government; for specific air quality measures; and for matters incidental thereto.

Part 2 of Chapter 2 of the Act sets out national, provincial and local ambient air quality and emission standards, chapter 3 institutional and planning matters, chapter 4 air quality management measures (priority areas, Listing of activities resulting in atmospheric emissions, controlled emitters, controlled fuels and other emitters). Chapter 5 describes the procedures to apply for licenses for listed activities, while chapter 7 describes the offences and penalties for non-adherence.

National Water Act (Act, 36 of 1998)

The National Water Act contains a number of provisions that impact on waste management, including the disposing of waste in a manner, which detrimentally impacts on a water resource and the discharge of waste into a water resource. The Act allows the Minister to make regulations for:

- Prescribing waste standards, which specify the quantity, quality and temperature of waste that may be discharged or deposited into or allowed to enter a water resource
- Prescribe the outcome or effect, which must be achieved through management practices for the treatment of waste before it is discharged or deposited into or allowed to enter a water resource.
- Requiring that waste discharged or deposited into or allowed to enter a water resource be monitored and analysed according to prescribed mechanisms.

White Paper on Integrated Pollution and Waste Management for South Africa, Notice 227 of 2000

The White Paper of Integrated Pollution and Waste Management was published in March 2000 and represents formal government policy regarding integrated pollution and waste management. Integrated pollution and waste management is defined as a holistic and integrated system and process of management aimed at pollution prevention and minimisation at source, managing the impact of pollution and waste on the receiving environment and remediating damaged environments. Waste management is to be implemented in a holistic and integrated manner and extend over the entire waste cycle from cradle-to-grave and includes the generation, storage, collection, transportation, treatment and disposal of waste.

The overarching goal reflected in the policy is integrated pollution and waste management, with the intention being to move away from fragmented and uncoordinated pollution control and waste management towards integrated pollution and waste management as well as waste minimisation. Within this framework of the overarching goal, the following strategic goals apply:

- ✓ Effective institutional framework and legislation;
- ✓ Pollution and waste minimisation, impact management and remediation;
- ✓ Holistic and integrated planning – the intention is to develop mechanisms to ensure that integrated pollution and waste management considerations are integrated into the development of government policies, strategies and programmes as well as all spatial and economic development planning processes and in all economic activity.

The strategic mechanisms include the following:

- ✓ The incorporation of integrated environmental management principles and methodologies in spatial development planning as it relates to pollution and waste management;
- ✓ Making timely and appropriate provision for adequate waste disposal facilities;
- ✓ Developing management instruments and mechanisms for the integration of pollution and waste management concerns in development planning and land allocation;
- ✓ Developing appropriate and agreed indicators to measure performance for inclusion in EIPs and EMPs as provided for in the National Environmental Management Act;
- ✓ Participation and partnerships in integrated pollution and waste management governance;
- ✓ Empowerment and education in integrated pollution and waste management;
- ✓ Information management and International co-operation.

DWAF Minimum Requirements for Landfill, 2nd Edition, 1998

The Minimum Requirements provide applicable waste management standards and/or specifications that must be met, as well as providing a point of departure against which environmentally acceptable waste disposal practices can be assessed. The objectives of setting Minimum Requirements are to:

- ✓ Prevent water pollution and to ensure sustained fitness for use of South Africa's water resources.
- ✓ Attain and maintain minimum waste management standards in order to protect human health and the environment from the possible harmful effects caused by the handling, treatment, storage and disposal of waste.
- ✓ Effectively administer and provide a systematic and nationally uniform approach to the waste disposal process.

- ✓ Endeavour to make South African waste management practices internationally acceptable.

Before a waste disposal site permit is issued, adherence to the Minimum Requirement conditions will be required from the permit applicant. The Minimum Requirements promote the hierarchical approach to waste management, as well as a holistic approach to the environment.

National Waste Management Strategy (NWMS) and Action Plans

The overall objective of this strategy is to reduce the generation of waste and the environmental impact of all forms of waste and thereby ensure that the socioeconomic development of South Africa, the health of the people and the quality of its environmental resources are no longer adversely affected by uncontrolled and uncoordinated waste management. The internationally accepted waste hierarchical approach was adopted of waste prevention or minimisation, recycle/reuse, treatment and finally disposal.

The strategy outlines the functions and responsibilities of the three levels of government and where possible, firm plans and targets are specified.

Action plans have been developed for the short-term initiatives for integrated waste management planning, a waste information system, waste minimisation and recycling, general waste collection, waste treatment and disposal, and capacity building, education, awareness and communication.

The roles and responsibilities in terms of the NWMS for local government include:

- ✓ *Integrated waste management planning:* Local government will be responsible for the compilation of general waste management plans for submission to provincial government.
- ✓ *Waste information system:* Local government will be responsible for data collection.
- ✓ *Waste minimisation:* Local government will implement and enforce appropriate national waste minimisation initiatives and promote the development of voluntary partnerships with industry.
- ✓ *Recycling:* Local governments are to establish recycling centres and/or facilitate community initiatives.
- ✓ *Waste collection and transportation:* Local governments are to improve service delivery. Private public partnerships to assist service delivery are encouraged.
- ✓ *Waste disposal:* Local government is to take responsibility for the establishment and management of landfill sites, and to promote development of regionally based facilities.

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- ✓ Formalising and controlling of scavenging is the responsibility of the permit holder.

The newly formulated National Waste Management Strategy is the guiding document for all parties involved in any sphere of waste management.

National Domestic Waste Collection Standards (October 2010)

The aim of this new set of Standards is to redress past imbalances in the provision of waste collection services, it is therefore imperative that acceptable, affordable and sustainable 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 work and live in. The Standard does however recognize that service levels may differ between areas depending on the practicality and cost efficiency of delivering the service. The Standard also addresses concepts like separation at source and recycling.

National Policy on Free Basic Refuse Removal Services

This draft is currently out for public comment. It links to existing Indigent Policies for Municipalities and aims to address the backlog in terms of provisioning of basic and free refuse removal services to households that suffer from a prolonged lack of refuse removal including previously disadvantaged localities.

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 20ll permit is normally issued. This responsibility has now been devolved to the National Environmental Department (DEA) from DWAF. 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. The 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.

Provincial Framework

There is currently no Provincial legislation pertaining to waste management. However, it emerged from discussions with Mr. Duarte Hugo, Acting Deputy Director Waste Management with the Free State Provincial Department of Economic Development, Tourism and Environmental Affairs that a service provider has been appointed to compile a provincial IWMP.

District Framework

The Lejweleputswa District Municipality has developed the District IWMP with the assistance of the Provincial Government. The District acknowledges the short comings of the District IWMP and considers it as a good framework to guide local municipalities in developing their own IWMP's. Records from a discussion held with the District Manager of Environmental Health and another official (in 2016) reflects that it was pointed out in those engagements that the District IWMP, though is considered complete, has not yet been taken through to the Council for approval at the time.

Matjhabeng Local Municipality By-law

The Refuse (Solid Waste) and Sanitary By-Law was promulgated in 2008 by the MLM and enforcement of this bylaw appears to be poor. The bylaw addresses the following waste issues amongst others, compaction of refuse, disposal sites, littering, dumping, general provision, etc. The omission of spot fines as part of bylaw enforcement with regard to the illegal dumping is a major short coming of the bylaw as is. Illegal dumping is a major challenge facing the municipality in relation to waste management. With assistance from SALGA, waste by-laws are in process of being upgraded, with new clause added in the by-laws that Traffic Department is to assist the Waste Department to eradicate illegal dumping by fining those who litter the environment without any authorization to do so.

The Role of Waste Management Officer

The designation of a waste management officer (WMO) at a municipal level is important in order to ensure that there is constant communication between all three spheres of government on the implementation of the Waste Act. In relation to the development of IWMP, a WMO could potentially play a critical role in ensuring that a municipality should develop its IWMP for compliance purposes. Chapter 3, Section 10(3) of the Waste Act requires that the National Department, Provinces and Municipalities designate WMOs in writing.

The Department has developed a guideline on designation of a WMO which contains information on the duties of a WMO as well as the delegations of power and engagements with other WMOs. The Local government sphere WMOs will act as a point of contact between other spheres of government on waste management issues. This includes the development and implementation of IWMPs which will assist Provinces or the National department in obtaining any information pertaining to the implementation of the IWMP's i.e. reporting on a municipality's progress with regards to reaching its targets as per the IWMP, as well as ensuring that a municipality includes IWMP reporting in the annual performance reports as called for by the (Municipal Systems Act) MSA.

IWMP Planning Process

The primary objective of IWMPs is to integrate and optimise waste management planning in order to maximise efficiency and minimise the associated environmental impacts and financial costs, and to improve the quality of life for all South Africans.

As part of the IWMP development process, **Section 13** of the **Waste Act** requires the development of annual performance reports and it must be noted that this happens outside the actual IWMP development process. Section 13 (3) of the Waste Act states that annual performance report must be prepared in terms of section 46 of the Municipal Systems Act and must contain information on the implementation of the municipal IWMP, including the information set out in paragraph (a) to (j) of subsection (2) insofar as it relates to the performance of the municipality. The diagram below (figure 2) summarises the integrated waste management planning process.

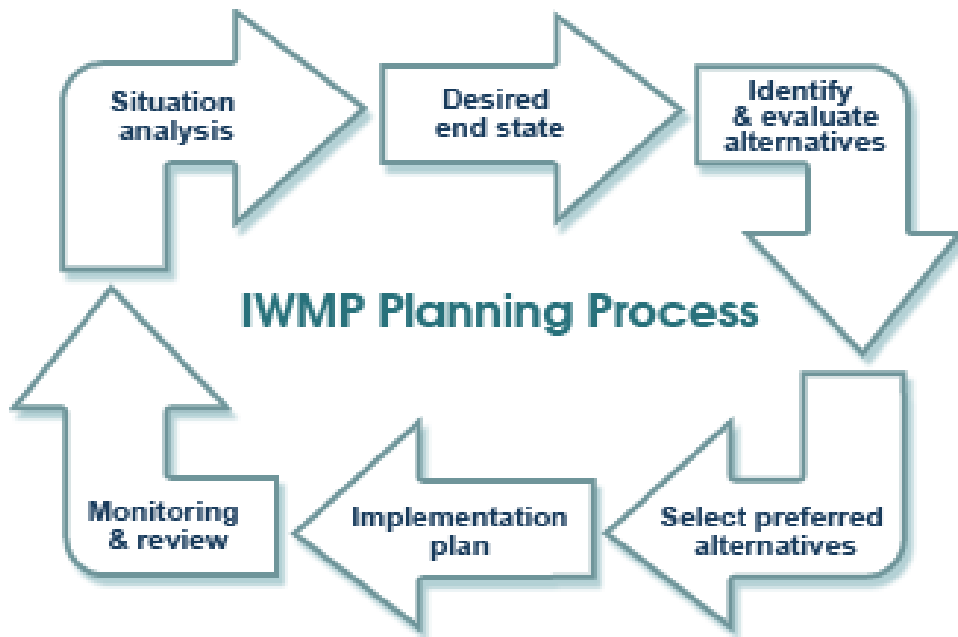


Figure 4: Integrated Waste Management Planning Process

As depicted in Figure 2 above, the integrated waste management planning process includes the following:

- Establishing the situation analysis which includes backlogs;
- Setting the desired end state;
- Identifying, evaluating and selecting alternative methods/approaches for achieving the desired end state;
- Implementing the integrated waste management plan; and
- Evaluating and reviewing the plan to ensure the respective objectives are being met.

Waste Minimization

National policy, in particular the Polokwane declaration sets the ambitious target of a reduction of waste to disposal by landfill by 50% by the year 2012. This was only going to be achieved through waste reduction and minimization. Thus, the IWMP is a guide that the MLM must adopt a plan of action, which is sets out in its declaration for the reduction of waste in the municipality by which year (specific target should be provided)

No formal or organized recycling in MLM and some uncontrolled material recovery is taking place at the landfill sites. There are also some private recycling initiatives and the municipality in partnership with the Province is currently piloting a recycling project at the Odendaalsrus landfill. The state of recycling in MLM is very poor with most of the recyclables ending up at the landfill sites resulting in informal Recycling and material recovery currently taking place at the landfill. The reason for this is that the municipality has not formed links with the main parties involved in the waste recycling industry.

Infrastructure development

It is necessary that all options with regard to service delivery and infrastructure development be considered in order to ensure an efficient, effective and environmentally acceptable waste collection and disposal service. Given that the resource requirements for managing landfills has been increasing with increased public awareness and legislative changes.

The model of regional waste disposal facilities (as opposed to each town within the MLM disposing of their waste individually) must be considered by the MLM. The Welkom and Hennenman landfill sites can be reengineered and operated properly to meet the minimum requirements and become a reliable source of revenue. The Odendaalsrus landfill can be closed whilst the remaining waste disposal facilities are converted into waste transfer or drop off stations. It appears that the model of allocating each town its own landfill site is designed to minimize the cost of waste transportation and with this regional model waste can be moved in-between the MLM towns and existing landfills within -30km radius, which is briefly described by the below:

| | Welkom | Odendaalsrus | Hennenman | Ventersburg | Virginia | Allanridge |
|---------------------|---------------|---------------------|------------------|--------------------|-----------------|-------------------|
| Welkom | 0 | 13 | 24 | 40 | 22 | 26 |
| Odendaalsrus | 13 | 0 | 33 | 50 | 34 | 21 |
| Hennenman | 24 | 33 | 0 | 15 | 26 | 52 |
| Ventersburg | 40 | 50 | 15 | 0 | 31 | 66 |
| Virginia | 22 | 34 | 26 | 31 | 0 | 55 |
| Allanridge | 26 | 21 | 52 | 66 | 55 | 0 |

Table 6: Distances tween Matjhabeng Local Municipality towns

6. CONTENTS OF THE INTERGRATED WASTE MANAGEMENT PLAN

6.1. Geographical area and situation analysis

Matjhabeng Local Municipality forms a part of the Lejweleputswa District Municipality and is located within the Free State Provincial boundaries. It is a Category B municipality, cost of six towns, namely; Welkom, Odendaalsrus, Virginia, Hennenman, Allanridge and Ventersburg. The main economic activities of MLM include mining, manufacturing and agriculture. Currently, there are four permitted landfill sites within the municipality's jurisdiction. In addition, the municipality has one transfer station in Virginia. It should also be noted that the other four additional privately owned landfill sites exist within the municipal boundaries operated by mines. These mine tailings are not regulated by the municipality, however it is required that the municipality, at minimum, compile a registry of these sites and confirm that industrial waste management plans are in place for all major industries within its of jurisdiction.



Figure 5: Map of District municipalities within the Free State province



Figure 6: Map of Lejweleputswa District Municipality with its respectful local municipalities

6.2. Current waste management services rendered

6.2.1. Waste disposed

The volume of waste that disposed of on site is estimated at about 155 000 tons per annum including the illegal dumping, condemned food products and animal carcasses.

Annual waste generation data for Matjhabeng Local Municipality is submitted through the South African Waste Information System (SAWIS), as required by the National Department of Forestry Fisheries and the Environment (DFFE). Even the waste quantities delivered to the Welkom landfill site is not weighed, although it should be weighed by law. The weigh bridge has not been working since June 2012 (Cubicle Trading, 2016: 34). Khabokedi Waste was the operator working in Welkom and Odendaalsrus landfill sites in 2016, with control over the estimates of the amount of waste entering the sites.

At present, Matjhabeng Local Municipality does not have a waste operator. Hence there is no control or exact estimate as to how much waste enters these landfill sites. Both landfill sites have devastating environmental conditions. The Welkom Landfill site has extended up to the old spice fields and this affects the people of Bronville the most, for waste is thrown everywhere

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uncontrollably. The Odendaalsrus landfill site has extended over a 1.5KM of “*waste guard of honour*” to the entrance to the site, behind Eldorette School.

To ensure that the same dysfunction does not occur to other landfill sites in the municipality, the volume of Hennenman and Allanridge landfill sites must be included in the final count. However, this will exclude waste from the four privately owned and operated landfills (illustrated by Tables 7 to 12, respectively)

Waste generation was last estimated in the 2011 Lejweleputswa District Municipality IWMP. This was a theoretical calculation based upon a waste generation rate of 0.5 kg of general waste per person per day over a period of ten years. Thus, the recent generation of waste estimates will be in 2021.

6.2.2. Collection

The estimated population served by the MLM is approximately 406 461 (StatsSA, 2011). Out of an estimated 146 326, 126 709 households receive refuse removal representing 46% of the population. All services are coordinated by the Municipal Solid Waste Management Division, with the main office in Welkom, and complemented by Eastern and Western regional offices. The services rendered extends to all the proclaimed townships, un-proclaimed townships and suburbs, depending on their needs.

6.2.3. Storage

The types of storage used in Matjhabeng jurisdictional area consist of the following:

- Residential premises use 85 and 240 litres PVC and black waste bags.
- Business premises uses 1.75m³ mini-mass containers and 240 litre bins
- Containers for supplementary and special services:
 - 6m³ mass container
 - 15m³ mass container
 - Street pole waste bins: to assist with street cleansing
 - Concrete litre bins: assist with street cleansing

6.2.4. Non-serviced Areas

About 6745 households within Matjhabeng local municipality does not have regular access to waste collection service namely Agricultural Holdings. Residents in these areas bury their waste. These areas are mainly rural and agricultural holdings areas and a plan for rendering a service to them is still a challenge. The Council does not have the capacity to service these areas due to lack of trucks, as well as the approach thereof.

6.2.5. Transportation and Equipment

Matjhabeng has four established landfill sites, with transfer station in Virginia. Hence, the Municipality aims to reduce transport costs, engineering costs and operating multiple landfill sites which contributes to increased chances of non-compliance. The distances between Matjhabeng towns in the table below is useful as a guide for planning purposes. The time travelled per round trip distances at an average speed 40km/h is a challenge to the operational vehicles. Therefore, it is evident that the collection vehicles are not able to do required trips. The fleet is not in good condition or awaiting payment to service providers must be sorted for collection route planning and workload distribution.

The transportation mentioned below is used for the waste removal services:

| Collection vehicle type | No. | Part status | Age (years) | Comments |
|---|-----|------------------------------|----------------|--|
| Compactors | 9 | Operational | +10 years | Only 3 very functionable and service the entire municipal area with concentration on Welkom, and 1 donated to the Municipality by Deputy Minister of Forestry, Fisheries and the Environment |
| Compactors with Goldfields and Radiators | 6 | Awaiting payment and service | 10 to 20 years | They need to be serviced. The Municipality is in the process of procuring new trucks in collaboration with the UD Company |
| Compactors in the workshop and other places | 21 | Not in good condition | 10 to 20 years | Others broke down, had accidents and damaged in the municipal area and other workshops |
| Grabs | 2 | Not in good condition | ±7 years | Needed for Virginia and Odendaalsrus |
| Grabs in the workshop | 5 | Not in good condition | ±7 to 20 years | Awaiting to be serviced |
| Skip loader | 1 | Operational | ±5 years | Based in Welkom |
| Skip loader in the workshop | 1 | Not in good condition | 20 years | Needs service |
| Tractors | 5 | Partially operational | +20 years | Based in Hennenman, Odendaalsrus and Allanridge |
| Tractors in the workshop | 5 | Not in good condition | +20 years | Scrap and breakdown, new tractors are needed |

Table 7: Equipment used for service of waste management



Figure 7: Compactor truck, illegal dump next to Welkom landfill site



Figure 8: Odendaalsrus buy-back centre

6.3. Disposal Sites

By law, waste disposal sites are supposed to be engineered and operated under license issued by the competent authority that has been delegated by the National Department of Environmental Affairs (which at present, is referred to as the Department of Environment, Forestry and Fisheries). Matjhabeng Local Municipality uses four waste disposal sites in different towns; namely Welkom, Odendaalsrus, Allanridge and Hennenman, in addition to one transfer station in Virginia.

All waste collected by the Municipality is disposed of at the landfill sites. Welkom and Odendaalsrus Landfill operations have been outsourced effectively from comprehensive investigations in terms of the Municipal Systems Act (32 of 2000). By establishing collection routes, a municipality would be able to properly plan for collection and disposal of waste to and from households to the waste disposal facility/ies, at the same time this information could also be used to gauge whether there is a need to develop transfer stations especially where there are vast travel differences between the collection points and the disposal points in order to save on time and financial resources.

Currently, there is no contractor for waste collection in Matjhabeng Local Municipality. However, the management on the site do not meet all the permit conditions and as a result, in addition with the assistance from DFFE and the Province interventions as to how waste should be management in the landfill site will be put into place to ensure all landfill comply at all times, thereby allowing the municipality to adopt a “Zero Waste” plan.



6.4. Detailed illustration of waste facilities in MLM as per 2021 Audits reports:

| Waste Facility Site Audit and Current operations | |
|--|---|
| Site Parameters Investigated | Findings |
| Name of disposal site | Welkom Waste Disposal Site |
| Class | G:S:B- |
| Geographic location of landfill | S: 28° 00' 50.2" - E: 26° 49' 46.8" |
| Operating hours | 08h00-17h00, 7 days a week |
| Waste Volume | 9000 tons per month |
| Remaining site life | 1 Year |
| Disposal Tariffs | None |
| Equipment on site | SD13 Standard Bulldozer |
| Infrastructure | Office, weigh bridge, water and electricity |
| Personnel | 1 supervisor, 1 security, 3 spotters, 1 weighbridge clerk and 1 driver |
| Registration/permit certificate | B33/2/340/21/P8 on the 26/06/1992 |
| Type of waste | Domestic / General waste |
| Description of neighboring areas | Road to Virginia, Residential Area, Farms and Mining |
| Signposting and road access | Yes but inadequate |
| Access control | Yes but poor due to the site not properly fenced |
| Method of land filling | Cell system |
| Disposal of hazardous waste | Not accepted, however due to poor access control it is possible for hazardous waste to end on this site |
| Excavation for cover | None. |
| Drainage | No drainage system observed |
| Control of nuisances | Burning of waste |
| Salvaging activities | Uncontrolled waste pickers on site |
| Leachate and gas management | No leachate and gas management system |
| Rehabilitation | None |
| Final cover | None - There is more than enough cover material onsite, lack of machinery and personnel is a challenge |
| Public participation | None |
| Plans for extending/closing the disposal site | No formal closure plans observed |

Table 8: Welkom waste disposal center

| Waste Facility Site Audit and Current operations | |
|---|---|
| Site Parameters Investigated | Findings |
| Name of disposal site | Odendaalsrus Waste Disposal Site |
| Class | G:M:B- |
| Geographic location of landfill | S: 27° 53' 12.0" - E: 26° 40' 32.9" |
| Area | 24 9630ha |
| Operating hours | 08h00-17h00, 7 days a week |
| Waste Volume | 1800 tons per month |
| Remaining site life | 3 years |
| Disposal Tariffs | None |
| Equipment on site | SD13 Standard Bulldozer |
| Infrastructure | Guard house, houses, Recycling shelter and water |
| Personnel | 1 security, 1 spotter and 1 driver (3) |
| Registration/permit certificate | B33/2/325/6/P108 on the 03/03/1994 |
| Type of waste | Domestic / General waste |
| Description of neighboring areas | Road to Odendaalsrus, Residential Area, Farms and Mining |
| Signposting and road access | Yes but inadequate |
| Access control | Yes but poor due to the site not fenced |
| Method of land filling | Cell system |
| Disposal of hazardous waste | Not accepted, however due to poor access control it is possible for hazardous waste to end on this site |
| Excavation for cover | None. |
| Drainage | No drainage system observed |
| Control of nuisances | Burning of waste |
| Salvaging activities | Uncontrolled waste pickers on site |
| Leachate and gas management | No leachate and gas management system |
| Rehabilitation | None |
| Final cover | None |
| Public participation | None |
| Plans for extending/closing the disposal site | No formal closure plans observed |

Table 9: Odendaalsrus waste disposal center

| Waste Facility Site Audit and Current operations | |
|---|---|
| Site Parameters Investigated | Findings |
| Name of disposal site | Allanridge Waste Disposal Site |
| Class | G:S:B- |
| Geographic location of landfill | S: 27° 45' 35.311 - E: 26° 39' 52.111 |
| Area | 18 4293ha |
| Operating hours | 08h00-17h00, 7 days a week |
| Waste Volume | 180 tons per months |
| Remaining site life | 10 years |
| Disposal Tariffs | None |
| Equipment on site | None |
| Infrastructure | None |
| Personnel | None |
| Registration/permit certificate | 16/2/7/C25/12/P289 |
| Type of waste | Domestic / General waste |
| Description of neighboring areas | Road to Odendaalsrus, Farms and Mining |
| Signposting and road access | Yes but inadequate |
| Access control | Yes but poor due to the site not fenced |
| Method of land filling | Trench system |
| Disposal of hazardous waste | Not accepted, however due to poor access control it is possible for hazardous waste to end on this site |
| Excavation for cover | None. |
| Drainage | No drainage system observed |
| Control of nuisances | Burning of waste |
| Salvaging activities | Uncontrolled waste pickers on site with dwellings |
| Leachate and gas management | No leachate and gas management system |
| Rehabilitation | None |
| Final cover | None |
| Public participation | None |
| Plans for extending/closing the disposal site | No formal closure plans observed |

Table 10 Allanridge disposal center

| Waste Facility Site Audit and Current operations | |
|---|---|
| Site Parameters Investigated | Findings |
| Name of disposal site | Henneman Waste Disposal Site |
| Class | G:M:B- |
| Geographic location of landfill | S: 28° 00' 01.9" - E: 27° 04' 22.5" |
| Area | 30 0187ha |
| Operating hours | 08h00-17h00, 7 days a week |
| Waste Volume | 1500 tons per month |
| Remaining site life | 10 Years |
| Disposal Tariffs | None |
| Equipment on site | None |
| Infrastructure | None |
| Personnel | None |
| Registration/permit certificate | B33/2/C350/122/P30 |
| Type of waste | Domestic / General waste |
| Description of neighboring areas | Residential and farms |
| Signposting and road access | Yes but inadequate |
| Access control | Yes but poor due to the site not fenced |
| Method of land filling | Not clear |
| Disposal of hazardous waste | Not accepted, however due to poor access control it is possible for hazardous waste to end on this site |
| Excavation for cover | None |
| Drainage | No drainage system observed |
| Control of nuisances | Burning of waste |
| Salvaging activities | Uncontrolled waste pickers on site with dwellings |
| Leachate and gas management | No leachate and gas management system |
| Rehabilitation | None |
| Final cover | None |
| Public participation | None |
| Plans for extending/closing the disposal site | No formal closure plans observed |

Table 11 Hennenman waste disposal center

| Waste Facility Site Audit and Current operations | |
|---|--|
| Site Parameters Investigated | Findings |
| Name of disposal site | Virginia Waste Transfer Station |
| Class | G:M:B- |
| Geographic location of landfill | S: 28° 07' 32.8 - E: 26° 52' 33.0 |
| Area | 1 8000ha |
| Operating hours | 08h00-17h00, 7 days a week |
| Waste Volume | Not estimated |
| Remaining site life | Transfer station – no estimate |
| Disposal Tariffs | None |
| Equipment on site | None |
| Infrastructure | None |
| Personnel | None |
| Registration/permit certificate | B33/2/C350/122/P30 on the 27/03/2000 |
| Type of waste | Domestic / General waste |
| Description of neighboring areas | Residential, farms and wetland |
| Signposting and road access | Yes but inadequate |
| Access control | Yes |
| Method of land filling | Transfer station but waste stays for months without transfer to landfill leading to high volume of uncollected waste and illegal dumping next to the facility, burning of waste and uncontrollable illegal dumping |
| Disposal of hazardous waste | Not accepted |
| Excavation for cover | Not needed |
| Drainage | No drainage system observed |
| Control of nuisances | Burning of waste |
| Salvaging activities | None with a <i>No Recycling</i> notice at the gate |
| Leachate and gas management | Not needed |
| Rehabilitation | None |
| Final cover | None |
| Public participation | None |
| Plans for extending/closing the disposal site | No formal closure plans observed |

Table 12: Virginia transfer station



Figure 8: Illegal dumping near Odendaalsrus landfill site

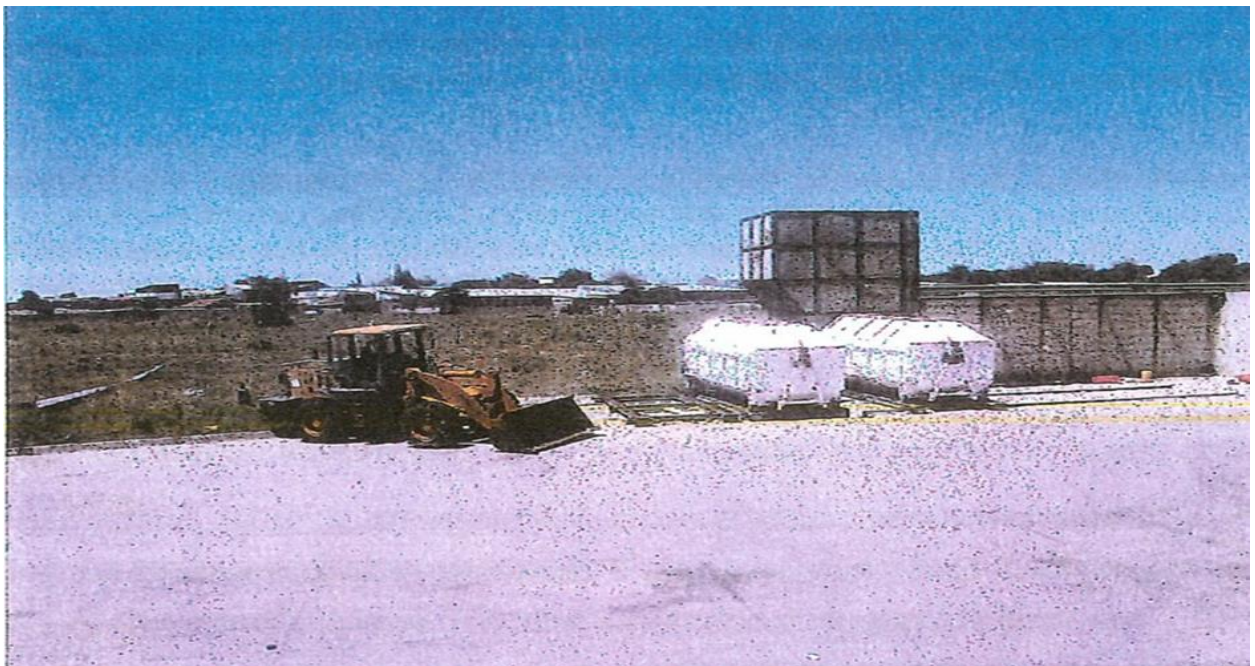


Figure 9: MLM transfer station, Virginia (2013)

In building a transfer station, the Municipality was aiming for the waste to be collected by compactor trucks to Welkom landfill site. Therefore, compactor trucks do not have to go through the areas of jurisdiction for waste collection, which allows flexibility and efficiency to allow compactor trucks to collect waste in other areas as well.



Figure 10: MLM transfer station, Virginia (2019)



Figure 11: MLM General Landfill site status (illegal dumping next to general landfill site)



Figure 12: Welkom landfill under construction



Figure 13: Waste truck and pickers (2013)

6.5. Waste generation quantities

The table indicates current estimated waste quantities generated and disposed off at municipal owned land fill sites in Matjhabeng Local municipality

| Landfill | Weekly | Monthly | Year | % Total |
|---------------------|-------------|---------|----------------|------------|
| Welkom | 2250 | 9000 | 108 000 | 72 |
| Odendaalsrus | 450 | 1800 | 21600 | 14 |
| Henneman | 375 | 1500 | 18000 | 12 |
| Allanridge | 45 | 180 | 2160 | 2 |
| Total | 3120 | | 149 760 | 100 |

Table 12: MLM Landfill Waste Volumes (Cubicle Trading, 2016)

Notes:

- Quantities are estimated averages, based on data extracted from the Lejweleputswa District Municipality IWMP and considering the national guidance on waste estimates, that a person generates a half kilogram to one kilogram of waste per day and people in low income groups generally generates less waste as compared to high income groups.
- Estimates exclude medical and hazardous waste, as well as waste disposed of at privately operated landfills.
- Data excludes recyclables recovered from site by informal waste pickers and reclaimers; therefore, total tonnages actually landfilled will be less than stated.
- The Landfill sites operate 7days a week and due to poor access control operating time are not adhered to as the sites remain accessible beyond operating hours.

Of utmost importance:

The growth estimates are only base on domestic waste. As the standard of population improve or worse, the amount of waste generated per service point will also adjust. Due to geographical landscape of Matjhabeng towns, the population of the municipality will therefore increase. The amounts indicated below for domestic waste (excluding garden waste) has been calculated as follows:

Business and industrial waste to be generated in future will be difficult to estimate since many businesses have closed down, with other industries experiencing no growth or expansion.

6.6. Collection needs

Waste transportation and waste transfer

As part of the IWMP, waste collection fleet should be critically analysed. Waste collection fleet currently used for the service is indicated below. Although it has already been started in the status quo analysis, this determines efficiency with regards to each vehicle.

Transfer needs

Based on the table above (*MLM landfill sites volumes*), it is clear that the economic radius for each vehicle has been exceeded. Establishment of more transfer stations in waste generation areas should be considered.

Disposal site

Cubicle Trading suggested that disposal costs indicated above would be better managed and controlled if some disposal sites could be closed and replaced with better transport arrangement or appropriate waste facilities whilst improving control points and weighbridge operations. This can result to regional landfill sites and reduce environmental liability, management and resources required to make each of the five sites meet permit conditions.

Since MLM does not have much resources to deploy to all sites regionalisation of landfill present an opportunity to focus and capitalize on economic of scales as there will be greater volumes as more waste will be diverted.

The Lejweleputswa district municipality IWMP (LDM-IWMP) also recognises the need for a regional landfill site appoint Welkom as the ideal location. Further engagement led by the District should be done involving other municipalities within the District with a view of better understanding the implications of having a regional landfill in Welkom, whilst further clarifying roles and responsibilities guided by the Intergovernmental Relations framework.

6.7. Waste Management costs

The table below shows the total activity costs for waste management service per annum. Attached as annexure.

Waste removal tariff no recently adopted tariffs?

The tariff that came into effect on the **1st July 2015** are tabled below for the different types of services

| Service | Tariff 2015/2016 |
|----------------------------------|-------------------------|
| Households | R65.02 |
| Industrial | R247 |
| Business | R120,04 |
| Bulk and other container | R711,98 |
| Removal of dead animal carcasses | R1250 |

Table 13: Different waste services

6.8. Budget

Salaries and Personnel Costs: 2015/2016

- Refuse Removal: R30 234 876.00
- Refuse Disposal: R15 757 986.00

Administration Costs

- Refuse Removal: R2 346 000.00
- Refuse Disposal: R1 988 972.00

Rental and Operational Costs

- Refuse Removal: R13 5355 801
- Refuse Disposal: R5 643 278.00

Sundry Expenses

- Refuse Removal: R9 998 922.00
- Refuse Disposal: R2 755 459.00

Overall Budget

Above figures are summarised in the table below:

| Expense | Annual cost (R) | Percentage |
|---------------------------|------------------------|-------------------|
| Salaries | 45 992 862 | 56 |
| Admin costs | 4 334 972 | 5 |
| Rental costs/ operational | 19 179 079 | 23 |
| Sundry/ capital | 12 754 381 | 16 |
| Total | 82 261 294 | 100 |

Table 16: Overall budget

6.9. Issues, Gap Analysis, Need Assessment, Objectives and Targets

Overview. Based on the status quo analysis, meetings and engagements with different stakeholders, including workers in the waste stream and the outcome of the solid waste sites audit reports, a number of issues were mentioned with regards to existing systems and improvement's thereof (Cubicle Trading, 2016 and Enviro-Pro, 2021).

When identifying issues, gaps and needs, short- and medium-term objectives of the NWMS and principle of the National Environmental Management Act (NEMA) need to be considered, as well as other applicable legislative requirements. When it comes to general waste, a number of priority initiatives in which the municipality will be required to play a leading role, is to:

- o Implement general waste collection services in non-serviced or poorly served areas and new ones
- o Develop waste buy-back centers
- o Promote separation at source
- o Minimize environmental impacts of waste disposal facilities and littering
- o Development and implementation of a Waste Information System
- o Capacitate people and create jobs in waste management and collection

Gaps and needs

Gaps and needs that have been identified in the existing system are commonly caused by:

- o *Institutional and Organisational*

The municipality has adequate staff to manage the waste services in Matjhabeng as per organogram. In reality, there is an issue of waste personnel who are unsatisfied with overtime shifts and acting positions. Some workers do not affect change (work to make a difference) as per job description and acknowledgement signed by each worker in their contract with the municipality. There are no sufficient vehicles to collect waste within the area of jurisdiction, leading to excessive backlog. Vacant posts due to retirement and death amongst others are not filled in time, resulting in a further strain in service delivery. The big gap that still exists between the management, skilled and unskilled labour in terms of positions and levels in the Organisational hierarchy limit upward mobility of personnel in the department. About 90% of the personnel is unskilled labour, with management constituting of only 1% of the total work force in the department.

Training, including computer skills, is required for the personnel to improve skills.

- o *Regulatory*

Regulations at national level are adequate and kept up to date with current waste management demands and challenges. On municipal level, the current waste by-laws need law enforcement and updating to ensure that the regulation are used to protect the public health as well as the

environment. Waste management department required to submit the by-laws to SALGA for upgrading.

- o *Socio-economic*

Majority of residents in Matjhabeng are living with poverty and do not have means to pay for basic services. Due to high unemployment rates and lack of finances, it is difficult to keep up with the needs of the community. Basic services payments have deteriorated. Closure of many businesses due to mining closure also worsen the situation. Hence, the municipality in its area of jurisdiction, must watch indigent status on a regular basis.

- o *Technical and operational*

The equipment use for waste removal service is very old. However, due to lack of finance, it is difficult for the municipality to purchase new modern equipment. Population changes and patterns, as well as the improvement in standards of living impacts on service delivery for the dependence on modern technology to liver services is very high.

In 2016, it was brought to the municipality's attention that the municipal waste vehicle experiences many breakdowns during collection. Waste is removed in the afternoon until the evening which in turn causes disturbances, noise and littering as the bags would be torn apart by the dogs in the process of awaiting for collection. To some extent, it is not only the dogs that tear the bags apart but the waste pickers as they try to see what each refuse bag contains. The municipality must therefore take care of the replacement policy so as to address fleet problems with waste management. On the other hand, in the municipal fleet section is the service providers awaiting for repayment for general service and waste management. Such aspects must be included in municipal planning and annual budget.

- o *Revenue generation from the landfill site*

There is no charge or recovery measures implemented in all landfill sites within the municipality, despite the municipality having a tariff structure and policy for waste services. The municipality has still not implemented its policy, which initially required investment from the municipality to strengthen measures for access control and weigh bridge.

- o *Poor landfill maintenance and impacts*

With non-compliance in accordance to the minimum requirements in waste disposal by landfill, results in no income generation for there is no proper mechanisms for weighing waste

There is a small budget for maintenance and insufficient plant hampers daily covering and maintenance at the landfill site

Matjhabeng local municipality does not have facilities for disposal of hazardous and medical waste, which results in increased illegal dumping. This has been opted by municipality so as to avoid costs of proper disposal since the transporting such waste type is expensive.

Soils and ground water can become polluted by landfill site if leachate moves through surrounding soils and enters ground water. Such pollution is highly possible for Welkom and Odendaalsrus landfill sites since they are in demoralizing environmental conditions. Leaching of heavy material could be dangerous to plants and animals, and people as well.

Poor landfill site management could result in air pollution. Hazardous (i.e. Benzene, methane, naphthalene, trichloroethylene, and so on) decompose and then creates volatile gasses. Should they become concentrated, they can become explosive.

Bad odours are common during the wet summer season when the landfill sites are kept moist. High temperature facilitates decomposition of waste and production of odour, landfill waste is usually covered in soil and rubble on a daily basis so as to reduce odour problems

Communities that are located close to landfill sites can be impacted by air pollution and landfill gas. If not managed properly volatile organic substances and landfill gas can be present in residential areas adjacent to landfill site. These substances cause burning eyes, sore throats and headaches, which on the other hand, attracts flies, rats, snakes; which an spread to surrounding communities.

- o *Illegal dumping and littering*

Matjhabeng has lack of information when it comes to waste minimisation and recycling initiative for people always dispose waste on open spaces, vacant or unused stands, street corners, and even public spaces. One case in point is in the entrance to a residential area where people drop off their waste and litter as they drive in the township. This, in turn, impacts badly on the overall look despite's the environment's greening and beautification.



Figure 14: Illegal dumping (Behind Marios, Welkom CBD)

- o *Findings: Residential entrances and exit*
 - Residents dump garden, domestic and animal carcasses on the side of the road
 - Some waste is just thrown next to the bulk containers that the Council has provided
 - Although, municipal vehicles service residents on a daily basis, there is still illegal dumping.
 - Loose papers are also seen lying around, in spite of piles of waste on different places.
 - Some people using public or private vehicles also have the tendency of throwing containers or papers of food substances just out of the window after consuming them.
 - People like street vendors, may also play a part in illegal dumping and littering for they operate from different points within the city, in most cases, in the areas that the Council is unable provide bin.
- o *Storm water channels*
 - Residents residing in areas along the channels use them for dumping as well. Most of those who make use of the bucket system in the municipality

- In some areas, waste is dumped on the edges of these channels in such a way that it is difficult to collect waste (see figure below).
- Waste deposited not these channels create a disturbance in the channels which makes a barrier to the constant flow of water in the channels
- Residents are exposed to communicable diseases (i.e. cholera or diarrhea)
- To clean these channels, it requires specific machinery and personnel that the municipality does not have



Figure 15: Illegal dumping in a storm water drainage (Nkoane road, Thabong)

- *Open spaces and unguarded buildings*

Most of the open spaces in Matjhabeng local municipality are used for illegal dumping. Since the cost of cleaning up illegal dumping makes up a substantial portion of the waste budget, the main causes of such include poor refuse removal services, lack of law enforcement and lack of education and awareness. However, the Good-Green Deeds Campaign youth programme has been launched in all local municipalities across the country as an intervention from the DFFE. These youths are responsible for identifying illegal dumping sites and hotspots, clean-up campaigns of those areas, as well as raise awareness to the residents around the areas with illegal dumps.

- *Impact*

- Illegal dumping causes pollution and degradation of the environment

- Illegal dumping of waste on land into storm water channels contributes towards soil and water pollution
- Biodiversity and the value of recreational value of open spaces is also affected



Figure 16: Nyakallon area, Allanridge

(these species could die as result of pollution from illegal dumping)

- *Waste minimisation and recycling*

Currently there is no capacity or expertise within the municipality to develop and drive waste minimisation and recycling initiatives. There is no recycling budget so it is difficult for the municipality to drive process 100%. However, there is a number of buy-back centres that Harmony mine has proposed as an initiative to help the municipality fight this waste problem. There is also a number of environmental protection programmes (i.e. EPWP, EPIP, YCOP) from the Provincial and National government are providing to the municipality as means of support with their waste and refuse removal services. Through these programmes, communities are encouraged to participate in recycling initiatives, as well as establish waste jobs that will help the municipality divert waste from landfill sites.

- *Social*

Inputs from the community and their representatives regarding the development and improvement of services has been invited and taken into consideration on several occasions. However, there is limited educations and awareness programmes due to financial constraints, which is why the provincial and national government has stepped into this issue to assist municipalities, as municipalities struggle on their own. The importance of rate payments to local municipalities could help municipalities deliver basic service handsomely.

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6.9.1. SWOT analysis

In order to categorise the needs within the municipality, a SWOT analysis was done. The results of the analysis should be taken into consideration during the updating or reviewing of the IWMP and its alternatives.

Strength

- The strong points limited to the following:
- Existing functional collection service
- Manpower and equipment suitable for work required
- Garden, building rubble and bulks waste services are rendered
- Collection equipment in reasonable working order
- Some by-laws that provide some basis for waste regulation

Weaknesses

Insufficient resources such as the following can be seen as weaknesses:

- Lack of fleet replacement policy
- No sufficient budget for maintenance
- Insufficient staff at management and skilled level
- The gap between management, skilled and unskilled labour in terms o levels limit upward mobility
- Waste management services not rendered in the agricultural holdings
- No proper recycling plan in place
- No accurate measurement of the waste entering the landfill site
- Landfill sites operations not meeting permit conditions

Opportunities

Opportunities within the areas consist of:

- Improving the participation of the industrial and mining sector
- Improving the awareness of the community and increase the involvement of the community through structured and managed programmes (i.e. EPWP, Thuma-Mina Good Green Deeds)
- Standardise residential storage container 240ltr bins
- Implement tariffs for waste disposal at landfill sites and illegal dumping fines
- Convert Welkom and Odendaalsrus landfill sites into regional facilities and charge neighboring municipalities for use

- Make use of a mobile scale to obtain more accurate tonnages
- Update by-laws to include all areas within the jurisdictional boundary and the IWMP
- Integrated waste management support by the district to enhance uniformity and shared services.

Threats

Threats that has been identified include:

- The culture of non-payment of rates, which halts financial viability of the service
- Management of waste site not according to legislation and guidelines
- Hazardous waste entering the landfill site and polluting the groundwater
- Total breakdown of services due to resources, such as funds and manpower
- Lack of refuse collection due to unavailable service compactor trucks, leading to more waste generation and illegal dumping
- Informal housing on landfill site (i.e. in Odendaalsrus landfill site)
- Scavengers on the landfill site creating security problem and liability for the management of the site



Figure 17: Clean-up campaign, ward 17

6.10. Approval and acceptance of objectives and targets

Public and politicians are empowered to better understand the principles of solid waste management planning and the objectives that need to be accepted by public and endorsed by political representatives.

The Waste Management Committee constituted by stakeholders from various local areas within the Municipality should be empowered to make informed decisions on what are the best options on solid waste management in the Municipality.

6.11. Desired end State

Key objectives and strategies

The key objectives and strategies focus on remedying the above identified inadequacies across the waste management value chain from collection, transportation, storage and disposal. Initiatives are proposed that will regularize all the local disposal sites in terms of environmental law, thereby eliminating or minimizing the public and environmental health risks. Strategies entail improved service delivery, compliance in terms of minimum requirements and the implementation of the required engineering and operating practices.

Initiatives are proposed that will ensure proper waste management practices. This entails the preparation and implementation of operations management plans for the various services together with the drafting and promulgation, as may be necessary, of all supporting policies, guidelines and bylaws together with the development of future planning initiatives.

Setting of Goals, Objectives and Targets

The goals and objectives of the NWMS are summarised as follows:

| 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 |

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| | |
|---|---|
| Avoiding and minimising 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 regionalisation of waste management services |
| Treating and safely disposing of waste as a last resort | <ul style="list-style-type: none"> • Stabilise quantity of waste disposed to landfill then reduce this volume • Improve landfill management to comply with legislation • Increase thermal treatment and conversion of waste to energy • Ensure the diversion of certain waste types 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 |

Table 14: Goals and objectives of the NWMS (NWMS DEA, 2010)

For MLM to achieve goals set out by NWMS, objective and target have to be in line with the waste management hierarchy. The waste hierarchy assists in making decisions about the proper and environmentally friendly ways of handling waste. Since gaps and needs has been identified, strategic and operational objectives have to be set.

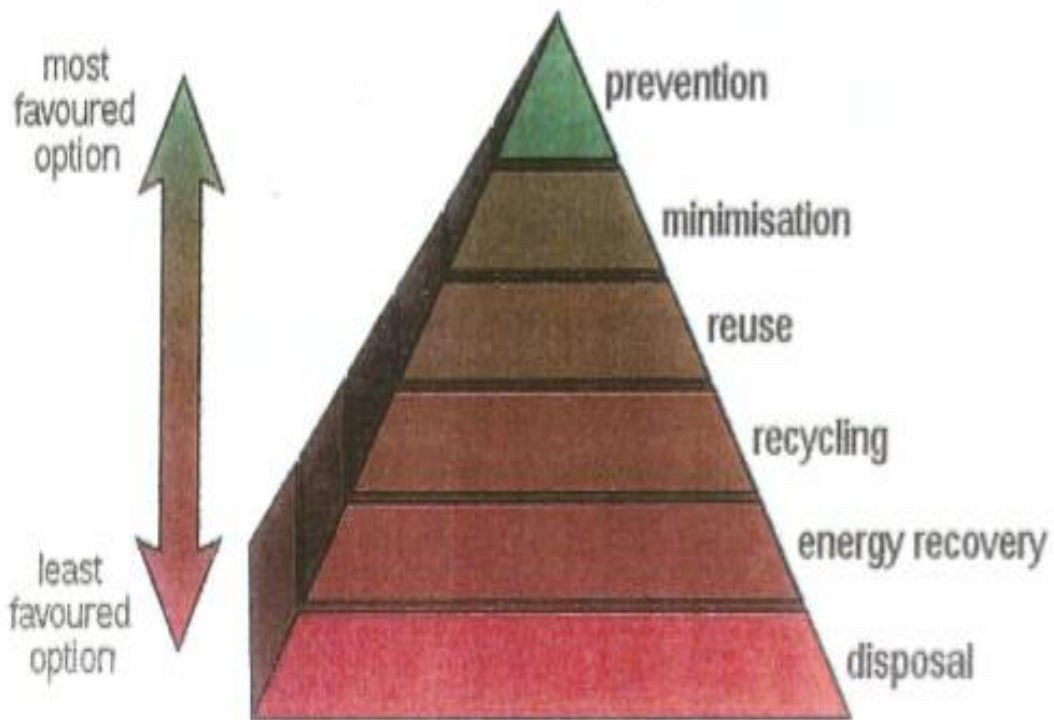


Figure 18: Waste management methods (from least to the most favoured method)



Figure 19: Waste Management Hierarchy

Strategic objectives

- Viability of waste separation at source versus separation at waste process facility is anticipated to be investigated by **JUNE 2022**
- Waste separation at source program in high income areas will be fully implemented for waste generation areas (Welkom and Odendaalsrus) by **DECEMBER 2023**
- The establishment of Municipal service partnerships (MSP's) in waste collection to be explored by **JUNE 2022** and if feasible implemented by **JULY 2024**
- Investigation of waste collection fleet by **MARCH 2023**
- Waste management systems in the municipality shall become economically independent and profitable in the long term, 2026 and beyond.

Operational Objectives

- By **December 2026**, all un-serviced areas will have an effective door-to-door waste collection service or alternative effective option.
- By then, all waste will be disposed in such a manner that meets the DEFF requirements
- Instead of illegal dumping to be reduced by 50% since 2017, it has escalated rapidly. This must be tackled with rightful mechanisms, such as purchasing of appropriate fleet as one of them
- Odendaalsrus landfill site are to be regionalized to serve closed waste disposal sites operating a transfers and drop off areas
- Virginia Transfer Station to be developed into a fully-fledged Solid Waste Disposal site with proper feasibility outcomes considered and full EIA conducted.
- Appropriate (qualified and capacity competent) personnel must be recruited to ensure effective rendering of services to communities incrementally per year
- The public and private sector should be well aware of their duties and responsibilities regarding waste management, capacity building drive to be rolled out by July 2022
- Enforcement of bylaws and other prescripts with regards to illegal dumping and illegal burning of waste to be enhanced by **JULY 2022**

Setting strategic goals, targets and indicators

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

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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 targets for waste management services 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 in the next five years in order to give effect to the Waste Act. It contains an action plan with various targets to be achieved by municipalities in the next five years until 2016. It is important that there should be a target date by which municipal strategic goals and targets are to be attained within the 5 years from the date the IWMP has been approved.

Strategic goals can be divided into:

- **Immediate:** 1 year
- **Short-term:** 2 to 3 years
- **Medium term:** 3 to 5 years and
- **Long-term:** 5 to 10 years

Long term goals relate to targets that extend beyond the 5 year period of implementing an IWMP i.e. decommissioning and planning to develop a new waste disposal facility

Herewith are tables that provide proposed desired end state for waste management strategic goals in Matjhabeng local municipality. Goals are therefore listed in tables below, and categorized into **Immediate, short-term, medium term** and **long term** goals:

Goal 1: Promote recycling and recovery of waste

| Immediate goals | Short term goals | Medium term goals | Long term goals |
|--|---|---|--|
| Establish mechanisms for promoting separation at source | Roll out separation at source to 30 % of households | Roll out separation at source to 70 % of households | 100% households receiving separation at source |
| Conduct a feasibility study to determine whether there is a need to establish buy back centres | Develop plans to establish buy back centres | Buy back centres established | |
| Develop a composting strategy to divert garden waste to landfill | Establish a compost recycling plant | Compost recycling plant fully operational and is operated in a sustainable manner | |

Goal 2: Ensure the effective and efficient delivery of waste services

| Immediate goals | Short term goals | Medium term goals | Long term goals |
|---|---|---|--|
| Develop a strategy for the collection of waste services | Increase the roll out of waste collection services by 50% of households (including indigents) | Increase the roll out of waste collection services by 70% of households (including indigents) | Increase the roll out of waste collection services by 100% of households (including indigents) |

Goal 3: Ensure that legislative tools are developed to deliver on the Waste Act and other applicable legislation

| Immediate goals | Short term goals | Medium term goals | Long term goals |
|-----------------|-----------------------------|-------------------|-----------------|
| | Develop/ amend waste by-law | | Review by-laws |

Goal 4: Sound budgeting and financing of waste management services

| Immediate goals | Short term goals | Medium term goals | Long term goals |
|---|---|---|---|
| Conduct full cost accounting for waste services | Set and implement tariffs for waste collection and disposal | Review and implement tariffs for waste collection and disposal | Review and implement tariffs for waste collection and disposal |
| Allocate budget for waste services from equitable share funding | Allocate budget for waste services from equitable share funding | Allocate budget for waste services from equitable share funding | Allocate budget for waste services from equitable share funding |

Goal 5: Ensure the safe and proper disposal of waste

| Immediate goals | Short term goals | Medium term goals | Long term goals |
|--|---|--|---|
| Apply for a waste license in order to have an approved waste disposal facility | Train waste disposal facility managers/operators in order that the disposal facilities can be run in accordance with the license requirements | Train waste disposal facility managers/operators in order that the disposal facility can be run in accordance with the license requirement | Train waste disposal facility managers/operators in order that the disposal facility can be run in accordance with the license conditions |
| Determine the available waste disposal airspace and apply for a waste license to construct a new waste disposal facility | Secure funding for the construction of a new waste disposal facility Construction of waste disposal facility | Secure funding for the construction of a new waste disposal facility Construction of waste disposal facility | Secure funding for the construction of a new |

| | | | |
|--|--|--|--|
| | | | waste disposal facility Construction of waste disposal facility |
|--|--|--|--|

Goal 6: Education and awareness

| Immediate goals | Short term goals | Medium term goals | Long term goals |
|--|---|---|---|
| Recruit environmental/ waste education personnel | Develop an education and awareness strategy and training materials to roll out education and awareness campaigns Develop a schools competition programme to encourage school's involvement on waste management issues i.e. recycling | Education and awareness campaigns implemented in a sustainable manner Roll out the competition and work closely with the schools to ensure maximum participation | Implement environmental education and awareness within all wards of Matjhabeng Local Municipality |

Goal 7: Compliance and enforcement

| Immediate goals | Short term goals | Medium term goals | Long term goals |
|---|---|-------------------|-----------------|
| Determine the required number of EMI's for the municipality to enforce by-laws and other waste transgressions. Develop a system for residents to report waste transgressions | Appoint staff to enforce by-laws Enforce by-laws | Enforce by-laws | Enforce by-laws |

6.12. Financial Sustainability Issues

The difference between the number of households and municipal rates account issued every month by the municipality confirms that some households receive the refuse removal service but are not being billed or paying. The weigh bridge not working for a long period and lack thereof in other landfills result in people not paying for the service as it is difficult to measure and charge accordingly as and when they come.

6.13. Security and control points

Control points, weighbridge or weighed surveys as indicated in the DEFF's minimum requirement under 'construction'. Waste quantities are therefore estimated. A security guard will be placed at the gate to control and register vehicle entering the site. Currently, the Welkom landfill site's security office is being upgraded from the one below



Figure 20: Security office at Welkom landfill site



Figure 21 Welkom landfill site under construction (August 2019)

6.14. Operations

Landfill sites are at different levels of their lifespan, with each audit with detailed information of each landfill site being provided below. However, there are a few common factors thereof. These include lack of fencing, poor application of over material, recycling, and so forth.

Due to lack of control over the past six years of the landfill site, it was stated that the airspace requirement will never be accomplished, therefore leading to the site's life span being shortened. Hence, it is recommended the local municipality state investigating on the design of new landfill sites.

Legislation requires, at minimum, that waste be placed, compacted and covered daily to allow sufficient storm water drainage as well as prevent leachate products. A compactor will be used for these operations with a minimum availability of 30% per annum due to some mechanical problems, further creating a huge backlog. Sites with lack of fencing create dysfunctional conditions illegal dumping

Service Delivery

The MSA (Municipal Systems Act 32 of 2000) 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, and 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 will apply to all. People will be treated equitably in the application of tariffs, The levy for services will be in proportion to consumption of services and the Municipality will endeavor to ascertain that poor household at least have basic services (we will investigate and take advantage of available subsidies), Tariffs will reflect the costs to provide the service (capital, operating, maintenance, administration, and interest), Tariffs will be financially sustainable, Local economic development can be promoted by setting special charges for industrial and commercial users, it will therefore be explored and any cross subsidies will be fully disclosed.

Recycling, and other principles of environmental management will 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



Figure 22: Illegal dumping behind Marios centre, Welkom CBD

6.15. Street Cleansing, Sweeping, Collection and Public Facilities

Litter picking is done on a daily basis in areas that are most prone to littering. Labourers with wheelie bins, brooms and spades render the service. Therefore, refuse trucks collect the waste overlapping or as per arrangements.

Below, is a schedule for weekly collection program and time spent per service:

| DAYS | WELKOM CENTRAL | EAST REGION | WEST REGION |
|----------------|---|--|--|
| MONDAY | Ward 32, 34, 10, 33, 30, 26, and 12. | Business, Harmony Mine, Wollaways, Industrial area, Old Meloding, Zone 14, Schools, Leratong and Eureka Park | CBD, Block C, Block 1, 2, 4, and 5, Industrial area, Rooisten, Putwasten, EXT 1, Mmaditjhakane, Airport, Mokotjo |
| TUESDAY | Ward 32, 33, 34, 25, 28, 10, 15 and 17. | Old Virginia, Merrispruit, Kitty, Twele-twele, Mandela Park, Albany and Ward 7 | Block B, K 1, 5, amd 9, Skoon Plaas, Ditentsheng, Airport and EXT 1 |

| | | | |
|------------------|---|--|--|
| WEDNESDAY | Ward 31, 32, 33, 34, 5, 29, 10, 11, 14 and 16 | Food premises, Industrial area, Pele-pele, Harmony Mine, Die Koppie, White City, Hostels, Old Albany and around water tank | Block A, Mass containers, Block 6, K3 and 6, Geneva, Riverside |
| THURSDAY | Ward 32, 33, 34, 25, 29, 10, 15 and 17 | Saaiplaas, Virginia, Central, Around water tank, Zone 13, Calabria, Zone 14 and around Garage | Prabicia, Block 7, Towender, K6 and 8 |
| FRIDAY | Ward 32, 33, 34, 25, 26, 13, 14 and 15. | | CBD, Eldorie, Hospital Park, K4, 7 and 8 |

Table 15: A weekly program scheduled for waste collection

Taxi ranks, public toilets and car wash bays

In terms of Section 19 of Environmental Conservation Act, 1989 (Act 73 of 1989) provides that no person may litter. The authority in control of or responsible for the maintaining of any place to which the public has access must provide containers that are adequate and suitable for discarding litter at places under its control or maintenance.

Section 19 (A) provides for the removal of litter. The authority in control of or responsible for the maintenance of a place to which the public access, to remove litter that has been discarded, dumped or left behind at that place. The local Government will thus be responsible for removal of litter from a place under its control or maintenance including any pavement adjacent to that place, or land situated between the place and the street, road or site used by the public to get access to such place.

Section 24 (A) empowers a competent authority to make regulations regarding the control of dumping litter, including the removal of litter, placing of containers for dumping of litter and any other matter necessary to control and prevent littering. In order to ensure that the Council complies with the above-quoted legislation, the following aspects will have to be considered:

SMME's / MSP's to be created to clean maintain grass, wash taxis, public toilets as well as litter picking within the vicinity. The Taxi Association, in partnership with Council will identify entrepreneurs who will be sent for business skills training and take over the management of ranking facilities. Successful candidates enter in a 3-year MSP contract with Council. Training

of these SMME's will be conducted by the Taxi Association and other stake holders at an agreed tariff on contractual basis.

Recycling at the taxi ranks will be encouraged to reduce waste and promote re-use. Public education and communication on hygienic matters will be enhanced to minimise diseases. Toilet Management will be strongly enforced to maintain high standards of cleanliness within the taxi rank areas. Toilet facilities will be improved so that it becomes acceptable to users/community.

Tariff set-up on the use of these toilets, water and removal of communal skips will be realigned with the finance Department. Taxi Rank community will also be engaged in this process for full taxi rank waste management and development strategies

6.16. Closure plan

The proposed final shape or closure plan of the landfill sites has been determined according to drainage and end-use requirements. The proposed end use of the open space.

The development of the site must be done according to an integrated landscape plan. The design and planning of the operation will ensure that the closure of the site coincide with the closure plan. As the site approached its final levels more accurate levels must be surveyed so as to ensure the final gradients and drainage are correct.

6.17. Identify, Evaluate and Select Alternatives

A municipality is required to critically look at all the requirements and should decide based on its available capacity and financial resources, which of the requirements will be attained in the short-medium to long term and what the implications would be if no action is taken. During the consultation phase of the development of an IWMP, it is important to make stakeholders aware of the requirements in terms of the Waste Act, in order that if there are trade-offs to be made, they too can be involved in prioritising the services to be delivered.

As announced by Minister Creecy in her Budget Speech, cash strapped municipalities can now use a portion of the MIG funding to address shortages in the waste management fleet and landfill operation equipment to increase the number of households that have regular access to weekly refuse removal.

The Municipality will consider Legal aspects, such as the revision and development of by-laws, as well as enforcement thereof. Furthermore, the municipality will appoint Peace Officers and apply for reporting offenders as a means discouraging littering and dumping whilst generating revenue and encouraging active citizenry.

Lastly, a municipality should also indicate the implications should there be lack of action on the strategic goals

Goal 1: Promote recycling and the recovery of waste (separation at source and recycling)

Current waste minimisation, reuse and recycling initiative

A few entities run recycling stores from within the landfill site boundaries. Reclamation of recyclable material from the landfill is still not controlled and therefore poses a serious health and safety risk to waste pickers working on the landfill sites' working faces.

Waste minimization, recycling and re-use initiatives

As indicated in the status quo, some recyclables are reclaimed from the disposal site monthly. To in line with the principles of NEMA, development of buy-back centres within waste generation areas should be considered. A programme for promoting re-use and recycling initiative and separation at source should be established. This will save the existing landfill air space.

The system should include technology to recapture the energy contained in waste and encourage small scale waste recycling initiatives that support urban and rural waste management. It should also provide income generating opportunities.

The approach to integrated pollution and waste management spelled out the White Paper on Integrated Pollution and Waste Management in South Africa (March, 2002) requires a shift from control to prevent:

- Minimise and/or avoid the creation of pollutant and waste;
- Minimise and/or avoid the transfer of pollutants form One medium to another;
- Accelerate the reduction and/or elimination of pollutants;
- Minimize health risks and impact;
- Promote the development of pollution prevention technologies;
- Use energy, materials and resources more effectively;
- Minimise the need for costly enforcement;
- Limit future liability with greater certainty;
- Limit costly clean-up practices;
- Promote a more competitive economy;
- Reduce human impact on the environment;
- Enhance the quality of life, and
- Ensure intergenerational equity

- **Type of material recycled**

Recyclable material reclaimed on the landfill sites include plastic, paper, metal, tins, PET bottles, glass bottles and so on. Amount for selling these recyclable products ranges from R1.00 to R10.00 per kilogram. Reclaimers receive ±R500 per week.

If no action is taken to achieve this goal the municipality will be in contravention of the Waste Act which requires municipalities to promote the waste management hierarchy approach to waste management where as much waste as possible should be recycled.

The National domestic waste collection standards which calls for municipalities to provide receptacles in order to divert recyclable waste to landfill. Waste that could otherwise be recycled will be disposed of in a waste disposal site; the resulting impact would be; failure to contribute to government's target on diverting recyclables to landfill.

Will experience environmental impacts associated with land filling such as the contamination of underground water resources, poorly run waste disposal facilities posing health and safety challenges to workers and reclaimers.

The municipality will miss out on an opportunity to create employment and contribute towards local economic development if no recycling is promoted

Goal 2: Ensure the effective and efficient delivery of waste services

The municipality will be in contravention of the National policy for the provision of basic refuse removal services to indigent households which requires that waste collection services should be delivered to indigent households.

Will not contribute to government targets (Outcome 10 targets) which aim to increase the number of households receiving a waste collection service from 64% to 75% by 2015.

Further, it will contravene any applicable municipal by-laws including the municipality's Constitutional obligation on the delivery of waste collection services. The poor and the most vulnerable will continue to live in unhygienic conditions posing health and safety challenges such as vector borne diseases

This exercise should be performed for all the chosen goals in order for the municipality to have a thorough understanding of what is required, how to achieve the goals and what the implications could be if there is no action.

6.18. Development of alternatives and scenarios

To address backlogs, development of alternatives which could have a positive socio-economic impact, but which are economically sustainable, should be considered. The elements of waste management stated below will have to be considered:

Storage

Type focus is to improve the level of service in that illegal dumping is increasing in our area open targeted spaces for this practice. The major contributing factor is lack of adequate storage facilities. The following findings were established:

- Some bins provided, particular in the township, were far too small to cater for the number of tenants and this is changing with the introduction of the 240 litre bins
- Communal skips provided were not structurally accommodative since residents were sending small kids to dispose of the waste. Residents who use wheelbarrows are unable to dispose of their waste property

- Waste plastic bags are torn apart by reclaimers and dogs, which further results to littering

To reduce illegal dumping and littering, provision of the latter is of importance

| Area | Type of storage | Number of units |
|---|----------------------|-----------------|
| Removed by local authority/ private company | 240 litre bins | 107 609 |
| Communal refuse dump | Skip bins | 9739 |
| No rubbish disposal | 240 litre bins | 4910 |
| Central Business District | Concrete bins | 6 |
| Other (churches, schools, etc.) | 240 bins & skip bins | 70 |
| Total | | 122 341 |

Table 16: Illustration of preferred storage type for each category

The budget for the provision of storage bins is established to be around R55 000 000.00 for the entire municipal area with which external funding will be applied for this regard. While the Municipality is considering erection of more transfer stations, budget in the erection of transfer stations will have to be considered.

6.19. Collection

Household collection

From the feedback received on the questionnaires, it has been highlighted that municipal vehicles experience a lot of breakdowns during collection. Waste is removed in the afternoons in some areas. Residents are exposed to the odour, flies, etc., including spillages caused by workers in the process of waste collection. Fleet Management problems have been identified and the replacement policy should be developed. Unfortunately, due to high cost of vehicles, Council may opt for establishment of Municipal Service Partnership (MSP) and Public Private Partnership (PPP'S) or outsourcing. These alternatives have to be thoroughly researched.

As an obligation on the municipality, residents are entitled to an efficient service with minimised environmental impacts. To continuously improve the level of service, the following aspects have to be considered:

- Household waste will be collected from individual premise once a week, using compactor with low-lifter for 240 litre bins.

- Three entrepreneurs per week will be identified and together with interested employees in the services to be sent for business skills training.
- Five successful candidates will enter into a 3-year Municipal Service Partnership with Council.
- Continuous training will be conducted by the main contractor at an agreed tariff on contractual obligations.
- Community Based Organisations (CBO's) and Cooperatives will also be considered in the process of establishment of Municipal Service Partnership (MSP's) as part of job creation community empowerment.
- Development of parks and illegal dumping cleaning will be done by plough back to communities by successful candidates.

Business Waste Collection

- SMME's who will be selected to render the service will also remove business waste at individual premises once a week with a size and type of business being considered.
- The business to be supplied with 240 litre bins or 18m³ containers breakdown analysis for the provision of storage.
- The tariff structure to be realigned together with Finance Department in consultation with business community.
- Further training will be conducted by the main contractor for management of the system at an agreed tariff on contractual basis for these SMME's.
- Recyclables to be separated at source with creation of SMME's in consultation with recycling bodies and business community. (Incentives to be put on place)
- Waste Management Section to continuously assess waste categorisation at source to minimise risks.

6.20. Awareness Programmes

| Activity | Budget | Frequency | Price |
|---|--|-----------|--|
| AWARENESS: Posters, Road shows, pamphlets, etc. | Transportation: 200km@ R1.70 X 4 (quarter) = R1 3600.00 Overtime: 40hours X (1.5) @ R44.48 p/h X 2 (employee) X 4 = R21 350.40 | Quarterly | R5 440.00 P.A R85 401.60 |
| EDUCATION: Ward meetings | Transportation: 200km@ R1.70 X 4 (quarter) = R13 600.00 Overtime: 40hours X (1.5) @ R44.48 p/h X 2 (employee) X 4 = R21 350.40 | Quarterly | R5 440.00 P.A R85 401.60 |
| INFORMATION SHARING: Newsletters | Transportation: 200km@ R1.70 X 4 (quarter) = R1 3600.00 Overtime: 40hours X (1.5) @ R44.48 p/h X 2 (employee) X 4 = R21 350.40 Printing @ R0.70 per newsletter X 45 000 = R31 500.00 Distribution @ R50 per person per day X 50 X 12 = R30 000.00 | Quarterly | R5440.00 P.A R85 401.60 R126 000.00 R120 000.00 |
| SKILLS DEVELOPMENT: Workshops, seminars, etc. | Transportation: 200km@ R1.70 X 4 (quarter) = R1 3600.00 Catering @ R30.00 per person Facilitation @ R60.00 per hour X 8 hours X 4 = R1 920.00 | Quarterly | R5440.00 P.A R1200.00 R1 920.00 |
| TOTAL | | | R527 088.00 |

The awareness programme should be financed from the capital budget.

6.21. Special Waste Collection

Medical waste/Health Care Waste

Medical waste is still disposed of by a private contractor, # Medical Waste. The main treatment facility is in Mangaung and it utilises a temperature (also known as a pressure treatment) to sterilise medical waste. In addition to private surgeries, consulting rooms, and veterinary practices, the Bongani Hospital in Welkom, as well as the Private hospitals (Medi-Clinic, St. Helena and RH Matjhabeng) have medical waste collected on a regular basis. Strict provisions to manage transporters hauling medical waste are being enforced by DEA. In November 2009, an estimated 7000 tons of medical waste was found illegally buried in Welkom. As it was necessary to also remove the soil that had potentially come into contact with the waste, approximately 18 000 tons of medical waste combined with soil was removed by Waste man in compliance with the Compliance Notice issued by this Department for the cleanup of the waste and rehabilitation of the sites.

Hazardous waste

Due to lack of control and resources in handling of hazardous waste, the council is obliged to ensure that such waste is taken care of in order to prevent the development of conditions dangerous or detrimental to health. In terms of Hazardous Substances Act (No. 15 of 1973), where disposal of empty containers by Local Government for Category B, Group 1 substances, it must refer to Regulation GGS 467 of 25 March 1977.

From the quoted legislation, the following aspects with regards to regulation of hazardous waste will be deemed as follows:

- Flammable containers and substances are said to be collected separately
- SMME's to be created to render the service in consultation with affected parties
- Training to be conducted by a main contractor at an agreed tariff on contractual obligation
- Contagious waste is to be collected and disposed of accordingly (i.e., dead animals, rotten chicken, and so forth) in accordance with the minimum requirements

Bulky Waste

This is the type of waste that is not removed on a daily basis. As advertised on Roads and Ribbon Development Act (No, 21 of 1940), it regulates the depositing or leaving of disused machinery or refuse near certain public roads. The council may remove the objects which have been left next to a road in contravention of the Act and recover the cost of removal from the

person who left it there. As required by the IWMP, the provision of the latter will be of high importance.

Separate SMME's could be created to render service (e.g. demolishes of old buildings)

- Assess the goods to determine the possibility of re-use (i.e. reclaimable such as bricks, roof sheets, steel, etc.
- Antique collectors, secondhand dealers and scrap metal dealers to be identified, however, to make sure scrap metals are sold in appropriate manner, and not in a way that promotes second-hand dealers to steal from the community
- Abandoned goods and vehicles should be impounded and auctioned at a later stage

Communal skips collection

For council to render efficient service to the communities, the provision of communal skips is of importance. These skips are used for illegal dumping, and by businesses and industries. For improvement in the level of service, the following aspects will have to be considered:

- Three entrepreneurs per ward must be identified and the interested employees in the service be sent for business skills training.
- The tariffs on the mini-transfer communal skips will be determined from household tariffs

Bulk waste

Due to unavailability of vehicles, below mentioned are the aspects that are considered to be of assistance in terms of the above.

- This service will be delivered by the Council with the use of a grab machine where a skip bin is not required
- Where a skip bin is required, a contractor will deliver the service for the Council
- Bulk waste will be classified as follows –
 - Building rubble
 - Garden waste
 - Solid
 - Mixed waste
- The creation of SMME s is to be done at a later stage after thorough consultation has been done on quantities and costs
- Planning department to inform the section on development of new houses/ renovations are taking place for building rubble removal in order to provide a skip

6.22. Transportation

Vehicle purchased in this section are not suitable for the waste removal services. Waste is double handled for there is still no capacity nor trucks for collection. Some vehicles and machineries are too old to exercise its duties and unavailability of parts, storage of personnel, particularly the Mechanical Workshops, contribute to the problem.

For efficient service delivery to our communities, the following is of importance

- Transportation will be based on an average of 2500 km per motor for both compactors and communal skips trucks
- Waste compactors with low lifter system will be used to accommodate 240 litre bins and 18 cubic metre bins
- Communal skips from transfer stations to be transported directly to the landfill site
- Communal skips will be removed from 11:00 on a 22 tons truck on a daily basis, depending on the volume of waste being disposed of in the skip
- Waste collected will be transported to the transfer station, as unusual, and at the landfill site for separation and recycling (although this is not currently occurring. Virginia transfer station has been turned into a home of illegal dumping and centre of waste burning)
- Remaining or general waste will be transported from the transfer station to the landfill site for treatment
- the relevant department will ensure compliance with the road Transport Act

6.23. Disposal

Welkom and Odendaalsrus landfill sites will be prioritised for improvements with waste from the other landfill sites diverted to these two sites for better treatment and economy of scale

The following must be considered:

- Only enervated waste will be accepted at the landfill site
- Waste will be placed, compacted and covered on a daily basis as guided by minimum requirement
- No recycling will be allowed at working face
- A tariff of 86/122 for business and industrial waste per ton currently applies, although it's not effective
- Canteen and change rooms are being erected at Welkom landfill site
- Security guards will be deployed at the site to guard against illegal dumping
- Landfill site will operate from 07:00 – 16:00 on week days, with arrangements on weekends

| Item description | Quantity | Amount |
|--------------------------------|----------|------------------------|
| Personnel | | |
| Operator | 1 | R79 814.43 |
| Cashier | 1 | R53 967.53 |
| Security | Unit | R62 125.05 |
| Loader Operator | 2 | R74 886.36 |
| Truck Driver | 1 | R68 582.05 |
| Total | | R339375.42 |
| Plant & Machineries | | |
| Compactor/Dozer (lease) | 1 | R739 200.00 |
| 15t Tipper Truck (lease) | 1 | R539 088.00 |
| Weight Bridge/Scale 40t | 1 | R350 000.00 once off |
| Communal Skip bins | 8 | R308 000.00 once off |
| Computer | 1 | R 18 000.00 once off |
| Total | | R1 954 288.00 |
| Land & Buildings | | |
| Office Building | 2 | R350 000.00 once off |
| Office Furniture | 2 | R 60 000.00 once off |
| Transfer Station | 1 | R170 000.00 once off |
| Waste Processing Facility | 1 | R7 300 000.00 once off |
| Total | | R7 880 000.00 |

Table 17: Financial implications

6.24. Analyse Financial Performance

PPP's will be engaged to assist Council in delivering effective and efficient service delivery with less environmental impacts and cost-saving. A policy will be drafted to ensure that waste management service is operating at an acceptable level. To save costs, as well as the environment, law enforcement and mandatory implementation of legislation will have to be considered.

It is obvious that once the implementation of the **IWMP** is on process, financial constraints/implications involve **IWMP's** processes quite huge. To avoid negative financial impacts to the rate payers, it is important to ensure that mandatory requirements on IWMP's and other legislations are implemented. A plan for zero waste will assist in achieving strategic objectives. Waste separation at source should be highly encouraged so as to generate income for rate payers and introduction of policies with regards to waste separation by source.

As announced by Minister Creecy in her Budget Speech, cash strapped municipalities can now use a portion of the MIG funding to address shortages in the waste management fleet and landfill operation equipment to increase the number of households that have regular access to weekly.

6.25. Evaluation of various scenarios

Scenarios to be evaluated

| Scenario number | Description | Issues/ Concerns/ Implication/ Constraints |
|-----------------|---|---|
| 1 | "Living with status quo" | No recycling of resources, accumulation of waste in un-serviced areas, continued subsidisation |
| 2 | SMME's and cooperatives/ outsourcing of waste removal service/ private contractors | |
| 3 | Need to categorize this scenario | |
| | | <ul style="list-style-type: none"> — Community upliftment — Skills development — Job creation through MSP's — Improved performance — Resistance with regards to unions — Financial costs associated with the establishment of MSP's at Municipal level — Recycling initiatives |
| 4 | Development of Regional Landfill sites | |

Aspects to be considered when scenarios are evaluated

| Scenario number | Description | Issues/ Concerns/ Implication/ Constraints |
|-----------------|---|--|
| | <p><u>Transportation:</u></p> <ul style="list-style-type: none"> • Fleet change • Implementation of mandatory requirements as per Road Transport Act | <ul style="list-style-type: none"> • Improve service delivery • Compliances with regards RTA • Financial costs associated with fleet change at Municipal level • Increase in occupational injuries • Lack of capacity at municipal level • Cost savings with regards to fleet change |
| | <p><u>Transfer station/ processing:</u></p> <ul style="list-style-type: none"> • Separation at source | <ul style="list-style-type: none"> • Reduce environmental impacts and risks • Recycling will be promoted • Air space will be saved |

| | | |
|--|--|--|
| | <ul style="list-style-type: none"> • Recycling and compositing • MSP's/ SMME's establishment • Training | <ul style="list-style-type: none"> • Job creation through MSP • Lack of financial capacity at Municipal level • Skills development • Lack of airspace usage • Public participation and awareness |
| | <p><u>Disposal:</u></p> <ul style="list-style-type: none"> • Landfill airspace usage • Implementation of mandatory requirements as per NWM and other legislation • Safety and security • Record keeping • New disposal site design | <ul style="list-style-type: none"> • Improved management and operations of landfill sites will impact on available air space • Closure and rehabilitation of unpermitted landfill sites • Capacity in terms of plant and personnel dedicated to the two landfill sites • Prolonged lifespan • Less environmental impacts and risks • Compliance with regards to DWAF's minimum requirements • Waste management audit will be achieved |

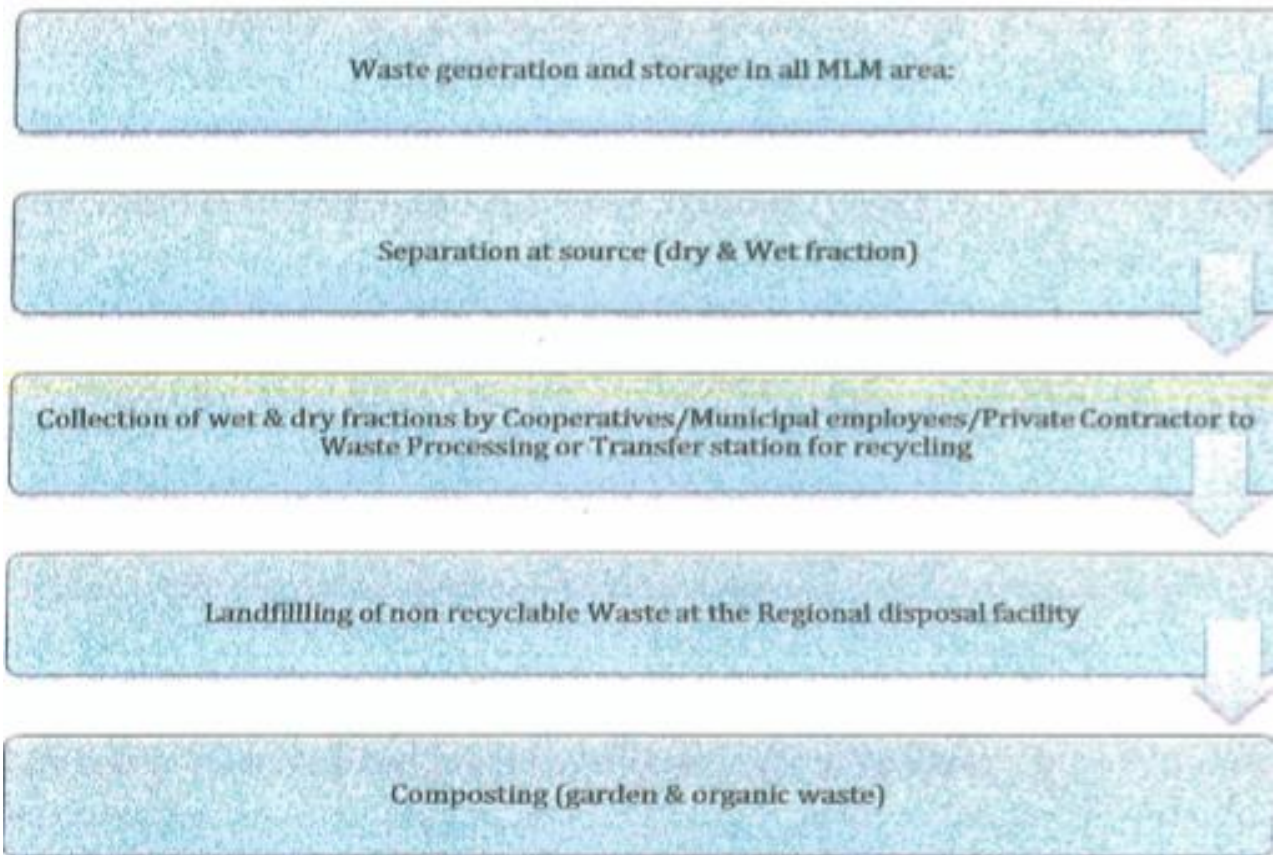


Figure 23: SCENARIO 2 – SMME's, Employees in service and private contractors

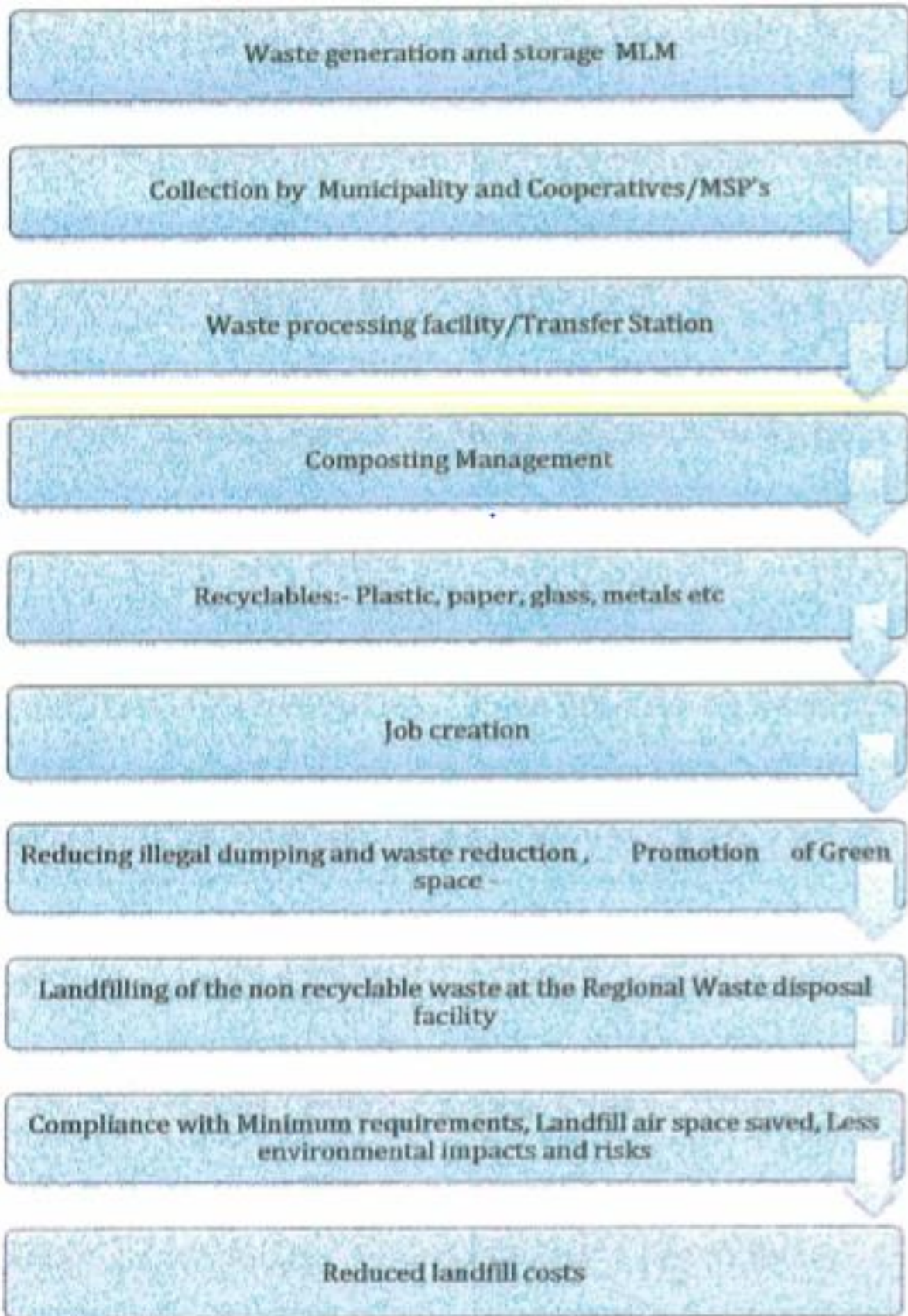
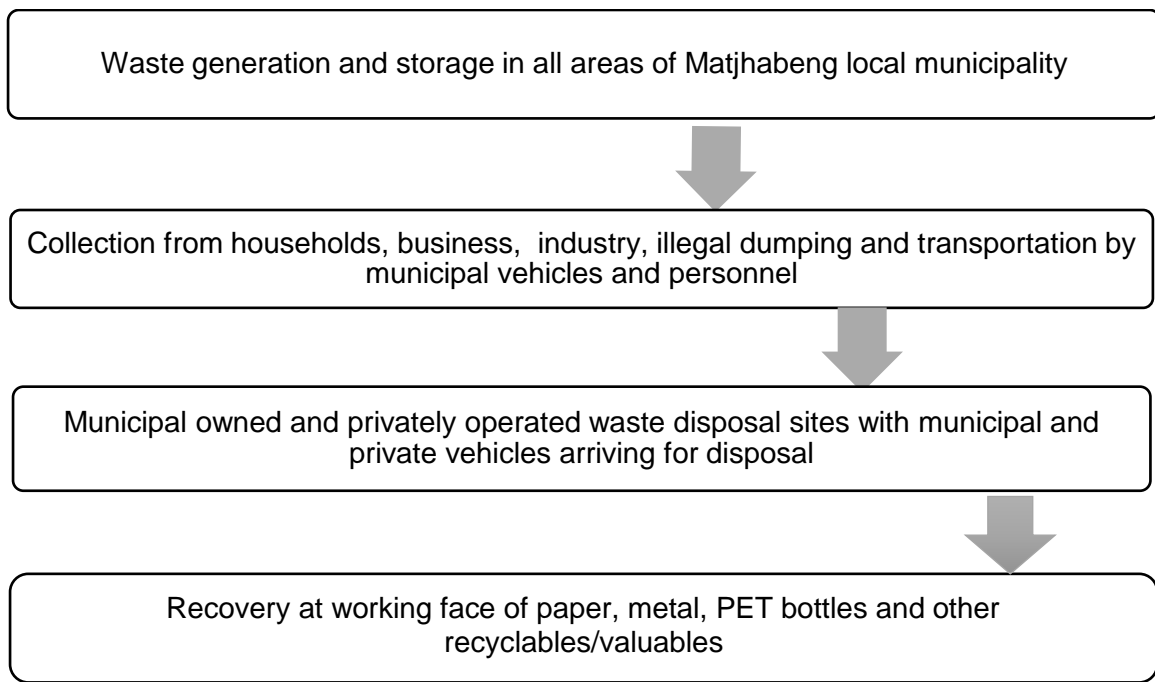


Figure 24: SCENARIO 3 – MSP Establishment

6.26. Waste flow path analysis

The objective of developing waste flow paths is to track flow of waste so that costs can be designed to each activity associated with its management and scenarios compare accordingly. It could facilitate the development and evaluation of various scenarios and assist with identification monitoring requirements.

Scenario 1



6.26.1.

Scenario 2

As discussed above, the scenario will not have influence on the current structure. Since there are vacancies within the new Council's structure, those vacancies would be used to implement the selected scenarios. The involvement of the MSP will enhance job creation and it will assist the Council in achieving principles set out in the NWMS. It will also assist the Council to provide waste collection service at un-serviced areas as the project will be running in phases.

Scenario 3

The organization of Welkom and Odendaalsrus landfill sites will have significant impact on the municipality's human resource, operations and capital budget. It is advisable that the municipality consider having the waste management section as a stand-alone Department to ensure focus and dedication of resources and personnel. It must be noted that whilst this require budget, over time the department can become sustainable as all municipalities within

the District will be required to play along with the existing users of the facilities who are currently not paying.

6.27. Communication and stakeholder participation

Under the Waste Act, Chapter 3, section 11 (7b) states that. “A municipality must, before finalising its integrated waste management plan, follow a consultative process contemplated in section 29 of the Municipal System Act, either as a separate process or as part of the consultative process relating to its IDP contemplated in that section”.

Apart from the Waste Act calling for community/stakeholder participation, Chapter 4 of the Municipal systems Act encourages municipalities to conduct community participation when developing their IWMP and it provides different mechanisms by which this could be done.

Identifying interested and affected parties are: These could be:

- Traditional and Government authorities;
- Recyclers;
- Community based organizations such as churches, youth environmental groups, formalized Non-governmental organizations;
- Political leaders e.g. ward councilors; MEC
- General members of the public
- Businesses; and
- Industry associations

7. IMPLENTATION INSTRUMENTS

7.1. Partnerships

The development of partnerships as a mechanism for providing the services and facilities required for Integrated Waste Management should be considered. The categories of partnerships that should be considered include:

- **Public-public partnerships:** this can be a partnership (between a District municipality and local municipalities) for collaborating on waste services such as on the establishment of a regional waste disposal facility or in instances where local municipalities have limited capacity to provide the delivery of waste services,
- **Public-private partnerships (PPP):** for collaborating on financial assistance for waste services, establishment of waste management facilities, establishment of separation at source and other waste management initiatives i.e. development and management of waste disposal facilities, establishment and management of MRFs, transfer stations, and recycling facilities.
- **NGO/Community based organisations (CBO's):** partnership with the municipality in order that they may participate or carryout awareness and education campaigns and programs.

The following provides a snapshot of how these partnerships could work, as well as indicates the various aspects that a municipality could partner on with the identified stakeholders.

- **Public-private-partnerships:** could be formed by calling for proposals from interested parties to indicate how they are going to deliver a certain aspect to waste management. Once the tender has been concluded and the municipality should sign a memorandum of understanding (MOU) in order that the conditions contained in the MOU should be met. The municipality could decide to play an oversight role while the service provider will be responsible for the delivery of the service. Some of the services could include carrying out recycling initiatives through Co-operatives (Co-ops), private company or through a community based waste collection method etc.
- **Leases:** in this type of a partnership a municipality would lease land to Co-ops or a private company to establish a buyback centre in order to carry out recycling;
- **Privatisation:** of a waste collection service i.e. the transportation aspect to the service / transfer of ownership whereby a driver-owner scheme could be in place, this entails the owner of a truck being the actual driver that provides the service on behalf of the municipality;

- **Joint ventures:** in a wide variety of areas such as in operating a waste disposal site, or in the construction of a waste disposal facility where a private company would be responsible for the project or certain aspects thereof.

Partnerships in the delivery of waste management services should be encouraged and municipalities should ensure that there are binding agreements in place to ensure that the services will be delivered. The formation of PPP's for the implementation of IWM plans should be investigated. PPP's for smaller local authorities could greatly reduce the cost of equipment and salaries and should be encouraged. Partnerships in waste collection can prove very beneficial for small local authorities and should be considered for public-public as well as for public-private partnerships.

7.2. Legislative Instruments: Development and enforcement of By-laws

7.2.1. Integrated waste management by laws

Existing waste management by-laws will have to be reviewed and adjusted to give effect to IWMP. New by-laws for the enforcement and implementation of IWMP initiative will have to be developed. Public Participation programme with regard to new by-laws will have to be developed and un-serviced areas will have to be accommodated.

Various legislative prescripts are applicable for the management of waste from cradle to grave. Legislative provisions sections under introduction lists relevant legislation as well as summarise their relevance.

7.2.2. Understanding the IWMP

The intent of Integrated Waste Management as adopted by the international community is that of a waste hierarchy which starts with **waste Prevention and Minimisation**, followed by **Re-use, Recycle, Treatment and finally, disposal** as the last resort.

All human activities give rise to residual materials which are not immediately used where they arise. These residuals may be recycled, reclaimed, or re-used; else they constitute waste which will ultimately be released into the environment. The biosphere has the capacity to transform many wastes over time, either into harmless products or nutrients which can be used again. However, the natural assimilation capacity of the environment can easily be exceeded if wastes, particularly from human activity, are not controlled. With the development of new chemical components like plastics, the environment appears to have little or no assimilative capacity. In these circumstances, pollution and loss of environmental quality will result.

Careful planning, management and control of wastes are thus required. Ideally, waste management should be viewed as a unity, with integrated control directed at all three waste receiving spheres; namely air, water and land. The relationship between these three spheres must always be considered – a reduction in air pollution by removing particle matter before discharge will produce either a solid or sludge waste for disposal, reduction of water pollution also normally produces a waste sludge. Some attempts to treat solid waste, may only shift the waste load into the atmosphere i.e. through incineration, therefore exchanging one pollutant for another

7.2.3. IWMP Goals and Objectives

The main goal of IWM planning is to **optimise waste management by maximising efficiency**, and **minimise associated health and environmental impacts and financial costs**; thereby improving quality of life of all South Africans and the globe as a whole.

The main objectives for this IWMP are:

- Improve waste management within the municipality.
- Access the current waste management system and highlight positives, as well as deficiencies in respect of waste management within the MLM.
- Institute a process of waste management aimed at pollution prevention and minimisation at source.
- Manage the impact of pollution and waste on the receiving environment.
- Manage waste in a holistic and integrated manner.

7.2.4. IWMP Implementation strategy

Once the referred scenario has been accepted at political level, a strategy to develop and implement the IWMP should be drafted. The implementation strategy will have short, medium and long term target dates that have to be met in line with the set standards.

The implementation strategy should describe:

- Who will be responsible for the organisation, planning and implementation of the IWMP
- How the IWMP will be integrated into the IDP
- The IWMP project implementation programme
- The Public Participation Programme
- The financing of various projects within the IWMP (Financial Management)
- Legal aspects, such as the revision and development of new by-laws, as well as enforcement thereof. Appointment of Peace Officers and application for reporting

offenders can also be a revenue generating intervention whilst encouraging active citizenry.

- A monitoring and review programme

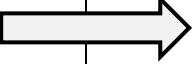
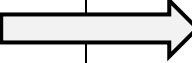
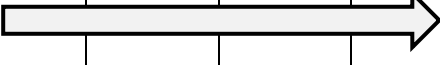
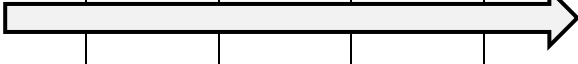



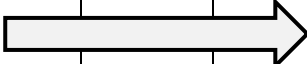
7.2.5. IWMP Project Programme

Time and project activity programme is indicated on the table below. This is to ensure that various projects are synchronised and target dates are met.

| Activity | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|--|---------|---------|---------|---------|---------|---------|---------|---------|
| | Jul-Dec | Jan-Dec | Jan-Dec | Jan-Dec | Jan-Dec | Jan-Dec | Jan-Dec | Jan-Dec |
| Investigation: Waste Separation at source v/s Waste processing facility | → | | | | | | | |
| Implementation: Waste separation at source program in high income areas | | → | → | → | → | | | |
| Establishment of MSP's (In Phases) | | → | → | → | → | | | |
| Weighbridge & Control Points | → | | | | | | | |
| Investigation: Waste Collection Fleet | → | | | | | | | |
| Unserviced Areas: Door to Door collection | | → | → | → | | | | |
| Compliance: DWAF Minimum Requirements | | | | → | → | | | |
| Investigation: Convert to regional landfill, transfer and drop off | | | → | → | → | → | → | |

Figure 25: Implementing the IWMP through Programmers

Implementing IWMP through programmes (continued)

| Activity | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 |
|--|--|--|--------------|--------------|--------------|--------------|
| | Jul - Dec | Jan - Dec | Jan - Dec | Jan - Dec | Jan - Dec | Jan - Dec |
| IMPLEMENTATION: Development of WIS for effective waste reporting |  | | | | | |
| Integration of waste pickers in landfill sites |  | | | | | |
| Environmental education and awareness |  | | | | | |
| Combat illegal dumping and littering |  | | | | | |
| IMPLEMENTATION: compliance of landfill sites: permitting and licensing | |  | | | | |
| Compliance of landfill sites: monitoring of waste through composting and disposal | |  | | | | |
| IMPLEMENTATION: convert to regional landfill, transfer and drop-off: buy-bac centre and development of composting facility | |  | | | | |
| IMPLEMENTATION: Separation at source v/s waste processing facility | |  | | | | |

Local government may develop by-laws, which augment National and Provincial regulatory requirements. These by-laws must aim to give effect to the right contained in section 24 of the Constitution by regulating waste management within the area of the municipality's jurisdiction; provide, in conjunction with any other applicable law, an effective legal and administrative framework, within which the Municipality can manage and regulate waste management activities; ensure that waste is avoided, or where it cannot be altogether avoided, minimised,

re-used, recycled, recovered, and disposed of in an environmental sound manner; and promote and ensure an effective delivery of waste services. The by-laws must also be aimed at discouraging littering by prosecuting offenders amongst others.

Local government may also enforce these by-laws either through local or regional authorities through designated EMI's. To increase capacity to enforce municipal by-laws; municipalities can explore training Metro police/ local enforcement agencies on waste related matters in order that they too are equipped and are able to issue fines on waste management transgressions. Environmental Health Practitioners (EHP's) could also be trained on waste matters in order that they can administer the enforcement of waste by-laws.

7.3. Funding Mechanism

Appropriate economic instruments should be evaluated and implemented.

A critical precondition for the successful implementation of IWMPs is access to sufficient funding to carry out the plan. Funding will be required for inter-alia: building capacity within the municipality; the development and implementation of by-laws; development and implementation of IWMP; development, operation and maintenance costs of waste management facilities; and the design and commissioning of new waste management facilities.

Different sources that a municipality could potentially obtain funding from could include Equitable Share Funding, grant allocation, revenue from rates and tariffs, revenue from fines. For once off projects, funding sources could include the Municipal Infrastructure Grant (MIG) funding for infrastructure related projects, donor funding to fund certain aspects to the delivery of waste services.

It must be noted that not all funding sources are sustainable, for example donor funding is sometimes only available for a limited period.

In order for municipalities to have sustainable sources of revenue, a full cost accounting of how much it realistically costs them to deliver waste management services should be developed. Once developed, municipalities will then be able to charge tariffs that are reflective of the cost of rendering waste management services and will generate accurate revenue for the waste services rendered. Municipalities will also be able to determine whether there is under-recovery of waste collection revenue from its customers or not.

Below are some examples of economic instruments that could be considered for funding the various aspects to waste management.

a. Funding mechanisms for recycling

Recycling initiatives could be funded through public-private initiatives whereby the municipality could provide receptacles for separation at source by households and a recycling company could, at their cost, collect the recyclables.

Another scenario could be that of Community based recyclers; wherein they could organize themselves and with the help of a municipality participate in recycling where they could be the ones employed in carrying the further sorting of recyclables in a buy back centre which could then be sold to recycling companies as a way of generating income to sustain the program. Further, the following funding models could be employed in order to ensure the financial sustainability of waste management initiatives:

- Fiscal funding allocation
- User charges e.g. volumetric charging
- Revenue collection from penalties, fines or levies
- Establish partnerships with industry wherein the industry may finance aspects of recycling i.e. fund the transport costs to carry out recycling (the NWMS has identified the Packaging industry as one of the industries that must develop an Industry Waste management plan which should stipulate how it will deal with packaging waste in order that it should not land up on waste disposal facilities)

b. Funding mechanisms for waste collection and transportation

To facilitate the funding of waste collection and transportation, possible sources of funding for waste collection and transportation could include:

- Payment for services rendered (full cost accounting will ensure that appropriate fees are charged) in order that waste management services are delivered sustainably, cross-subsidisation could be explored whereby poor communities could be subsidised by paying households in order that basic services are rendered to indigent households;
- Local government budgetary allocations (from Equitable share funding allocation); and
- Use of public-private partnerships.

c. Funding mechanisms for waste disposal

The cost associated with general waste disposal will mainly be funded by user fees or as part of waste charges for local authority's general waste disposal sites. The introduction of waste disposal tariffs at all waste disposal facilities, reflecting the real cost of waste disposal, should be encouraged.

Public-private partnerships may be established for the development and operation of waste facilities including regional waste disposal facilities. In this type of partnership, a memorandum of understanding/agreement could be signed between a municipality and a private company wherein it will be agreed on whether the private company will make an upfront payment towards the establishment of the waste disposal facility and once in operation the private company will utilize the disposal facility and in turn instead of being charged disposal fees the municipality would deduct from the amounts already paid in advance.

Matjhabeng Local Municipality is one such an example whereby this Municipality entered into a joint venture with a private company for the establishment of its waste disposal facility and the private company made an upfront payment to this municipality and every time the company uses the waste disposal facility deductions are made from the upfront payment that was used to establish the site until such a time that there amount has been used up.

7.4. Implementation Plan (summary of IWMP)

| Situation analysis (current situation/ challenges identified during the situation analysis compilation process) | Desired end state (Goals) | Targets | Y1 | Y2 | Y3 | Y4 | Y5 | Selected alternatives | (Implementation mechanisms) Resources | | |
|--|--|--|----|----|----|----|----|---|--|---|-----------------------------------|
| | | | | | | | | | Human resource (HR) | Equipment (EQP) | Estimated for Finance (HR+EQP) |
| All waste going to waste disposal facilities or illegally dumped in outskirts of towns and other local areas. | Goal 1: Promote reduction, reusing, recycling and recovery of waste | Community capacity building and advocacy on reduction, reusing, recycling and recovery of waste. | X | X | | | | Communicate the plans through local Municipal communication systems including distribution of pamphlets to households | 2 additional personnel (remuneration) | Additional waste receptacles | R 800 000 |
| | | Establish mechanisms for promoting separation at source in selected communities | | X | | | | Establish a pilot project for separation at source | | | |
| | | Roll out separation at source to 25% of households | | | X | | | Roll out separation at source through a public private partnership (PPP) | 2 additional personnel (remuneration) | Waste receptacles, 2 collection and transportation vehicles | R1 200 000 |
| | | The 25% of households participating in separation at source | | | | X | | Roll out separation at source through a public private partnership (PPP) | 2 additional personnel (remuneration) | Waste receptacles, 2 collection and transportation vehicles | R1 700 000 |
| | | The 50 % households are participating in separation at source | | | | X | | 2 additional personnel (remuneration) | Waste receptacles, 1 collection and transportation vehicle | R2 200 000 | |

| | | | | | | | | | | | |
|--|---|---|---|---|---|---|---|--|---|---|------------|
| Some of the households are not receiving waste management services | Goal 2: Ensure the improved effective and efficient delivery of waste services | The 75 % households are participating in separation at source | | | | | X | | 2 additional personnel (remuneration) | Waste receptacles, 1 collection and transportation vehicle | R3 000 000 |
| | | Develop a composting strategy to divert garden waste from waste disposal facilities | X | | | | | | 1 project manager from the municipality to oversee the feasibility study and the strategy development process | | R200 000 |
| | | Establish a compost plant | | X | | | | | 1 project manager from the municipality to manage the contractor | Procure equipment needed to run a fully compliant compost plant such as forklifts, grinding buckets, wood chippers, etc.) | R3 000 000 |
| | | Review the strategy for the collection of waste services | X | | | | | | 1 additional personnel (project manager) (remuneration) | | R500 000 |
| | | Increase the roll out of waste collection services to 25% of households (including indigents) | | X | X | | | | 2 additional personnel to manage the contractors | Establish a transfer station/ MRF facility, procure waste receptacles/bins | R3 000 000 |
| There is no up to date waste management by-law in place | Goal 3: Develop legislative tools to enforce the Waste Act and other | Increase the roll out of waste collection services to 50% of households (including indigents) | | | | X | X | | Additional personnel to manage the contractors | Procure waste receptacles/bins | R2 500 000 |
| | | Develop a strategy for the collection of waste services | | X | | | | | Existing Personnel (project manager and waste officials) | Computer and stationery | R200 000 |

| | | | | | | | | | | | |
|--|---|---|---|---|---|---|-----------------|---|---|---|-------------|
| <p>The budget is not ring fenced and there are no proper mechanism for cost recovery for the services rendered</p> | applicable legislation | Review waste management by-law | | | | X | Review by-law/s | Existing Personnel (project manager and waste officials) | Computer and stationery | R250 000 | |
| | Goal 4: Sound budgeting and financing of waste management services | Conduct full cost accounting for waste services | X | | | | | Conduct a full cost accounting exercise internally and ensure the proper budgeting of waste service and services rendered | Personnel (remuneration) | Computer and stationery | R80 000 |
| | | Set and implement tariffs for waste collection and disposal | | X | | | | Implement tariffs for waste collection and disposal | Personnel (will be implemented by existing staff) | Computer and stationery | R200 000 |
| | | Review and implement revised tariffs for waste collection and disposal | | | | | X | Procure a service provider to develop the tariff model | Personnel (will be implemented by existing staff) | Computer and stationery | R100 000 |
| | Goal 5: Ensure the safe and proper disposal of waste | Apply for a waste licence in order to have a licenced waste disposal facility | | X | | | | Close unlicensed waste disposal facilities and apply for a licence to | Personnel (Project manager) | | R500 000 |
| | | Establish a new waste disposal facility | | | X | | | Establish a new waste disposal facility | Personnel (waste disposal facility operators, weigh-bridge operator etc.) | Equipment to run a fully compliant waste disposal facility i.e. trucks, weigh-bridge etc. | R15 000 000 |
| <p>The municipality is operating an unlicensed waste disposal facility and the waste disposal facility is not managed in an environmentally sound manner</p> | | | | | | | | | | | |

| | | | | | | | | | | |
|---|------------------------------------|--|---|---|---|---|--|--|---|------------|
| | | Train the waste disposal facility manager/operators in order that the disposal facility can be run in accordance with the licence conditions | | | X | | Conduct training for waste disposal facility manager/ weigh-bridge operators | Service provider | Training material | R100 000 |
| The municipality does not have education and awareness programme or strategy in place | Goal 6: Education and awareness | Recruit environmental/ waste education personnel | X | | | | Appoint education personnel | Personnel (3 additional staff members) | | R2 000 000 |
| | | Develop an education and awareness strategy | | X | | | Develop an education and awareness strategy, internally | Personnel (existing staff members) | Develop material to conduct education, awareness and advocacy | R100 000 |
| | | Develop a schools competition programme to encourage school's involvement on waste management issues i.e. recycling | | | X | | Roll out the education and awareness campaigns i.e. schools competition | Personnel (existing staff members) | (Posters, pamphlets, and media, etc) | R500 000 |
| There is no law enforcement | Goal 7: Compliance and enforcement | Appoint officials to enforce by-laws | | X | | | Roll out enforcement and monitoring of by-laws | 6 additional personnel | | R3 000 000 |
| | | Enforce by-laws | | | X | X | Enforce by-laws | Personnel (remuneration) | Vehicles Laptops Cell phones | R500 000 |

8. APPROVAL PROCESS

Chapter 3, Section 11 4a (ii) of the Waste Act states that each municipality must include the approved IWMP in its integrated development plan (IDP) as contemplated in chapter 5 of the Municipal System Act for approval by Council. This is to ensure that the approved IWMP is included in the municipal IDP, the goals and targets contained in the IWMP are prioritised and that Council will implement the IWMP. Further, it is also to ensure that waste management services are streamlined with other essential services such as water and sanitation, housing, and electrification.

Matjhabeng Local Municipality will ensure that there is required consultation preceding the approval and implementation of this IWMP. All relevant stakeholders will be engaged as part of the District Development Model to ensure that all waste related aspects from other state organs, private sector and communities are incorporated into the final version.

9. REPORTING ON IMPLEMENTATION, MONITORING AND REVIEW

Municipal system Act makes provision for provincial and national monitoring and standard setting. The objective of this is to ensure that non-performances and misadministration at local municipal level is identified and addressed. The management system of the Municipality should therefore be performance outcome based. Key Performance Indicators (KPI's) will have to be developed and performance targets are set. This will enable the municipality to do self-evaluation and continuous improvement.

Performance monitoring, measuring and review are inter-related activities which provide different levels of analysis. In terms of principles of Total Quality Movement (TQM), an important aspect when implementing the IWMP should be to monitor and review various aspects of the plan so that adjustment can be made to the plan as well as to develop Waste Information System (WIS) to support strategic planning and effective monitoring.

Objectives

- Ensure that the implementation of IWMP is on track, within the time period allocated, that objectives are being met and that adjustments and requirements can be made where required.
- Continuously improve the quality of services rendered.
- Identify needs and problems that needs to be addressed
- Fulfil the monitoring requirements as may be improved in terms of provision of applicable legislation.

- Fulfil the information needs of the public.

Monitoring

Monitoring is essential for strategic planning, performance assessment, both technical and financial compliance monitoring and public accountability.

Monitoring activities will include:

- Volumes rates of waste generated, recycled and disposed.
- Collection services.
- Recycling and composting initiatives.
- Illegal dumping and littering.
- Effectiveness of legislation, regulations, ordinances and /or by –laws.
- Complaints received regarding poor waste management.
- Communities’ perceptions and opinions of level of service as well as receptacles/garden sites, education, willingness to pay, etc.
- Compliance of landfill sites to permit condition, RODs, etc.
- Finances such as expenditure and income, payment for services, and recovery of costs, unit costs, etc.

KPI’s will be developed for each program and for an overall performance of the plan.

Council’s KPI’s are as follows:

- Sense of place and belonging
- Globally Competitive
- Sustainable Development
- Learning and growth
- Internal business processes
- Good governance

An annual report should be compiled and sent to Provincial Department of Environment as part of information requirements on level of execution and sustainability of the IWMP.

Review

The objective of reviewing the IWMP and its implementation is to ensure its continuing sustainability; adequacy and effectiveness. The review will be submitted to Council and therefore, should also be made available to the public.

Because the implementation of IWMP will take a number of years to complete, partial reviewing and updating of certain areas will be adequate. The IWMP will be reviewed in full every 5 years in line with planning time period.

10.CONCLUSION

This document was based on the Municipal integrated waste for Matjhabeng Local Municipality. In developing an emphasis, the document provided the organogram of the solid waste management vision in the municipality, budgeting plan for the finances for fleet, employment of relevant officials, as well for adequate provision of resources for effective waste collection and management in the municipality. Moreover, the document discussed into details budgeting and allocation of resources for programmes that involves the sorting at source, as well as the environmental education and awareness, in collaboration with EPWP participants or officials.

What can be deduced from the document is that in general, the MLM is providing reasonable waste management services to the public, however some services do require fine tuning and improvements for compliance and improved service level. A good starting point for the Municipality to ensure legislative compliance is the immediate formal confirmation of the municipal Waste Management Officer and implementation of waste minimization and recycling programmes.

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