3rd Generation

Laingsburg Municipality

Integrated Waste Management Plan (IWMP)

Draft Report

2024

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EXECUTIVE SUMMARY

Department of Forestry, Fisheries and the Environment (DFFE) has embarked on a project to support Laingsburg Municipality (LM) within Central Karoo District Municipality in developing their Integrated Waste Management Plan (IWMP) as per the requirement of the National Environmental Management Waste Act, Act 59 of 2008 (NEMWA), as amended. Provincial government and municipalities responsible for waste management are expected to develop their IWMPs. Municipalities must submit their IWMPs to the Council for approval and to the Member of Executive Council (MEC) for endorsement, and the endorsed IWMP must be incorporated into Municipal Integrated Development Plans (IDPs). The IWMP aims to provide strategic direction for waste management within the Municipality over the short, medium, and long term.

The LM developed its first generation IWMP in 2005, replaced by the 2nd generation IWMP in 2015. This IWMP is the 3rd generation plan, updating and replacing the 2015 IWMP. The IWMP will assist the Municipality in improving the current waste management practices which mainly focus on waste collection and disposal to a more improved waste management practice that promotes circular economy and sustainable development, as the waste value-chain would be planned for and managed through the IWMP. The overall objective of an IWMP is to ensure that there is integration and optimization of general waste, to maximize efficiency and minimise the associated environmental impacts while simultaneously improving the quality of life of the people within the Municipality.

The IWMP provides an overview of the existing waste management practices in LM and outlines the contextual factors and legislative frameworks shaping the formulation of the IWMP. The report draws from several sources, including interviews with key stakeholders and municipal representatives and a comprehensive review of background information. Status Quo comprises a description of the population and development profiles of the Municipality to which the plan relates, an assessment of the quantities and types of waste that are generated in the Municipality, 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.

Based on current information, from Stats SA, 2022, there has been an increase in population growth from 8 289 in 2011 to 11 366 recorded in 2022. Total number of households increased from 2 408 to 3 314. The increased population puts more pressure on the service delivery

expected from the Municipality. The municipality is currently collecting waste from all households and all registered indigent households are being serviced.

The Municipality has one waste disposal facility which is licensed. The waste disposal facility does not have a weighbridge, and volume density estimates are used to record waste disposal volumes reported on IPWIS monthly. Waste recycling is limited and there are no waste reclaimers within the Municipality, as a result, there are huge volumes of recyclables observed at the waste disposal facility. Waste characterisations also showed that most of the waste disposed of within the Municipality is recyclable. Illegal dumping is a challenge, however; Municipality manages the illegal dumps using Eight (8) EPWP participants appointed by CKDM who are responsible for waste management. Illegal dumps cannot be eliminated as such the Municipality can manage illegal dumps by continuously raising community awareness and enforcing penalties under their waste management by-laws.

The Municipality currently has no waste prevention, minimisation, and separation at source initiatives. These initiatives can assist the Municipality in managing future waste generation. There is a need for the Municipality to partner with Producer Responsibility Organizations (PROs) to implement extended producer responsibility schemes within the municipality. Challenges that the Municipality encounters include amongst others; limited human resources, limited air space, illegal dumping, poor infrastructure for storing waste at Matjiesfontein, waste operation equipment, and specialized waste management vehicles needed for proper site management. The Municipality has gazetted waste management by-laws, however, there is a need to have Environmental Management Inspectors (EMI)/peace officers to ensure effective implementation of the by-laws.

The analyses of the current waste management system have led to the identification of gaps and needs (Section 5 of this report), and these are addressed with the overarching goals, objectives, and targets in (Section 9 of this report) The main goals for integrated waste management in LM can be summarized as follows:

- Goal 1: Improve waste collection services;
- Goal 2: Develop waste minimisation and recycling;
- Goal 3: Improve management and compliance of waste facilities
- Goal 4: Enhance waste education and awareness
- Goal 5: Strengthen human and financial resource management.
- Goal 6: Improve waste management information

- Goal 7: Promote integrated waste management planning
- Goal 8: Improve hazardous and medical waste management.

For these goals to be met, a series of implementation instruments (action plans) will need to be implemented. These action plans are detailed in the Implementation plan in Section 10 of this report. It is imperative for the LM to action the proposed in the Implementation plan as this will directly result in improved waste management of the Municipality.

As part of the development of the IWMP, the consultants will engage with stakeholders and members of the community. Stakeholders and I&APs will be notified that the draft IWMP is out for comment. The comments on the draft IWMP will be incorporated into the final IWMP.

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ABBREVIATIONS

Abbreviation	Description
DFFE	Department of Forestry, Fisheries and the Environment
EPIP	Environmental Protection and Implementation Programme
EPR	Extended Producer Responsibility
EPWP	Expanded Public Workers Programme
FBRR	Free Basic Refuse Removal
HDPE	High Density Polyethylene
IDP	Integrated Development Plan
GHG	Greenhouse Gas
IWMP	Integrated Waste Management Plan
IPWIS	Integrated Pollutant and Waste Information System
MEC	Member of Executive Council
MIG	Municipal Infrastructure Grant
NDWCS	National Domestic Waste Collections Standards
NEM: AQA	National Environmental Management Air Quality Act (Act 39 of 2004)
NEMA	National Environmental Management Act (Act No 107 of 1998)
NEMWA	National Environmental Management Act: Waste Act (Act 59 of 2008)
NWA	National Water Act (Act No 36 of 1998)
NWMS	National Waste Management Strategy
PET	Polyethylene terephthalate
SDG	Sustainable Development Goals
PROs	Producer Responsibility Organisations

Abbreviation	**Description**
SDF	Spatial Development Framework
SA SoER	South African State of Environment Report
SAWIS	South African Waste Information System
TLB	Tractor Loader Backhoes
WML	Waste Management License
WMO	Waste Management Officer

DEFINITIONS

Word	Definition
Building and Demolition Waste	Means waste, excluding hazardous waste, produced during the construction, alteration, repair, or demolition of any structure, and includes rubble, earth, rock and wood displaced during that construction, alteration, repair or demolition.
Business Waste	This means waste that emanates from premises that are used wholly or mainly for commercial, retail, wholesale, entertainment, or government administration purposes.
By-laws	Regulations made by a local authority.
Circular Economy	Circular Economy is a model of production and consumption, which involves sharing, leasing, reusing, repairing, refurbishing and recycling existing materials and products as long as possible.
Desired End State	Entails identifying priorities and goals that a Municipality wishes to attain with regards to waste management.
Disposal	Means the burial, deposit, discharge, abandoning, dumping, placing or release of any waste into, or onto, any land.
Domestic Waste	Means waste, excluding hazardous waste, that emanates from premises that are used wholly or mainly for residential, educational, health care, sport or recreation purposes.
Environment	The surroundings in which humans exist and includes the land, water and atmosphere. In addition, it includes the interrelationships, combinations, properties and conditions of all organisms that exist within the surroundings.
Environmental Impact Assessment	Environmental Impact Assessment in planning law, in some circumstances where a development is likely to have significant effects on the environment, a necessary examination of environmental issues before planning can be granted.
Fleet	Comprise of all the transport vehicles owned by a company, government agency or other business.
General Waste	Means waste that does not pose an immediate hazard or threat to health or to the environment, and includes— *(a)* domestic waste;

Word	Definition
	(b) building and demolition waste; *(c)* business waste; and *(d)* inert waste.
Hazardous Waste	Means any waste that contains organic or inorganic elements or compounds that may, owing to the inherent physical, chemical, or toxicological characteristics of that waste, have a detrimental impact on health and the environment.
Industrial symbiosis	Is a free facilitation service that promotes the exchange of residual resources of one company with another company that can make use of it.
Integrated Waste Management Plan	Is a statutory requirement of the NEMWA that has been promulgated and came into effect on 1 July 2009, with the goal to transform the current methodology of waste management, i.e., collection and disposal, to a sustainable practice focusing on waste avoidance and environmental sustainability. The IWMP is a critical sector plan to form part of the Integrated Development Plan.
Interested and Affected Parties	Interested and Affected Party for the purposes of Chapter 5 of the NEMA and in relation to the assessment of the environmental impact of a listed activity or related activity, means an interested and affected party contemplated in Section 24(4)(a)(v) of the NEMA and which includes – a) any person, group of persons or organisation interested in or affected by such operation or activity; and b) any organ of stale that may have jurisdiction over any aspect of the operation or activity.
Waste Disposal Facility	This means any site or premise used for the accumulation of waste with the purpose of disposing of that waste at that site or on that premise.
MEC	Means the Member of the Executive Council of a province who is responsible for waste management in the province.
Minimisation	When used in relation to waste, means the avoidance of the amount and toxicity of waste that is generated and, in the event where waste is generated, the reduction of the amount and toxicity of waste that is disposed of.
Municipal Systems Act	Means the Local Government: Municipal Systems Act, 2000 (Act No. 32 of 2000).

Word	Definition
Municipality	Means a Municipality established in terms of the Local Government: Municipal Structures Act, 1998 (Act No. 117 of 1998).
National Environmental Management Act	Means the National Environmental Management Act, 1998 (Act No. 107 of 1998).
National Environmental Management Waste Act	Is the primary legislation that governs waste management in South Africa.
National Waste Management Strategy	The National Waste Management Strategy (NWMS) is a legislative requirement of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008), the "Waste Act". The purpose of the NWMS is to achieve the objects of the Waste Act. Organs of state and affected persons are obliged to give effect to the NWMS.
Partnerships	An association of two or more people as partners.
Projection	Is a potential future evolution of a quantity or set of quantities, often computed with the aid of a model.
Recovery	Means the controlled extraction of a material or the retrieval of energy from waste to produce a product.
Recycle	Means a process where waste is reclaimed for further use, which process involves the separation of waste from a waste stream for further use and the processing of that separated material as a product or raw material.
Recycling	Means a process where waste is reclaimed for further use, which process involves the separation of waste from a waste stream for further use and the processing of that separated material as a product or raw material.
Re-use	Means to utilise articles from the waste stream again for a similar or different purpose without changing the form or properties of the articles.
Stakeholder	A person or an organisation that has a legitimate interest in a project or entity or would be affected by a particular action or policy.
Status Quo	The existing state of affairs, especially regarding social or political issues.

Word	Definition
Storage	Means the accumulation of waste in a manner that does not constitute treatment or disposal of that waste.
Treatment	Means any method, technique or process that is designed to— *(a)* change the physical, biological or chemical character or composition of a waste; or *(b)* remove, separate, concentrate or recover a hazardous or toxic component of a waste; or *(c)* destroy or reduce the toxicity of a waste, in order to minimise the impact of the waste on the environment prior to further use or disposal;
Waste	Means any substance, material or object, that is unwanted, rejected, abandoned, discarded or disposed of, or that is intended or required to be discarded or disposed of, by the holder of that substance, material or object, whether or not such substance, material or object can be re-used, recycled or recovered and includes all wastes as defined in Schedule 3 to this Act; or (b) any other substance, material or object that is not included in Schedule 3 that may be defined as a waste by the Minister by notice in the Gazette
Waste characterisation	The process by which the composition of different waste streams is analysed
Waste Pickers	Someone who collects re-usable and recyclable materials from residential and commercial waste bins, waste disposal facilities and open spaces in order to revalue them and generate an income.
Waste picker integration	The creation of a formally planned recycling system that values and improves the present role of waste pickers, builds on the strengths of their existing system for collecting and revaluing materials, and includes waste pickers as key partners in its design, implementation, evaluation and revision. Waste picker integration requires changes in a number of spheres and includes the integration of waste pickers' work, as well as the political, economic, social, legal and environmental integration of waste pickers.
Waste Disposal Facility	This means any site or premise used for the accumulation of waste with the purpose of disposing of that waste at that site or on that premise.

Word	Definition
Waste Management Activity	Means any activity listed in Schedule 1 or published by notice in the *Gazette* under section 19, and includes— *(a)* the importation and exportation of waste; *(b)* the generation of waste, including the undertaking of any activity or process that is likely to result in the generation of waste; *(c)* the accumulation and storage of waste; *(d)* the collection and handling of waste; *(e)* the reduction, re-use, recycling and recovery of waste; *(f)* the trading in waste; *(g)* the transportation of waste; *(h)* the transfer of waste; *(i)* the treatment of waste; and *(j)* the disposal of waste.
Waste Management License	This is a license that is issued by a competent authority which authorises an individual/organisation to commence, undertake or conduct a waste management activity under the waste listed activities.
Waste Management Officer	An individual appointed by a local Municipality to coordinate waste management within that Municipality. This individual performs a regulatory function overseeing adherence to national norms and standards and achieving the objectives of the Waste Act.
Waste Management Services	Means waste collection, treatment, recycling and disposal services.
Waste Minimisation Programme	This means a programme that is intended to promote the reduced generation and disposal of waste.
Waste Transfer Facility or Station	Means a facility that is used to accumulate and temporarily store waste before it is transported to a recycling, treatment or waste disposal facility.
Waste Treatment Facility	Means any site that is used to accumulate waste for the purpose of storage, recovery, treatment, reprocessing, recycling or sorting of that waste.

1 INTRODUCTION

The South African Constitution of the Republic, 1996 (Act 108 of 1996), under Chapter 2 Section 24, stipulates that everyone has the right to an environment that is not harmful to their health or well-being and to have the environment protected through reasonable legislative and other measures that prevent pollution and ecological degradation. DFFE has to support struggling municipalities that do not have the relevant capacity to ensure that waste services delivery is improved, as such DFFE has embarked on this project to assist Laingsburg Municipality as one of the municipalities within the Central Karoo District Municipality (CKDM) to develop LM's IWMP.

LM is a Category B Municipality which covers an area of 8,784 km². The Municipality is the smallest in terms of population contribution in the Western Cape Province and South Africa. The Municipality is divided into 4 wards. The main town is Laingsburg, and the key economic sectors are agriculture, finance, construction, and community services. According to Stats 2022, the total population is 11,366, which is the smallest population within the CKDM. The Municipality's total households are 3 314 with an average of 3,4 household size.

NEMWA is the primary legislation that governs waste management in South Africa, Section 11 (1) of NEMWA, as amended requires provincial government and municipalities responsible for waste management to prepare and review their IWMPs. Each Municipality must submit their IWMP that has been approved by the municipal council to the MEC for endorsement, the endorsed IWMP must then be incorporated into the IDP.

The Municipality's overall waste management challenges include limited waste management infrastructure, low levels of compliance with the conditions of the waste management disposal facility's license, a lack of a specialised waste management fleet, limited landfill airspace, a lack of budgets prioritized and allocated for waste management, and a shortage of experienced and qualified waste management personnel. Poorly managed waste management facilities can emit odours, disperse wind, and create frequent fires, all of which have an impact on the environment and cause nuisances and health risks to communities living nearby. The impacts of waste management facilities are strongly linked to environmental pollution and climate change since inappropriate waste disposal leads to surface and groundwater pollution as well as Greenhouse Gas (GHG) emissions. Overcoming these challenges requires an integrated approach to waste management.

The IWMP is developed in line with the updated DFFE guidelines for the development of IWMP, the Department of Environmental Affairs and Development Planning (DEADP) guidelines for waste management planning and aligned with the 2020 National Waste Management Strategy (NWMS) which promotes the waste management hierarchy and circular economy. The goal of the IWMP is to transform the current methods of waste management, i.e. collection and disposal, to a sustainable practice focusing on waste circular economy and environmental sustainability. Several strategic plans have been taken into consideration during the development of this IWMP. The IWMP aligns with the global Sustainable Development Goals (SDGs), National Development Plan (NDP), and provincial plan (i.e. Western Cape IWMP). The IWMP will also be aligned with the Municipality's IDP and municipal Spatial Development Framework (SDF). A summary of this linkage is provided in Section 8 of this report.

The status quo /situation analysis covers the legislative framework, demographics, waste quantities, and types, as well as the current waste management systems such as waste collection, recycling, treatment, waste disposal, key principles on NWMS 2020, waste pickers integration, circular economy, and waste management funding. Information was gathered by reviewing existing waste management documents, questionnaire, ground truthing as well as by conducting interviews.

2 LEGISLATIVE REQUIREMENTS

This section provides a comprehensive list of applicable National and Provincial legislations, policies, and Guidelines concerning the management of solid waste within the Municipalities.

An understanding of the applicable legal framework is essential when evaluating options for the management of waste. The latest versions of legislation captured here and their respective amendments can be downloaded from the webpage of the South African Waste Information Centre (SAWIC: https://sawic.environment.gov.za/

The following legal requirements and obligations have an impact on the management of waste within municipalities.

Table 2-1: Applicable national legal requirements and obligations

The Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act (Act 36 of 1947)
The Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act (Act 36 of 1947) The Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act, Act 36 of 1947 regulates the importation, sale, acquisition, disposal or use of fertilizers, farm feeds, agricultural remedies (pesticides), and stock remedies. This Act has relevance to compost where it is intended for use as a fertilizer and digestate from anaerobic digestion plants intended as fertilizers. It also regulates the disposal of farm feeds, obsolete agricultural remedies (pesticides) and fertilizers.
The Hazardous Substances Act, 1973 (Act 15 of 1973) & Regulations
This legislation aims to address substances that are deemed hazardous, to regulate and prohibit the importation, manufacture, sale, use, operation, application, modification, disposal or dumping of such substances. In terms of waste management, Section 29 of the Hazardous Substances Act stipulates that the Minister has the designated authority to authorise, regulate or prohibit the dumping of hazardous substances. Industries that generate hazardous waste must produce an industrial waste management plan. Industries such as small-scale mines and other industries within the municipalities are expected to comply with this Act and the By-laws must incorporate this in their systems.
The Occupational Health and Safety Act, 1993 (Act 85 of 1993) and Regulations
The Occupational Health and Safety Act, Act 85 of 1993 contains provisions that protect waste workers from harm during the waste management process. The Act provides for the development of regulations that protect workers and the public from exposure to asbestos, hazardous chemicals, hazardous waste and lead. The Occupational Health and Safety Act and its regulations are of importance to the management of the health and safety of workers responsible for the handling of waste. This Act could also be applicable to waste harvesters, if they are allowed by a municipality to reclaim waste.
Constitution of the Republic of South Africa Act, 1996 (Act No108 of 1996)
The Constitution of the Republic of South Africa (Act 108 of 1996) is the supreme law of the country and provides the legal foundation for every law developed. Section 24 of the Constitution states that everyone has a right to an environment that is not harmful to their health or well-being and to have the environment protected, for the benefit of present and future generations, through reasonable legislation development and implementation and other measures that prevent pollution and ecological degradation, promote conservation and secure ecologically sustainable development. As such,

fundamental rights in the Constitution must be taken into consideration during waste management planning.

The National Environmental Management Act, 1998 (Act No 107 of 1998) (NEMA)

The National Environmental Management Act (Act No.107 of 1998) (NEMA) as amended is the framework Act dealing with environmental management in South Africa. It imposes a duty of care on every person who causes environmental degradation to put measures in place to stop, reduce or rectify the pollution as it occurs. The environmental impact assessments that are required for the establishment and management of waste facilities are conducted under this legislation. The national environmental management principles in Section 2 of the Act provide for the sound management of the environment, which includes waste aspects such as the polluter pays, duty of care, proximity, and regionalization and cradle-to-grave principles. Section 24 of the Act makes provision for the application and enforcement of waste management licenses. Section 25 of the Act provides for incorporation of international environmental instruments – Accession to, ratification, and introduction of legislation giving effect to an international environmental instrument to which the country is a partyThe duty of care and the remediation of environmental damage are addressed in Section 28 of the Act. The principles enunciated in the NEMA need to inform waste management decision-making and practices.

A key aspect of NEMA is that it provides a set of environmental management principles including Precautionary, Polluter pays and Prevention and duty of care as well as the Waste Management Hierarchy that apply throughout the Republic to the actions of all organs of state that may significantly affect the environment. In addition, Section 28 of NEMA, affectionately known as the “duty of care” provision, requires persons who are defined in the section to take reasonable measures to combat pollution or degradation of the environment.

The National Water Act, 1998 (Act 36 of 1998) (NWA)

The National Water Act (Act No. 36 of 1998) (NWA) contains several provisions that impact 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; and
- 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.

- This Act requires that waste discharged or deposited into or allowed to enter a water resource be monitored and analysed according to prescribed mechanisms.

The Local Government Municipal Structures Act, 1998 (Act 117 of 1998)
This Act provides for the establishment of municipalities in accordance with the requirements relating to categories and types of municipalities. It establishes criteria for determining the category of municipality to be established in an area and defines the types of municipalities that may be established within each category. The Act furthermore provides for an appropriate division of functions and powers between categories of municipalities and regulates the internal systems, structures and office-bearers of the municipalities. It also provides for appropriate electoral systems for matters in connection therewith.
White Paper on Integrated Pollution and Waste Management for South Africa (Government Gazette 20978, 17 March 2000)
The White Paper introduced an integrated approach to be adopted by the government to deal with the issues relating to waste management and pollution.
The Local Government Municipal Systems Act, 2000 (Act 32 of 2000)
Section 25 of the MSA, requires each municipal council to within a prescribed period after the start of its election term, adopt a single, inclusive and strategic IDP, for the development of the Municipality. In relation to waste management, the IDP is required to include sectorial environmental plans which would be an IWMP for waste management. In their IDP's municipalities are required to ensure proper resource allocation to achieve the targets set in the respective plans. Section 13 of the Act provides for the publication of relevant By-laws by the municipal council in the Provincial Gazette and where feasible in a local newspaper or in any other practical way to bring the contents of the By-law to the attention of the local community.
The Local Government Municipal Finance Management Act, 2003 (Act 56 of 2003)
This Act provides for the secure and sustainable management of the financial affairs of municipalities and other institutions in the local sphere of government
The National Health Act (Act 61 of 2003)
The National Health Act (Act No. 63 of 2003) provides measures for the promotion of health and

Section 20 of the Act sets out the duties and powers of local authorities. It provides that every local government is obliged to take measures to maintain its district in a clean and hygienic condition and to prevent the occurrence of any nuisance, unhygienic or offensive condition, or any other condition, which could be of danger to the health of any person. A "nuisance" includes any accumulation of refuse or other matter that is offensive or is injurious or dangerous to health. The local government is obliged to abate the nuisance or remedy the condition and to prevent the pollution of any water intended for the use of the inhabitants of its district.

The National Environmental Management: Air Quality Act 39 of 2004

The National Environmental Management: Air Quality Act 39 of 2004 (NEM: AQA) as amended reforms the law regulating air quality to protect the environment by providing measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development while promoting justifiable economic and social development; provides for national norms and standards regulating air quality monitoring, management and control of all spheres of government; for specific air quality measures; and matters incidental thereto. This Act is furthermore relevant to the management of waste as it may impact air quality and ultimately contribute to the mitigation of climate change.

National Environmental Management: Waste Management Act, 2008 (Act No. 59 of 2008) (NEMWA)

The National Environmental Management Act: Waste Act (Act 59 of 2008) (NEMWA) as amended regulates waste management to protect health and the environment by providing reasonable measures for the prevention of pollution and ecological degradation, and for securing ecologically sustainable development. This is aimed at providing for institutional arrangements and planning matters; providing for national norms and standards for regulating the management of waste by all spheres of government; providing for specific waste management measures; to provide for the licensing and control of waste 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.

NEMWA 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 2-1.**

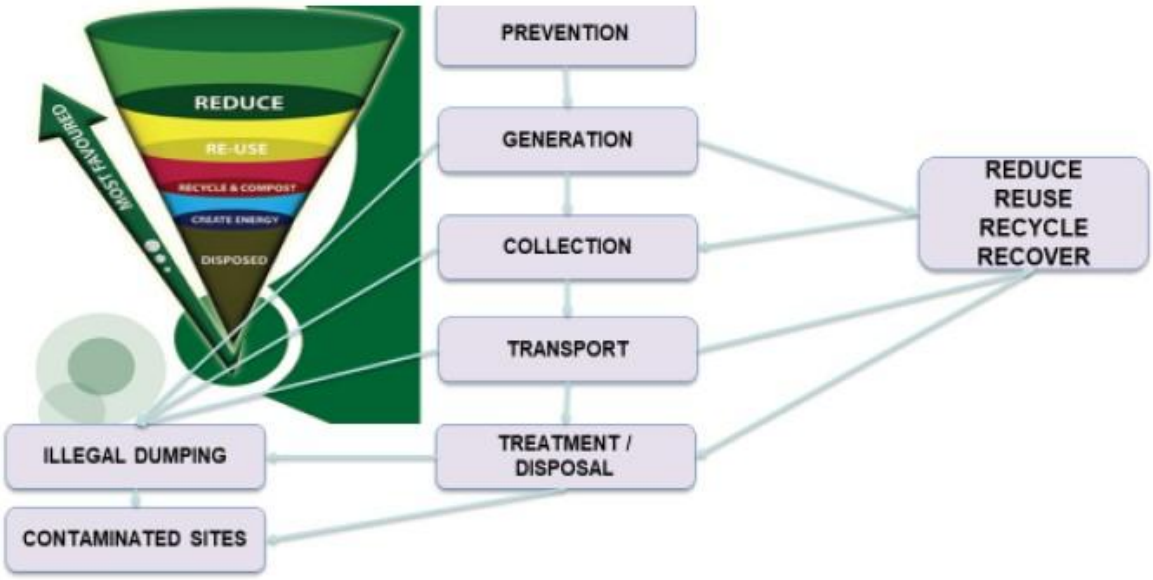

Figure 2-1:Waste Management Hierarchy

Waste Tyre Regulations, 2008 (Government Gazette 31901)
The Waste Tyre Regulations were published on 13 February 2009 and came into effect on 30 June 2009 in terms of section 24B of the ECA and make provision for effective and integrated management of waste tyres.
Consumer Protection Act (CPA), 2008 (Act 68 of 2008)
Section 59 of this act provides for producers, suppliers or distributors of goods (designated products or their components) that may not be disposed of into a common waste collection system to be recovered and safely disposed
Waste Tyre Regulation GNR 149 of 2009
Waste Tyre Regulation regulates the management of waste tyres by providing regulatory mechanisms.
National Environmental Management: Waste Act (59 of 2008): List of Waste Management Activities that have or are likely to have a detrimental effect on the environment. GN 32368, 3 July 2009
This notice lists the activities that trigger a waste license requirement and no person may commence, undertake or conduct a waste management activity listed in this schedule unless a license is issued in

respect of that activity
National Environmental Management Act, 1998 (Act No. 107 of 1998): Environmental Impact Assessment ("EIA") Regulations, 18 June 2010
These regulations standardise the procedure and criteria as contemplated in Chapter 5 of the NEMA relating to the submission, processing and consideration of, and decision on, applications for environmental authorisations for the commencement of activities to avoid detrimental impacts on the environment, or where it cannot be avoided, ensure mitigation and management of impacts to acceptable levels, and to optimise positive environmental impacts, and for matters pertaining thereto.
The National Domestic Waste Collection Standards (GNR 21 of 2011)
This notice aims to standardize waste service delivery to ensure that this service is available to all while complying with current health and safety legislations as well as minimally changing those waste collection processes that function effectively and efficiently. The National Domestic Waste Collections Standards (NDWCS) also specify that recyclables that are not collected at households should be deposited at drop-off centres which must be easily accessible to households. These drop-off centres must promote recycling and ensure user-friendliness and also collection must be done at regular intervals so that it does not cause a nuisance. The NDWCS defines that there should be mechanisms in place to ensure that there be transparent communication between different stakeholders. This document stipulates that the service provider must create awareness amongst households about waste collection services offered, source separation, composting and the consequences of illegal dumping. This notice also outlines the role of the Waste Management Officer (WMO) regarding waste awareness and the handling of complaints.
National Waste Management Strategy (NWMS) (14 November 2011)
The purpose of the strategy is to give effect to the objects of the Waste Act as required in terms of section 6(1).
The National Policy for the provision of Basic Refuse Removal services to indigent households (GN 413 of 2011)
The National Policy on Free Basic Refuse Removal (FBRR) aims to address the need for free basic refuse removal among impoverished households. Many municipalities experience several challenges concerning delivering an effective and sustainable waste service to all households. Some of the

problems currently experienced by municipalities in terms of waste management are insufficient income for budget allocation, lack of equipment, skilled staff and poor access to service areas.

There are three objectives of the National Policy on FBRR. The first, being to establish a framework for the development, identification and management of indigent households that can be enrolled for the FBRR service within the Municipality. The second is to set broad principles, resulting in the adoption of By-laws for the implementation and enforcement of tariff policies that will support the FBRR service within the concerned municipalities. The last of these principles is to educate and raise awareness within municipalities regarding the proper handling of domestic waste for FBRR as well as for the need to minimise waste and promote recycling.

Municipal Solid Waste Tariff Strategy (2012)

The purpose of the Municipal Solid Waste Tariff Strategy is to provide a framework and guidance for municipalities in setting solid waste tariffs that align with the intentions of the NWMS. The NWMS recognizes the importance of full cost accounting as the foundation of financial sustainability, which is critical in the delivery of effective and efficient waste services and in the promotion of waste minimization, reuse, recycling and recovery. Full cost accounting considers all operational and capital expenditure pertaining to solid waste services. The introduction of cost-recovery tariffs enables municipalities to fund the “maintenance, renewal and expansion of solid waste infrastructure” (NWMS, 2011). The under-pricing of waste services sends inappropriate signals to households and waste generators and discourages waste minimisation. Inadequacies in municipal solid waste tariff setting have been raised by National Treasury (National Treasury, 2011). The strategy aims to reflect the principles that need to be adhered to in solid waste tariff setting and provides guidance in achieving the correct balance between appropriate subsidization and full cost recovery.

The National Waste Information Regulation (GNR 625 of 2012)

This notice illustrates the regulations for the collections of data and information to fulfil the objectives of the National Waste Information System (SAWIS) set out in Section 61 of the NEMWA. The list of activities requiring registration and reporting on the SAWIS includes general waste disposal facilities that receive more than 150 tonnes of waste per day, recycling and treatment facilities, hazardous waste being exported or imported as well as energy recovery facilities.

List of Waste Management Activities that have or are likely to have, a Detrimental Effect on the Environment (GN 921 of 2013)

The listed waste activities under Sections 19 and 20 of Chapter 4 of NEMWA are published in

Government Notice 921 of 2013 as Category A; activities requiring a Basic Assessment (BA) process (applicable to general waste), Category B; activities requiring a Scoping and Environmental Impact Assessment (EIA) process (applicable to hazardous waste) set out in Section 24(5) of NEMA (Act No. 107 of 1998), as part of the waste management license application contemplated in Section 45 read with Section 20(b) of the Act. The main activities in terms of Categories A and B for which a waste license may be required, fall within the following broad categories: Storage of waste; Recycling or recovery of waste; Treatment of waste; Disposal of waste; and Construction, expansion or decommissioning of waste facilities.

The National Norms and Standards for the Remediation of Contaminated Land and Soil Quality in the Republic of South Africa (GN 467 of 2013)

The purpose of the norms and standards is to provide for a uniform, national approach relating to the remediation of contaminated land.

The National Norms and Standards for the Storage of Waste GNR 926 of 2013

The purpose of these norms and standards is to provide a uniform national approach to the management of waste facilities and to ensure that best practice in the management of waste storage facilities is achieved. This document also outlines the minimum standards for the design and operation of new and existing waste storage facilities.

Part 1 of this document outlines the requirements for registration, what factors to consider when selecting a location and finally the requirements for the construction and design of the proposed waste storage facility.

Part 2 of these norms and standards outlines the requirements for the management of waste storage facilities. Aspects such as access control, notices/signage, waste storage containers and minimum requirements for above and underground waste storage facilities are outlined in this section. This is applicable to facilities such as the landfill sites.

The National Norms and Standards for Disposal of Waste to landfill GNR 636 of 2013

These Norms and Standards determine the requirements for the disposal of waste to landfills as contemplated in regulation Section 8(1) (b) and (c) of the Waste Classification and Management Regulations. Chapter 2 outlines and illustrates Landfill Classification and Containment Barrier Design. Waste assessed in terms of the Norms and Standards for Assessment of Waste for Landfill Disposal in terms of Section 7(1) of the Act must be disposed to a licensed landfill.

The Waste Classification and Management Regulations (GNR 634 of 2013)
The purpose of this Regulation is to regulate the classification and management of waste in manner which supports and implements the provisions of NEMWA; to establish a mechanism and procedure for the listing of waste management activities that do not require a Waste Management License; to prescribe requirements for the disposal of waste to a landfill; to prescribe general duties of waste generators, transporters and managers.
The National Norms and Standards for the Scrapping or Recovery of Motor Vehicles GNR 925 of 2013
The National Norms and Standards for the Scrapping or Recovery of Motor Vehicles aim at controlling the scrapping or recovery of motor vehicles at a facility with an operational area in excess of 500 m^2 in order to prevent or minimize potentially negative impacts on the biophysical and socio-economic environment.
The National Norms and Standards for the Assessment of Waste for Landfill Disposal (GNR 635 of 2013)
The National Norms and Standards for the Assessment of Waste for Landfill Disposal prescribes the requirements for the assessment of waste prior to its disposal to landfill in terms of Regulation 8(1)(a) of the regulations. It is the responsibility of the Municipality to ensure compliance with the waste quality prior to its disposal at landfill.
Western Cape Health Care Waste Management Act, 2007 (Act 7 of 2007), Amendment Act, 2010 (No. 6 of 2010), Regulations, 2013
The Act, Amendment Act and Regulations provides for the effective management (handling, storage, collection, transportation, treatment and disposal) of health care waste by all persons in the Western Cape
National Environmental Management: Waste Act: National Waste Information Regulations, January 2013
These Regulations instruct waste generators and holders to register and report to the National and Provincial waste information systems. The waste generators and holders in the Western Cape Province must register on the Integrated Pollutant and Waste Information System (IPWIS).

National Organic Waste Composting Strategy: Draft Strategy Report and Guideline (February 2013)
The national organic draft strategy has been developed to promote composting as one method to beneficiate organic waste and to divert organics from landfill disposal. The Guidelines aim to provide a practical conceptual-level information tool to assist authorities and other interested parties in identifying viable and sustainable composting opportunities
The National Environmental Management: Waste Act: Waste Classification & Management Regulations (Government Gazette No. 36784, 23 August 2013)
The Regulations serve to regulate the classification and management of waste in a manner that supports and implements the provisions of the Waste Act and provide for safe and appropriate handling, storage, recovery, reuse, recycling, treatment and disposal of waste and will also enable accurate and relevant reporting on waste generation and management.
National Environmental Management: Waste Act: National Norms and Standards for Disposal of Waste to Landfill (Government Gazette No. 36784, 23 August 2013)
These Norms and Standards determine the requirements for the disposal of waste to landfill as contemplated in Regulation 8(1) (b) and (c).
National Environmental Management: Waste Act: National Norms and Standards for Assessment of Waste to Landfill (Government Gazette No. 36784, 23 August 2013)
These Norms and Standards prescribe the requirements for the assessment of waste prior to disposal to landfill in terms of Regulation 8(1) (a).
National Norms and Standards for the Sorting, Shredding, Grinding, Crushing, Screening or Bailing of General Waste (GNR 1093 of 2017)
The purpose of these Norms and Standards is to provide a uniform national approach relating to the management of waste facilities that sort, shred, grind, crush, screen, chip or bale general waste, with an operational area that is 1000m^2 and more. Waste facilities with less than 1000m^2 are to comply with Section 4(4) of the Norms and Standards only, which requires that the facility must be registered with the Competent Authority and comply with the principles of the duty of care as contained in Section 28 of the NEMA.

The Norms and Standards require that the Municipality ensure-

All new waste facilities must be registered 90 days prior to any construction taking place;

Existing waste facilities must register within 90 days of the publishing of the Norms and Standards (i.e. on or before 09 January 2018);

Those waste facilities that are already registered do not need to re-register but must comply with the Norms and Standards from 11 October 2017; and

A waste facility that is less than 1000m^2 must, inter alia, register in terms of the Norms and Standards.

Regulations Regarding the Exclusion of Waste or a Portion of a Waste Stream from the Definition of Waste (GN R 715 of 2018)

The purpose of these regulations are as follows: Prescribe the manner in which a person or a category of persons may apply to the Minister for exclusion of a waste stream or a portion of waste for beneficial use from the definition of waste; Exclude permitted uses of a waste stream or a portion of waste from the definition of waste; and Promote diversion of waste from landfill disposal to its beneficial use.

The National Waste Management Strategy GNR 2020

The National Waste Management Strategy (NWMS,2020) is a legislative requirement of NEMWA. The purpose of the NWMS is to give effect in achieving the objectives outlined in the NEMWA. The 2020 NWMS is a revision and update of the 2020 NWMS. Organs of state and affected persons are obliged to give effect to the NWMS. The 2020 NWMS is structured around central implementation themes that are described in terms of strategic objectives and actions:

Theme 1: Waste Minimisation

Theme 2: Effective and Sustainable Waste Services

Theme 3: Waste Awareness and Compliance

The NWMS's overall aim is to reduce the generation and environmental impacts associated with poor waste management. It presents a plan on how to achieve the desired goals outlined in the document which will ultimately promote a cleaner, healthier environment within South Africa.

Extended Producer Responsibility (GN 1184 of 2020)

Aims to provide the framework for the development, implementation, monitoring and evaluation of extended producer responsibility schemes by producers in terms of section 18 of the NEM: WA.

The National Norms and Standards for Organic Waste Composting GN 561 of 2021
The National Norms and Standards for Organic Waste Composting (draft) aim at controlling the composting of organic waste at a facility that falls within the threshold of these norms and standards to prevent or minimize potentially negative impacts on the biophysical and socio-economic environment
The National Health Act, Act 2003 (Act 63 of 2003)
This act provides a framework for a structured uniform health system within the Republic, taking into account the obligations imposed by the Constitution and other laws on the national, provincial and local governments concerning health services.
Laingsburg Municipality: By-law relating to Integrated Waste Management 2023
The Municipality has developed the by-law in line with the Provincial model which empowers it to implement effective waste minimisation strategies like the diversion of organic waste.
DFFE Integrated Waste Management Guidelines
The guidelines provide a background for the compilation of Integrated Waste Management Plans which includes a short historical overview of IWMP's to date and a basic description of the legal framework about IWMP development.
Western Cape Guidelines
The guidelines have been developed to assist Municipalities in developing their IWMPs
INTERNATIONAL AGRREMENTS
Basel Convention 22 March 1989
This convention is an international treaty that controls the transboundary movements and disposal of hazardous waste (excluding the movement of radioactive waste) between nations and to prevent the transfer of hazardous waste from developed to less developed countries
Rotterdam Convention 10 September 1998
The Rotterdam Convention promotes shared responsibility and cooperative efforts among Parties in the

international trade of certain hazardous chemicals to protect human health and the environment from potential harm and to contribute to their environmentally sound use, by facilitating information exchange about their characteristics and by providing for a national decision-making process on their import and export. The Convention aims to facilitate informed decision-making by countries regarding the trade in hazardous chemicals
Stockholm Convention 22 May 2001
The Stockholm Convention aims to protect human health and the environment from persistent organic pollutants. The Convention listed 24 chemicals including Polychlorinated Biphenyls (PCBs) as chemicals that possess toxic properties, resist degradation, bio-accumulate and are transported through air, water and migratory species, across international boundaries and deposited far from their place of release where they accumulate in terrestrial and aquatic ecosystems, known as persistent organic pollutants (POPs).
Minamata Convention 16 August 2017
The Minamata Convention on Mercury is intended to protect human health and the environment from the adverse effects of mercury. The Convention draws attention to a global and pervasive metal that, while naturally occurring, has broad uses in everyday objects and is released to the atmosphere, soil and water from a variety of sources. Controlling the anthropogenic releases of mercury throughout its lifecycle has been a key factor in shaping the obligations under the Convention.

3 INTEGRATED WASTE MANAGEMENT PLANNING PROCESS

The primary objective of IWMP is to integrate and optimise waste management planning 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 3-1** summarises the integrated waste management planning process that has been adopted for this process.

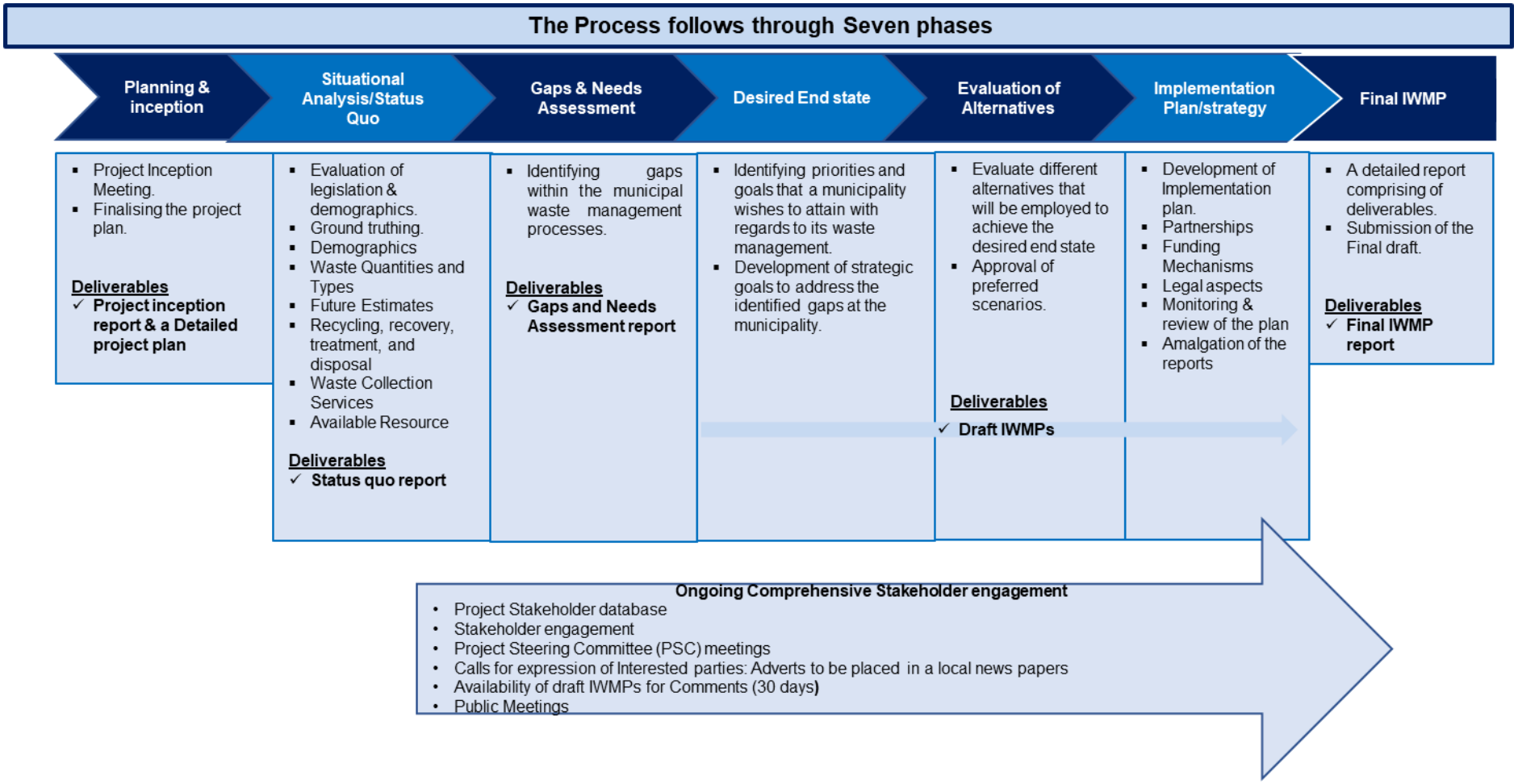

Figure 3-1: Integrated Waste Management Planning Process

4 WASTE SITUATION ASSESSMENT

The development of an IWMP includes a situation analysis which entails a description of the population and development profiles to which the plan relates, an assessment of waste quantities and types of waste generated within the Municipality, a description of the services that are available for the collection, minimisation, re-use, recycling, and recovery, treatment and disposal of waste. Moreover, the situation analysis is also completed in terms of institutional, financial, legal and physical conditions which must also be translated into the desired end state.

4.1 Situational Analysis Methodology

The information for compiling the status quo report was collected from the following sources:

- Laingsburg Municipality Integrated Development Plan 2022-2027-year 1 review implementation 2023/24;
- Laingsburg Municipality: Model Integrated Waste Management By-law, 2023;
- Laingsburg Municipality Spatial Development Framework,2012;
- Laingsburg Municipality,2015, 2nd Generation Integrated Waste Management Plan
- Department of Environmental Affairs and Development Planning compliance audit of the waste management permit for the Laingsburg waste disposal facility;
- Western Cape Integrated Waste Management Plan 2023-2027;
- Western Cape IWMP guidelines
- Illegal dumping and clean-up campaign report Goldnerville;
- Interviews with key stakeholders e.g. waste recyclers and municipal officials;
- Site visits conducted on 01-02 November 2023;
- Stats SA (2011 and 2022); and
- Community Service 2016.

4.2 Geographical Area

This section describes the location and demographics of LM to provide a comprehensive background of the municipality.

4.2.1 Locality

LM is located in the west of the region Central Karoo District Municipality (CKDM). It is the smallest Municipality in the Western Cape Province and South Africa. Laingsburg is the entry point to the CKDM if driving from Cape Town along N1 to Johannesburg, It's accessible from all the major cities of the Western Cape as well as Northern Cape, Eastern Cape, Free State and Gauteng Province. The Municipality is a Category B Municipality in the CKDM which covers an area of 8,784 km² on the south-western edge of the Great Karoo. The Municipality is divided into four (4) wards by the demarcation board. The biggest ward in population numbers is ward 4, consisting of Goldnerville, the second (2nd) biggest ward is Ward one (1), which consists of Bergsig Reconstruction and Development Programme (RDP) residential area, the third (3rd) biggest ward is ward two (2), consisting of Matjiesfontein, Vleiland and the whole agricultural community, however, this ward is the biggest regarding the size, the smallest ward is ward three (3) which mainly consisting of central business area, Acacia Park and Nuwe Dorp as well as a few farms along the urban edge of the municipality. According to Stats 2022, the total population is 11 366, which is the smallest population within the CKDM. The Municipality's total households is 3 314 with an average of 3,4 household size. **Figure 4-1** and **Figure 4-2** show the locality map of LM and Laingsburg waste disposal facility.

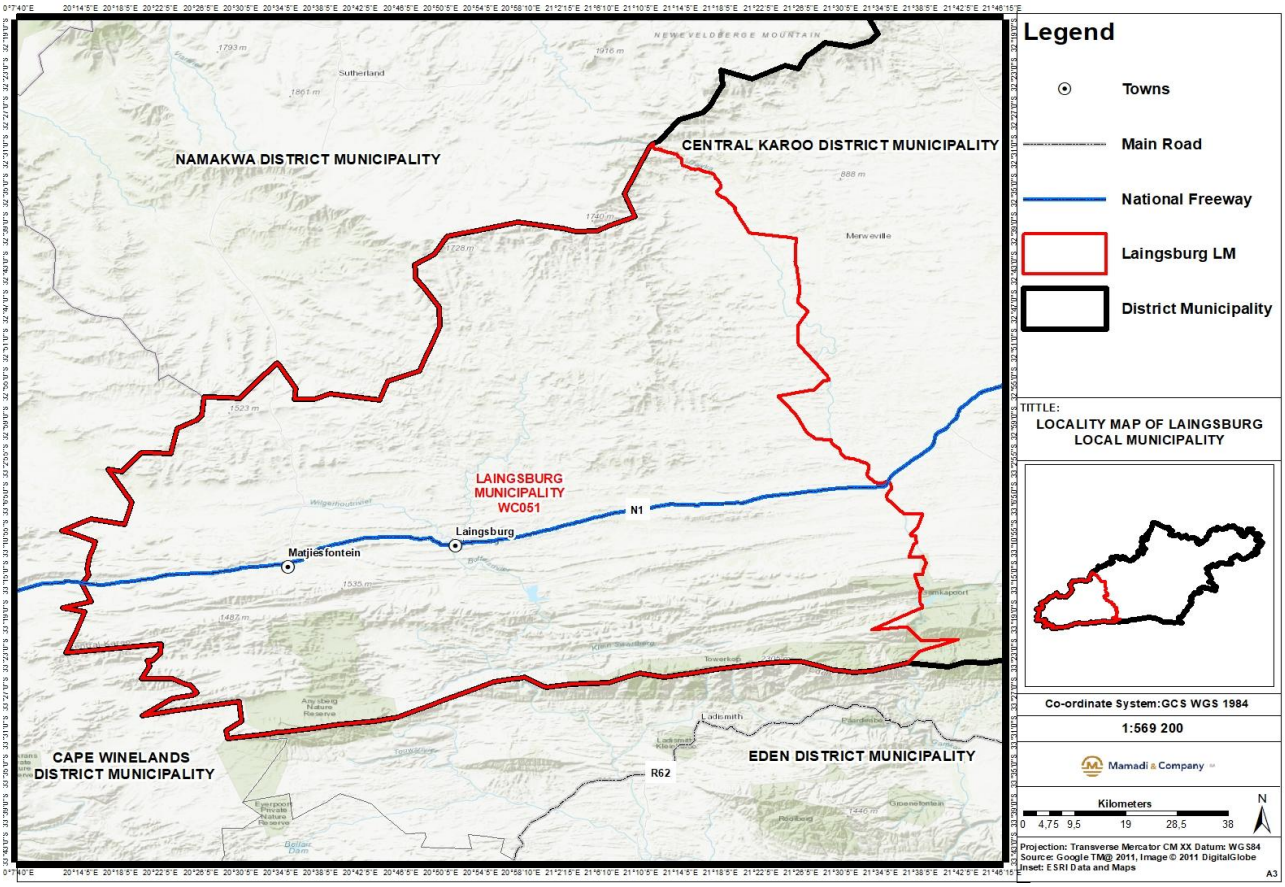

Figure 4-1: Locality Map of Laingsburg Municipality

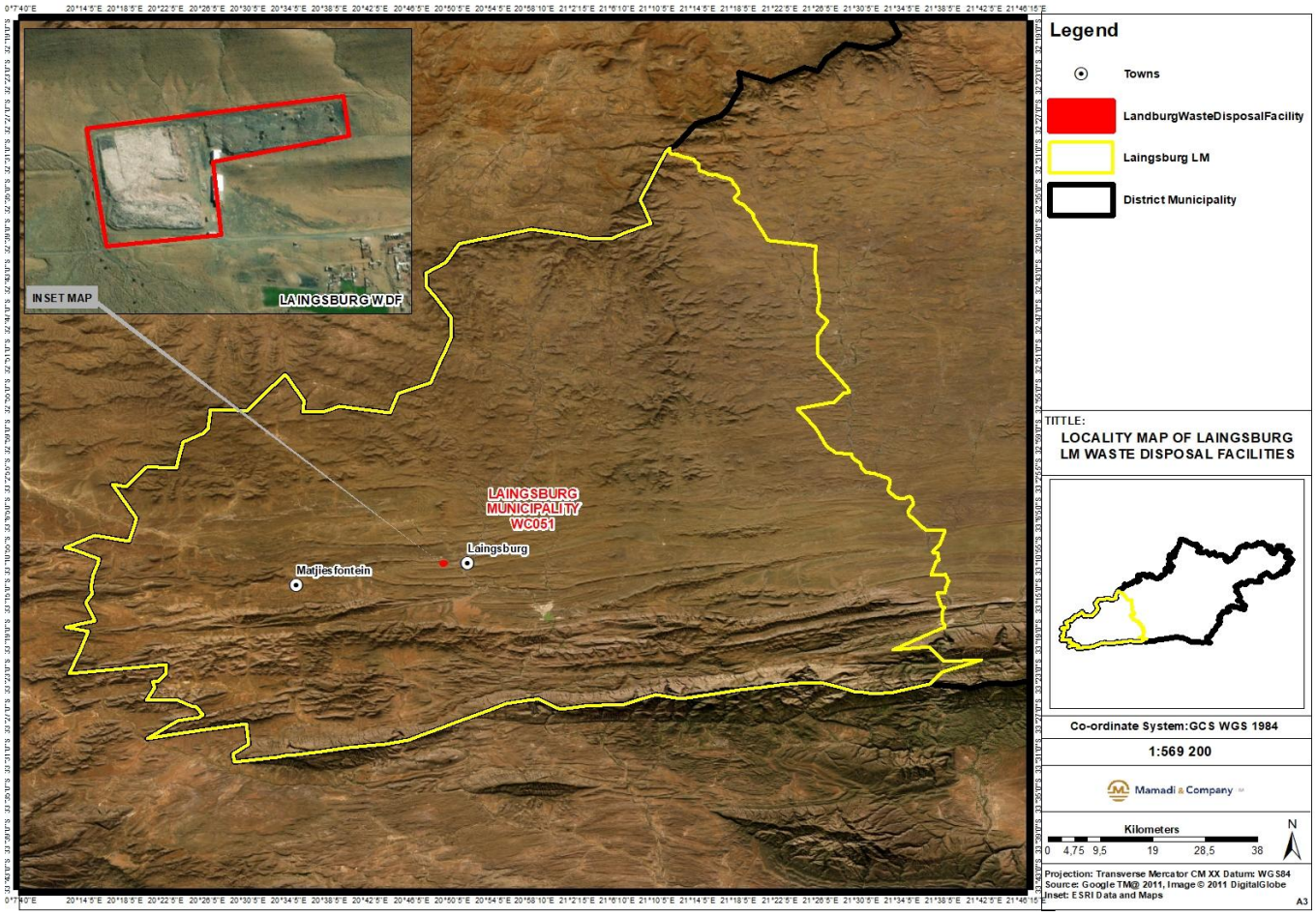

Figure 4-2: Maps showing Laingsburg Waste Disposal Facility

4.2.2 Climate

The warmest months in Laingsburg are January, February and March, with daily mean temperatures ranging from 20 to 22 °C (69 - 73 °F) throughout the day. The coldest temperatures usually occur in June, July and August, when daily mean temperatures range from 10 to 12 °C (51 - 53 °F) throughout the day. On average each year, Laingsburg experiences 164 days above 25 °C (77.0 °F) and 7 days below 0 °C (32.0 °F). Laingsburg usually has the most precipitation in July, November and December, with an average of 3 rainy days and 22 mm (0.9 inches) of precipitation per month. The driest months in Laingsburg are April, June and October. On average, 12 mm (0.5 inches) of precipitation falls during these months. Laingsburg typically receives about 36.37 millimetres (1.43 inches) of precipitation and has 71.63 rainy days (19.62% of the time) annually. The predominant wind direction is easterly followed by south-south-westerly, westerly and west-north-westerly directions.

4.2.3 Topography

The municipal area is generally undulating with mountain ranges rising above the general level of the Karoo plains to the north and south. The general altitude of the Municipality is approximately 206m (676ft) above sea level and the highest mountain Seweweekspoort Peak raises approximately 2320m (7628ft) (IDP, 2007-2012) The difference in altitude in the study area ranges from about 500m in the river valleys, to over 2320m on the mountain peaks. The mountain ranges create a significant change in the relief of the area from north to south. The Skaapberg, Karookop and Kromberge form the northern most boundary of the study area. The area south of the N1 is dominated by east-west mountain ranges including the Klein Swartberge, containing the highest mountains in the municipality, and the Anysberg which 6 form the southern boundary. The Elandsberge, De Witteberge, De Waaihoekberg, Anysberg, Klein Swartberge and the Matjiesgoetberge are found in a band south of the N1 and their valleys along the Bobbejaans and Buffels Rivers contain the settlements of the Municipality.

4.2.4 Geology

Figure 4-3 indicates the general pattern of the geology within the Municipality. This distribution shows there are five geological formations in the Municipality. The predominant formation is located generally north of a line between Hillandale and Koup and in small patches to the south is the Mudstone of the Moordenaars Karoo. Mudstone or Mudrock is a fine-grained sedimentary rock (65%) that looks like sun-baked clay deposits. Mudstone is hardened mud or

a mixture of silts, clays and particles and can include Shale or Argillite. Shale is generally found in thin layers and is a mixture of sedimentary rock including mud and a mix of flax or clay minerals and other traces of minerals including Quartz and Calzite. Argillite is a sedimentary rock that does not split easily and is formed from consolidated clay. The second most predominant formation is Arenite, which is also a sedimentary rock but with sand grains of a more medium nature. Arenite is mainly formed by erosion of other rocks or by redeposits of sand. Arenite, along with Shale and Tillite, is found in east-west bands generally south of the N1. Tillite is a sedimentary rock that consists of consolidated masses of un-weathered blocks.

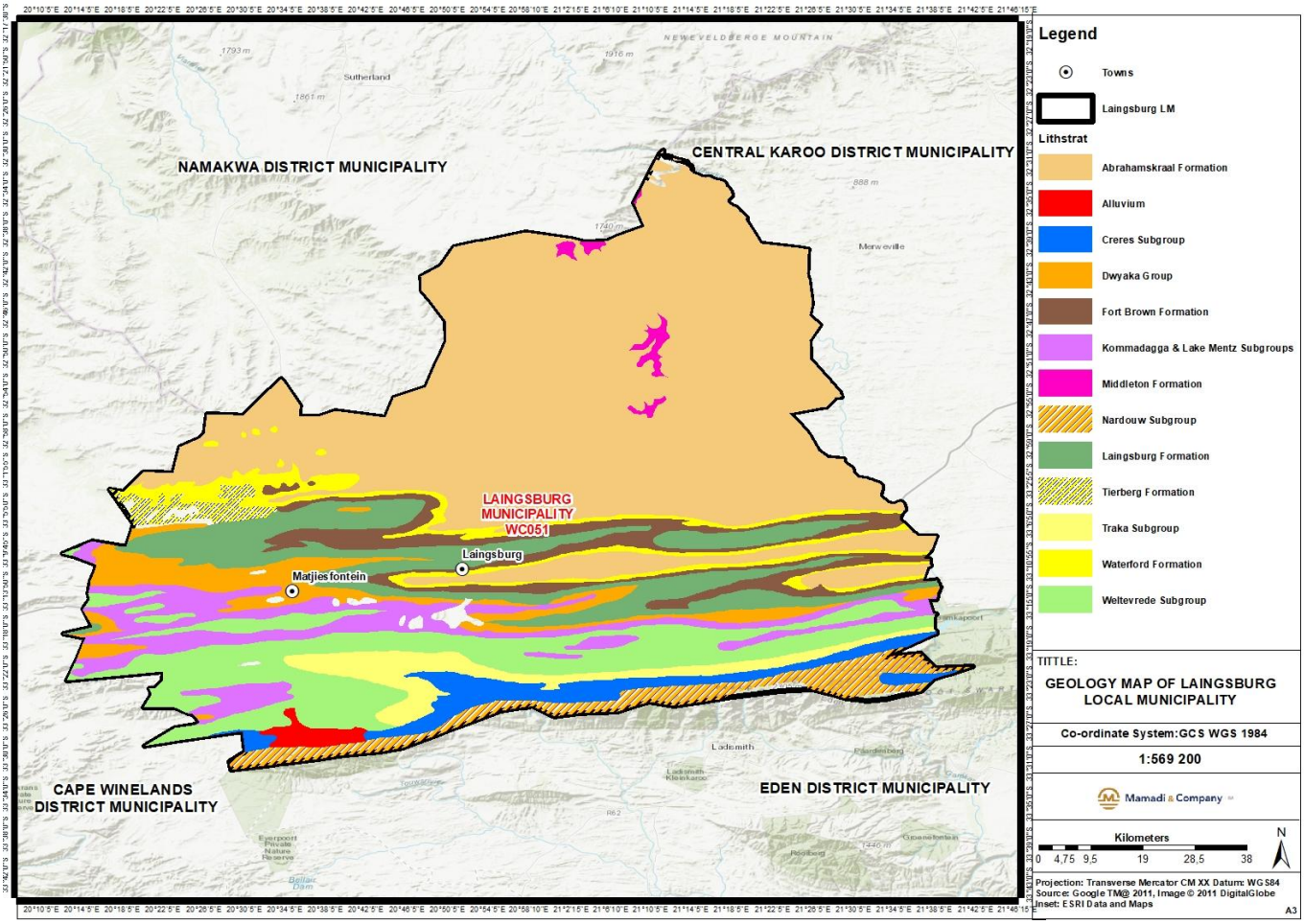

Figure 4-3: Geology Map of Laingsburg Municipality

4.2.5 Hydrology

Figure 4-4 shows the distribution of the rivers and tributaries through the study area. The major river through the area is the Buffels River, which flows into the Floriskraal Dam southeast of Laingsburg. The Buffels, Wilgehout, Meintjiesplaas and Anys Rivers have been moderately modified and special policy is required to protect them and restore them to an Unmodified or Natural state. It is believed that Laingsburg has quite a strong aquifer with a great deal of groundwater. However, this needs to be verified.

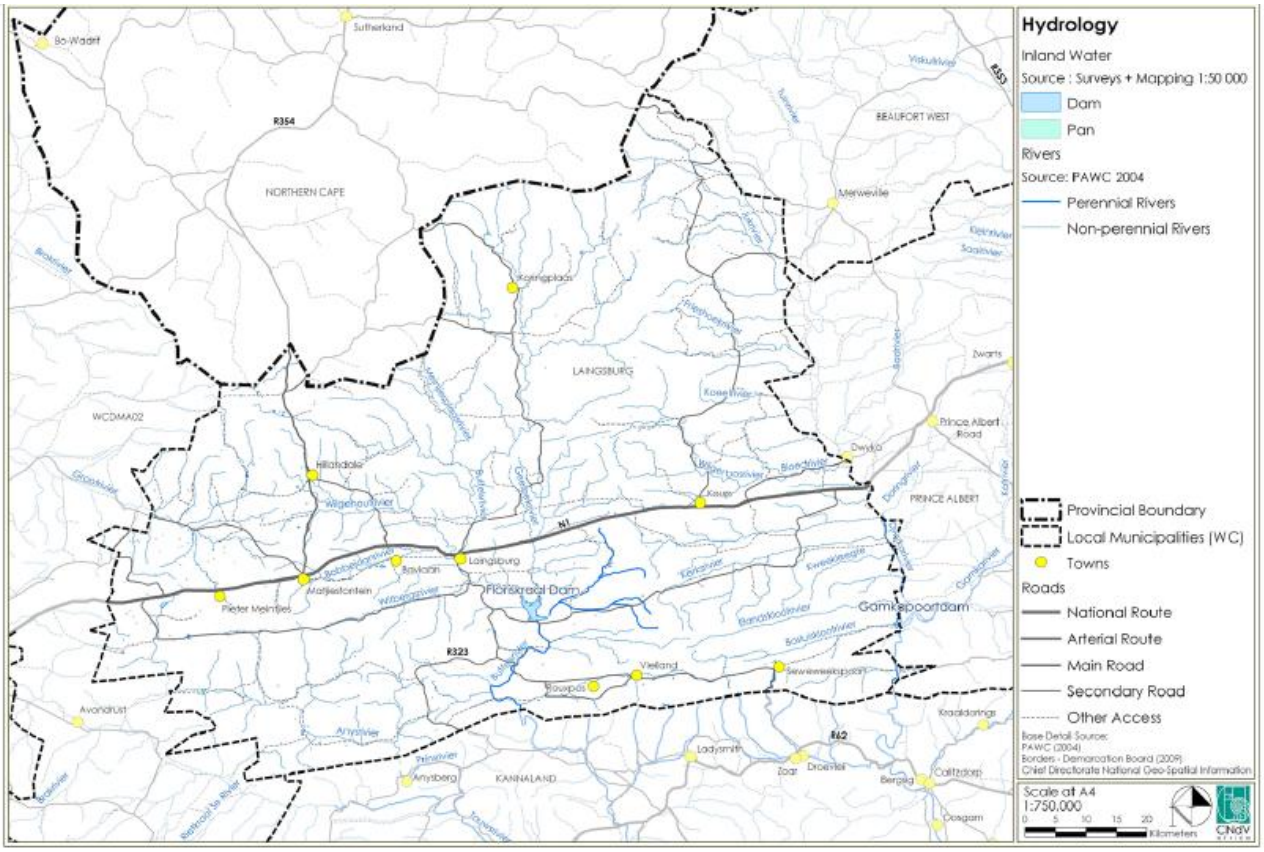

Figure 4-4: Hydrological Map of Laingsburg Municipality (Spatial Development Framework 2017)

4.3 Demographics Profile and Population Growth

This section highlights the socio-economic aspects such as population, education, employment, and income levels at the Municipality. According to the DFFE IWMP Guidelines, demographic data is required to calculate projections of current and future waste quantities. Furthermore, this information is required to:

- Assess the required resources and infrastructure to provide effective waste management services;
- Ensure that previously un-serviced areas, such as informal settlements (i.e. high-density areas, usually on the periphery of urban areas that are characterised by structures such as “shacks”) and rural (low-density areas usually a greater distance from urban areas and also referred to as “villages”) or sparsely populated areas are considered;
- Evaluate the potential for financial recovery; and
- Form the basis for projected waste volumes and types.

Understanding the demographic profile of the Municipality will provide a clear indication of the socio-economic factors that influence waste generation, in particular population (which gives a direct indication of waste generation values), education (which may have a bearing on awareness and waste management education), employment and income (which indicates access to waste management services). Aspects within demographics also allow for the analysis of factors that may influence attitudes and behaviours relating to waste management. Importantly, socio-economic factors emphasise the level of user affordability, which serves as a key aspect to be considered for appropriate budgeting and costing. This also shows areas that require more attention and financial assistance. **Table 4-1** below are details the demographic profiles for Laingsburg Municipality.

Table 4-1: Growth and Demographic Profiles

Population Growth		
Municipality Total Population (Stats SA, Census 2022)	11 366	
Estimated Population Growth Rate (%) (Stats SA, Census 2022)	3.37%	
Municipality Total Population (Stats SA, Census 2011)	8 289	
Estimated Population Growth rate (%) (Stats SA, Census 2011)	2.16%	
Municipality Total Population (Community Survey 2016)	8 895	
Demographic Profiles		
Age		
Young	24,6%	2 796
Middle Age/ Working Age	68,3%	7 763
Old Age	7,1%	807
Gender		
Male	48,8%	5 541
Female	51,2%	5 825
Education		
No Schooling	5.9%	671
Tertiary	6%	682
Population Groups		
Black African	3.5%	394
Coloured	87,5%	9 909
Indian/Asian	0,5%	58
White	7,6%	855
Other	0,9%	106

4.3.1 Employment Status and Economic Performance of Laingsburg Municipality.

According to Laingsburg 2022 economic profile, LM has the lowest unemployment rate in the CKDM (estimated at 20.9% in 2021) and is below the CKDM (22.7%) rate and the Western Cape 25.1% unemployment rate. Unemployment has been on an upward trend from 2015 (15.6%) to 2021 largely driven by job losses because of the drought, loadshedding and economic recession over this period. The not economically active population has also increased from 2020 to 2021 as job losses and an insufficient supply of jobs have led to an increasing number of discouraged work seekers. Unfortunately, most job losses affect low-skilled and informal workers who are more vulnerable to living in poverty during times of economic decline.

It is estimated that LM's total employed in 2020 amounts to 2 704 workers, of which 2 323 (85.9%) are employed in the formal sector and 381 (16.6%) are informally employed. Employment in the informal sector suffered an annual average decline of 2.8% over the 2016 to 2020 period. This is a concern as the informal economy should be able to act as a buffer during times of economic recession. Most of the formally employed consisted of semi-skilled (47.7%) and low-skilled 33 (1%) workers. The skilled category only contributed 19.2% to total formal employment. The skilled and semi-skilled categories grew at a pace of 2.4% % per annum and 0.7% per annum respectively from 2016 to 2020 and notably outpaced low-skilled employment which merely grew by 0.1% per annum. The growth in the skilled and semi-skilled categories reflects the increasing market demand for skilled labour and the need for skills development initiatives, especially with the growing general government sector in the LM. **Table 4-2** and **Figure 4-5** details the 2011 and 2020 employment status based on Stats 2011 and Socio-Economic profile 2022.

Table 4-2: Employment Status of Laingsburg Municipality

Employment Status	Stats 2011	Socio Economic Profile 2022
Employed	2 935	2 704
Unemployed	843	3 326

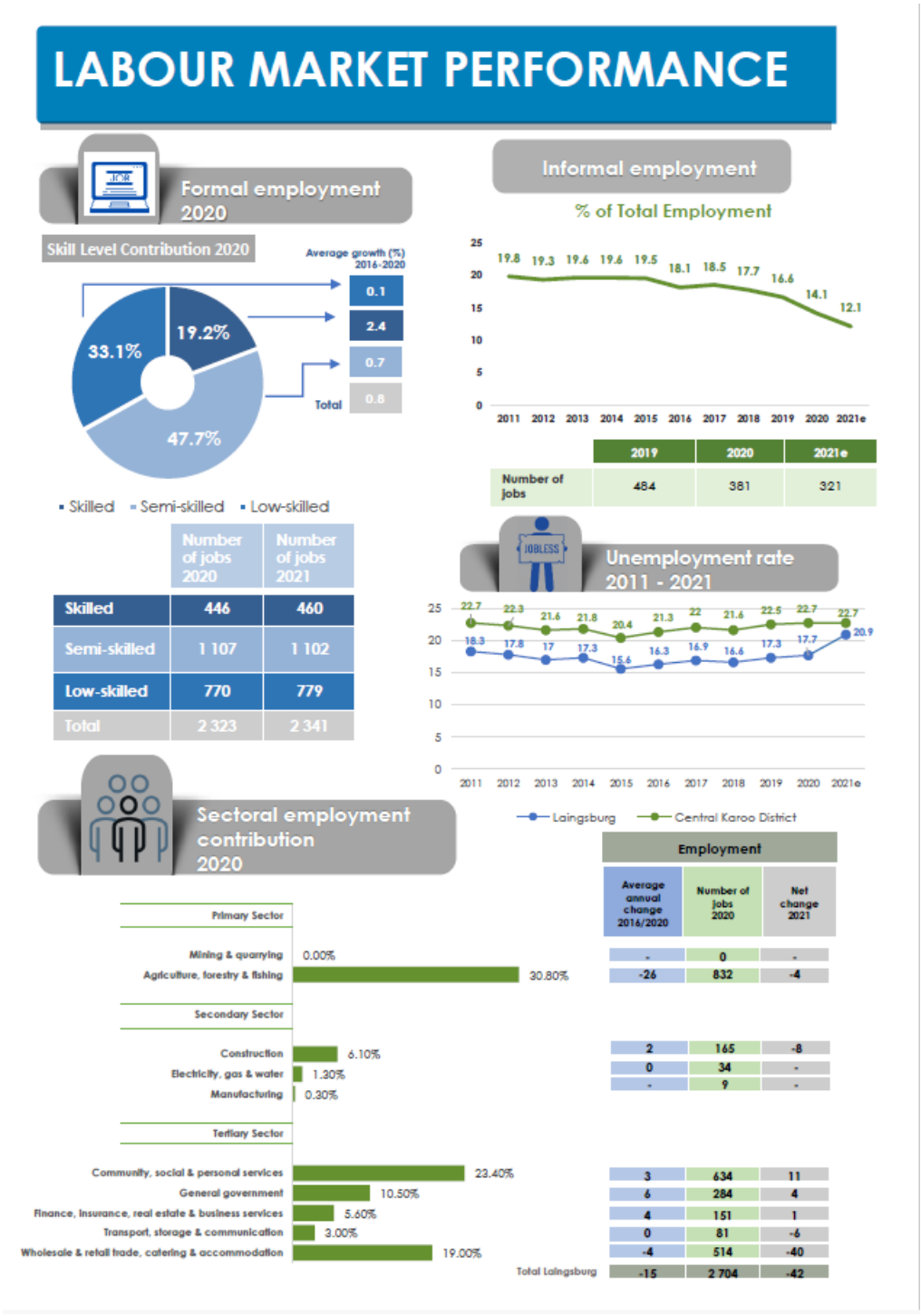

Figure 4-5: Laingsburg Economic Status (Laingsburg Municipality 2022 Socio-Economic profile)

4.3.2 Income Groups

Income statistics is not included in Stats SA 2022, as a result, Stats SA 2011 averages were used with the assumption that all income groups grew at the same rate. LM has 78% of its households falling within the low-income level and only about 1.2% in the high-income level. **Table 4-3** details the development profile of the LM.

Table 4-3: Laingsburg Municipality Income Groups (Stats 2011)

Income Levels	Households	%
Low income (No income – R76 400)	2445	78
Middle income (R76 401 – R614 400)	640	21
High income (R614 001 – R2 457 601 or more)	37	1.2

4.3.3 Dwelling Types

According to Stats SA 2022, the Municipality has 3 314 households. **Table 4-4** details household dwelling types based on Stats SA 2022.

Table 4-4 Households Dwelling Types (Stats SA 2022)

Dwelling Types		
Formal dwelling	3 187	96,2%
Traditional dwelling	27	0,8%
Informal dwelling	79	2,4%
Other	21	0,6%

4.3.4 Future Population

If the current population of LM grows at a constant rate of 3.37% per decade (Statistics SA, 2022), over five years, the population of this Municipality is estimated to be 13 414 persons as per the calculation below:

$Pop_{future} = Pop_{present} (1+i)^{n}$

$Pop_{future} = 11\ 366\ ((1+(0.0337))^{5}$

$=11\ 366\ (1.1802)$

$=13\ 414$

Calculation Index:

Pop_{future}- Future Population

$Pop_{present}$- Présent Population as per (Stats SA, 2022)

i - Growth rate as per Stats SA, 2022

n - No of years

The equation above was used to calculate the future population over 10 years for the years 2032, 2042, and 2052 (up to 30 years) for LM in **Table 4-5** below.

Table 4-5: Laingsburg Municipality Population Growth Projections

Census (2022)	Estimated (2032)	Estimated (2042)	Estimated (2052)
11 366	15 832	22 053	30 721

With a population estimate of 15,832 people in 2032, it is evident that an additional 4,466 people will be generating waste. This population growth will ultimately increase the number of households within the Municipality requiring waste management services as projected in **Table 4-6 be**low.

Table 4-6: Laingsburg Municipality's Number of Households Projections

Census 2011 Statistics:	Census 2022 Statistics:	The HH increased by 10yrs by
2 408	3 314	906
2032	**2042**	**2052**
(HH in 10 years)	**(HH in 20 years)**	**(HH in 30 years)**
4 616	6 430	8 957

Note: The baseline year used for estimates is 2022

4.4 Waste Management Systems

Existing waste management systems within the Municipality have been explored to determine the quantities and the types of waste generated in its area of jurisdiction. This involves establishing the current quantities of waste generated, recycled, treated, and disposed of to highlight the gaps and challenges within the Municipality.

4.4.1 Waste Generation and Characterisation

Waste generated in the Municipality can generally be categorised as follows:

- **General domestic and commercial waste:** This consists of paper, plastic, metal, glass, and building rubble;
- **Medical waste:** This includes infectious waste, pathological waste, sharp waste, pharmaceutical waste, genotoxic waste, chemical waste, waste with heavy metals, radioactive waste;
- **Hazardous waste**: Includes waste such as motor oils, sewage sludge, and electronic waste; and
- **Organic waste-** This includes garden waste, fruits and vegetables.

Figure 4-6 below shows the main waste subgroups generated, thus constituting waste streams within LM.

Figure 4-6: Sub-Categories of Waste Generated in Laingsburg Municipality

4.4.1.1 Waste Characterisation

Waste characterisation was conducted on the 01st and 02nd of November 2023 (summer) at the Laingsburg waste disposal facility. Waste samples were collected from Laingsburg residential (high-income class) and Goldnerville residential (low and middle class). Samples were analysed from these areas to give a presentation of the total waste streams within the Municipality. This will indicate the potential recyclable waste materials that can be diverted from being landfilled within the Municipality.

The following method was used to analyse/characterize waste streams:

- A 100 kg sample was taken from a refuse truck from Laingsburg and Goldnerville residential areas;
- The waste was then sorted into different waste streams and placed in refuse bags according to their waste stream; and
- The sorted waste streams were then weighed (kilograms) using the scale.
- It must be noted that the results of the analysis are only based on the sample that was analysed, as such only waste streams that were part of the sample were recorded. The Municipality will be required to conduct a detailed waste characterisation in different seasons for the whole Municipal area

The waste stream was composed of fifteen (14) categories, namely, High-Density Polyethylene (HDPE) Plastic, Polyethylene terephthalate (PET), mixed plastic, organic waste (food waste), card boxes, Aluminium cans, metals cans, white paper, glass bottles, textile, sanitary waste, garden waste, foil, clear and plastic. **Table 4-7** and **Figure 4-7** below details waste stream analysis from Laingsburg residential with most of the waste being glass bottles while **Table 4-8** and **Figure 4-8** details waste stream analysis from Goldnerville residential, with most of the waste being textile, followed by glass bottles and metals. The least waste category is white paper and foil in both areas.

Table 4-7: Waste Streams Analysis from Laingsburg Residential Town

Waste Stream	Mass (kg)	Annual Mass Estimate (kg)	Annual Mass Estimate (tonnes)	Percentage (%)
HDPE	16	193.308	0.193308	15.4
PET	12	138.492	0.138492	11.0
Mixed Paper	8	95.52	0.09552	0.0
Organic waste	7	88.5	0.0885	7.0
Card Boxes	14	165.792	0.165792	13.2
Aluminium Cans	4	50.088	0.050088	4.0
Polystyrene	0	2.592	0.002592	0.2
White Paper	6	69.42	0.06942	5.5
Glass Bottles	16	187.248	0.187248	14.9
Clear Plastic	7	86.76	0.08676	6.9
Metal cans	4	42.588	0.042588	3.4
Foil Paper	2	23.88	0.02388	1.9
Garden Waste	4	45.36	0.04536	3.6
Sanitary waste	6	66	0.066	5.3
Total	105	1255.548	1.255548	100

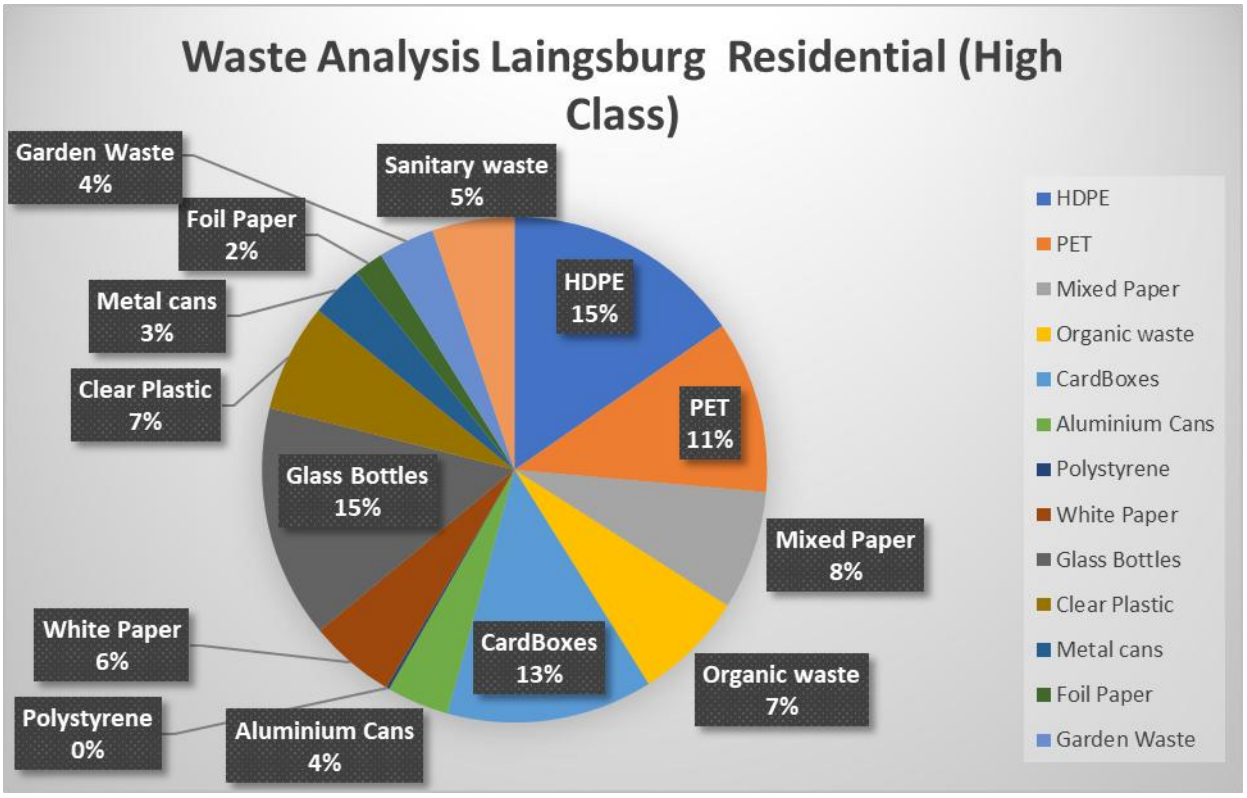

Figure 4-7: Waste Stream Analysis from Laingsburg Residential Town

Table 4-8: Waste Streams Analysis from Goldnerville Residential

Waste Stream	Mass (kg)	Annual Mass Estimate (kg)	Annual Mass Estimate (tonnes)	Percentage (%)
Textile	21.58	258.96	0.25896	20.3
PET	8.949	107.388	0.107388	8.4
Mixed Paper	1.835	22.02	0.02202	1.7
Organic waste	4.137	49.644	0.049644	3.9
Card Boxes	6.302	75.624	0.075624	5.9
Aluminium Cans	6.955	83.46	0.08346	6.5
Polystyrene	0.54	6.48	0.00648	0.5
White Paper	19.232	230.784	0.230784	18.1
Glass Bottles	13.421	161.052	0.161052	12.6
Clear Plastic	4.508	54.096	0.054096	4.2
Metal cans	3.038	36.456	0.036456	2.9
Foil Paper	0.496	5.952	0.005952	0.5
Garden Waste	7.788	93.456	0.093456	7.3
Sanitary waste	7.506	90.072	0.090072	7.1
Total	106.29	1275.444	1.275444	100

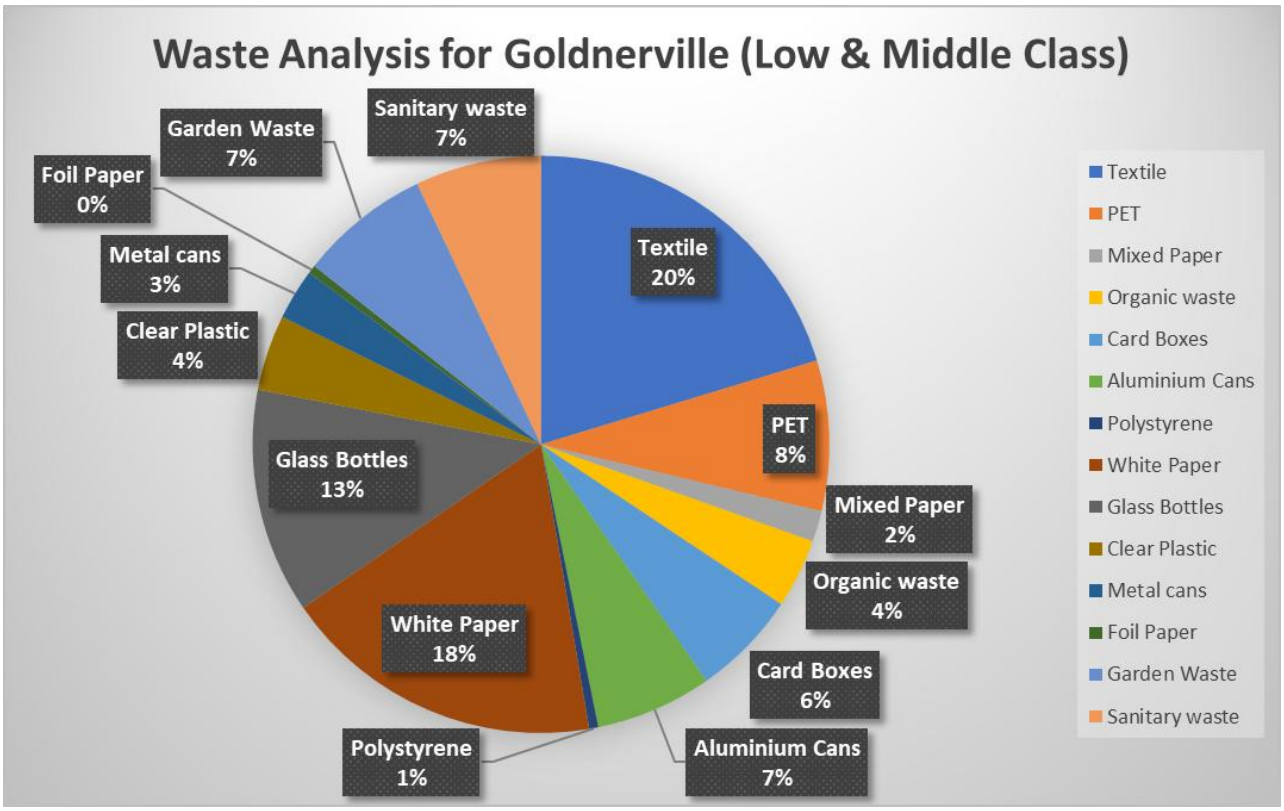

Figure 4-8: Waste Stream Analysis from Goldnerville Residential

In November 2012 an in-depth waste characterisation study was conducted for LM by DEADP in collaboration with master's students from Stellenbosch University, CKDM, and Laingsburg officials, as well as EPWP municipal workers. A representative sample was selected from different locations i.e. Business area, Matjiesfontein, Laingsburg, Golderville, and Bergzig. 43% of waste was from Laingsburg, 22% from Matjiesfontein, waste from the business area as well as Golderville constituted 12% each while the least waste (11%) was from Bergzig. The waste streams are comprised of plastic film, plastic bottles, dense plastics, paper, packaging material, medical, organics, glass, and metal. Organics waste (28%) and paper (22%) formed most of the waste collected while packaging material was the least at 4%. Both studies show that most of the waste disposed at the waste disposal facility are recyclable materials. **Table 4-9** and **Figure 4-9** below detail of the results of the waste characterisation conducted for LM.

Table 4-9: Waste Characterisation for Laingsburg Municipality (DEADP 2012)

Town/ Area	Unopened mass (kg)	Black/ Recycling bag no.	Plastic Film	Dense Plastics	Paper	Packaging Material	Medical	Organics	Glass	Metal	Other	Total Weight	% Weight
Business Area	269.46	84	20.99	26.26	69.15	12.37	12.13	70.06	29.68	14.64	10.34	**265.61**	**12**
Matjiesfontein	488.40	100	32.01	45.22	80.06	17.14	33.21	148.52	54.47	19.00	56.49	**486.09**	**22**
Lainsburg	968.56	233	65.66	115.14	282.26	32.62	56.01	247.72	24.62	86.08	58.12	**968.23**	**43**
Golderville	273.10	59	15.73	52.64	43.90	10.21	33.15	78.93	8.52	13.02	17.01	**273.11**	**12**
Bergzig	244.50	41	13.32	27.98	23.86	7.69	59.33	70.74	6.19	16.93	17.89	**243.93**	**11**
Total	**2244.02**	**517**	**147.7**	**267.2**	**499.2**	**80.0**	**193.8**	**616.0**	**123.5**	**149.7**	**159.9**	**2237.0**	**100**
% Waste types			**7**	**12**	**22**	**4**	**9**	**28**	**6**	**7**	**7**	**100**	

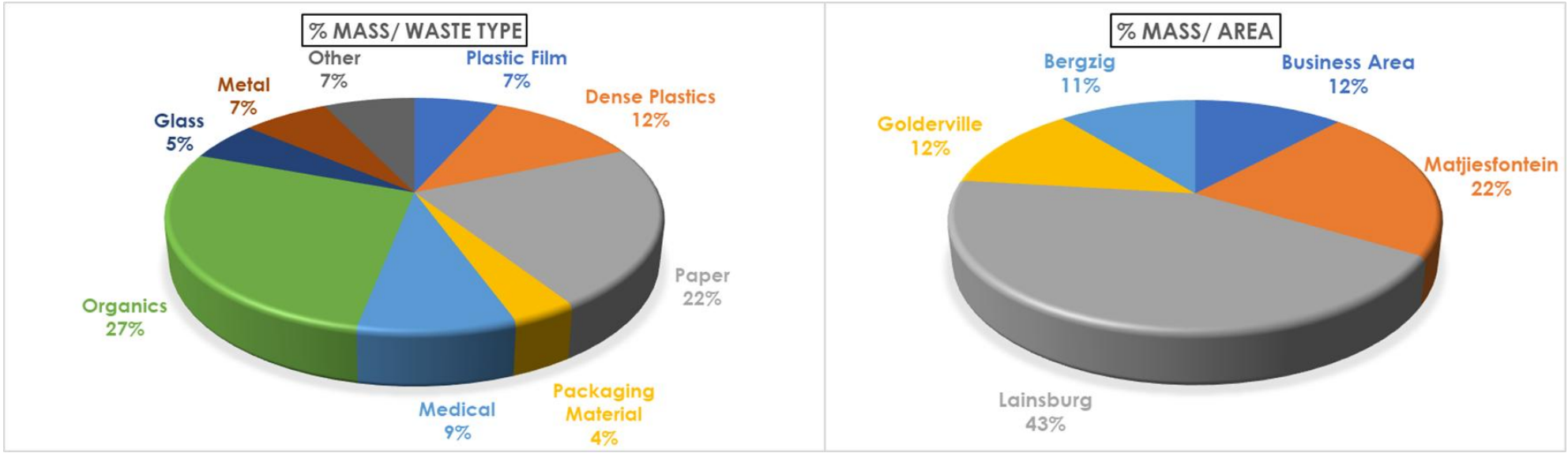

Figure 4-9: Waste Mass/Waste Type and Waste Mass/Area

4.4.2 Waste Collection

80% of households in the Municipality receive Kerbside waste collection. 20% of households that do not receive kerbside waste collection constitute only farmers due to the distance to the waste disposal facility. The Municipality collects waste from Laingsburg, Goldernerville, Bergisg, and Matjiesfontein once a week. Waste from Matjiesfontein is collected and temporarily stored in a central area before being collected once a week and disposed of at the Laingsburg waste disposal facility. The Municipality has 753 indigent households, and all indigent households receive free basic waste collection services. Commercial waste is collected from all businesses three (3) times a week i.e. Monday, Tuesday, and Friday, while Goldernerville and Bersgsig waste is collected Wednesday and Thursday is town including (School, Protea, Hugo Steet & Extension). **Table 4-10** detail basic waste collection services within the Municipality.

Table 4-10: Status of waste collection in Laingsburg Municipality

Laingsburg Municipality	
Total Number of Households (Stats SA 2022)	3 314
Serviced Households	2 651
Un-serviced Households	663
Number of Indigent Households	753
Serviced Indigent Households	753

4.4.2.1 Waste Management Fleet

To achieve effective waste management collection, the Municipality must be equipped with a sufficient and efficient waste management fleet to carry out waste collection and waste disposal services. The municipality is facing difficulties in terms of waste management due to a lack of waste machinery and proper vehicles. The municipality's outdated fleet leads to illegal dumping since the schedule for waste collection is not reliable due to excessive waste vehicle breakdowns.

Table 4-11 below are details of the fleet that is currently available to render waste management services within the Municipality.

Table 4-11: Waste Management Fleet in Laingsburg Municipality

Different vehicles available for waste management	Model	Average breakdowns per month (days per month)
Ford Tractor with trailer (CBM 2039)	Unknown	Monthly
CASE Tractor with trailer (CBM 2118)	JX752WD	Monthly
Tractor 30 Series with trailer (CBM 1901)	5630	Monthly
Nissan A520 Compactor body (CBM 1122)	PKF210N	Monthly
Nissan CW Series Compactor body (CBM 2527)	290 PHN	Monthly – currently at mechanics for repairs and not in use

The municipality has applied for a Municipal Infrastructure Grant (MIG) procurement of a specialised waste management fleet to extend refuse collection to the un-serviced poor households. The specialised waste management fleet includes a refuse compactor truck, tipper truck, Front End Loader, Tractor Loader Backhoes (TLB), and a landfill compactor. **Figure 4-10** shows some of the vehicles within LM.

Figure 4-10::Waste Management Vehicles

4.4.3 Waste Recycling, Treatment and Disposal

4.4.3.1 Status of Waste Disposal Facilities

This section includes waste disposal facilities and their status. The Municipality has one operational waste disposal facility namely Laingsburg waste disposal site which is managed by the Municipality. **Table 4-12** details the status of the Laingsburg waste disposal site.

Table 4-12: Status of Laingsburg Waste Disposal Site

Position of site:	Remainder Erf1 Laingsburg, Latitude: 33°11'49.86"S Longitude: 20°49'9.03"E
Permit/License:	19/2/5/4/C1/5/WL0102/17
Year issued:	2018
Classification of site:	G:C: B-/Class B
Type of Operation (end – tip, trench, cell):	None
Estimated size of site:	44 600 m²
Estimated remaining life of site:	Unknown
Separation of fresh and contaminated water:	No
Groundwater monitoring:	No
Volumes per day, week or month:	288 per month
Is cover material available?:	No
Is the drainage sufficient?:	Yes
Is there access control?:	Yes
Is the site fenced?	Yes
Does the site have a sufficient buffer zone?	Yes
Type of equipment utilised on site:	Only tractor with front scoop to move waste and do minor earthworks. Municipal Digger loader is broken.
Operating hours:	07h30-16h45. 24-hour security
Site facilities, i.e. ablutions, guard house:	Ablution facility, guard house recycling facility, compost facility – equipment needed to be fully functional
Weighbridge	No, departmental waste calculator for waste estimations
Reporting on IPWIS	Yes
Complain register	Yes
Estimating cost for closure:	To be determined
Savings plan for closure:	To be determined

4.4.3.2 Waste Management Challenges in Disposal Facilities

Based on observations and interviews conducted during ground truthing, the following challenges were noted at the disposal facility:

- No waste compaction;
- No cover material;
- There is one borehole and no groundwater monitoring is conducted;
- There are no waste pickers at the waste disposal facility;
- Limited Air Space;
- No weighbridge; and
- There is no equipment to utilise at the waste disposal facility.

DEADP conducts external audits annually. The following non-compliances were noted from the audit report conducted on the 7th of November 2022 by DEADP:

- The actual height of the facility could not be determined during the audit but appeared to exceed one meter;
- No airspace determination report;
- No operational design or plan;
- No set targets to recover recyclables at the facility as part of an overall strategy to divert waste from being disposed of at waste disposal facilities;
- Waste burning takes place at the site from time to time,
- No spill kits were kept at the facility;
- No surface water and detection monitoring; and
- No monitoring committee has been established.

Figure 4-11 depicts the status of Laingsburg waste disposal facility as well as the area where the Municipality stores waste temporarily at Matjiesfontein before it can be disposed at Laingsburg waste disposal facility.

Figure 4-11: Status of Laingsburg Waste disposal Facility & Waste Storage Area

4.4.4 Illegal Dumping

Illegal dumping is one of the problems facing the Municipality. Illegal dumping hotspots have been identified within Laingsburg residential areas and by law, it is a punishable offense to dump waste in an area that is not designated for waste disposal. Illegal dumping poses major environmental and public health risks. When people discard undesirable things in improper locations, it has terrible consequences for the environment, economy, and community. Illegal dumps can lead to infections, clean-up costs, water pollution, air pollution, increased wildfire risk, and so on.

The Municipality manages the illegal dumps through the greening and cleaning EPWP project funded by DFFE. The project started in March 2023 and ended in February 2024. Illegal dumps hot spots are identified, and then cleaning campaigns and waste management awareness campaigns are conducted by graduates to manage these illegal dumps. Illegal dumps cannot be eliminated as such the Municipality can manage illegal dumps by continuously raising community awareness and enforcing penalties under their waste management by-laws. **Figure 4-12** below depicts illegal dumps before cleaning and after cleaning.

Figure 4-12: Illegal dumps before and after cleaning

4.4.4.1 Awareness and Environmental Education

The Municipality is conducting monthly clean-up campaigns in the communities and quarterly awareness campaigns at schools. As part of awareness, the Municipality has been placing waste management awareness posters on Laingsburg commercial building walls. The posters were written in both English and Afrikaans to accommodate the residents. The Municipality has three graduates who assist with conducting clean-up campaigns and environmental awareness within the Municipality. They provide detailed reports monthly on the clean-up campaigns and awareness conducted. Environmental awareness included the distribution of posters in the community host spots, municipal premises, Tthusong centre, magistrate court and the police station on the 13th of June 2023. On the 07th of July 2023 at Matjiesfontein Hall, was coupled with a clean-up campaign, the awareness focused on waste reuse, recycling and greening. On the 2nd of June 2023, environmental awareness was held at Acacia primary school, the awareness focused on waste reuse, and recycling with a demonstration of how to conduct waste characterisation. The awareness aimed to make the community understand the importance of keeping the environment clean. **Figure 4-13** below depicts some of the awareness campaigns that were conducted within the Municipality.

Figure 4-13: Environmental Awareness campaigns.

4.4.4.2 Hazardous and Health Care Risk Care Waste Disposal

The responsibility of managing hazardous waste and HCRW waste does not lie with municipalities, however, the Municipality needs to know whether the waste within its jurisdiction is managed properly. The Municipality is collaborating with Homebase Care to collect and return expired and unwanted medical waste from people with chronic diseases to healthcare facilities for proper disposal. HCRW from the government health care facilities in the Laingsburg municipal area is collected by Averda and then transported to their transfer station in George before it is sent to their facility in Cape Town.

Hazardous waste is not allowed at the waste disposal facility, waste generators are responsible for managing their hazardous waste. Hazardous waste generators are encouraged by the Municipality to dispose of their hazardous waste at the Vissershok waste disposal facility. The Municipality collects and stores fluorescent lights at the Municipal depot and disposes of them once a year at the Vissershok waste disposal facility. The Municipality should develop a register for all hazardous waste producers within the Municipality to ensure the safe disposal of hazardous waste. The Municipality should engage with Producer Responsibility Organizations (PROs) to establish a working relationship for the effective implementation of Extended Producer Responsibility (EPR).

4.4.4.3 Waste Treatment Facilities

In the Western Cape, the following waste treatment methods are being undertaken:

- Wet/putrescible/organic waste such as food waste, is either composted to produce fertilizer or digested anaerobically to also produce fertilizer;
- Anaerobic digestion allows for the recovery of biogas from waste. Biogas is combustible and can be used as a source of energy; and
- Healthcare risk waste is either treated by incineration or autoclaved and shredded before disposal.

4.4.4.4 Status of Waste Recycling

Recycling is a key component of waste minimisation which was practiced within the Municipality by a private company (Saseko which falls under Trash Pirates) during ground truthing. Saseko was operating at the waste disposal facility and is assisting the Municipality by reclaiming recyclables from the waste disposal facility. The recyclables were sent to Cape Town and Johannesburg. Unfortunately, the company is no longer working at the waste disposal facility. The Municipality needs to look into other opportunities for recycling to minimise the huge volumes of recyclables disposed at the waste disposal facility.

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4.4.5 Organic/Green Waste

The Municipality has a facility within the waste disposal facility for treating garden waste into composting, however, the facility is not yet functional due to lack of equipment. Garden waste is currently stored separately at the waste disposal facility, nevertheless; the Municipality does not record and report on waste disposal or diversion. Disposal of garden waste is prohibited at waste disposal facilities, as such the Municipality must finalise and implement an organic waste diversion plan in alignment with the Western Cape PIWMP's set target of a 50% diversion rate of organic waste by 2022 and a 100% diversion rate by 2027.

4.4.6 Waste Reporting

General waste disposal facilities that receive more than 150 tonnes of waste per day, and recycling and treatment facilities are required to register and report on the SAWIS as per NEMWA. These facilities are required to report monthly and annual tonnages of waste generated, recycled, and disposed of at the waste disposal facility. In the Western Cape province, municipalities are required to report waste disposal and diversion data on the provincial IPWIS monthly. The data is then uploaded on SAWIS. IPWIS is the provincial waste information system for the Western Cape and waste activities based in the Western Cape have therefore been exempted from registering and reporting directly to the SAWIS.

Laingsburg waste disposal facility does not have a weighbridge; however, the Municipality uses the standardised estimation tool developed by the (DEA&DP) known as the waste calculator. The waste calculator is an excel-based tool that quantifies the waste in mass estimates. Laingsburg waste disposal facility (**WIR Number: D05760-01)** is registered and disposal mass is reported on IPWIS. In 2022 all reports were submitted on IPWIs, however; in 2023 reports were submitted from January to September. Reporting on IPWIs is a legislative requirement that should be adhered to. The Municipality must complete all pending IPWIs reports. The Municipality has already received a pre-directive, and failure to complete reports will result in the Department having no choice but to once again institute corrective measures to compel compliance with the waste information system regulations. Laingsburg waste disposal facility Figure 4-13 below shows disposal mass from January 2023 to August 2023.

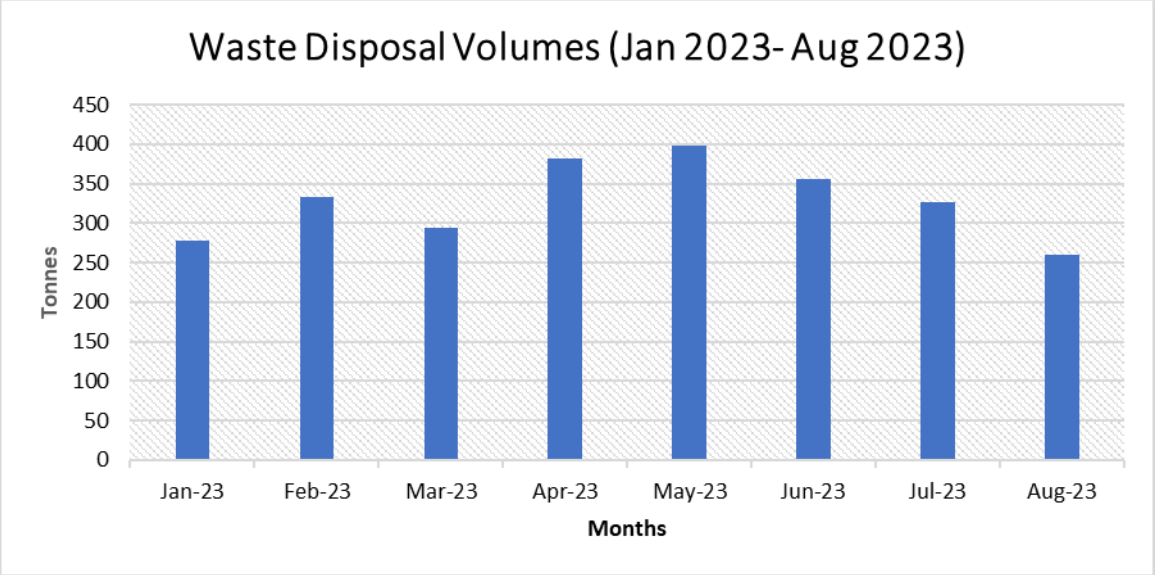

Figure 4-14: Waste Disposal Volumes Jan 2023- Aug 2023

4.4.7 Determining current domestic waste generation per capita

The DFFE IWMP Guidelines suggest various techniques that can be adopted for estimating waste generation rates and characteristics. These include:

- Modelling techniques – generally an inexpensive technique based on generic data but only provides a general idea of the waste volumes and types;
- Physical sampling techniques – A more accurate method but a more time-consuming and expensive exercise; and
- Direct measurement techniques – even more costly than physical sampling.

For the LM's IWMP, a model approach was adopted to estimate waste generation for all income categories. The South African State of Environment Report (SA SoER, 2018) estimated that each person generates about 0.7 kg of waste each day. This is further broken down according to income category as follows:

- Low income=0.41kg/person/day or (0.41kgx365 days) =149.65kg/person/year
- Middle income=0.74kg/person/day or (0.74kgx 365days) = 270.1kg/person/year
- High income=1.29 kg/person/day or (1.29kgx365days) = 470.85kg/person/year

The referenced waste generation averages for different income levels were applied to income categories sourced from Stats SA 2022 data. An average density of 330kg/m^3 of compacted

wastes was used. **Figure 4-15** shows LM-specific demographic information used to calculate future waste generation is presented in **Table 4-13** for the Municipality.

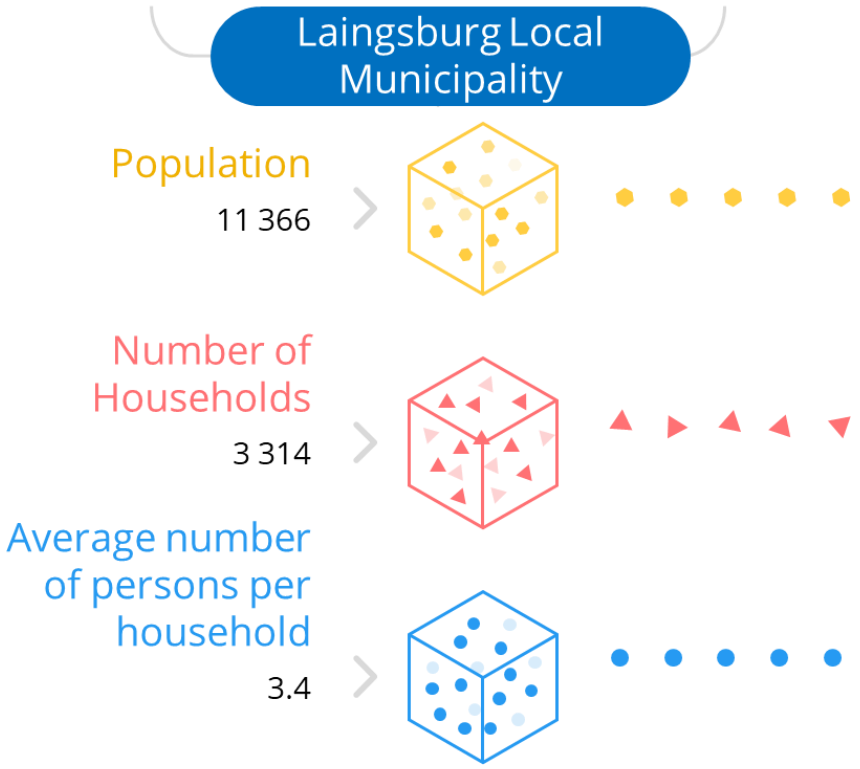

Figure 4-15: Demographics for MDM (Stats SA, 2022)

Stats SA, 2022 doesn't have average household income statistics, as a result, Stats SA 2011 averages and Stats 2022 total population were used with the assumption that all income groups grew at the same rate. **Table 4-13** below summarises waste generation for Laingsburg Municipality.

Table 4-13: Yearly Estimated Waste Quantities for Laingsburg Municipality

Yearly Household income (Rands)		%	People	Households	All persons by income group	Income group	SA SoER (kg/capita/year)	Current domestic waste generation per capita (kg's/person/year)	Tonnes/ person/ year
No income		5.3	602	165	8900	LOW	149.65	1331821.85	1331.82
1.00	4 800	2	227	62					
4801.00	9600.00	2.9	330	91					
9601.00	19600.00	20.9	2375	653					
19601.00	38200.00	25.4	2887	793					
38201.00	76400.00	21.8	2478	681					
76401.00	153800.00	11	1250	343	2000	MIDDLE	270.10	540312.36	540.31
153801.00	307600.00	6.6	750	206					
307601.00	614400.00	2.9	330	91					
614001.00	1228800.00	0.7	80	22	1216	HIGHER	470.85	572629.88	572.63
1228801.00	2457600.00	0.5	57	16					
2457601.00		0.0	0	0					
11366						**Total kg's/person/year**		2444764.09	**2444.76**
						Total tonnes/person/year		**24447.64**	

Based on the analysis in **Table 4-13** above, it is estimated that the domestic waste per year for Laingsburg Municipality is about **2444.76 tonnes**.

4.4.8 Estimating Future Waste Generation Rates and Quantities

Estimating future waste trends using information collected on the domestic waste generation rates for each socio-economic category/type i.e. the population, population distribution, and commercial. With a growth rate of 3.37% (Stats SA, 2022) per year, the population is expected to increase over the next five (5) years. It is envisaged that the most probable driver of waste generation will be future developments and the change in the socio-economic profile of LM's population. The main change to the profile of waste collection in the Municipality will be the expansion of the urban centres because of rural-to-urban migration and the development of these urban areas. This could manifest itself in the following manner:

- Business development across the Municipality;
- Urbanisation; and
- Agricultural activities.

Estimation of future waste generation in LM for the next 10, 20 and 30 years are presented in **Table 4-14 Table 4-15** and **Table 4-16.**

Table 4-14: Estimation of Future Waste Volumes (in 10 Years/2032) Produced per Capita In Laingsburg Municipality

Type of settlement	**Base population (2022)**	**Future Population estimates**	**Current domestic waste generation rates per capita** *(Base Population* kg/person/year/1000)*	**Future domestic waste generation rates per capita in 10 years** *(Future Population* kg/person/year/1000)*
Low Income	8 900	12 396	1331.82 tonnes	1855.09 tonnes
Middle Income	2000	2786	540.31 tonnes	752.60 tonnes
High Income	1216	1694	572.62 tonnes	797.62 tonnes

Table 4-15: Estimating future waste volumes (in 20 years/2042) produced per capita in Laingsburg Municipality.

Type of settlement	Base population (2022)	Future Population estimates	Current domestic waste generation rates per capita *(Base Population* kg/person/year/1000)*	Future domestic waste generation rates per capita in 20 years *(Future Population* kg/person/year/1000)*
Low Income	8900	17268	1331.82 tonnes	2584.13 tonnes
Middle Income	2000	3881	540.31 tonnes	1048.37 tonnes
High Income	1216	2360	572.62 tonnes	1111.07 tonnes

Table 4-16: Estimating future waste volumes (in 30 years/2052) produced per capita in Laingsburg Municipality.

Type of settlement	Base population (2022)	Future Population estimates	Current domestic waste generation rates per capita *(Base Population* kg/person/year/1000)*	Future domestic waste generation rates per capita in 30 years *(Future Population* kg/person/year/1000)*
Low Income	8900	24055	1331.82 tonnes	3599.78 tonnes
Middle Income	2000	5407	540.31 tonnes	14604.10 tonnes
High Income	1216	3287	572.62 tonnes	1547.76 tonnes

Table 4-14 Table 4-15 and **Table 4-16.** above are on future waste mass are based on the following assumptions:

- Assuming that the population growth rates will remain constant for the next 30 years.
- Assuming that the per capita waste generation rates would be according to the 2018 State of the Environment Report for all income categories:
  - ✓ Low income=0.41kg/person/day
  - ✓ Middle income=0.74kg/person/day
  - ✓ High income=1.29 kg/person/day
- Assuming that the waste generation rates would be according to the 2018 State of Environment figures in 30 years.

4.4.9 Financing of Waste Management

4.4.9.1 Budgeting for Waste Services

According to the Municipal Systems Act, Act No 32 of 2000, municipalities must ensure adequate budgeting to fulfill their constitutional mandate of providing waste management services. An additional budget is required to ensure improved waste management and the successful implementation of the IWMP depends on the availability of the budget to close all identified gaps. **Table 4-17** details categories of waste management cost drivers within LM.

Table 4-17: Annual Waste Management Budgeting

Waste Management Financing	2020/21	2021/22	2022/23	2023/24
Waste Management Capital Budget	R0	R0	R0	R0
Waste Management Expenditure	R2,811,795.00	R7,535,459.00	R5,161,863.00	R2,023,061.00
Waste Management Revenue	R- 2,684,062.00	R- 3,039,043.00	R- 3,002,034.00	-R 2,532,248.00
Revenue Sources				
Equitable share funding	R- 1,134,795.00	R- 1,008,618.00	R- 472,170.00	R- 258,377.00
Tariffs	R- 1,549,267.00	R- 2,030,425.00	R- 2,529,864.00	R- 2,273,871.00

4.4.9.2 Organizational and Institutional Matters

This section details the current organizational structure and institutional matters to determine the available human resources to deliver waste services within the Municipality. **Figure 4-16** shows the current organizational structure.

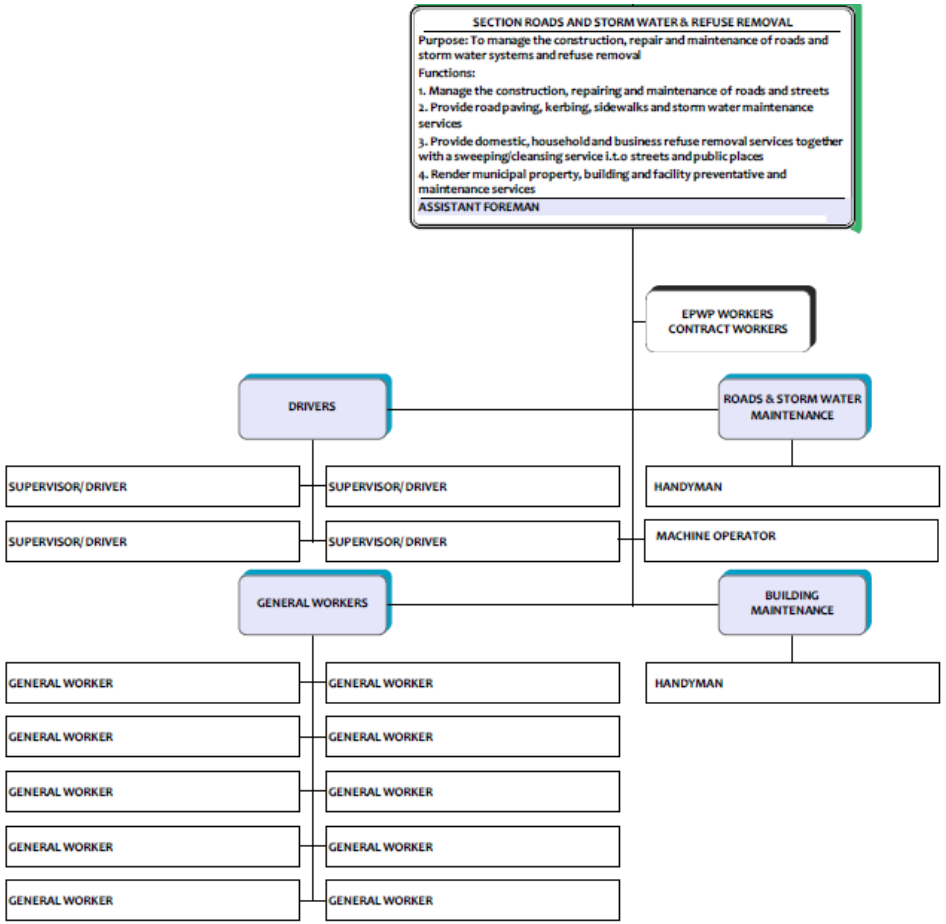

Figure 4-16: Waste Management Division Organizational Structure

Based on the current organisational structure there are Eight (8) waste management officials which include drivers and general workers. Based on the current organisational structure there are currently no vacant posts. To ensure continued service and effective skills transfer and to also ensure that the correct functions are put in place to fulfill NEMWA's requirements, the successful implementation of IWMP is dependent on the availability of qualified personnel. Continuous training and succession planning are crucial to maintaining a competent pool of employees. The current structure needs to be reviewed to include personnel dedicated to waste management.

The proposed organogram structure **Figure 4-17** shows an ideal structure that can be employed in the waste management division; however, the organogram structure below not take into consideration the size of the municipality but the necessary personnel that play an effective role in waste management, therefore depending on the size of the Municipality, municipalities will determine the number of personnel needed according to their specific needs.

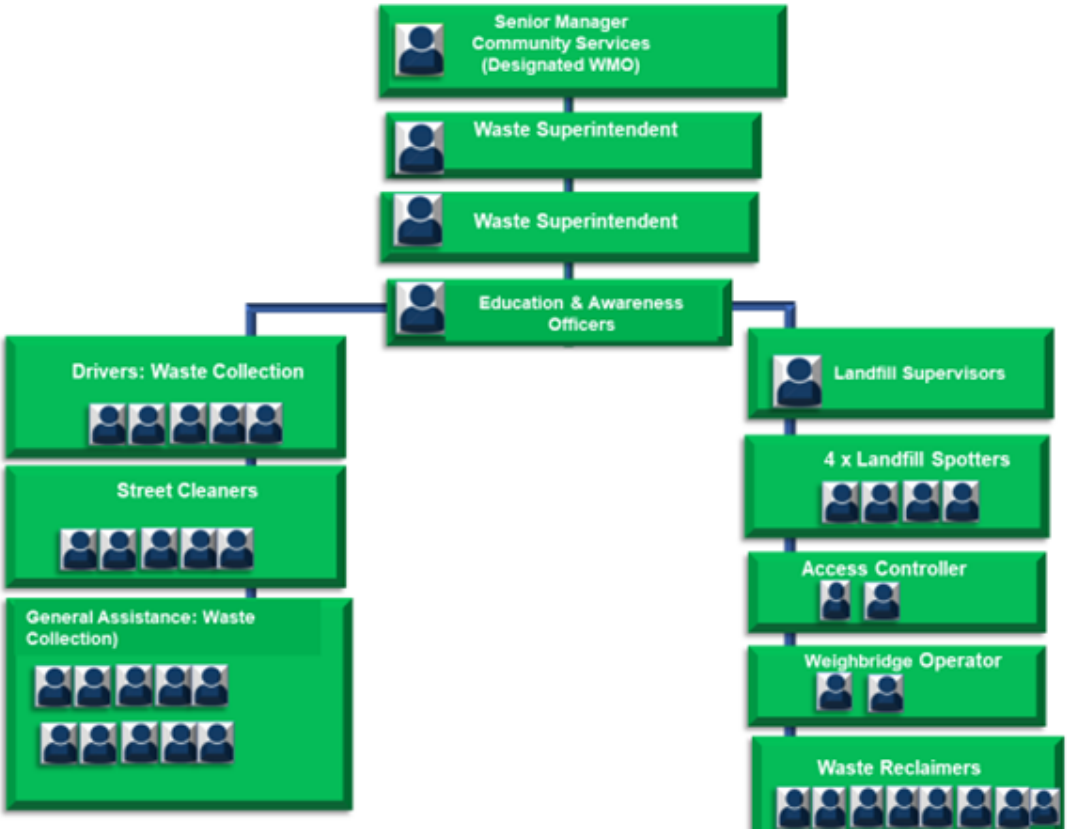

Figure 4-17 : Proposed Waste Management Organizational Structure for Local Municipality

Table 4-19 details the current institutional matters within LM.

Table 4-18: Organizational and Institutional Matters

Department Responsible for Waste Management	By-laws Status/Waste Policy	Waste Tariffs	Private Sector Involvement in waste Management	Designation of (WMO)	EMIs
Technical Services	Model Integrated Waste Management By-Law, 2023 (Endorsed)	Yes	Recycling	Designated (Mr. Johan Mouton)	One

4.4.10 Designation of WMO

In terms of Section 10(1-3) of NEMWA, any organ of state that is authorised to carry out waste management services must designate in writing a WMO to coordinate waste management at each level of government, this is to ensure that there is a dedicated authority in each sphere of government that is responsible for implementing the policy and regulations of the NEMWA.

The duties and responsibilities that NEMWA and the NWMS assign to each sphere of government define the roles and powers of their WMOs. The LM has designated a WMO. It is important that the appointed WMO performs regulatory functions and should be allocated functional divisions separate from service-delivery functions where possible. Guidelines for designating WMOs detail the roles and responsibilities of WMOs.

Roles and responsibilities of Municipal WMO

- Policy development and bylaws
- Financial planning and management
- Integrated waste management planning and reporting
- Infrastructure development
- Waste services provision arrangements
- Performance management and regulatory capacity
- Health and hygiene promotion
- Asset management and legal matters
- Service authority structural and organisational issues (capacity building)

4.4.11 Development and Enforcement of By-Laws

The LM has developed waste management By-laws which were gazetted in 2023. Waste management By-laws are crucial for maintaining a clean, healthy environment and ensuring responsible waste handling within the Municipality. They promote sustainable practices that protect both people and the environment. The LM currently has no trained and designated EMIs. The Municipality may enforce these By-laws either through local or regional authorities through designated EMIs. To increase capacity to enforce municipal By-laws; municipalities can explore training Metro police/ local enforcement agencies on waste-related matters so that they too are equipped and can issue fines on waste management transgressions.

4.4.12 Mainstreaming Key Principles of the National Waste Management Strategy

4.4.12.1 Waste Minimisation and Prevention

This section focuses on the identification of existing waste minimization and prevention initiatives. The most preferred methods of waste management, as indicated by the waste hierarchy, are waste minimization and prevention. These waste management methods are important as they lower waste management expenses. The identification of current waste minimization and prevention measures will assist the Municipality in promoting waste minimization and prevention activities through advocacy and education to ensure that residents participate as much as possible as well as exploring opportunities for expanding the initiatives throughout the Municipality. Currently, there are no waste minimization and prevention initiatives. The Municipality should consider implementing waste minimisation initiatives such as separation-at-source programmes; recycling initiatives in collaboration with schools and communities, industrial symbiosis etc.

4.4.12.2 Environmentally Sound Socio-Economic Growth and Development

This section focuses on identifying existing efforts to ensure environmentally sound socio-economic growth and development, this includes identifying waste management jobs in the Municipality, and efforts to support locally owned small businesses and entrepreneurs such as cooperatives and waste pickers. This information will help identify gaps in areas where there are new functions that must be performed. Waste Pickers Integration

This section focuses on identifying existing initiatives aimed at integrating the waste pickers in the Municipality, the number of waste pickers operating in the Municipality, the areas they operate as well as their working conditions. Circular Economy

Incorporating a circular waste economy in the municipal planning process is crucial for implementing NWMS 2020. This section focuses on identifying the existing circular economy activities undertaken in the Municipality. This includes activities such as promoting behavioral change through education and awareness, implementing Extended Producer Responsibility (EPR), increasing the collection of material for recycling and engaging in Industrial Symbiosis (IS) initiatives. The Municipality is conducting monthly clean-up campaigns in the communities and quarterly awareness campaigns at schools. The Municipality needs to consider a coordinated municipal waste awareness drive and targeted campaign to support the Municipality's future waste minimisation initiatives.

5 GAP AND NEEDS ANALYSIS

This section presents the waste management issues/challenges identified through the status quo analysis review. The gap and needs analysis aim to identify gaps and needs arising from the current waste management practices within the Municipality. Identifying the waste management priorities and needs that the Municipality wants to achieve includes the following:

- Identifying key waste management gaps; and
- Identifying the resulting needs.

Gaps and needs related to waste management in the LM have been identified in terms of each of the following waste management activities:

- Waste collection services;
- Waste minimisation, recycling and re-use initiatives;
- Hazardous and medical waste management;
- Waste management facilities;
- Waste education and awareness;
- Human and financial resource management;
- Waste reporting; and
- Integrated waste management planning.

5.1 Waste Collection Services

Table 5-1 provides the gaps identified and the resulting needs for waste service delivery in the LM.

Table 5-1: Waste collection service gaps and needs identified.

THEME	GAP IDENTIFIED	RESULTING NEED
Waste collection	• The Municipality is not collecting waste from the farmers.	• The Municipality should encourage farmers to dispose waste in an appropriate manner.
Waste collection fleet	• Insufficient and frequent fleet breakdowns compromise the reliability of the waste collection schedule and, as such promote illegal dumps.	• The Municipality should develop a fleet management plan to replace and maintain the available waste management fleet to ensure there is no disruption to the waste collection schedule. • The Municipality should acquire an additional fleet to extend waste collection services to other areas not receiving waste collection services. • The Municipality must also use its portion of MIG to procure specialised waste management fleet to extend refuse collection services to the un-serviced households.

5.2 Waste Minimisation, Recycling and Re-Use Initiatives

Table 5-2 provides the gaps identified as well as the resulting needs for waste minimisation, recycling, and re-use initiatives in the LM.

Table 5-2: Waste minimisation, recycling and re-use initiatives gaps and needs identified.

THEME	GAP IDENTIFIED	RESULTING NEED
Recycling	• There are numerous recyclables within the landfill due to limited recycling and a lack of waste reclaimers working at the landfill site.	• The Municipality should encourage waste recycling, allow waste reclaimers to work in designated areas, and collaborate with local recycling companies.
Waste Prevention and Minimisation	• There are no waste prevention and minimisation initiatives.	• The Municipality should develop a waste minimisation plan for diverting waste from the landfill site. • The Municipality should work with various stakeholders, including other government sectors, manufacturers, and consumers, to discover methods in which they may contribute to waste minimization and prevention. • The Municipality should establish industrial symbiosis initiatives by developing a system to register companies with different waste streams, this will allow the exchange of waste between companies. • The Municipality can emphasize waste reduction and prevention measures through education and advocacy to ensure maximum participation by citizens.
Organic Waste	• Incomplete organic waste diversion plan. • The structure constructed for organic waste is not operational due to a lack of equipment.	• The Municipality should finalise the organic waste diversion plan. • The Municipality should acquire the necessary equipment for

THEME	GAP IDENTIFIED	RESULTING NEED
		the facility to be operational. • The Municipality should record and report the diverted volumes of organic waste regularly.

THEME	GAP IDENTIFIED	RESULTING NEED
Hazardous waste	• There is a lack of information available on hazardous waste generators within the Municipality.	• The Municipality should create a database of hazardous waste generators, and to ensure safe disposal. • The Municipality should request disposal certificates from hazardous waste generators. • The Municipality should educate the community on the management and safe disposal of household hazardous waste. • The Municipality should collaborate with the district's Environmental Health Practitioners (EHPs) to develop a monitoring program for hazardous waste generators. • The Municipality must pilot the implementation of a household hazardous waste management strategy developed by DFFE.
Medical	• There is a lack of information available on how household medical waste is managed.	• The Municipality should collaborate with the Department of Health (DOH) to conduct awareness of the safe disposal of household medical waste.

THEME	GAP IDENTIFIED	RESULTING NEED
		• The Municipality should collaborate with health facilities such as clinics, hospitals, and surgeries to encourage the community to return expired and unwanted medication, as well as medical waste to health facilities.

5.3 Waste Management Facilities

Table 5-3 provides the gaps identified in terms of waste management facilities.

Table 5-3: Waste management facilities gaps and needs identified.

THEME	GAP IDENTIFIED	RESULTING NEED
Compliance with the conditions of the Waste Management Licence (WML)	• The landfill site does not comply with the following conditions of the WML: ✓ The actual height of the facility could not be determined during the audit but appeared to exceed one meter; ✓ No airspace determination report; ✓ No operational design or plan; ✓ No set targets to recover recyclables at the facility as part of an overall strategy to divert waste from being disposed of at waste disposal facilities; ✓ Waste burning takes place at the site from time to time; ✓ No spill kits were kept at the facility; ✓ No surface water and detection monitoring; and ✓ No monitoring committee has been established.	• The Municipality should put a plan in place to close the identified non-compliances.

THEME	GAP IDENTIFIED	RESULTING NEED
Infrastructure, equipment and plant	• The Municipality does not have a weighbridge. • Lack of transfer stations and drop-off centres. • There is a lack of sufficient cover material. • Lack of plant to manage the landfill site.	• The Municipality needs to install a weighbridge. • The Municipality should place skip bins at Matjiesfontein • The Municipality needs to identify a sustainable source for cover material. • The Municipality should acquire a Bulldozer, Tractor-Loader-Backhoe (TLB), and Tipper Truck.

5.4 Waste Education and Awareness

Table 5-5 provides the gaps identified in terms of waste management information.

Table 5-4: Waste education and awareness gaps and needs identified.

THEME	GAP IDENTIFIED	RESULTING NEED
Awareness and education	• Lack of permanent staff to conduct awareness campaigns.	• The Municipality should appoint dedicated personnel for waste awareness and education campaigns.
Illegal dumping	• Illegal dumping is persistent regardless of the efforts the Municipality has in place.	• The Municipality should continue to conduct awareness campaigns and enforce waste management by-laws.

5.5 Human And Financial Resource Management

Table 5-5 provides the gaps identified in terms of staff and financial management.

Table 5-5: Human and financial resource management gaps and needs identified.

THEME	GAP IDENTIFIED	RESULTING NEED
Human Resources	• The current organisational structure does not have adequate staff dedicated to waste management. • The general workers are also responsible for maintenance and water services.	• The successful implementation of the IWMP will require a review of the current organisational structure to accommodate dedicated human resources for waste management.
Budget	• No capital budget was allocated for waste management.	• The successful implementation of the IWMP will require a budget therefore the Municipality should allocate a sufficient budget for waste management activities such as expanding awareness and education campaigns, acquiring additional resources, and expanding waste collection services to un-serviced areas.

5.6 Waste Reporting.

Waste reporting is essential in ensuring that Municipal waste management services comply with evolving legislation and waste management best practices.

Table 5-6 provides the gaps identified in terms of waste reporting with the associated need to effectively address the gap.

Table 5-6: Waste reporting gaps and needs identified.

THEME	GAP IDENTIFIED	RESULTING NEED
IPWIs	• The Municipality is registered and reports on the Integrated Pollutant and Waste Information System (IPWIS), however, there is no constancy in reporting waste disposal volumes on the system.	• The Municipality should ensure reporting on IPWIS is up to date.

THEME	GAP IDENTIFIED	RESULTING NEED
Integrated Waste Management Planning	• NEMWA requires the IWMP to be integrated into the IDP. • The Municipality must submit annual reports of the implementation of the IWMP as per Section 46 of the MSA • NEMWA requires the IWMP to be reviewed every 5 years. • The Municipality has one Environmental Management EMI • Waste pickers are not integrated.	• The Municipality should ensure that the final endorsed IWMP is incorporated into the IDP to ensure the successful implementation of the IWMP. • Once the IWMP is finalised the Municipality must ensure that annual reports are prepared and submitted in line with the MSA. • The Municipality must ensure that the IWMP is reviewed every 5 years. • EMIs should be trained and designated to ensure waste management by-laws are implemented. • The Municipality should develop a plan for waste pickers integration.

6 DESIRED END STATE

The desired end state entails identifying waste management priorities and goals that the Municipality wishes to attain. This will assist the Municipality in its strategic planning and prioritisation efforts to ensure that the Municipality receives the help and support they need to achieve its intended end state. Information from the status quo report is used to develop strategic goals to address the gaps and needs of the communities within the Municipality and respond to NEM: WA's objectives. A fully costed implementation plan, that will include strategic goals will then be developed

7 THE NATIONAL WASTE MANAGEMENT STRATEGY (NWMS)

The NWMS 2020 was revised and updated to focus on three overarching goals that are intended to articulate the core objectives of the NEM: WAA. The strategy provides a simpler conceptual structure based on three main implementation themes framed as overarching goals informed by global emerging trends in waste management. The associated targets have been replaced with a set of strategic objectives for each goal, which will be monitored in terms of performance indicators.

7.1 National Waste Management Strategy 2020 Pillars

The three goals of the NWMS 2020 that will be used to align this IWMP are as follows:

- **Goal 1**: Waste Minimisation - the aim is to prevent waste and where waste cannot be prevented, 40% should be diverted from landfill within 5 years through reuse, recycling, recovery, and alternative waste treatment: 25% of waste reduction in waste generation and 20% waste reused in the economic value chain.
- **Goal 2**: Effective and Sustainable Waste Services - this would see all South Africans living in clean communities with waste services that are well managed and financially sustainable.
- **Goal 3**: Waste Awareness and Compliance - the aim is to create a culture of compliance with zero tolerance of pollution, litter, and illegal dumping.

7.2 Western Cape Provincial Integrated Waste Management Plan (PIWMP)

The Western Cape Province developed a PIWMP in 2017. This plan sets objectives to satisfy the need for a reasonable plan to address waste management shortcomings. The goals from the Western Cape PIWMP that will be used to align this IWMP are as follows:

- **Goal 1:** Strengthen education, capacity and advocacy towards integrated waste management
- **Goal 2:** Improved integrated waste management planning and implementation for efficient waste services and infrastructure
- **Goal 3:** Effective and efficient utilisation of resources
- **Goal 4:** Improved compliance with environmental regulatory framework

7.3 Goals identified for the LM's IWMP

The main aim of an Integrated Waste Management Plan is to consolidate the existing information to achieve integration and optimization of waste management within Municipalities. Strategic objectives of the function within the integrated waste management sector include the following:

Goal 1: Improve waste collection services

Goal 2: Develop waste minimisation and recycling

Goal 3: Improve management and compliance of waste facilities

Goal 4: Enhance waste education and awareness

Goal 5: Strengthen human and financial resource management.

Goal 6: Improve waste management information

Goal 7: Promote integrated waste management planning

7.4 Roles and Responsibilities of local government as per the NWMS 2020

District and Local Municipalities are critical in the implementation of NWMS goals as they are responsible for the planning and delivery of waste collection, disposal services and infrastructure. District municipalities are primarily responsible for providing technical support to local municipalities and assisting with regional planning and coordination. Waste collection and disposal to landfill is typically undertaken by local municipalities. As part of the implementation of the NWMS, local government needs to shift the focus of waste collection services to incorporate separation at source to promote diversion of waste from landfills through reuse, recycling, and recovery. Addressing waste management issues that are specific to the economic, social, and environmental profile of the district is key to ensure effective waste management.

8 ALIGNMENT WITH THE NWMS 2020 AND WESTERN CAPE PIWMP GOALS

Table 8-1 below outlines how the goals of the LM IWMP align with the NWMS 2020 and Western Cape PIWMP goals.

Table 8-1: Alignment of LM goals with the NWMS 2020 and Western Cape PIWMP goals

LM GOALS	WESTERN CAPE PIWMP GOALS	NWMS 2020 GOALS
Goal 1: Improve waste collection services	**Goal 2:** Improved integrated waste management planning and implementation for efficient waste services and infrastructure	**Goal 2**: Effective and Sustainable Waste Services – this would see all South Africans living in clean communities with waste services that are well managed and financially sustainable.
Goal 2: Promote waste minimisation and recycling	**Goal 3:** Effective and efficient utilisation of resources.	**Goal 1**: Waste Minimisation – the aim is to prevent waste and where waste cannot be prevented, 40% should be diverted from landfill within 5 years through reuse, recycling, recovery, and alternative waste treatment: 25% of waste reduction in waste generation and 20% waste reused in the economic value chain.
Goal 3: Improve compliance and enforcement	Goal 4: Improved compliance with the environmental regulatory framework.	**Goal 2**: Effective and sustainable waste services – this would see all South Africans living in clean communities with waste services that are well-managed and financially sustainable.

LM GOALS	WESTERN CAPE PIWMP GOALS	NWMS 2020 GOALS
Goal 4: Enhance waste education and awareness	**Goal 3:** Waste awareness and compliance – the aim is to create a culture of compliance with zero tolerance for pollution, litter and illegal dumping.	**Goal 3**: Waste Awareness and Compliance - the aim is to create a culture of compliance with zero tolerance of pollution, litter, and illegal dumping.
Goal 5: Strengthen human and financial resource management	**Goal 2:** Improved integrated waste management planning and implementation for efficient waste services, technologies and infrastructure.	**Goal 2**: Effective and sustainable waste services – this would see all South Africans living in clean communities with waste services that are well-managed and financially sustainable.
Goal 6: Improve waste management information	**Goal 2:** Improved integrated waste management planning and implementation for efficient waste services, technologies and infrastructure	**Goal 2**: Effective and sustainable waste services – this would see all South Africans living in clean communities with waste services that are well-managed and financially sustainable.
Goal 7: Promote integrated waste management planning	**Goal 2:** Improved integrated waste management planning and implementation for efficient waste services and infrastructure.	**Goal 2**: Effective and Sustainable Waste Services – this would see all South Africans living in clean communities with waste services that are well managed and financially sustainable.
Goal 8: Improve hazardous and medical waste management.	**Goal 2:** Improved integrated waste management planning and implementation for efficient waste services, technologies and infrastructure.	**Goal 3**: Waste awareness and compliance – the aim is to create a culture of compliance with zero tolerance for pollution, litter and illegal dumping.

9 SETTING STRATEGIC GOALS, OBJECTIVES, TARGETS AND ALTERNATIVES FOR THE LM

The strategic goals, objectives, targets, indicators, and alternatives to assist the Municipality close the identified gaps are listed in **Table 9-1** below. The strategic goals are informed by waste management issues observed and identified during the status quo analysis. The waste management hierarchy guides the established strategic goals based on waste legislation and policies. To assess the achievement of accomplishing a goal, key performance indicators are also included for the relevant goals. The instruments to be utilized are given, and the sphere of government responsible for implementation is identified and listed, given the fact that responsibilities regarding waste management differ throughout government structures. This section also includes alternatives the Municipality can employ to achieve the desired end state. The preferred alternatives identified in this section will be taken forward into the implementation plan.

Table 9-1: Strategic Goals, Targets, Indicators, and Alternatives

GOAL 1: IMPROVE WASTE COLLECTION SERVICES				
Objectives	**Target**	**Key Performance Indicator**	**Responsible Department**	**Alternative**
Objective 1: Encourage safe disposal of waste in farming areas.	• Promote safe disposal of waste in farming areas where the Municipality is unable to collect waste.	• Safe disposal of waste in farming areas	LM	There are no feasible alternatives to this project.
Objective 2: Efficient and sufficient waste management fleet.	• Ensure that a fleet management plan is developed to maintain and replace the existing waste management fleet. • Procure additional fleet to enhance waste collection services: ✓ Skip Truck ✓ Tipper Truck between 1.5 and 3 tonnes ✓ 10 Skip bins ✓ Compactor Truck	• Fleet management plan • Skip Truck • Tipper Truck • 10 Skip bins • Compactor Truck	LM & Province	There are no feasible alternatives to this project. This is to ensure the waste management fleet remains operational and in good condition.

GOAL 2: IMPROVE WASTE MINIMIZATION AND RECYCLING				
Objective	**Target**	**Key Performance Indicator**	**Responsible Department**	**Alternative**
Objective 1: Promote waste minimisation, re-use and recycling	• Find a recycling company that can work at the waste disposal facility. • Partner with businesses, government institutions, and manufacturers to explore ways in which they may contribute to waste minimization and prevention. • Partner with PROs through the EPR to assist with funds for recycling programs for products under the EPR schemes.	• Recycling company • Partnerships established with businesses, government institutions, and manufacturers. • Partnerships established with PRO.	LM	There are no feasible alternatives to this project.
	• Develop a waste minimisation for diverting waste from the landfill site.	• Waste minimisation plan	LM	There are no feasible alternatives to this project.
	• Allow waste reclaimers to work in a designated area.	• Register of waste reclaimers working at a designated area.	LM	There are no feasible alternatives to this project.

GOAL 2: IMPROVE WASTE MINIMIZATION AND RECYCLING				
Objective	**Target**	**Key Performance Indicator**	**Responsible Department**	**Alternative**
	• Emphasize waste reduction and prevention measures through education and awareness to ensure maximum participation by citizens. • Collaborate with schools to encourage waste recycling and minimisation e.g. competitions. • Conduct waste characterisation seasonally.	• Education and awareness conducted • Collaborations with schools. • Waste characterisation study	LM	There are no feasible alternatives to this project.

GOAL 3: IMPROVE MANAGEMENT AND COMPLIANCE OF WASTE FACILITIES				
Objective	**Target**	**Key Performance Indicator**	**Responsible Department**	**Alternative**
Objective 1: Improve compliance with conditions	• Develop a plan to close all the identified non-compliances	• A plan to close all non-compliance	LM	There are no feasible alternatives

GOAL 3: IMPROVE MANAGEMENT AND COMPLIANCE OF WASTE FACILITIES				
Objective	**Target**	**Key Performance Indicator**	**Responsible Department**	**Alternative**
of waste licence.	• Conduct monitoring as per the conditions of the license.	• Monitoring reports.	LM	to this project. The Municipality is required to ensure compliance with the conditions of waste disposal facility.
	• Finalize the organic waste diversion plan • Record and report the diverted volumes of organic waste regularly.	• Final organic waste diversion plan. • Records of reporting.	LM	
	• Acquire the necessary equipment for the facility to be operational.	• Composting equipment.	LM	There are no feasible alternatives to this project.
Objective 2 Improve maintenance of the WDF.	• Install a weighbridge.	• Weighbridge	LM	There are no feasible alternatives to this project.
	• The Municipality should place skip bins at Matjiesfontein	• Waste Transfer Station	LM & Province	There are no feasible alternatives

GOAL 3: IMPROVE MANAGEMENT AND COMPLIANCE OF WASTE FACILITIES				
Objective	**Target**	**Key Performance Indicator**	**Responsible Department**	**Alternative**
	•			to this project.
	• Acquire the necessary yellow fleet ✓ Landfill Compactor ✓ Bulldozer ✓ TLB ✓ Tipper Truck ✓ Excavator	• Acquired yellow fleet.	LM & Province	An alternative could be to hire fleet or outsource, and this is not recommended.

GOAL 4: ENHANCE WASTE EDUCATION AND AWARENESS				
Objective	**Target**	**Key Performance Indicator**	**Responsible Department**	**Alternative**
Objective 1: Implement waste awareness programmes.	• Develop an annual education and waste awareness calendar. • Partner with schools and other stakeholders.	• Annual education and awareness plan. • Partnerships developed.	LM	There is no feasible alternative to this project

GOAL 4: ENHANCE WASTE EDUCATION AND AWARENESS				
Objective	**Target**	**Key Performance Indicator**	**Responsible Department**	**Alternative**
	• Develop awareness materials. • Conduct door-to-door campaigns. Conduct regular community education and awareness campaigns. • Use other platforms to promote awareness such as municipal website, newsletters, radio, posters, and social media.	• Door-to-door campaigns. • Education and awareness campaigns conducted. • Awareness campaigns conducted on other platforms.		
Objective 2: Combat illegal dumping	• Conduct clean-up campaigns and inform the public about the consequences of unlawful dumping.	• Education and awareness campaigns conducted	LM & DM	There is no feasible alternative to this project

GOAL 5: STRENGTHEN HUMAN AND FINANCIAL RESOURCE MANAGEMENT				
Objective	**Target**	**Key Performance Indicator**	**Responsible Department**	**Alternative**
Objective 1: Strengthen human capacity	• Review the current organisational structure and identify the new position required to successfully implement the waste function.	• Reviewed and approved organogram	LM	There is no feasible alternative to this project. This is to ensure that there are dedicated personnel for waste management.
	• Appoint waste Management Officer	• Appointment letter	LM	There is no feasible alternative to this project.
	• Train and designate the available officers as EMIs to ensure the implementation of waste management by-laws. • Develop a plan to integrate the waste pickers.	• Training certificates. • Waste pickers integration plan	LM & Province	There is no feasible alternative to this project.

GOAL 5: STRENGTHEN HUMAN AND FINANCIAL RESOURCE MANAGEMENT				
Objective	**Target**	**Key Performance Indicator**	**Responsible Department**	**Alternative**
Objective 2: Ensure sound budgeting and financing of waste management services	• Ensure all waste projects are included in the IDP, to guarantee that they are included in the planning and budget of Municipal projects.	• Waste project included in the IDP.	LM	There is no feasible alternative to this project.

GOAL 6: IMPROVE WASTE MANAGEMENT INFORMATION				
Objectives	**Target**	**Key Performance Indicator**	**Responsible Department**	**Resources/Cost Estimates**
Objective 1: Ensure reporting is up to date on IPWIS	Ensure consistency in reporting in reporting on IPWIS.	Compliance with waste reporting	LM	There is no feasible alternative to this project. Reporting on IPWIS is a legislative requirement.
Objective 2: Improve waste management information	Develop a database of hazardous and medical waste generators.	database of hazardous and medical waste generators.	LM	There is no feasible alternative to this project.

GOAL 7: PROMOTE INTEGRATED WASTE MANAGEMENT PLANNING				
Objective	**Target**	**Key Performance Indicator**	**Responsible Department**	**Alternative**
Objective 1: Enhance integrated waste management planning	• Ensure that the approved IWMP is endorsed by the MEC.	• Endorsement by MEC	LM	There is no feasible alternative to this project. Endorsement of the IWMP is a legal requirement.
	• Develop annual reports on the implementation of the IWMP.	• Annual reports on the implementation of the IWMP	LM	There is no feasible alternative to this project. Annual IWMP implementation reports are a legal requirement.

GOAL 7: PROMOTE INTEGRATED WASTE MANAGEMENT PLANNING				
Objective	**Target**	**Key Performance Indicator**	**Responsible Department**	**Alternative**
	• Implement waste management by-laws.	• Enforced By-Laws	LM	There is no feasible alternative to this project.
	• Ensure that IWMP is reviewed every 5 years.	• Review of the IWMP	LM	There is no feasible alternative to this project. A review of the IWMP is a legal requirement.

OAL 8 IMPROVE HAZARDOUS AND MEDICAL WASTE MANAGEMENT.				
Objectives	**Target**	**Key Performance Indicator**	**Responsible Department**	**Alternative**
Objective 1: Ensure appropriate disposal of hazardous waste.	• Develop a database of hazardous waste generators.	• Database of hazardous waste generators.	LM	There is no feasible alternative to this project.
	• Develop a monitoring program in collaboration with district EHPs to ensure appropriate disposal of hazardous waste	• A monitoring program.	LM &DM	There is no feasible alternative to this project.
	• Pilot the National household hazardous waste strategy developed by DFFE. • The Municipality should collaborate with PROs under the ERP scheme for the collection of hazardous waste.	• Pilot study • Partnerships with PROs.	LM	There is no feasible alternative to this project.
Objective 2: Ensure appropriate disposal of medical waste.	• Collaborate with health facilities such as clinics, hospitals, and surgeries to encourage the community to return expired and unwanted medical waste to health facilities. • Collaborate with health facilities to conduct	• Partnerships with health facilities. • Number of awareness conducted.	LM	There is no feasible alternative to this project.

OAL 8 IMPROVE HAZARDOUS AND MEDICAL WASTE MANAGEMENT.				
Objectives	**Target**	**Key Performance Indicator**	**Responsible Department**	**Alternative**
	awareness on safe disposal of households' medical waste			

10 IMPLEMENTATION PLAN

An implementation strategy to help the LM achieve the goals and targets mentioned in the gap and needs analysis is provided in the following section.

The implementation plan outlines several initiatives and related tasks that, if carried out correctly, ought to help the LM meet its goals. The projects that have been selected have been ranked in order of timeframes and cover the years 2025–2029. The plan for implementation is outlined in **Table 10-2** below.

An estimated budget is provided to allow for appropriate financial planning. The achievement of the strategic goals and targets within the allotted timeframes from the date the IWMP is endorsed must have a quantifiable target date and precise timeframe. The target date for each strategic goal can also be allocated to the following three broad timeframes as follows:

- Short-term targets (Attainable within 0 to 1 year)
- Medium-term targets (Attainable within 1 to 3 years)
- Long-term targets (Attainable within 4 to 7 years)

The implementation plan's legend is shown in the **Table 10-1** below.

Table 10-1: Implementation plan legend

TERM	
Short-term	
Medium-term	
Long-term/continuous	

Table 10-2: Implementation Plan

GOAL	OBJECTIVE	ACTIVITY	TIMEFRAME					RESPONSIBLE DEPARTMENT	HUMAN RESOURCES/ESTIMATED BUDGET REQUIRED
			2025	2026	2027	2028	2029		
Goal 1: Encourage safe disposal of waste in farming areas.	Objective 1: Expand waste collection services	Promote safe disposal of waste in farming areas where the Municipality is unable to collect waste.						LM	Human Resources
	Objective 2: Develop a fleet management plan	Ensure that a fleet management plan is developed to maintain the existing fleet.						LM	Human Resources
		Procure additional fleet to enhance waste collection services. ✓ Skip Truck ✓ Tipper Truck between 1.5 and 3 tonnes ✓ 10 Skip bins ✓ Compactor Truck						LM & Province	✓ R1 500 000 ✓ R1 330 840 ✓ R200 000 ✓ R1 431 908
Goal 2: Develop waste minimisation initiatives	Objective 1: promote waste minimisation, re-use and recycling	Find a recycling company that can work at the waste disposal facility. Partner with businesses, government institutions, and manufacturers to explore						LM	Human Resources

GOAL	OBJECTIVE	ACTIVITY	TIMEFRAME					RESPONSIBLE DEPARTMENT	HUMAN RESOURCES/ESTIMATED BUDGET REQUIRED
			2025	2026	2027	2028	2029		
		ways in which they may contribute to waste minimization and prevention. Partner with PROs through the EPR to assist with funds for recycling programs for products under the EPR schemes.							
		Develop a waste minimisation for diverting waste from the landfill site Allow waste reclaimers to work in a designated area.						LM	Human Resources
		Emphasize waste reduction and prevention measures through education and awareness to ensure maximum participation by citizens.						LM	Human Resources
		Collaborate with schools to encourage waste recycling and minimisation e.g. competitions. Conduct waste						LM	Internal expenditure as determined by operations

GOAL	OBJECTIVE	ACTIVITY	TIMEFRAME					RESPONSIBLE DEPARTMENT	HUMAN RESOURCES/ESTIMATED BUDGET REQUIRED
			2025	2026	2027	2028	2029		
		characterisation seasonally.							
Goal 3: Improve Management and Compliance of Waste Facilities	Objective 1: Improve compliance with conditions of waste licence. Objective 2: Improve maintenance of the WDF.	Develop a plan to close all the identified non-compliances.						LM	Human Resources
		Conduct monitoring as per the conditions of the licence.						LM	Internal expenditure as determined by operations
		Finalize the organic waste diversion plan. Record and report the diverted volumes of organic waste regularly.						LM	Human Resources
		Acquire the necessary equipment for the facility to be operational.						LM	Internal expenditure as determined by operations
	Objective 2 Improve maintenance of the WDF.	Install a weighbridge						LM	R3 000 000
		The Municipality should place skip bins at Matjiesfontein						LM	Internal expenditure as determined by operations

GOAL	OBJECTIVE	ACTIVITY	TIMEFRAME					RESPONSIBLE DEPARTMENT	HUMAN RESOURCES/ESTIMATED BUDGET REQUIRED
			2025	2026	2027	2028	2029		
		Acquire the necessary yellow fleet ✓ Landfill Compactor ✓ Bulldozer ✓ TLB ✓ Tipper Truck. ✓ Excavator ✓ Front End Loader						LM & Province	✓ R11 106 010 ✓ R1 500 000 ✓ R1 330 840 ✓ R903 700 ✓ R6 500 000 ✓ R1 612 205
Goal 4: Enhance waste education and awareness	Objective 1: Implement waste awareness programmes	Develop an annual education and waste awareness calendar. Partner with schools and other stakeholders. Develop awareness materials. Conduct door-to-door campaigns. Conduct regular community education and awareness campaigns. Use other platforms to promote awareness such as municipal website, newsletters, radio, posters, and social media.						LM	Human Resources

GOAL	OBJECTIVE	ACTIVITY	TIMEFRAME					RESPONSIBLE DEPARTMENT	HUMAN RESOURCES/ESTIMATED BUDGET REQUIRED
			2025	2026	2027	2028	2029		
	Objective 2: Combat illegal dumping	Conduct clean-up campaigns and inform the public about the consequences of unlawful dumping.						LM	Human Resources
Goal 5: Strengthen Human and Financial Resource Management	Objective 1: Strengthen human capacity	Review the current organisational structure and identify the new position required to successfully implement the waste function.						LM	Human Resources
		Appoint waste Management Officer						LM	R400 000 Monthly
		Train and designate the available officers as EMIs to ensure the implementation of waste management by-laws. Develop a plan to integrate the waste pickers.							R10 000,00 each
	Objective 2: Ensure sound budgeting and financing of waste management services	Ensure all waste projects are included in the IDP, to guarantee that they are included in the planning and						LM	Human Resources

GOAL	OBJECTIVE	ACTIVITY	TIMEFRAME					RESPONSIBLE DEPARTMENT	HUMAN RESOURCES/ESTIMATED BUDGET REQUIRED
			2025	2026	2027	2028	2029		
		budget of Municipal projects							
Goal 6: Improve waste management information	Objective 1: Ensure reporting is up to date on IPWIS	Ensure that all reports are submitted to IPIWS.						LM	Human Resources
Goal 7: Promote integrated waste management planning	Objective 1: Enhance Integrated Waste Management Planning	Ensure that the approved IWMP is endorsed by the MEC. Develop annual reports on the implementation of the IWMP. Implement waste management by-laws.						LM	Human Resources
		Ensure the IWMP is reviewed every 5 years							Free in-house and R400 000.00 if it is outsourced.
Goal 8: Improve hazardous and medical waste management.	Objective 1: Ensure appropriate disposal of hazardous waste.	Develop a database of hazardous waste generators.						LM	Human Resources
		Develop a monitoring program in collaboration with district EHPs to ensure appropriate disposal of hazardous waste.						LM & DM	Human Resources
		Pilot the National household						LM	Internal expenditure as

GOAL	OBJECTIVE	ACTIVITY	TIMEFRAME					RESPONSIBLE DEPARTMENT	HUMAN RESOURCES/ESTIMATED BUDGET REQUIRED
			2025	2026	2027	2028	2029		
		hazardous waste strategy developed by DFFE.							determined by operations
		The Municipality should collaborate with PROs under the ERP scheme for the collection of hazardous waste.						LM	Human Resources
	Objective 2: Ensure appropriate disposal of medical waste.	Collaborate with health facilities such as clinics, hospitals, and surgeries to encourage the community to return expired and unwanted medical waste to health facilities. Collaborate with health facilities to conduct awareness on safe disposal of households' medical waste						LM	Human Resources

11 IMPLEMENTATION INSTRUMENTS

11.1 Partnerships

The development of partnerships has been identified as an important mechanism for providing the required support for the implementation of the IWMP. The costs and needs of a sustainable waste management system are very high and therefore require contribution and participation from its various stakeholders. A wide range of partnerships that can be formed including Public-Public, Public-Private and Public-Community partnerships.

11.1.1 Public-Public Partnerships

This is a partnership between two public sector institutions or organisations where neither partner seeks to profit from the partnership. Existing public-public partnerships include DFFE-EPWP, DFFE partnered with the Municipality to sponsor the development of IWMP. The municipality is encouraged to explore other partnerships with the district, province, health facilities, schools, etc.

11.1.2 Public-Private Partnerships

This is a partnership between a public sector and a private company. Typically, this involves private capital financing government projects. Public-Community Partnerships

This is a partnership between the public sector and the community (Non-Government Organisation (NGO)**/**Community-Based Organisation (CBO)). There are no existing partnerships, the Municipality is encouraged to partner with the community for sustainable waste management services.

11.2 Legislative Instruments: Development and Enforcement of By-law

Waste management By-laws as a supporting legal framework must be implemented to support the implementation of IWMP. Municipalities have the power to develop By-laws, which augment national and provincial regulatory requirements. Municipalities also need to enforce these waste management By-laws either through municipal mechanisms such as EMIs or other delegated authority within Municipalities.

11.3 Funding Mechanisms

The successful implementation of the IWMP depends on the availability of sufficient funding to carry out the plan. Funding will be required for the following:

11.3.1 Funding Mechanisms for Waste Prevention, Minimisation and Recycling

The primary source of initial funding for waste prevention, minimisation and recycling activities may be sourced from:

- Recycling agencies
- Municipal budget
- Donor funding
- Public/private partnerships

11.3.2 Funding Mechanisms for Waste Collection and Transportation

Possible sources for waste collection and transportation include:

- Payment for services rendered
- Local government budgetary allocations (from Equitable share funding allocation)
- Municipal budget allocations
- Donor funding for specific projects
- Public-private partnerships.

11.3.3 Funding mechanisms for waste disposal

- Waste disposal tariffs
- Public-private partnerships

12 MONITORING AND REVIEW OF THE IWMP

It is necessary to continuously and regularly monitor the Implementation Plan to make sure the IWMP's targets, goals, and objectives are met within the allotted time limits.

According to Section 13(2) of NEM: WA, performance reports on the implementation of the integrated waste management plan must be prepared in terms of Section 46 of the MSA and must contain the following information:

- The extent to which the plan has been implemented during the period;

- The waste management initiatives that have been undertaken during the reporting period;
- The delivery of waste management services and measures taken to secure the efficient delivery of waste management services, if applicable;
- The level of compliance with the plan and any applicable waste management standards;
- The measures taken to secure compliance with waste management standards;
- The waste management monitoring activities;
- The actual budget expended on implementing the plan; and
- The measures that have been taken to make any necessary amendments to the plan.

The LM must appoint a Waste Management Officer (WMO) who will be responsible for implementing and managing the IWMP. The LM's progress toward achieving the aims, targets, and objectives specified in the Implementation Plan of the IWMP must be summarized in an Annual Performance Report which must be compiled by the WMP. The following should be included in the report:

- Strategic Issues: The effectiveness of the LM and its advancement toward achieving its short-, medium-, and long-term goals, objectives, and targets.
- Financial Issues: Budget forecasts reporting, securing adequate funds, and budgetary restrictions concerning both current waste management operations and this IWMP's implementation.
- IWMP Amendments: Modifications to the IWMP required by the findings of financial restrictions, feasibility studies, etc.
- Communication: Informing people, important stakeholders, and council members about the status of the IWMP's meeting.

The next review of the IWMP should take place in 2030, as it is a component of the Integrated Development Plan mandated by Chapter 5 of the MSA.

In order to continuously improve on the current level of waste management services in the LM, the thorough review will update the status quo, assess overall progress in relation to the goals, objectives, and targets specified in this IWMP, examine any gaps and needs, and reformulate the goals and objectives as necessary to further advance the waste management services provided by the LM.

13 PUBLIC PARTICIPATION PROCESS

As part of the development of the IWMP, the consultants will engage with stakeholders and members of the community. Stakeholders and I&APs will be notified that the draft IWMP is out for comment. The comments on the draft LM IWMP will be incorporated into the final LM IWMP

14 CONCLUSION

The draft IWMP Report is intended to provide an overview of the current waste management practices undertaken in the Municipality. It also indicates the planning context within which the IWMP for the Municipality is formulated, as well as additional legislative frameworks that need to be considered when undertaking the compilation of an IWMP.

The draft IWMP Report was compiled with the information obtained from the following methods:

- Interviews with key stakeholders and representatives from the Municipality;
- Ground truthing/auditing of waste management practices within the Municipality; and
- A review of all available background information, guidelines and development frameworks about waste management practices applicable to the Municipality.

Based on current information, from Stats SA, 2022, there has been an increase in population growth from 8 289 in 2011 to 11 366 recorded in 2022. Total number of households increased from 2 408 to 3 314. The increased population puts more pressure with regards to the service delivery expected from the Municipality. The municipality is currently collecting waste from all households and all registered indigent households are being serviced.

The Municipality has one waste disposal facility which is licensed. The waste disposal facility does not have a weighbridge and volume density estimates are used to record waste disposal volumes which are reported on IPWIS monthly. Waste recycling is limited and there are no independent waste reclaimers within the Municipality, as a result, there are huge volumes of recyclables observed at the waste disposal facility. Illegal dumping is a challenge; however, the Municipality manages the illegal dumps through the greening and cleaning EPWP project funded by DFFE

Challenges that the Municipality encounters; amongst others include limited human resources, limited air space, illegal dumping, poor infrastructure for storing waste at Matjiesfontein, waste operation equipment and specialized waste management vehicles needed for proper site management. The Municipality has gazetted waste management by-laws, however, there is a need to have EMIs/peace officers to ensure the effective implementation of the by-laws.

Gaps and resulting needs have been identified using current waste management practices. For the Municipality to provide sustainable waste management services, the identified gaps will be resolved through the development of an implementation plan that includes strategic goals and objectives based on the gaps and needs.

The analyses of the current waste management system have led to the identification of gaps and needs (Section 5 of this report), and these are addressed with the overarching goals, objectives, and targets in Section 8 of this report. The main goals for integrated waste management in LM can be summarized as follows:

- Goal 1: Improve waste collection services;
- Goal 2: Develop waste minimisation and recycling;
- Goal 3: Improve compliance and enforcement.
- Goal 4: Enhance waste education and awareness.
- Goal 5: Strengthen human and financial resource management.
- Goal 6: Improve waste management information.
- Goal 7: Promote integrated waste management planning.
- Goal 8: Improve hazardous and medical waste management.

For these goals to be met, a series of implementation instruments (action plans) will need to be implemented. These action plans are detailed in the Implementation plan in Section 9 of this report. It is imperative for the LM to action the items proposed in the Implementation plan as this will directly result in improved waste management of the Municipality.

As part of the development of the IWMP, the consultants will engage with stakeholders and members of the community. Stakeholders and interested and affected parties (I&APs) will be notified that the draft IWMP is out for comment. The comments on the draft IWMP will be incorporated into the final IWMP.

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