13/5/B

Beaufort West Municipality Draft : Integrated Waste Management Plan (IWMP)

2025/2026 – 2029/2030

Sponsored By	Prepared by:
forestry, fisheries & the environment Department Forestry, Fisheries and the Environment REPUBLIC OF SOUTH AFRICA	Mamadi & Company

SIRKULASIE	OPDRAG

	DOCUMENT TITLE:	IWMP	
	DOC NO:	MC.DFFE.IWMPs.2024	

PROJECT INFORMATION

Title	Development of Municipal Integrated Waste Management Plans (IWMP) for Beaufort West Municipality
Submission Date	27 November 2024
Our Reference	MC.DFFE.IWMP.2024

VERSION AND AMENDMENT SCHEDULE

Version	Version date	Author	Description of Amendments
1	25 November 2024	Mmapula Moropo (Senior Environnemental Consultant)	Document created

APPROVAL AND CONTROL SCHEDULE

Approved by	Designation	Responsibility	Signature	Date Approved
Mmapula Moropo	Senior Environmental Consultant	Compiler		25 November 2024
Legion Mazibuko	Senior Environmental Consultant	Review		26 November 2024
Ronaldo Greeff-Retief	Environmental Manager	Review		27 November 2024
Ike Rampedi	Chief Operational Officer	Approval		27 November 2024

CLIENT APPROVAL

NAME	DESIGNATION	DATE	SIGNATURE
Hlayisani Ntsanwisi	Project Manager		
Malcolm Mogotsi	Director - Municipal Waste Support		

REPORT STATUS	DRAFT		FINAL	

	DOCUMENT TITLE:	IWMP	
	DOC NO:	MC.DFFE.IWMPs.2024	

EXECUTIVE SUMMARY

Department of Forestry, Fisheries, and the Environment (DFFE) has embarked on a project to support Beaufort West Local Municipality (BWM) 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 as amended (NEMWA). Provincial governments and Municipalities responsible for waste management are expected to develop and review their IWMPs. Municipalities must submit their IWMP to the Council for approval and to the Member of Executive Council (MEC) for endorsement, and the endorsed IWMP must be incorporated into the Municipal Integrated Development Plan (IDP). The IWMP aims to provide strategic direction for waste management within the Municipality over the short, medium and long term.

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 valuechain would be planned for and managed through the IWMP. The overall objective of an IWMP is to ensure that there is integration and optimisation 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 the BWM and outlines the contextual factors and legislative frameworks shaping the formulation of 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 types that are generated in the Municipality, a description of the services that are provided or that are available for the collection, minimization, 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 49 586 in 2011 to 72 972 recorded in 2022. Total number of households increased from 13 088 to 19 216. The increased population puts more pressure with regards to the service delivery expected from the Municipality. The Municipality is currently collecting waste from 12 978 households and all registered indigent households (5 689) are being serviced.

The Municipality has four (4) Waste Disposal Facilities (WDFs) that are managed by the Municipality i.e. Vaalkoppies waste disposal site, Murrayburg waste disposal site, Nelpoort waste disposal site, and Merweville waste disposal site, of which all of them are licensed except Murraysburg.The Vaalkoppies Waste Disposal Facility (WDF) is the only landfill with a weighbridge.; however, it is not in use because the Municipality has no electricity. The waste disposed at the WDF is recorded on volume density estimate, and the Municipality reports the waste volumes to IPWIS.

Waste recycling is limited within the Municipality. Illegal dumping is a challenge, however; the Municipality has a Cleaning and Greening program to conduct clean-up campaigns and awareness campaigns with 156 Expanded Public Works Programme (EPWP) participants on a contract that started on the 1st of March 2023 until 29th February 2024, which is one year contract. Challenges that the Municipality encounters include limited experienced and qualified waste management personnel and waste management resources, such as a specialised waste management fleet, a lack of budgets prioritized and allocated for waste management, low levels of compliance with the conditions of the waste management disposal facility's license, poor infrastructure, and absence of electricity and water supply in the WDF

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 BMW can be summarized as follows:

- Effective and efficient solid waste service delivery
- Promote waste minimisation and recycling
- Improve hazardous and medical waste management
- Improve management and compliance of waste facilities
- Improve waste management information
- Improve waste education and awareness
- Strengthen human and financial resources management
- Improve integrated waste management planning

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 section 9 of this report. It is imperative for the BMW to implement 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.

TABLE OF CONTENTS

EXECUTIVE SUMMARY I

LIST OF FIGURES VI

LIST OF TABLES VIII

ABBREVIATIONS XI

1 INTRODUCTION 1

2 LEGISLATIVE REQUIREMENTS 2

3 INTEGRATED WASTE MANAGEMENT PLANNING PROCESS 16

4 WASTE SITUATION ASSESSMENT 18

4.1 SITUATIONAL ANALYSIS METHODOLOGY 18

4.2 GEOGRAPHICAL AREA 18

4.2.1 Locality 18

4.2.2 Climate 21

4.2.3 Topography 21

4.2.4 Hydrology 21

4.2.5 Geology 22

4.3 DEMOGRAPHICS AND POPULATION GROWTH 23

4.3.1 Employment Status and Economic Performance of Beaufort West Municipality 25

4.3.2 Income Groups 27

4.3.3 Dwelling Types 27

4.3.4 Future Population 27

4.4 WASTE MANAGEMENT SYSTEMS 28

4.4.1 Waste Generation and Characterisation 29

4.4.2 Waste Collection 43

4.4.3 Waste Recycling, Treatment and Disposal 44

4.4.4 Waste Reporting 57

4.4.5 Determining current domestic waste generation per capita. 58

4.4.6 Estimating Future Waste Generation Rates and Quantities 61

4.4.7 Financing of Waste Management 63

4.4.8 Designation of WMO 66

4.4.9 Development and Enforcement of By-Laws 67

4.4.10 Mainstreaming Key Principles of the National Waste Management Strategy 67

4.4.11 Waste Pickers Integration 68

4.4.12 Circular Economy 68

5 GAP AND NEEDS ANALYSIS 69

5.1 WASTE SERVICE DELIVERY 70

5.2 WASTE MINIMISATION, RECYCLING AND RE-USE INITIATIVES 71

5.3 HAZARDOUS AND MEDICAL WASTE MANAGEMENT 74

5.4 WASTE MANAGEMENT FACILITIES 76

5.5 WASTE MANAGEMENT INFORMATION 79

5.6 WASTE EDUCATION AND PUBLIC AWARENESS 80

5.7 HUMAN AND FINANCIAL RESOURCE MANAGEMENT 81

5.8 INTEGRATED WASTE MANAGEMENT PLANNING 82

6 THE NATIONAL WASTE MANAGEMENT STRATEGY (NWMS) 84

6.1 NATIONAL WASTE MANAGEMENT STRATEGY 2020 GOALS 84

6.2 WESTERN CAPE PROVINCIAL INTEGRATED WASTE MANAGEMENT PLAN (PIWMP)..... 84

6.3 GOALS IDENTIFIED FOR THE BWM'S IWMP 85

6.4 ROLES AND RESPONSIBILITIES OF LOCAL GOVERNMENT AS PER THE NWMS 2020 85

7 ALIGNMENT WITH THE NWMS 2020 AND WESTERN CAPE PIWMP GOALS 86

8 SETTING STRATEGIC GOALS, OBJECTIVES, AND TARGETS FOR THE BMW 88

9 IMPLEMENTATION PLAN 100

10 MONITORING AND REVIEW OF THE IWMP 113

11 PUBLIC PARTICIPATION PROCESS 115

12 CONCLUSION 116

13 REFERENCES 118

LIST OF FIGURES

Figure 2-1: Waste Management Hierarchy 5

Figure 3-1: Integrated Waste Management Planning Process. 17

Figure 4-1: Locality Map of BWM Municipality 19

Figure 4-2: Location of the BWM WDFs 20

Figure 4-3: Hydrological Map of Beaufort West Municipality 22

Figure 4-4: Geological Map for Beaufort Wes 23

Figure 4-5: Beaufort West Economic Status (Beaufort West Municipality 2022 Socio-Economic profile) 26

Figure 4-6: Sub-Categories of Waste Generated in BWM. 29

Figure 4-7: Waste Stream Analysis for Murraysburg Town in kg. 32

Figure 4-8: Waste Streams Analysis for Murraysburg Town Residential Area- High-Income .. 33

Figure 4-9: Waste Streams Analysis for Murraysburg Town Residential Area- Low-Income .. 34

Figure 4-10: Waste Streams Analysis for Beaufort West Town- Business Waste 36

Figure 4-11: Waste Stream Analysis for Hospital Hill Residential (High Income) 38

Figure 4-12: Waste Stream Analysis for Prince Valley Residential (Low Income) 40

Figure 4-13: Waste Mass/Waste Type and Waste Mass/Area 42

Figure 4-14: Status of Vaalkoppies WDF 45

Figure 4-15: Status of Murraysburg WDF 48

Figure 4-16: Status of Nelspoort WDF 51

Figure 4-17: Status of Merweville Waste Disposal Facility 53

Figure 4-18: Illegal Dumping Clean-Ups 54

Figure 4-19: Pictures of Awareness Campaigns 55

Figure 4-20: Waste Disposal Tonnage from July 2023-December 2023 58

Figure 4-21: Demographics for BWM (Stats SA, 2022) 59

Figure 4-22: Waste Management Organizational Structure 65

LIST OF TABLES

Table 2-1: Applicable national legal requirements and obligations 3

Table 4-1: Growth and Demographic Profiles 24

Table 4-2: Employment Status of Beaufort West Municipality 25

Table 4-3: Beaufort West Municipality Income Groups (Stats 2011) 27

Table 4-4 Households Dwelling Types (Stats SA 2022:) 27

Table 4-5: BWM Population Growth Projections 28

Table 4-6: BMW's Number of Households Projections (Stats SA,2011/2022) 28

Table 4-7: Waste Streams Analysis for Murraysburg Business 31

Table 4-8: Waste Streams Analysis for Murraysburg Town Residential- High-Income Class . 32

Table 4-9: Waste Streams Analysis for Murraysburg Township-Low-Income 34

Table 4-10: Waste Streams Analysis for Beaufort West Town- Business Waste 35

Table 4-11: Waste Streams Analysis for Hospital Hill Residential Area- High-Income 37

Table 4-12: Waste Streams Analysis for Prince Valley Residential Area- Low-Income 39

Table 4-13: Beaufort Local Municipality Waste Characterisation (DEADP 2017) 41

Table 4-14: Status of Waste Collection in BWM 43

Table 4-15: Waste Management Fleet in BWM 43

Table 4-16: Status of Vaalkoppies Waste Disposal Site 44

Table 4-17: Status of Murraysburg Waste Disposal Site 47

Table 4-18: Status of Nelspoort WDF 49

Table 4-19: Status of Merweville Waste Disposal Site 52

Table 4-4-20: Waste Recycling Companies and their Status 57

Table 4-21: WDF & Period of Reporting (DEADP) 57

Table 4-22: Yearly Estimated Waste Quantities for BWM (Stats SA, 2011/2022) 60

Table 4-23: Estimation of Future Waste Volumes (in 10 Years/2031) Produced In BWM 61

Table 4-24: Estimation of future waste volumes (in 20 years/2041) produced per capita in BWM. 62

Table 4-25: Estimation of future waste volumes (in 30 years/2051) produced per capita in BWM. 62

Table 4-26: Annual Waste Management Budgeting 63

Table 4-27: Organizational and Institutional Matters 66

Table 5-1: Waste service delivery gaps and needs identified. 70

Table 5-2: Waste minimization, recycling and re-use initiatives gaps and needs identified 71

Table 5-3: Hazardous waste gaps and needs identified in BWM. 74

Table 5-4: Waste management facilities gaps and needs identified. 76

Table 5-5: Waste management information gaps and needs identified 79

Table 5-6: Waste education and initiatives gaps and needs 80

Table 5-7: Staff and financial management gaps and needs identified 81

Table 5-8: Integrated waste Management gaps and needs identified 82

Table 8-1: Alignment of BMW goals with the NWMS 2020 and Western Cape PIWMP goals. 86

Table 9-1: Strategic Goals, Targets, Indicators, and Instruments for Implementation 89

Table 10-1: Implementation plan legend 100

Table 10-2: Implementation plan 101

ABBREVIATIONS

Abbreviation	Description
BWM	Beaufort West Municipality
CBA	Central Business Area
DEADP	Department of Environment Affair, Development and Planning
DFFE	Department of Forestry, Fisheries and the Environment
EHPs	Environmental Health Practitioners
EPIP	Environmental Protection and Implementation Programme
EPR	Extended Producer Responsibility
EPWP	Expanded Public Works Programme
GHG	Greenhouse Gas
HDPE	High Density Polyethylene
IDP	Integrated Development Plan
IPWIS	Integrated Pollutant and Waste Information System
IWMP	Integrated Waste Management Plan
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) as amended
NWA	National Water Act (Act No 36 of 1998)

NWMS	National Waste Management Strategy
Abbreviation	Description
PET	Polyethylene terephthalate
PROs	Producer Responsibility Organisations
SA SoER	South African State of Environment Report
SAWIS	South African Waste Information System
SDG	Sustainable Development Goals
WDF	Waste Disposal Facility
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	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.
Department of Environment Affair, Development and Planning	Means the Provincial Department or component responsible for Environmental 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.
Extended Producer Responsibility	Is a strategy to add all of the estimated environmental costs associated with a product throughout the product life cycle to the market price of that product, contemporarily mainly applied in the field of waste management
Producer Responsibility Organisations	Is the enterprise that is delegated with the producer's responsibility to fulfil their Extended Producers responsibility pertaining to collection, proper channelization, and management of E-waste under the provision of E-waste

Word	Definition
	management rules
Environmental Authorisation	Authorisation by a competent authority of a listed activity or specified activity, in terms of this NEMA, and includes a similar authorisation contemplated in a. Specific Environmental Management Act (SEMA).

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; *(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, 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

Word	Definition
	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).
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 objectives of the Waste Act. Organs of the 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.

Word	Definition

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.
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	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 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

Word	Definition
Waste characterisation	The process by which the composition of different waste streams is analysed
Waste Pickers	Someone who collects reusable and recyclable materials from residential and commercial waste bins, landfill sites, and open spaces 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.
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.

Word	Definition
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 a duty 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 BWM as one of the municipalities within Central Karoo District Municipality to develop BWM IWMP.

BWM is a Category B Municipality that covers an area of 21,917 km². BWM is the largest Municipality in terms of population contribution in the Central Karoo District Municipality. The Municipality has 7 wards. The main town is Beaufort West, and the key economic sectors are agriculture, transport and logistics, and tourism. According to Stats 2022, the total population is 72 972, which is the largest population within the district. The Municipality's total households are 19 216 with an average of 3,8 household size.

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

The Municipality's overall waste management challenges include limited experienced and qualified waste management personnel and waste management resources, such as a specialised waste management fleet, a lack of budgets prioritized and allocated for waste management, low levels of compliance with the conditions of the waste management disposal facility's license, poor infrastructure, and absence of electricity and water supply in the WDF. 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). A summary of this alignment 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, and 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: http://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, 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 party. The 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 pay 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.

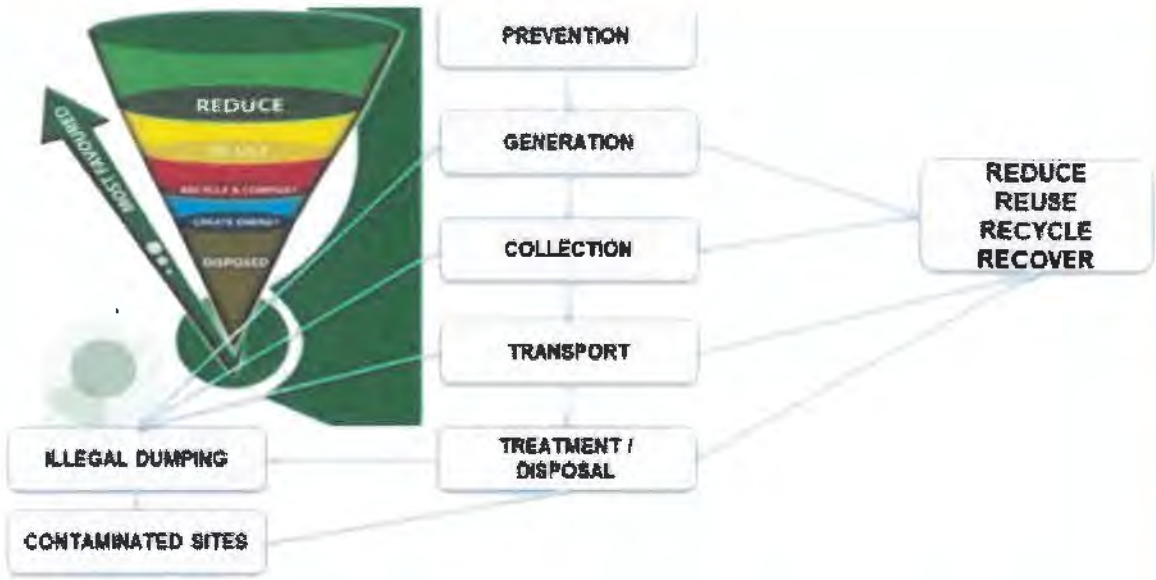


Figure 2-1: Waste Management Hierarchy

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 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)

NEMWA 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 2-2.**

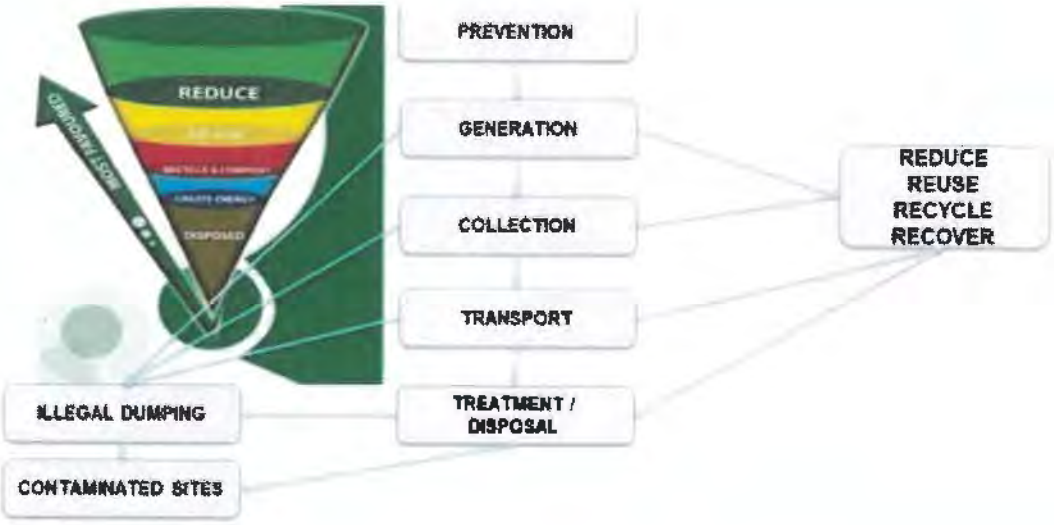


Figure 2-2: Waste Management Hierarchy

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 Act 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 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 is 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, is 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 Bylaws 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 expenditures for 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 the National Treasury (National Treasury, 2011). The strategy aims to reflect the principles that need to be adhered to in solid waste tariff setting and guides 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 collection 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 applies to facilities such as 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 of in 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 a manner that 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 before 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 the 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 provide for the effective management (handling, storage, collection, transportation, treatment, and disposal) of healthcare 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 1000^{m2} and more. Waste facilities with less than 1000^{m2} 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 1000^{m2} 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 the 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 NEMWA.

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.

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

Aims to facilitate informed decision-making by countries regarding the trade in hazardous chemicals

Stockholm Convention 22 May 2001

Aims to protect human health and the environment from persistent organic pollutants

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.

forestry, fisheries & the environment Department: Forestry, Fisheries and the Environment REPUBLIC OF SOUTH AFRICA	**DOCUMENT TITLE:**	**IWMP**	
	DOC NO:	**MC.DFFE.IWMPs.2024**	

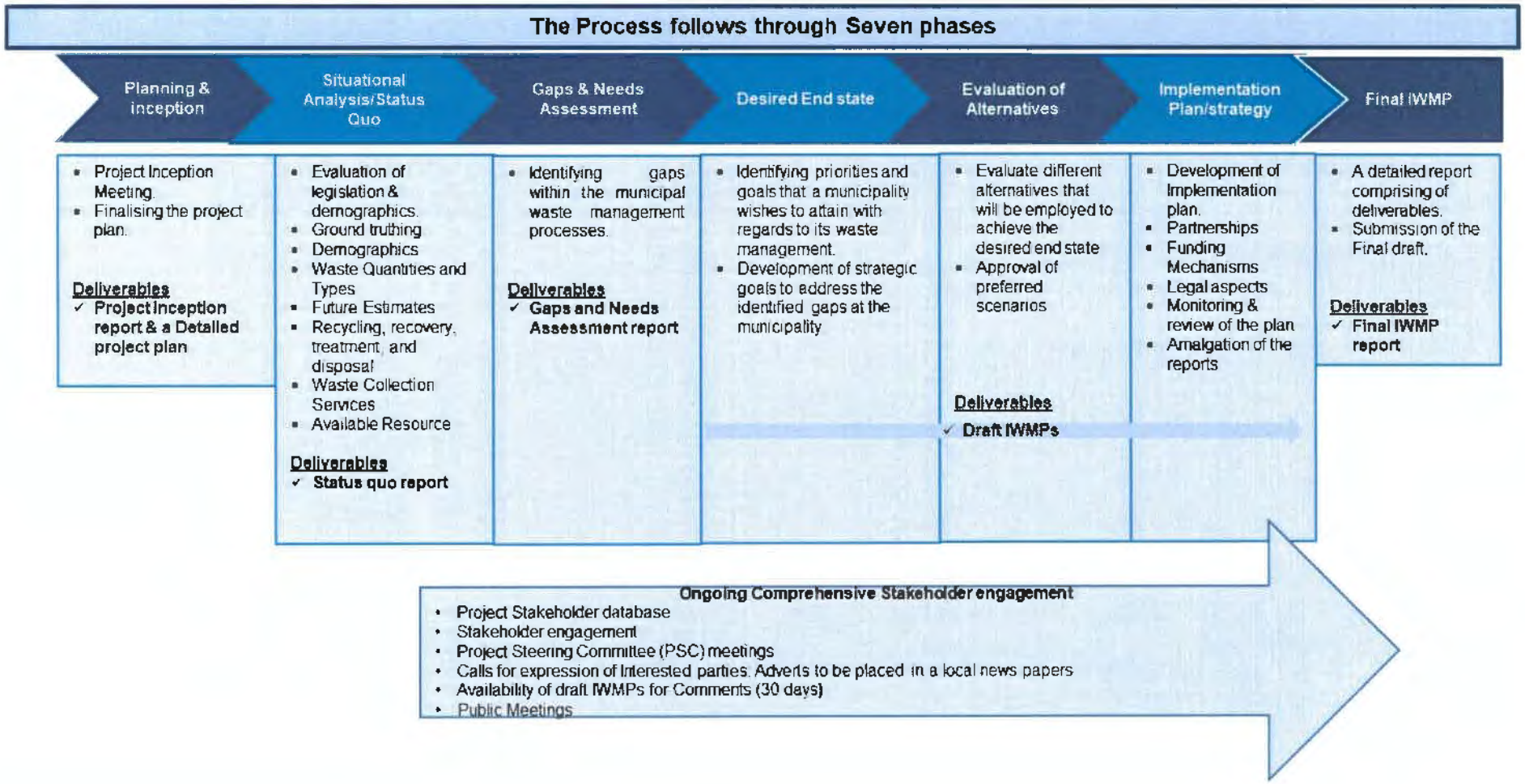


Figure 3-1: Integrated Waste Management Planning Process.

WASTE SITUATION ASSESSMENT

The development of an IWMP includes a situation analysis which entails a description of the population and development profiles of BWM 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 IWMP was collected from the following sources:

- Beaufort West Municipality 5th Generation Integrated Development Plan (2022-2027);
- Department of Environmental Affairs and Development Planning compliance audit reports;
- Western Cape Integrated Waste Management Plan 2023-2027;
- Western Cape IWMP guidelines;
- Beaufort West WDFs Waste Management License;
- Interviews with key stakeholders e.g waste pickers, and Municipal officials;
- Site visits conducted on 30-31 November 2023;
- Stats SA (2011 and 2022) and
- Community Service 2016.

4.2 Geographical Area

This section describes the location and demographics of BWM to provide a comprehensive background of the Municipality.

4.2.1 Locality

BWM is a Category B Municipality located within the Central Karoo District in the Western Cape Province. It is bordered by the Northern Cape to the north and west, Prince Albert to the south,

and the Eastern Cape to the east. BWM is a category B Municipality which covers an area of 21,917 km². The Municipality is predominantly rural with 7 wards. The main town is Beaufort West with a key economic sector being agriculture. According to Stats 2022, the total population is 72 972, which is the largest population within the CKDM. BWM's total household is 19 216 with an average of 3,8 household size. **Figure 4-1** shows the location of the BWM and **Figure 4-2** shows the location of the WDFs within the BWM.

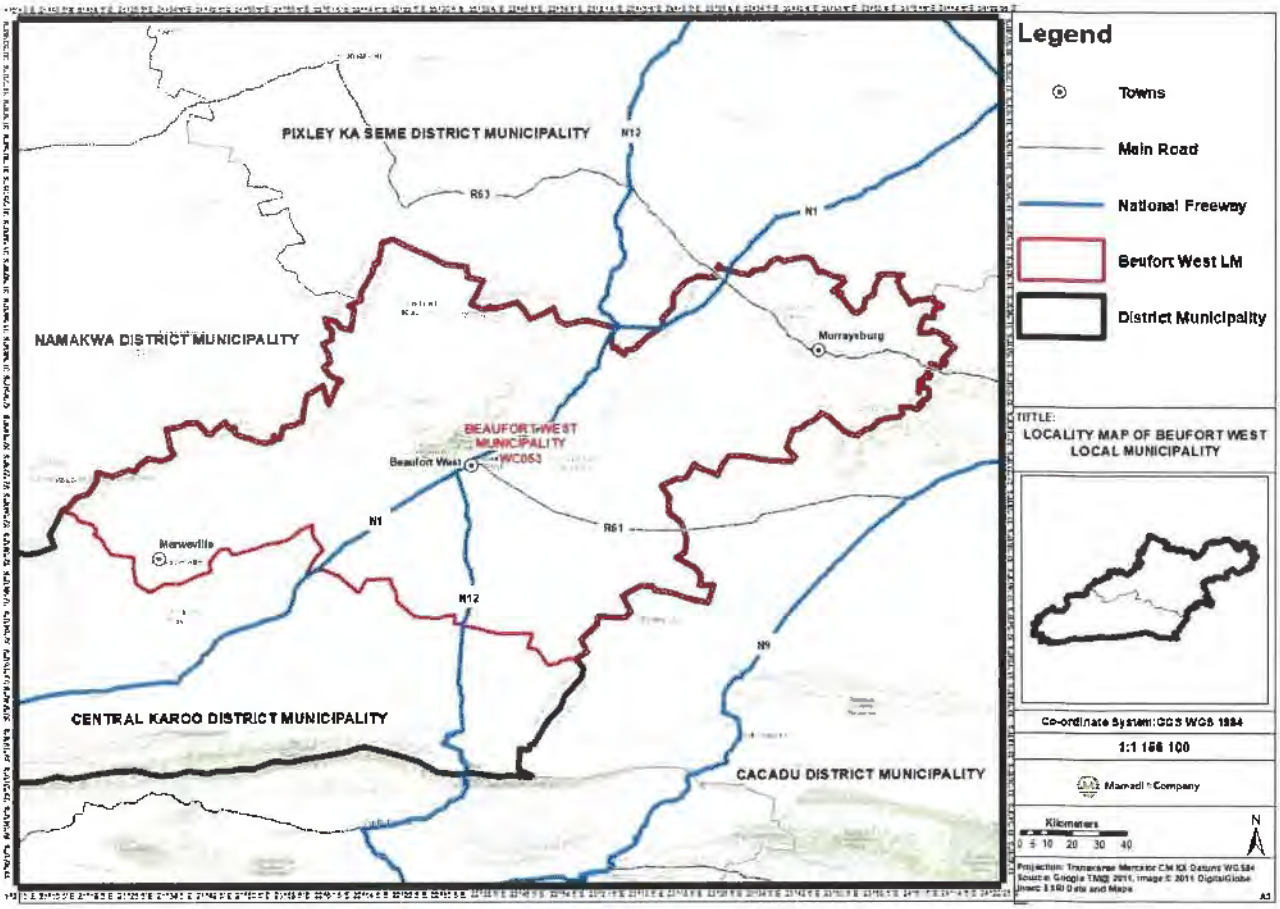


Figure 4-1: Locality Map of BWM Municipality

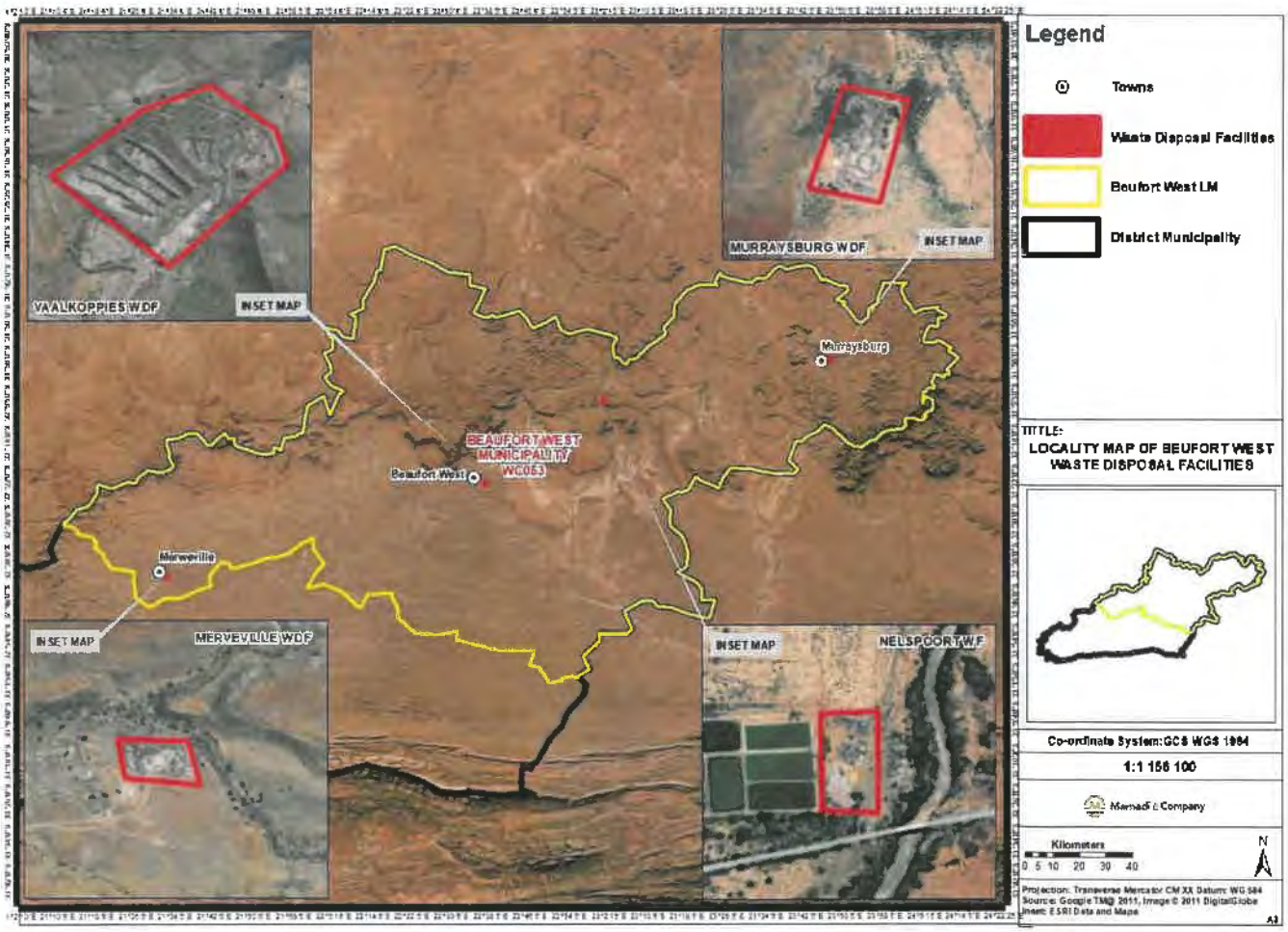


Figure 4-2: Location of the BWM WDFs

4.2.2 Climate

In Beaufort West, the summers are hot; the winters are cold, dry, and windy; and it is mostly clear year-round. Over the year, the temperature typically varies from 3°c to 32°c and is rarely below -0.55°c or above 37°c. Based on the beach/pool score, the best time of year to visit Beaufort West for hot-weather activities is from mid-December to mid-March. The hot season lasts for three to four months, from December 2 to March 15, with an average daily high temperature above 30°c. The hottest month of the year in Beaufort West is January, with an average high of 33°c and a low of 17°c. The cool season lasts for three months, from May 22 to August 25, with an average daily high temperature below 21°c. The coldest month of the year in Beaufort West is July, with an average low of 3°c and a high of 18°c.

4.2.3 Topography

The geographical coordinates of Beaufort West are -32.357 degrees latitude, 22.583 degrees longitude, and 2,785 ft elevation. The topography within 3 Km of Beaufort West contains only modest variations in elevation, with a maximum elevation change of 85 meters and an average elevation above sea level of 851 meters. Within 10 miles contains only modest variations in elevation 1 Km. Within 80 Km also contains extreme variations in elevation 1 Km. The area within 3 Km of Beaufort West is covered by artificial surfaces (52%) and shrubs (43%), within 10 miles by shrubs (90%), and within 80 Km by shrubs (89%) and bare soil (11%).

4.2.4 Hydrology

Figure 4-3 shows the distribution of the rivers, tributaries, and wetlands through the study area. Beaufort West lies in a hollow between two hills and is flanked by the Gamka River in the west and the Kuils River in the east. Both rivers, which became semi-perennial because of urbanisation, flow in a generally north-to-south direction.

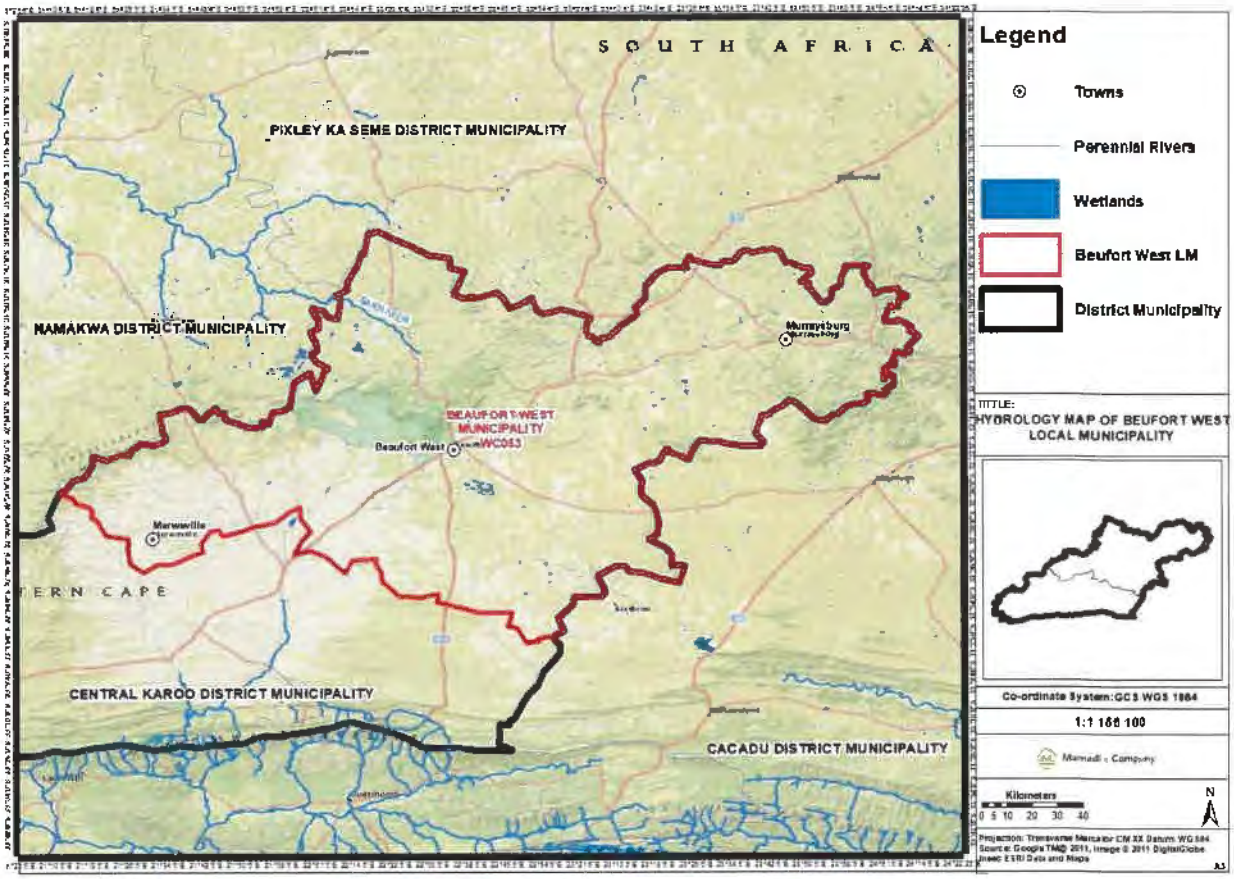


Figure 4-3: Hydrological Map of Beaufort West Municipality

4.2.5 Geology

Beaufort West is underlain by mudstone and sandstone of the Teekloof formation which forms part of the Beaufort Group and is locally covered by Quaternary age alluvium deposits towards the south. The area does host several dolerite dykes (intrusive igneous rocks). **Figure 4-4** below illustrate the geological features of Beaufort West.

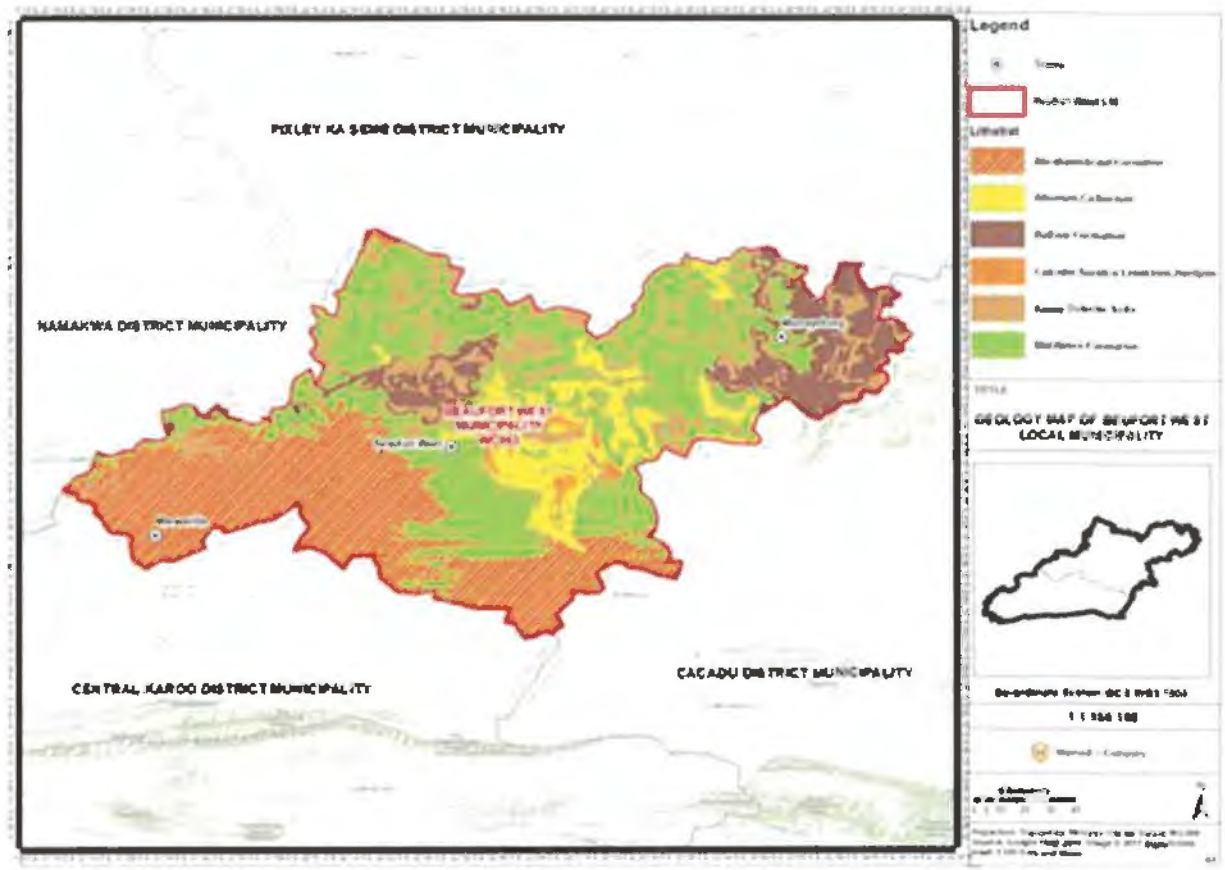


Figure 4-4: Geological Map for Beaufort Wes

4.3 Demographics and Population Growth

This section highlights the socio-economic aspects such as population, education, employment, and income levels at BWM. 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. highdensity 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 emphasize 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 details the demographic profiles for BWM.

Table 4-1: Growth and Demographic Profiles

Population Growth		
Municipality Total Population (Stats SA, Census 2022)	72 972	
Estimated Population Growth rate (%) (Stats SA, Census 2022)	4.29%	
Municipality Total Population (Stats SA, Census 2011)	49 586	
Estimated Population Growth rate (%) (Stats SA, Census 2011)	1.21%	
Municipality Total Population (Community Survey 2016)	51 080	
Demographic Profiles		
Age		
Young	27,7%	20 213
Middle Age/ Working Age	65,8%	48 016
Old Age	6,5%	4 743
Gender		
Male	47,8%	34 853

Female	52,2%	38 119
Education		
No Schooling	5,2%	3 795
Tertiary	65,8%	17 184
Population Groups		
Black African	11 447	15,7%
Coloured	56 455	77,5%
Indian/Asian	274	0,4%
White	3 612	5,0%
Other	1 021	1,4%

4.3.1 Employment Status and Economic Performance of Beaufort West Municipality

Beaufort West's total employed in 2020 amounted to 11 477 workers, of which 9 086 (79.2%) are employed in the formal sector and 2 391 (20.8%) 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 (40.4%) and lowskilled (35.6%) workers. The skilled category only contributed 24.0% to total formal employment. The skilled category grew at a pace of 1.3% per annum; semi-skilled and lowskilled categories shrank by 0.2 % and 0.9 % between 2016 to 2020. The growth in the 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 municipal area **Table 4.2 and Figure 4.5** detail the 2011 and 2020 employment status based on Stats 2011 and Socio-Economic profile 2022.

Table 4-2: Employment Status of Beaufort West Municipality

Employment Status	Stats 2011	Socio Economic Profile 2022
Employed	11 012	11 477
Unemployed	3 772	19 674

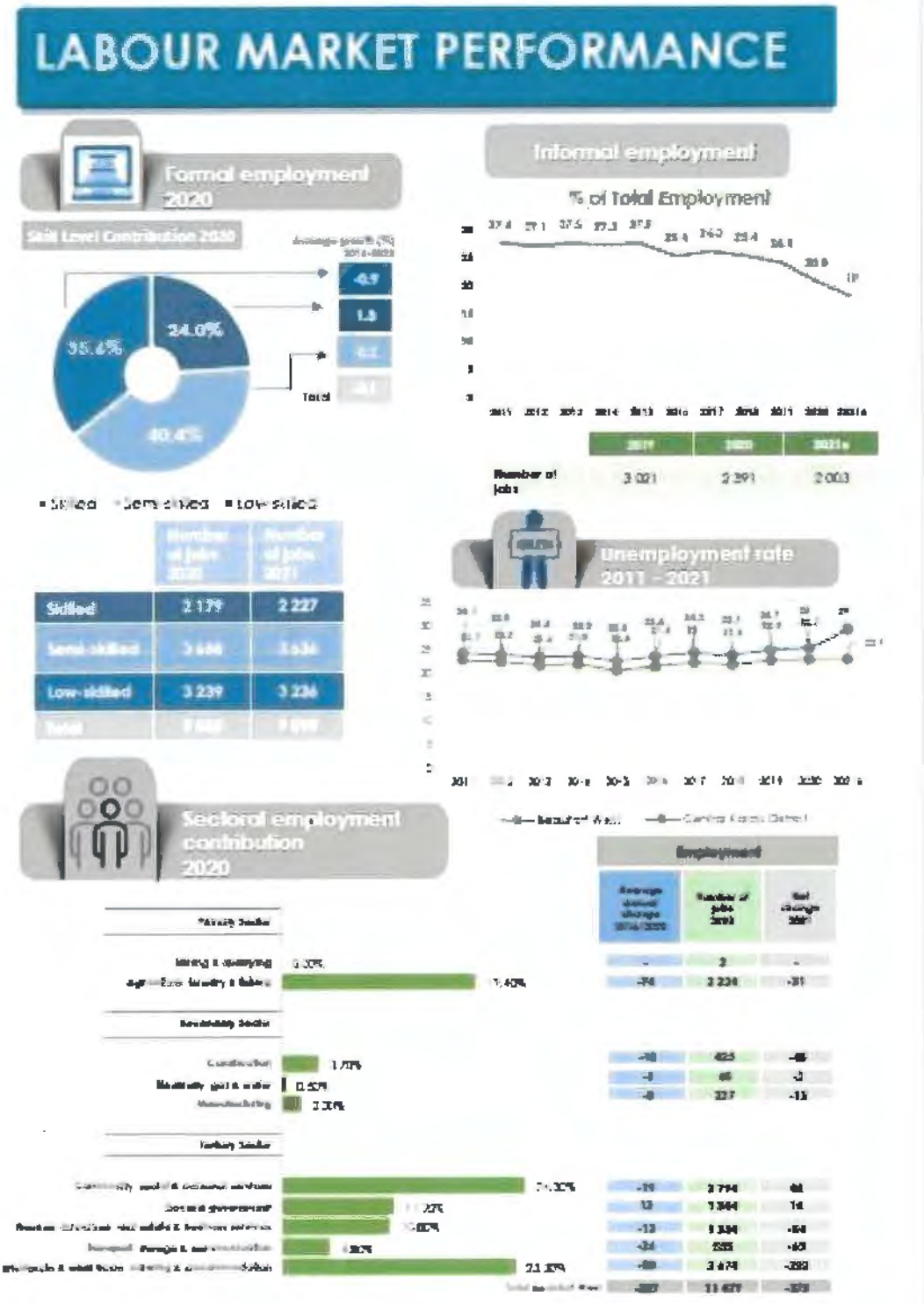

LABOUR MARKET PERFORMANCE
Formal employment 2020
Skill Level Contribution 2020
35.6%
24.0%
40.4%
Total
Skilled
Semi-skilled
Low-skilled
Informal employment
% of Total Employment
Number of jobs
3 021
2 391
2 003
Unemployment rate 2011 - 2021
Skilled
2 179
2 227
Low-skilled
3 239
3 236
Sectoral employment contribution 2020
Employment

Figure 4-5: Beaufort West Economic Status (Beaufort West Municipality 2022 SocioEconomic 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. BWM has 79.30% of its households falling within the low-income level and only about 11% in the high-income level. **Table 4.3** details the development profile of the BMW Municipality.

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

Income Levels	Households	%
Low income (No income – R76 400)	10 627	79
Middle income (R76 401 – R614 400)	22 627	20
High income (R614 001 – R2 457 601 or more)	147	1.1

4.3.3 Dwelling Types

According to Stats SA 2022, BWM has 19 216 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	19 104	99.4%
Traditional dwelling	35	0.2%
Informal dwelling	70	0.4%
Other	7	0.0%

4.3.4 Future Population

If the current population of BWM grows at a constant rate of 4.29% per decade (Statistics SA, 2022), over five years, the population of this Municipality is estimated to be 90 025.56 persons as per the calculation below:

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

$Pop_{future} = 72\ 972\ ((1+(0.0429))^5$

$= 72\ 972\ (1.2337)$

$= 90\ 025.56$

Calculation Index :

Pop_{future}- Future Population

$Pop_{present}$- Present 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 BWM in **Table 4-5** below.

Table 4-5: BWM Population Growth Projections

Census (2022)	Estimated (2032)	Estimated (2042)	Estimated (2052)
72 972	111 063	169 047	257 299

With a population estimate of 111,063 people in 2032, it is evident that an additional 38 091 people will be generating waste. This population growth will ultimately increase the number of households within BWM requiring waste management services as projected in **Table 4-6** below.

Table 4-6: BMW's Number of Households Projections (Stats SA,2011/2022)

Census 2011 Statistics:	Census 2022 Statistics:	The HH increased in 10yrs
13 088	19 216	6 128
2032	2042	2052
(HH in 10 years)	**(HH in 20 years)**	**(HH in 30 years)**
29 247	44 516	67 156

Note: Baseline year used for estimates is 2022

4.4 Waste Management Systems

Existing waste management systems within the BWM have been explored to determine the quantities and 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 BWM 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, and radioactive waste.
- **Hazardous waste:** Includes waste such as motor oils, sewage sludge, electronic waste and waste from funeral parlours.
- **Organic waste-** This includes garden waste, fruits and vegetables.

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

Figure 4-6: Sub-Categories of Waste Generated in BWM.

4.4.1.1 Waste Characterisation

The waste characterisation was conducted on the 30th and 31st of October 2023 at Murraysburg and Vaalkoppies waste disposal sites respectively.

Waste samples were collected from Murraysburg town business, Murraysburg town residential (high-income class) Murraysburg township (middle-income class) for waste characterisation conducted at Murraysburg WDF. 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:

- The Municipality reserved samples (waste refuse bags) which were supposed to be a minimum of 100kg from Murraysburg town business, Murraysburg town residential and Murraysburg township;
- 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 (kg) using the scale.
- It must be noted that the sample size depended on samples that the Municipality reserved, and 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 waste stream for Murraysburg town area comprised ±12 categories, as detailed in **Table 4.7** and **Figure 4-7** with most of the waste being cardboard and organic waste. **Table 4-7: Waste Streams Analysis for Murraysburg Business**

Waste Stream	Mass (kg)	Annual Mass Estimate (kg)	Annual Mass Estimate (tonnes)	Percentage (%)
HDPE	1,02	12,24	0,01224	3
PET	3,065	36,78	0,03678	9
Mixed Plastic	2,87	34,44	0,03444	8
Cardboards	11,8375	142,05	0,14205	34
Organic waste (food waste)	6,195	74,34	0,07434	18
Polystyrene	0,02	0,24	0,00024	0
Aluminum Foil	0,03	0,36	0,00036	0
Clear Plastics	0,05	0,6	0,0006	0
Textile	1,055	12,66	0,01266	3
Diapers	5,19	62,28	0,06228	15
Bottles	3,455	41,46	0,04146	10
TOTAL	**34,7875**	**417,45**	**0,41745**	**100**

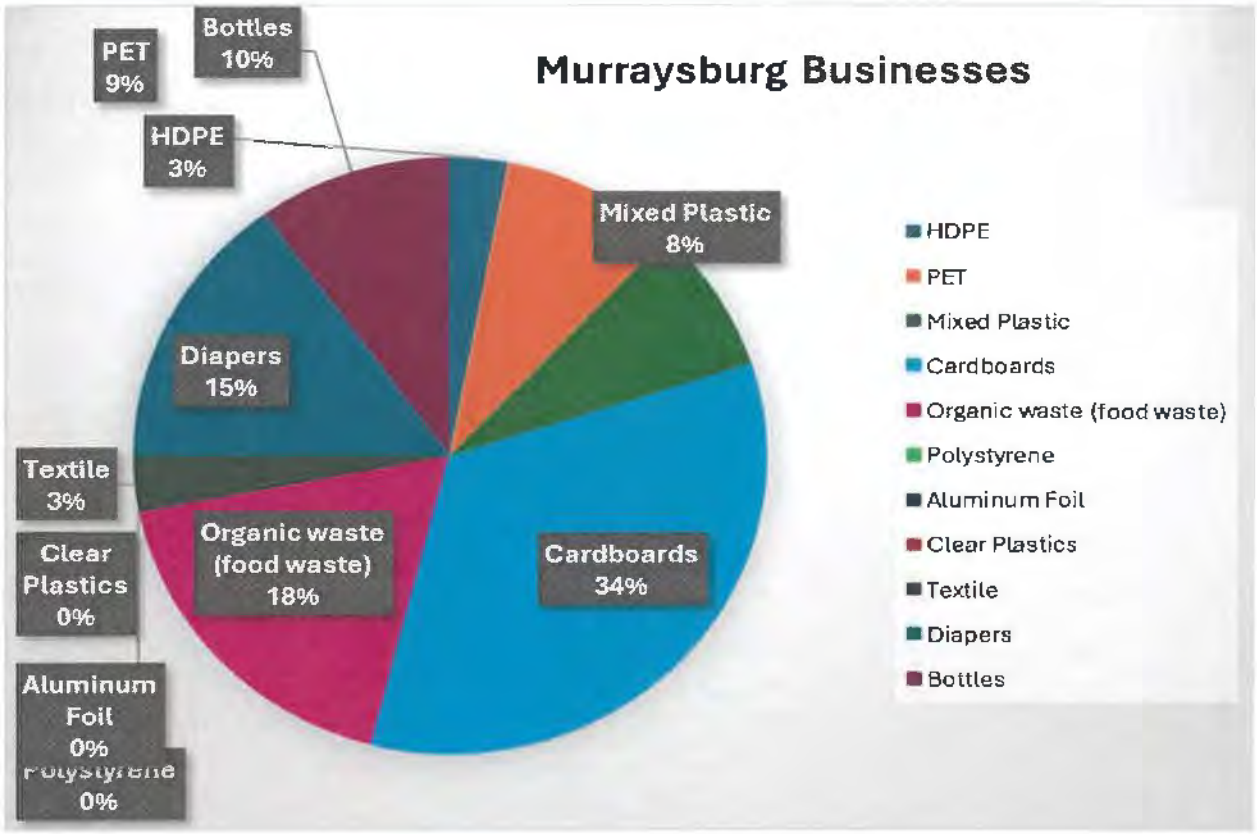


Figure 4-7: Waste Stream Analysis for Murraysburg Town in kg.

The waste stream for Murraysburg town area comprised ±12 categories, as detailed in **Table 4-8** and **Figure 4-8** with most of the waste being cardboard and metal respectively.

Table 4-8: Waste Streams Analysis for Murraysburg Town Residential- High-Income Class

Waste Stream	Mass (kg)	Annual Mass Estimate (kg)	Annual Mass Estimate (tonnes)	Percentage (%)
HDPE	1.02	12.24	0.01224	1.95
PET	3.065	36.78	0.03678	5.86
Mixed Plastic	2.87	34.44	0.03444	5.49
Metal	9.25	111	0.111	17.69
Cardboard	11.83	141.96	0.14196	22.62
Organic waste (food waste)	6.195	74.34	0.07434	11.85

polystyrene	0.12	1.44	0.00144	0.23
Aluminum Cans	4.6	55.2	0.0552	8.80
Clear plastic	0.15	1.8	0.0018	0.29
White Paper	3.5	42	0.042	6.69
Glass	3.455	41.46	0.04146	6.61
Textile	1.055	12.66	0.01266	2.02
Nappies	5.19	62.28	0.06228	9.92
TOTAL	**52.3**	**627.6**	**0.6276**	**100**

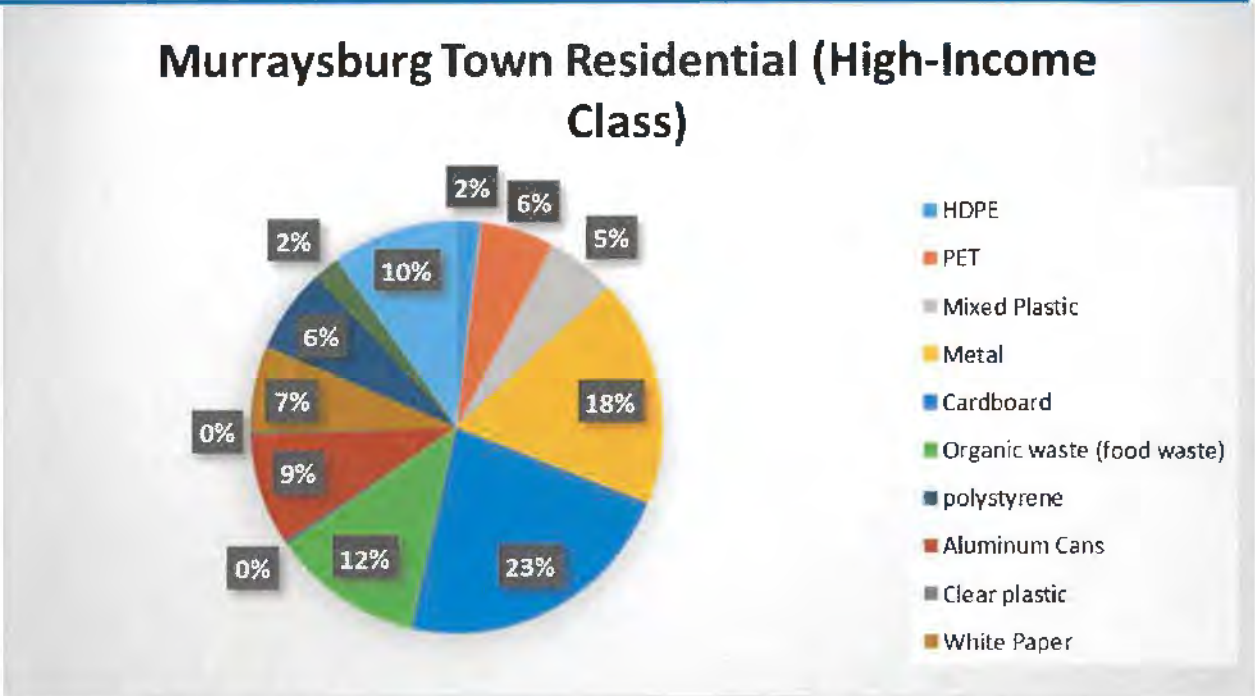


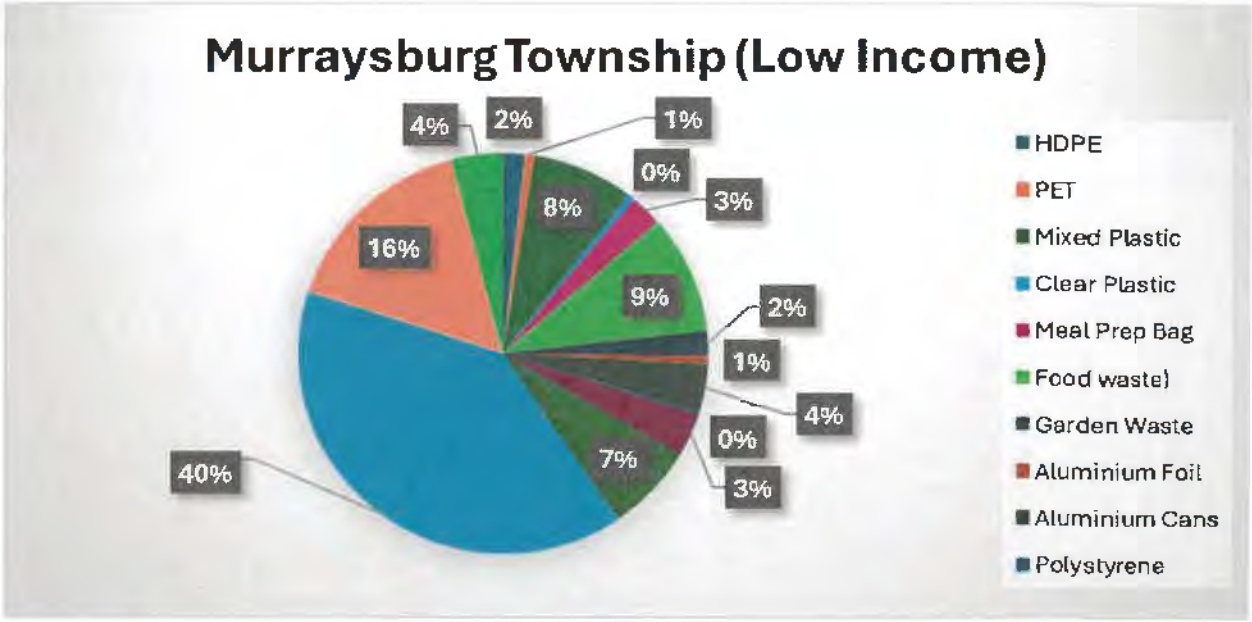
Figure 4-8: Waste Streams Analysis for Murraysburg Town Residential Area- HighIncome

The waste stream for Murraysburg town area comprised ±12 categories, as detailed in **Table 4-9** and **Figure 4-9** with most of the waste being cardboard and metal respectively.

Table 4-9: Waste Streams Analysis for Murraysburg Township-Low-Income

Waste Stream	Mass (kg)	Annual Mass Estimate (kg)	Annual Mass Estimate (tonnes)	Percentage (%)
HDPE	0,505	6,0600	0,0061	2,16
PET	0,205	2,4600	0,0025	0,88
Mixed Plastic	2,357	28,2840	0,0283	10,08
Clear Plastic	0,14	1,6800	0,0017	0,60
Meal Prep Bag	0,775	9,3000	0,0093	3,31
Organic waste (food waste)	2,79	33,4800	0,0335	11,93
Garden Waste	0,59	7,0800	0,0071	2,52
Aluminium Foil	0,2	2,4000	0,0024	0,85
Aluminium Cans	1,105	13,2600	0,0133	4,72
Polystyrene	0,065	0,78	0,0008	0,28
White paper	1,04	12,48	0,0125	4,45
Glass bottles	2,045	24,54	0,0245	8,74
Diapers	22,915	274,98	0,2750	49,48
Textile	9,177	110,12	0,1101	19,82
Glass	2,399	28,788	0,028788	5,18
TOTAL	**46,308**	**555,6960**	**0,5557**	**100,00**

Figure 4-9: Waste Streams Analysis for Murraysburg Town Residential Area- LowIncome



The waste stream for Beaufort West town comprised ±15 categories as detailed in **Table 4-10 and Figure 4-10** with most of the waste being glass bottles and cardboard respectively. **Table 4-10: Waste Streams Analysis for Beaufort West Town- Business Waste**

Waste Stream	Mass (kg)	Annual Mass Estimate (kg)	Annual Mass Estimate (tonnes)	Percentage (%)
Organic waste (food waste)	0,85	10,2	0,0102	1
Polystyrene	0,08	0,96	0,00096	0
Cardboards	10,985	131,82	0,13182	19
PET	7,13	85,56	0,08556	12
Clear Plastic	2,095	25,14	0,02514	4
Mixed Plastics	6,285	75,42	0,07542	11
Aluminium Foil	0,99	11,88	0,01188	2
LDPE	4,66	55,92	0,05592	8
Newspapers	0,31	3,72	0,00372	1
Garden Waste	2,855	34,26	0,03426	5
White Paper	2.09	12,48	0,01248	2
Glass Bottles	18,3	219,6	0,2196	31

HDPE	1,695	20,34	0,02034	3
Aluminium Cans	0,075	0,9	0,0009	0
TOTAL	**58,4**	**700,8**	**0,7008**	**100**

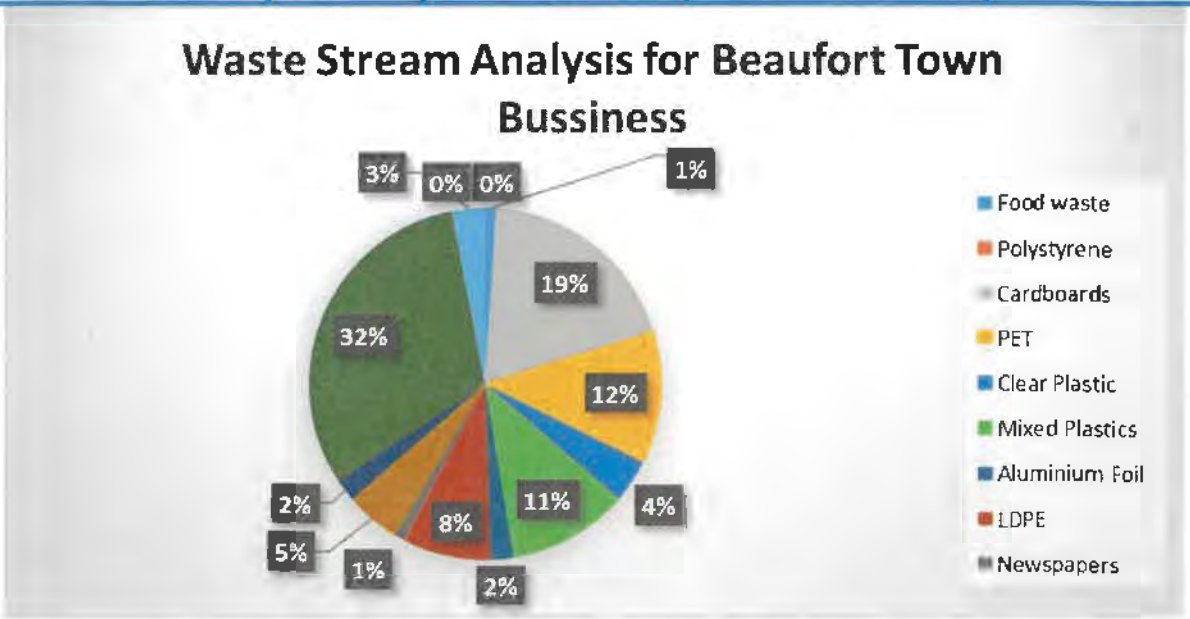


Figure 4-10: Waste Streams Analysis for Beaufort West Town- Business Waste

The waste characterisation was also conducted at Vaalkoppies WDF on 31st October 2023 for Beaufort West town, Hospital Hill (high income) and Prince Valley (low income). The waste stream for Hospital Hill comprised of ±15 categories as detailed in **Table 4-11 and Figure 4-11** with most of the waste being glass bottles and cardboard respectively.

Table 4-11: Waste Streams Analysis for Hospital Hill Residential Area- High-Income

Waste Stream	Mass (kg)	Annual Mass Estimate (kg)	Annual Mass Estimate (tonnes)	Percentage (%)
Glass Bottles	5,298	63,576	0,063576	25
Mixed Waste	0,69	8,28	0,00828	3
Diapers	0,04	0,48	0,00048	0
Newspapers	0,05	0,6	0,0006	0
Textile	0,035	0,42	0,00042	0
Aluminium Foil	0,06	0,72	0,00072	0
Organic waste (food waste)	6,578	78,936	0,078936	32
Aluminium Cans	0,26	3,12	0,00312	1
Polystyrene	0,3	3,6	0,0036	1
LDPE	0,065	0,78	0,00078	0
Clear Plastic	0,02	0,24	0,00024	0
Mixed Plastic	1,36	16,32	0,01632	7
PET	0,97	11,64	0,01164	5
HD	2,685	32,22	0,03222	13
Cardboards	2,075	24,9	0,0249	10
TOTAL	**20,786**	**249,432**	**0,249432**	**100**

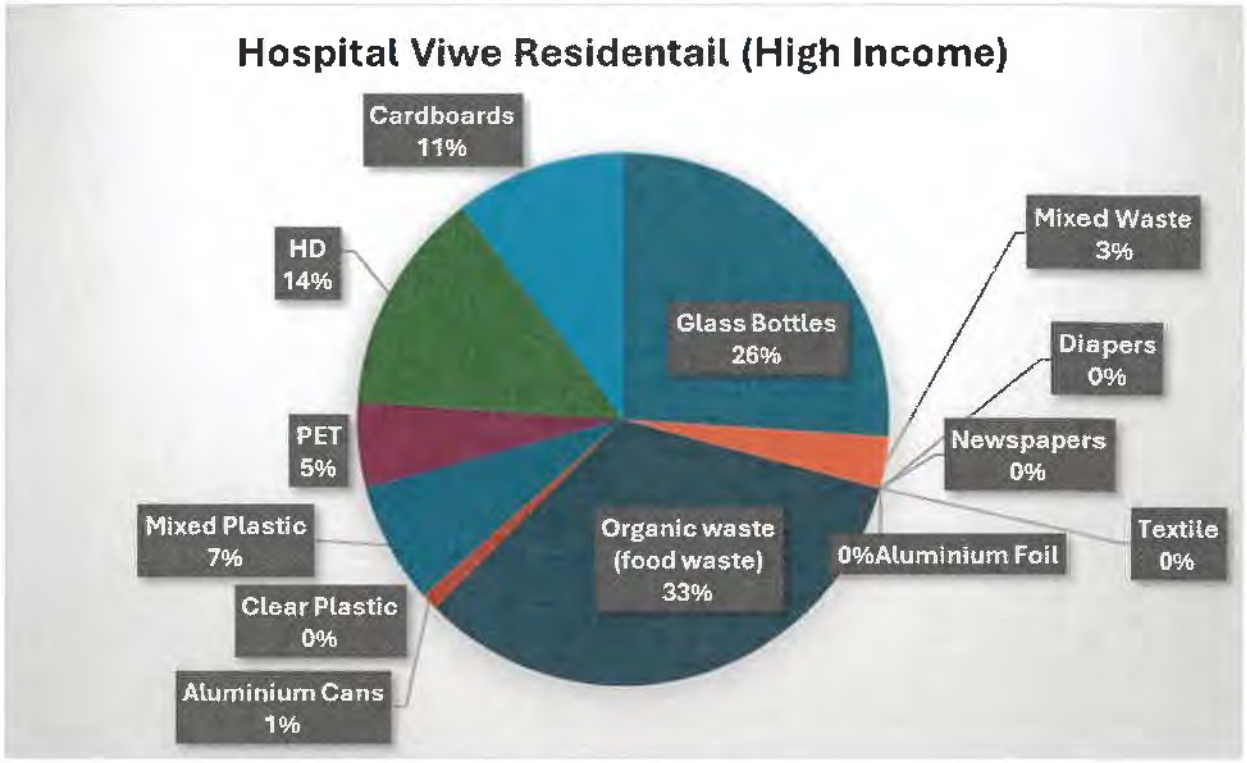


Figure 4-11: Waste Stream Analysis for Hospital Hill Residential (High Income)

The waste stream for Prince Valley comprised of ±15 categories as detailed in **Table 4-12 and Figure 4-12 with** most of the waste being glass bottles and cardboard respectively.

Table 4-12: Waste Streams Analysis for Prince Valley Residential Area- Low-Income

Waste Stream	Mass (kg)	Annual Mass Estimate (kg)	Annual Mass Estimate (tonnes)	Percentage (%)
Food waste	7.81	93.6720	0.0937	13'08
PET	13,535	162,4200	0,1624	22,67
Textile	4,6	55,2000	0,0552	7,71
Mixed Plastic	2,335	28,0200	0,0280	3,91
Clear Plastic	1,97	23,6400	0,0236	3,30
Diapers	2,26	27,1200	0,0271	3,79
Polystyrene	0,63	7,5600	0,0076	1,06
Cardboard	5,24	62,8800	0,0629	8,78

Glass bottles	11.67	140.04	0.1400	19.55
HDPE	0,665	7,98	0,0080	1,11
Newspapers	1,43	17,16	0,0172	2,40
LDPE	0,705	8,46	0,0085	1,18
Aluminium foil	0,425	5,1	0,0051	0,71
Aluminium cans	7,162	85,944	0,085944	12,00
TOTAL	**61,123**	**716,3160**	**0,7163**	**100,00**

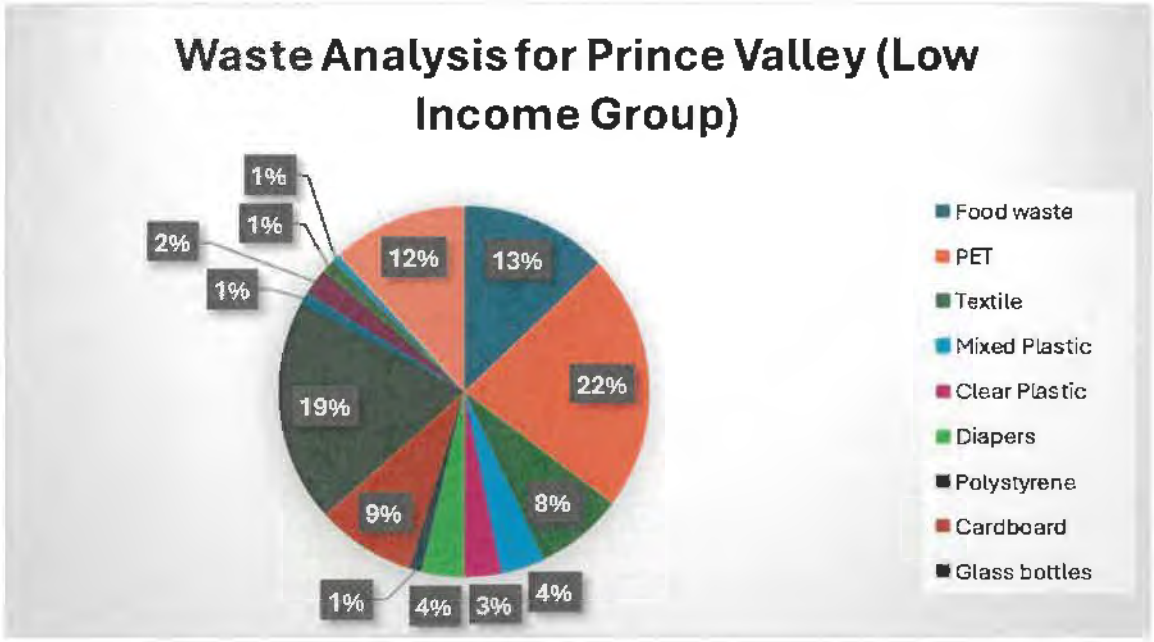


Figure 4-12: Waste Stream Analysis for Prince Valley Residential (Low Income)

In September 2017 an in-depth waste characterisation study was conducted for BMW by DEADP. A representative sample was selected from different locations i.e. Prince Valley, Mandlenkosi, Rustdene, Toekomrus, Newlands, Barakke, Business, Lande, Falatse, Essopville, Lande and Hospital. A total number of four hundred forty-five (445) bags were analysed. The waste streams contained plastic, cardboard, metals, food waste, green waste, household hazardous waste, human hygiene waste. Food waste (23%) and paper (15%) formed most of the waste collected while household hazardous waste and metals were the least 3%. Both studies show that most of the waste disposed at the WDF are recyclable materials. **Table 4-13 and Figure 4-9** below detail the results of the waste characterisation conducted for BMW.

Table 4-13 Beaufort Local

Municipality Waste Characterisation (DEADP 2017)

Address of origin	Total # of bags analysed per area	Unopened mass (kg)	Plastic (soft)	Plastic (dense)	Paper	Cardboard	Glass	Metals	Food waste	Green waste	Household Hazardous waste	Human Hygiene waste	Other	Total	% mass/ area
Rustdene	78	285.4	21.8	25.1	28.1	25.8	27.0	8.3	59.7	31.4	16.8	20.0	21.8	285.9	19
Toekomrus	15	56.96	5.25	7.48	6.12	4.1	4.12	1.58	16.78	1.64	2.04	5.18	1.66	55.95	4
Newlands	23	93.4	4.92	8.04	5.98	6.58	3.42	2.48	38.52	5.38	1.9	4.2	9.42	90.84	6
Barakke	8	37.18	1.28	2.46	6	1.16	2.7	0.94	10.52	0	1.94	8.7	1.06	36.76	2
Business	18	41.85	4.88	4.04	16.56	4.73	2.06	1.1	1.08	3.1	1.54	1.04	1.58	41.71	3
Essopville	19	68.53	5.56	8.06	3.14	8.46075	5.5	1.26	24.7	2.84	1.36	5.62	1.2	67.70075	5
Falatse	28	111.98	5.32	8.18	6.42	10.4	5.46	3.98	15.6	23.52	2.43	22.98	5.26	109.55	7
Lande	37	83.5	6.26	10.22	18.28	12.9	9.26	4.07	5.78	7.46	1.36	3.24	4.48	83.31	6
Hospital	63	199.45	7.6	10.54	81.94	14.28	12	4.32	27.52	26.28	6.7	2.34	4.42	197.94	13
Prince Valley	70	320	17.94	22.49	27.74	22.54	26.22	6.36	96.16	36.68	6.91	39.07	14.77	316.88	21
Mandlenkosi	86	208.04	8.4	16.29	31.4	16.94	14.78	4.8	50.12	44.4	2.05	7.46	13.06	209.7	14
Total	**445**	**1506**	**89**	**123**	**232**	**128**	**112**	**39**	**346**	**183**	**45**	**120**	**79**	**1496**	**100**
% MASS/ WASTE TYPE			**6**	**8**	**15**	**9**	**8**	**3**	**23**	**12**	**3**	**8**	**5**	**100**	

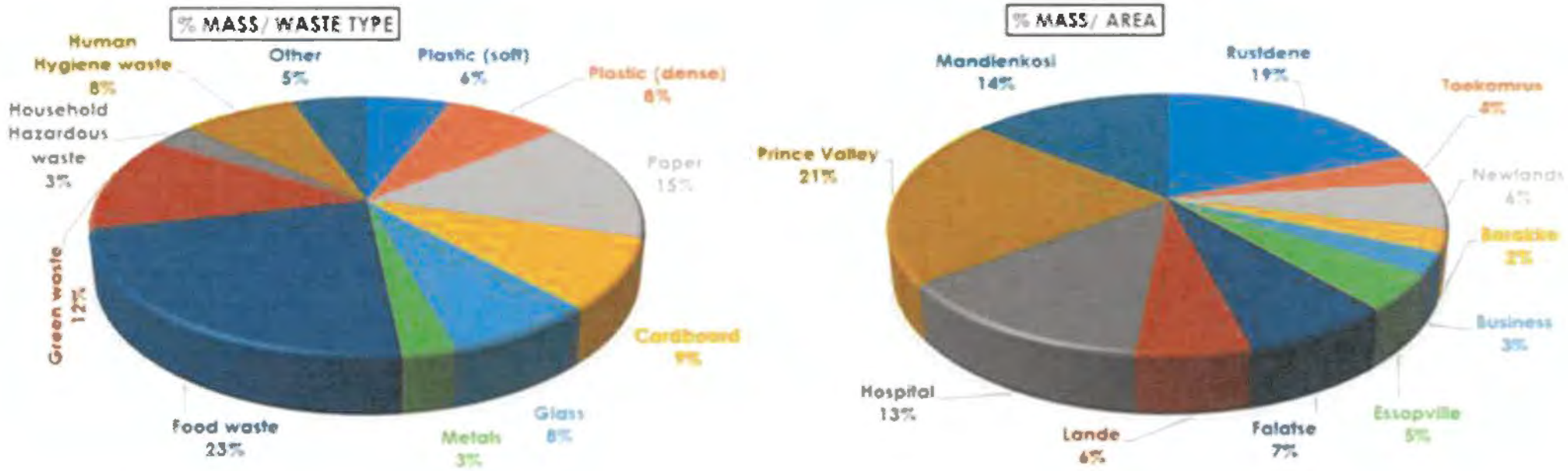


Figure 4-13: Waste Mass/Waste Type and Waste Mass/Area

4.4.2 Waste Collection

According 2022/2027 IDP, the Municipality has 12 978 households, and all receive weekly kerbside waste collection in 85 litre refuse bins or refuse bags. The Municipality has 5 689 registered indigent households, and all receive free basic waste collection services.

Commercial waste is collected from all businesses in skip bins once a week and upon request. Refuse from nearby farms is collected once a week or owners take it to the WDF. **Table 4-14** below are details of the status of waste collection in BWM.

Table 4-14: Status of Waste Collection in BWM

Beaufort West Municipality	
Total Number of Households (BWM)	12 978
Serviced Households	12 978
Number of Indigent Households	5 689
Serviced Indigent Households	5 689

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 has one compactor truck and one Tipper which have not been operational for over three years due to mechanical issues and budget constraints to fix them. **Table 4-15** below are details of the fleet that is currently available to render waste management services within BWM.

Table 4-15: Waste Management Fleet in BWM

Type of Vehicles	Year and Model	Status
Nissan UD Compactor truck	2010 CZ 3484	Good
Nissan Compactor truck	2019 CZ 2962	Fair
Nissan Compactor truck	2016 CZ 3697	Fair

Nissan Compactor truck	2022 CZ 5094	Good

4.4.3 Waste Recycling, Treatment and Disposal

4.4.3.1 Status of Waste Disposal Facilities

The Municipality has four (4) operational WDFs namely:

- Vaalkoppies WDF;
- Murraysburg WDF;
- Nelspoort WDF and
- Merweville WDF.

The status of the Vaalkoppies WDF is detailed in **Table 4-16 and Figure 4-14.**

Table 4-16: Status of Vaalkoppies Waste Disposal Site

Position of site:	(Co-ordinates: 32°22'35,36"S and 22°37'1.17" E). The site is located at the remaining extent of farm185, District of Beaufort West
Permit/License:	16/2/7/J232/D18/Z1/P442.
Year issued:	2000
Classification of the site:	G:C: B /Class B
Type of operation (end–tip, trench, cell):	Cell
Estimated size of site:	69 055 m^2
The estimated remaining life of the site:	Unknown
Separation of fresh and contaminated water:	None
Groundwater monitoring:	None
Volumes per day, week, or month:	366.6300 (Municipal), 58.6200 (Commercial), 53.4400 (Organic)
Is cover material available?	No
Is the drainage sufficient?	No
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:	None (Tipper truck and front- End-loader hired when required and depending on availability of budget)
Operating hours:	08H00-16H15
Site facilities, i.e. ablutions, guard house:	Yes
Weighbridge	Yes, however, is not operational
Reporting on IPWIS	Yes
Estimating cost for closure:	Unknown
Savings plan for closure:	None

Figure 4-14: Status of Vaalkoppies WDF

Based on observations and interviews conducted during ground truthing, the following waste management challenges for Vaalkoppies waste disposal site

- The signage is wrongly written;

- Poor management of the facility due to lack of equipment;
- The weighbridge is not working due to the unavailability of tariffs for waste disposal and the issue of electricity;
- No compaction of waste due to lack of equipment;
- Lack of permanent staff such as WDF operators, general workers and administration support responsible for the maintenance of the facility;
- No formal agreement between waste pickers and recycling companies at the facility;
- Burning of waste inside and outside the facility;
- Groundwater monitoring is not conducted;
- Internal audits are not conducted;
- Waste is dumped by public or private companies outside the site (mostly after hours and on weekends / public holidays); and
- Disposal of abattoir waste on site

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

- There is no control over what is disposed of and how it is disposed of;
- No hazardous waste is allowed in the facility, however, waste loads were checked;
- Abattoir waste was disposed of at the facility. The Norms and Standards prohibit the disposal of waste having more than 40% moisture content;
- No organic waste diversion plan;
- Non-compliance with permit conditions are not reported;
- Unauthorised individuals were found living on and around the facility;
- Significant volumes of waste were disposed of in the buffer zone, instead of at the site;
- No control of runoff water from the facility;
- The facility might be close to the maximum height,
- A noticed board did not align with the condition of the license;
- Waste was not being compacted, nor covered;
- The complaints register was not evident;
- Windblown litter was observed outside of the facility;
- The emergency response plan was not being implemented;
- The airspace determination study was not done,;
- The boreholes were not being monitored and could not be found;
- Water quality monitoring not conducted;

- Internal auditing of the facility was not being done; and
- Air quality monitoring and an annual topographical survey of the facility were not conducted.

The status of the Murraysburg WDF is detailed in **Table 4-17 and Figure 4-15.**

Table 4-17: Status of Murraysburg Waste Disposal Site

Position of site:	(Co-ordinates: 31°57'39,50"S and 23°47'11.27" E). The site is located at the remaining extent of Erf 249, Murraysburg
Permit/License:	19/2/5/4/C3/WL0108/17
Year issued:	Unlicensed
Classification of the site:	Operational for closure
Type of operation (end–tip, trench, cell):	End-tip
Estimated size of site:	17 870m²
The estimated remaining life of site:	Unknown
Separation of fresh and contaminated water:	None
Groundwater monitoring:	None
Volumes per day, week, or month:	Mun – 38.2500
Is cover material available?	No
Is the drainage sufficient?	No
Is there access control?	No
Is the site fenced?	Yes
Does the site have a sufficient buffer zone?	Yes
Type of equipment utilised on site:	None (Tipper truck and front- En-loader hired when required and depending on availability of budget)
Operating hours:	08H00-16H00
Site facilities, i.e. ablutions, guard house:	Yes, No guard house

Weighbridge	No
Reporting on IPWIS	Yes
Estimating cost for closure:	Unknown
Savings plan for closure:	None

Figure 4-15: Status of Murraysburg WDF

Based on observations and interviews conducted during ground truthing, the following waste management challenges for Murraysburg waste disposal site

- The facility is not licensed;
- Poor maintenance of waste on site (lack of heavy equipment or machinery);
- No access control on site (no personnel for access control and record keeping);
- Burning of wase on site;
- Vandalism on site (new transfer station and fencing due to lack of security)
- No waste compaction;
- Waste disposed outside the facility;
- Groundwater monitoring network not established

- Groundwater monitoring is not conducted;
- Internal audits are not conducted;

DEADP conducts external audits annually. The following non-compliances were noted from the audit report conducted on the 8th of November 2022 by DEADP:

- Decommissioning of this facility had not commenced yet, while it is overdue.
- No personnel at the facility to check the waste types prior to being disposed of at the Facility;
- The facility is not externally audited;
- No organic waste diversion plan;
- The Municipality has not planned for the decommissioning of this facility yet;
- A notice/sign board was not placed at the facility;
- Illegal dumping of waste near the facility, outside of the footprint area, has become quite significant;
- Informal reclamation of waste, not authorised by the Municipality, takes place at all parts the facility;
- No emergency response plan;
- No boreholes at the facility;
- Water quality monitoring was not being done for this facility;
- No topographical surveys conducted;
- The facility is not externally audited;
- Environmental incidents were reported to the Department;
- No incident register; and
- Waste was not compacted and not covered, but was burned.

The status of the Nelspoort WDF is detailed in **Table 4-18** and **Figure 4-16.**

Table 4-18: Status of Nelspoort WDF

Position of site:	(Co-ordinates: 32°5',50.61"S and 23°1'9.68"E). The site is located on Erf No.2 Nelspoort
Permit/License:	19/2/4/1/C3/14
Year issued:	2014
Classification of the site:	GCB-
Type of operation (end–tip, trench, cell):	End-tip

Estimated size of site:	17 550m²
The estimated remaining life of the site:	Unknown
Separation of fresh and contaminated water:	None
Groundwater monitoring:	None
Volumes per day, week, or month:	Mun – 10.800 Org – 4.800
Is cover material available?	No
Is the drainage sufficient?	No
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:	None (Tipper truck and front- En-loader hired when required and depending on availability of budget)
Operating hours:	08H00-18H00
Site facilities, i.e. ablutions, guard house:	Yes
Weighbridge	No
Reporting on IPWIS	Yes
Estimating cost for closure:	Unknown
Savings plan for closure:	None

Figure 4-16: Status of Nelspoort WDF

Based on observations and interviews conducted during ground truthing, the following waste management challenges for the Nelspoort waste disposal site

- Poor maintenance of waste on site (lack of heavy equipment or machinery);
- No access control on site (no personnel for access control and record keeping);
- Burning of wase on site;
- No ablution facilities (toilets, store/ staff room and water supply)
- Vandalism on site
- No waste compaction;
- Waste disposed outside the facility;
- Groundwater monitoring network not established; and
- Internal audits are not conducted.

The status of the Merweville WDF is detailed in **Table 4-19** and **Figure 4-17**

Table 4-19: Status of Merweville Waste Disposal Site

Position of site:	(Co-ordinates: 32°40',59.57"S and 21°32'5.49"E). The site is located on portion 6 of farm Van Der Bylskraal
Permit/License:	19/2/5/1/C3/W0053/12
Year issued:	2021
Classification of site:	G:C:B-/Class B
Type of operation (end – tip, trench, cell):	End-tip
Estimated size of site:	17 550m²
Estimated remaining life of site:	Unknown
Separation of fresh and contaminated water:	None
Groundwater monitoring:	None
Volumes per day, week, or month:	Mun – 27.000
Is cover material available?	No
Is the drainage sufficient?	No
Is there access control?	No
Is the site fenced?	Yes
Does the site have a sufficient buffer zone?	Yes
Type of equipment utilised on site:	None
Operating hours:	08H00-16H00
Site facilities, i.e. ablutions, guard house:	No
Weighbridge	No
Reporting on IPWIS	Yes
Estimating cost for closure:	Unknown

Savings plan for closure:	None

Figure 4-17: Status of Merweville Waste Disposal Facility

Based on observations and interviews conducted during ground truthing, the following waste management challenges for the Merweville waste disposal site

- Poor maintenance of waste on site (lack of heavy equipment or machinery);
- No access control on site (no personnel for access control and record keeping);
- Burning of waste on site;
- No ablution facilities (toilets, store/ staff room and water supply)
- Vandalism on site
- No waste compaction;
- Waste disposed outside the facility;
- Groundwater monitoring network not established; and

- Internal audits are not conducted.

4.4.3.1.1 Illegal Dumping

Illegal dumping is common all over the municipal area. The Municipality is collecting the illegal dumped waste at an unnecessary cost. Illegal dumping ranges from instances of litter found on roadsides to large vacant plots of land utilised as a dump site. Illegal dumpsites have numerous negative impacts on the environment and human health. The causes of illegal dumping could be attributed to inconsistence waste removal services within a specific area and limited public awareness on the issue. In 2019 the Municipality was issued with directives in terms of section 28(4) and section 16 of NEMWA for Vaalkopies and Murraysburg town for causing pollution and environmental degradation due to poor waste management and several illegal dump hotspots, as such measures should be put place to prevent such non-compliance directives against the Municipality. The Municipality has a cleaning and greening program to conduct clean-up campaigns and awareness campaigns with 156 EPWP.

Figure 4-18 below shows some of the illegal dumps within BWM, it should be noted that these are not permanent illegal dumps as they are removed and cleaned regularly using EPWP participants.

Figure 4-18: Illegal Dumping Clean-Ups

4.4.3.1.2 Awareness and Environmental Education

The Municipality is conducting awareness in schools and communities (door to door) using EPWP participants as there are no permanent employees to conduct such programs. Waste awareness and education is conducted quarterly. Below is a list of awareness programs conducted by the Municipality:

- Use of plastic initiative between BWM (EPWP, Greening and cleaning participants) and Right to Care, in June 2023;
- Educate learners and educators on sorting of waste at HM Dlikida Primary;
- Tree planting an initiative between DFFE, BWM (EPWPs, participants in greening and cleaning, and educators or personnel at HM Dlikidla Primary School in September 2023; and
- Promote recycling and a clean environment to tourists and residents driving and/or walking on the main road in the Central Business District (CBD) area during the festive season and Easter weekends, an initiative by EPWP.

The Municipality does not have a plan for conducting awareness. **Figure 4-19** shows pictures of the awareness campaigns.

Figure 4-19: Pictures of Awareness Campaigns

4.4.3.1.3 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. HCRW from the government health care facilities in the BWM area is collected by Solid Waste Technologies SA (Pty) Ltd and then transported to their transfer station in George before it is sent to their facility in Cape Town. Hazardous waste such as used oil from mechanics is not allowed at the WDF, waste generators are responsible for managing their hazardous waste. The Municipality must make provision for the management of hazardous waste generated by residences within the municipal jurisdiction as co-disposal on operational non-engineered WDFs is prohibited. This can be achieved by engaging with Producer Responsibility Organizations (PROs) to establish a working relationship for the effective implementation of Extended Producer Responsibility (EPR) schemes. Municipal Bylaws could be a powerful tool to introduce financial penalties for not meeting EPR targets.

4.4.3.2 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,
- Healthcare risk waste is either treated by incineration or autoclaved and shredded before disposal.

There are no waste treatment facilities within the Municipality.

4.4.3.3 Status of Waste Recycling

Recycling is a key component of waste minimisation, the level of recycling initiatives ranges from small-scale street collection to large business enterprises that have collection, storage, and processing facilities. BWM has three (3) private recyclers within the Municipality, which are in Beaufort West town. The two scrap metal recyclers recycle about 64 tonnes of metals monthly. **Table 4-20** below highlight recycling initiatives within BWM, their registration status, and the type of recyclable materials being recycled.

Table 4-4-20: Waste Recycling Companies and their Status

Recycling Companies	Registration Status	Operations Status	Recyclable Materials
Rallo's recycling	Application has been lodged	Operational	Glass, paper, plastic, cardboard, and E-recycling
Blyth Street Scrap Metal Recycler	Unknown	Operational	Ferrous and Non-ferrous metals
Boland Scrap Metal	Unknown	Operational	Plastic, PET, Ferrous and Non-ferrous metals

4.4.4 Waste Reporting

General WDFs 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 NEM: WA. These facilities are required to report quarterly, and annual tonnages of waste generated, recycled, and disposed of at the WDF. 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.

All waste disposal sites do not have weighbridges except for Vaalkopies; however, the Municipality uses the standardised estimation tool developed by the DEADP known as the waste calculator. The waste calculator is an Excel-based tool that quantifies the waste in mass estimates. BWM waste disposal sites are registered and report monthly disposal volumes on IPWIS, however, there is no consistency in the report. Reporting on IPWIS is a legislative requirement that should be adhered to. The Municipality must complete all pending IPWIS reports. **Table 4-20** below shows the WDFs and the period of reporting in according to DEADP's records.

Table 4-21: WDF & Period of Reporting (DEADP)

Waste Disposal Facility	Period of Reporting
Vaalkoppies WDF WIR Number: D04168-01	9/12 (2022) and 0/9 (2023)
Nelspoort WDF WIR Number: D04167-01	4/12 (2022) and 0/9 (2023)
Murraysburg WDF WIR Number: D03120-01	4/12 (2022) and 0/9 (2023)
Merweville WDF WIR Number: D04169-01	3/12 (2022) and 0/9 (2023)
Beaufort West Recycling Depot WIR Number: D07358-01	1/12 (2022) and 0/9 (2023)

The Municipality records Municipal, construction and organic waste. **Figure 4-20** below shows disposal tonnes from July 2023 to December 2023.

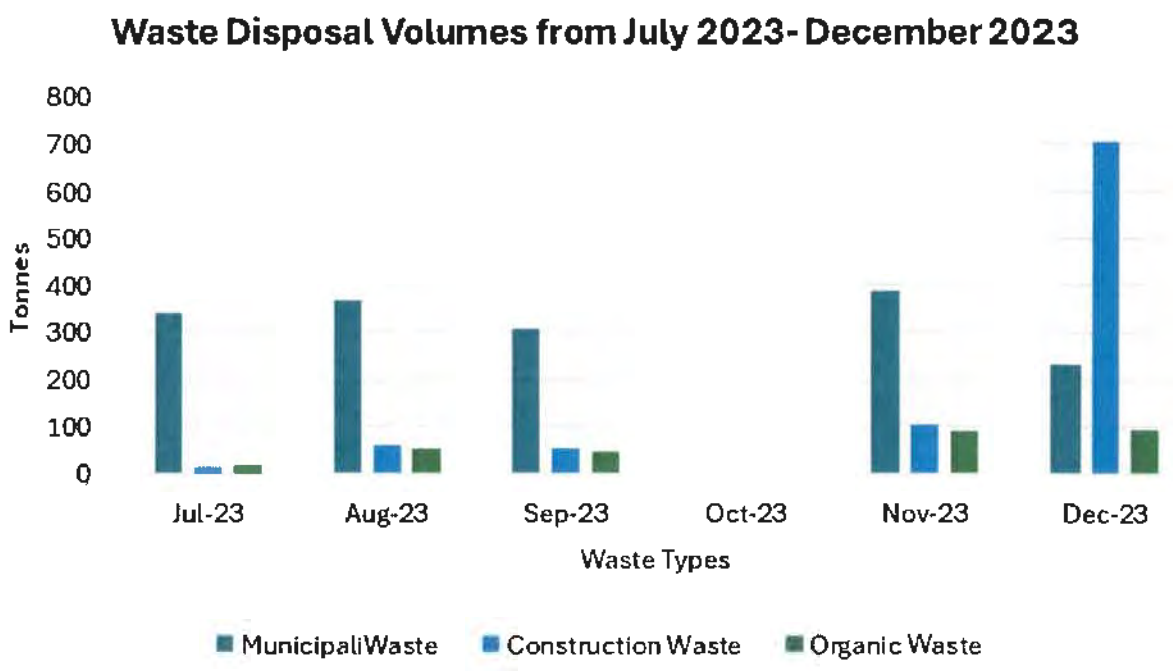


Figure 4-20: Waste Disposal Tonnage from July 2023-December 2023

4.4.5 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 BWM'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 4-21** shows BWM demographic information used to calculate future waste generation is presented in **Table 4-22** for BWM.

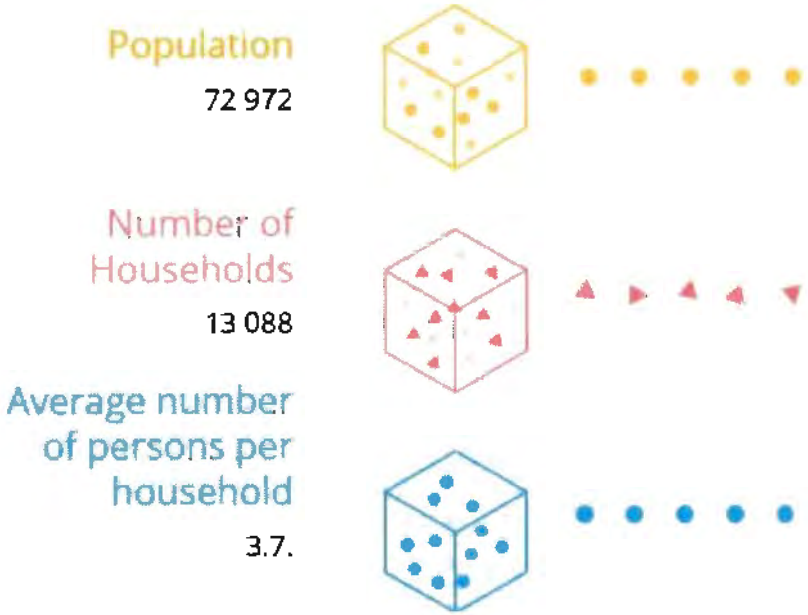


Figure 4-21: Demographics for BWM (Stats SA, 2022)

Stats SA, 2022 doesn't have average household income statistics, as a result, Stats SA 2011 averages were used and 2022 population with the assumption that all income groups grew at the same rate. **Table 4-22** below summarises waste generation for BWM.

Table 4-22: Yearly Estimated Waste Quantities for BWM

Yearly Household Income (Rands)		%	People	Households	All persons by income group	Income group	SA SoER (kg/capita/yearly)	Current domestic waste generation per capita (kg's/person/year)	Tonnes/ person/ year
No income		9.5	4711	1273	39322	LOW	149.65	5884492.11	5884.49
1.00	4 800	3.30	1636	442					
4801.00	9600.00	5.80	2876	777					
9601.00	19600.00	21.7	10760	2908					
19601.00	38200.00	23.7	11752	3176					
38201.00	76400.00	15.3	7587	2050					
76401.00	153800.00	10	4711	1273	8132	MIDDLE	270.10	2196481.29	2196.48
153801.00	307600.00	6.90	3421	925					
307601.00	614400.00	3.20	1587	429					
614001.00	1228800.00	0.70	347	94	5554	HIGHER	470.85	2614927.63	2614.93
1228801.00	2457600.00	0.20	99	27					
2457601.00		0.20	99	27					

49586	**Total kg's/person/year**	10695901.02	**10695.90**
	Total tonnes/person/year	**10695.90**	

Based on the analysis in **Table 4-22** above, it is estimated that the domestic waste per year for BWM is about **10695.90 tonnes**.

4.4.6 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 and industrial waste generation rates. With a growth rate of 4.29% (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 BWM's population. The main change to the profile of waste collection in BWM will be the expansion of the urban centres because of rural-tourban migration and the development of these urban areas. This could manifest itself in the following manner:

- Business development across the BWM;
- Urbanisation;
- Tourist attractions; and
- Agricultural activities.

Estimations of future waste generation in BWM for the next 10, 20 and 30 years are presented in **Table 4-23, Table 4-24 and Table 4-25.**

Table 4-23: Estimation of Future Waste Volumes (in 10 Years/2031) Produced In BWM

Type of settlement	Base population (2022)	Future Population estimates	Current domestic waste generation rates per Capita *(kg's/person/year)*	Future domestic waste generation rates per (Tonnes)
Low Income	39 322	52 782	5 884 492.106	7 898.79
Middle Income	8 132	10 368	2 196 481.29	2 800.49
High Income	5 554	582	2 614 927.627	273.99

Table 4-24: Estimation of future waste volumes (in 20 years/2041) produced per capita in BWM.

Type of settlement	Base population (2022)	Future Population estimates	Current domestic waste generation rates per capita *(kg's/person/year)*	Future domestic waste generation rates per (Tonnes)
Low Income	39 322	56 309	5 884 492.106	8 426.65
Middle Income	8 132	1 1061	2 196 481.29	2 987.65
High Income	5 554	621	2 614 927.627	292.30

Table 4-25: Estimation of future waste volumes (in 30 years/2051) produced per capita in BWM.

Type of settlement	Base population (2022)	Future Population estimates	Current domestic waste generation rates per capita *(kg's/person/year)*	Future domestic waste generation rates per (Tonnes)
Low Income	39 322	60 072	5 884 492.106	8 989.79
Middle Income	8 132	11 800	2 196 481.29	3 1873.05
High Income	5 554	662	2 614 927.627	311.83

Table 4-23, Table 4-24 and Table 4-25 above are on future waste volumes 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.

4.4.7 Financing of Waste Management

4.4.7.1 Budgeting for Waste Services

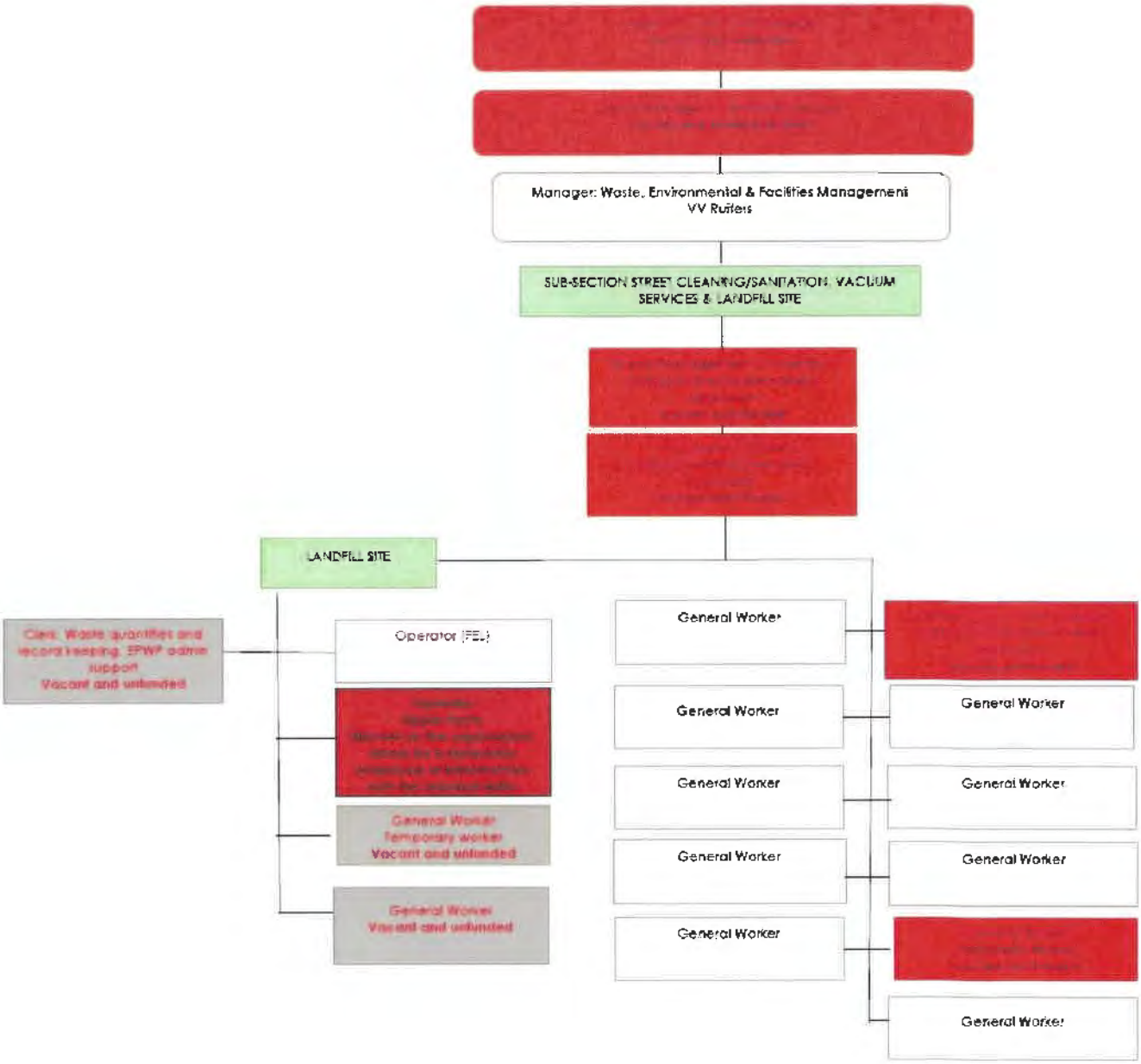
According to the Municipal Systems Act, Act No 32 of 2000, Municipalities must ensure adequate budgeting to fulfill their constitutional mandate of providing waste management services. **Table 4-26** details categories of waste management cost drivers within BWM, and it shows that waste management budgeting was not prioritized as no budget was provided in the past three years. The successful implementation of the IWMP will require a budget for waste management projects.

Table 4-26: Annual Waste Management Budgeting

Setting	2020/21	2021/22	2022/23	2023/24
Waste Management Capital Budget	-	-	-	R4,925,229
Waste Management Expenditure	-	-	-	R4,925,229
Waste Management Revenue	R9,195,524	R7,903,430	R10,497,935	R24,791,000
Revenue Sources				
Equitable share funding	R77,480,092	R 69,624,762	R77,265,000	R83,574,000

4.4.7.2 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 BWM.


Manager: Waste, Environmental & Facilities Management
VV Rutters
SUB-SECTION STREET CLEANING/SANITATION, VACUUM SERVICES & LANDFILL SITE
LANDFILL SITE
Clerk: Waste quantities and record keeping, EPWP admin support
Vacant and unfunded
Operator (FEL)
General Worker
Temporary worker
Vacant and unfunded
General Worker
Vacant and unfunded
General Worker
General Worker
General Worker
General Worker
General Worker
General Worker
General Worker
General Worker

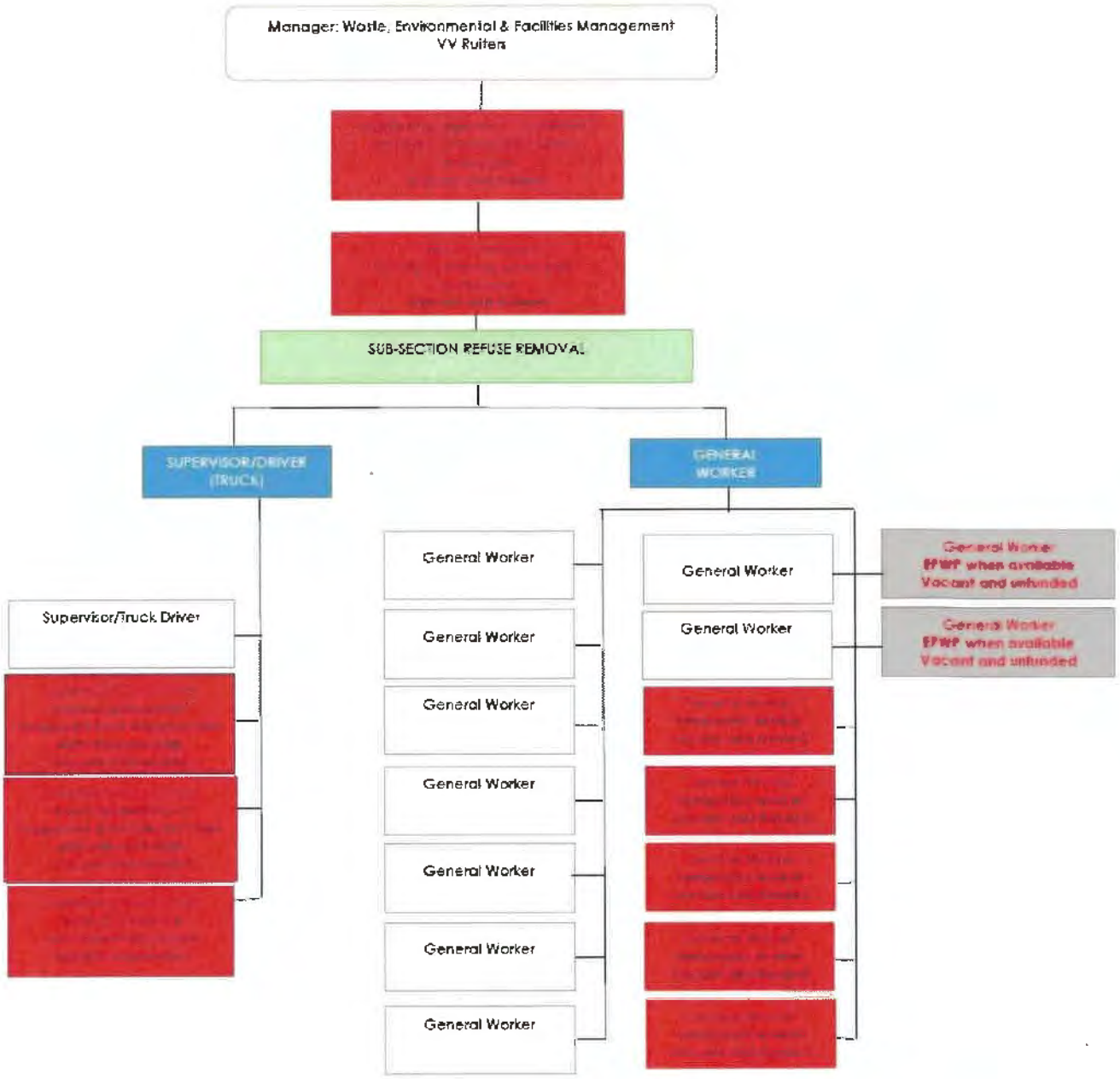

Manager: Waste, Environmental & Facilities Management
VV Ruiters
SUB-SECTION REFUSE REMOVAL
SUPERVISOR/DRIVER (TRUCK)
GENERAL WORKER
Supervisor/Truck Driver
General Worker
General Worker
General Worker
General Worker
General Worker
General Worker
General Worker
General Worker
General Worker
EPWP when available
Vacant and unfunded
General Worker
EPWP when available
Vacant and unfunded

Figure 4-22: Waste Management Organizational Structure

The waste management division falls under Community Services. Based on the current organizational structure, there are Twenty-two (22) waste management vacant positions, including Waste Management Coordinator, Operator Tipper Truck, Senior Supervisors, General Workers, Supervisor Truck Drivers, and Clerk. The organisational structure needs to be revised to accommodate personnel to manage waste disposal facilities. EPWP assists with litter picking and street cleaning. Challenges include inadequate refuse vehicles, mushrooming of illegal dumping and financial constrain. Vacant positions need to be occupied 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, as 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 to ensure that positions are not left vacant. **Table 4-27** details the current institutional matters within BWM.

Table 4-27: 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
Community Services	Waste Management By-laws on Draft state	Only for waste collection	No	Designated (Vuyokazi Ruiter)	None

4.4.8 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 BMW 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)

4.4.9 Development and Enforcement of By-Laws

The BMW has developed waste management By-laws which are under review. 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 BMW 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. Environmental Health Practitioners (EHPs) could also be trained in waste matters to administer the enforcement of waste By-laws.

4.4.10 Mainstreaming Key Principles of the National Waste Management Strategy

4.4.10.1 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 within BWM. The Municipality should consider implementing waste minimisation initiatives such as a separation-at-source program, recycling initiatives in collaboration with schools and communities, industrial symbiosis, etc.

4.4.10.2 Environmentally Sound Socio-Economic Growth and Development

This section focuses on identifying existing efforts to ensure environmentally sound socioeconomic growth and development, including waste management jobs in the Municipality, 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. BWM has waste pickers reclaiming the recyclable materials from the Vaalkoppies WDF and these recyclable materials are sold to entrepreneurs involved in recycling. The Municipality is also replacing new street swing bins on pavements and flee market in the CBD.

4.4.11 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. The Municipality has +-40 waste pickers that are working at Valkoppies WDF. The Municipality allows them access to the WDF for collecting recyclables weekly. In 2022 seven waste pickers in Beaufort West and four in Murraysburg were employed through Murraysburg landfill project. Municipality should partner with PROs under the EPRs scheme to assist with waste picker integration

4.4.12 Circular Economy

Incorporating a circular waste economy in the municipal planning process is crucial for implementing NWMS. This section focuses on identifying the existing circular economy activities undertaken in the Municipality. This includes recycling such as promoting behavioral change through education and awareness, implementing EPR, increasing the collection of material for recycling, and engaging in Industrial Symbiosis (IS) initiatives.

BWM conducts awareness programs every year, wherein, they do door-to-door in residential, education on recycling at schools, and education on recycling at robots in the Central District

Aea (CBD) area. The municipality has no permanent staff to conduct awareness programs, they use EPWP participants every year to conduct such programs. In the 2023 financial year about (ten) 10 field workers and one (1) supervisor were employed on contract for 6 months from July 2023 until December 2023 for Beaufort West and Murraysburg. This is a conditional grant under the Department of Transport and Public Works (Department of Infrastructure) funded every year

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 aims 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 BWM have been identified in terms of each of the following waste management activities:

- Waste service delivery;
- Waste minimisation, recycling, and re-use initiatives;
- Hazardous waste management;
- Waste management facilities;
- Waste management information;
- Waste education and public awareness;
- Human and financial resource management; and
- Integrated waste management panning.

5.1 Waste Service Delivery

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

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

THEME	GAP IDENTIFIED	RESULTING NEED
Waste collection Fleet	Only two out of four operational trucks are in good condition. There is one compactor and tipper within BWM which have not been operational for three years and cannot be repaired due to budget constraints	BWM should have sufficient and efficient fleets to collect and dispose of waste.

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 reuse initiatives.

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

THEME	GAP IDENTIFIED	RESULTING NEED

Recycling	• There is minimal waste recycling in the Municipality. • Lack of collaboration between the Municipality and two metal recyclers.	• The Municipality should encourage the establishment of waste recycling initiatives. • The Municipality should collaborate with all recycling companies within the Municipality, this will assist the Municipality in quantifying and reporting all quantities of recycled waste within its jurisdiction. • Municipality must partner with PROs through the EPR to assist with required needs for recycling programs for products under the EPR Schemes • Recycling competition within schools, waste reclaimers, and the community can play a big role in maximising recycling.
Waste minimization and prevention	• There are no waste prevention and minimisation initiatives.	• BWM must develop waste minimization and prevention strategies to ensure the diversion of waste from the WDF. • The Municipality should consider implementing waste minimisation initiatives such as a separation-at-source program in collaboration with schools and communities, industrial symbiosis, etc.

THEME	GAP IDENTIFIED	RESULTING NEED

		• The Municipality should collaborate with many stakeholders, including other government sectors, manufacturers, and consumers, to explore ways in which they may contribute to waste minimization and prevention. • The Municipality could establish industrial symbiosis projects by developing a system for registering businesses with various waste streams, allowing waste to be exchanged between companies. This will promote a circular economy by reducing the use of virgin resources. • To guarantee that as many residents as possible participate, the Municipality can highlight waste reduction and prevention strategies through advocacy and education.
Organic waste	• The Municipality does not have an organic diversion plan. • Lack of knowledge on home composting • Lack of composting facilities	• The Municipality should develop an organic waste diversion plan. • Awareness campaigns should be conducted to educate the public on composting at home and its benefits. • The Municipality should consider having a composting area near/or in the WDF

5.3 Hazardous and Medical Waste Management

Although local municipalities are legally not responsible for the management and safe disposal of hazardous and medical waste generated by major businesses within their area of jurisdiction, they do need to ensure that no hazardous and medical waste is disposed of on municipal landfills that are not licenced, developed, and operated to the required standards. In terms of the duty-of-care principle as required in NEMWA, generators of hazardous waste are responsible for the legally compliant management, treatment, and disposal of such hazardous waste generated.

Table 5-3 provides the gaps identified in terms of hazardous and medical waste management with the associated needs.

Table 5-3: Hazardous waste gaps and needs identified in BWM.

THEME	GAP IDENTIFIED	RESULTING NEED

Hazardous waste	• Lack of information on hazardous waste generators within the Municipality. • Household hazardous waste is collected and disposed of alongside domestic waste. Batteries, fluorescent lamps/tubes, chemicals, and other hazardous materials are common in household waste.	• The Municipality should create a database of hazardous waste generators, and to ensure safe disposal, hazardous waste generators should provide safe disposal certificates. • The district's Environmental Health Practitioners (EHPs) and the Municipality should work together to create a hazardous waste-generators monitoring program. • The Municipality should educate the community on managing and safely disposing of household hazardous waste. • The Municipality should make provision for the management of hazardous waste generated by residences within the municipal jurisdiction, by creating designated drop-off centres

THEME	GAP IDENTIFIED	RESULTING NEED
		for hazardous waste as co-disposal on operational nonengineered WDFs is prohibited. • The Municipality should pilot the DFFE household National hazardous waste management strategy. • The Municipality should collaborate with PROs under the ERP scheme for the collection of hazardous waste.

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. • The Municipality should collaborate with health facilities such as clinics, hospitals, and surgeries to encourage the community to return expired and unwanted medical waste to health facilities.

5.4 Waste Management Facilities

Table 5-4 provides the gaps identified in terms of waste management facilities.

Table 5-4: Waste management facilities gaps and needs identified.

THEME	GAP IDENTIFIED	RESULTING NEED

Compliance with the conditions of the waste licence and minimum requirements for waste disposal by landfill.	Non-compliance with the conditions of the WML: • There is no control over what is disposed of and how it is disposed of; • Abattoir waste was disposed of at the Valkoppies WDF. The Norms and Standards prohibit the disposal of waste having more than 40% moisture content; • No organic waste diversion plan; • Non-compliance with permit conditions are not reported; • Significant volumes of waste were disposed of in the buffer zone, instead of at the Valkoppies WDF; • No control of runoff water from the facility Valkoppies WDF; • Valkoppies WDF might be close to the maximum height, • A noticed board at Valkoppies WDF did not align with	The Municipality should close all the non-compliance • The Municipality should ensure that waste entering the site is checked at the entrance; • Abattoir waste should not be disposed of in the WDF; • The Municipality should have an organic waste diversion plan. • The Municipality should report all non-compliance to DEADP; • The Municipality should ensure that all waste is disposed of within the premises; • The Municipality should put measures in place to control runoff water; • A notice board should be aligned; • The Municipality should ensure there is sufficient cover material

THEME	GAP IDENTIFIED	RESULTING NEED

	the condition of the licence; • Waste was not being compacted, nor covered in all sites; • The Murray WDFis not licenced;	• Develop a complaint register; • The Municipality should have dedicated personnel /spotters to clear windblown litter; • Ensure that Murray WDF i licenced;

Monitoring and Maintenance	• The Municipality is not conducting the following required monitoring for WDF: ▯ Groundwater monitoring network no established ▯ Water quality monitoring; ▯ Air quality monitoring and an annual topographical survey of the Valkoppies were not conducted; ▯ The airspace determination study; ▯ The emergency response plan was not being implemented; ▯ Internal audits are not conducted; • Poor maintenance of waste on WDFs due to the lack of heavy equipment or machinery • No access control due to Insufficient human resources • Unauthorised individuals were found living on and around the Valkoppies; • There is a lack of human resources as such:	• The Municipality should develop a monitoring program and allocate the necessary for the required monitoring • The Municipality should acquire the necessary plant and equipment for the maintenance of the WDFs; • The Municipality should put in place access control measures; • The Municipality should ensure that no unauthorized individuals reside in the WDF;

THEME	GAP IDENTIFIED	RESULTING NEED

	• Windblown litter was observed outside of the facility; • No personnel at the facility to check the waste types before being disposed of at the Facility; • Waste disposed outside the facility; • No complaints registers;	• The Municipality should acquire sufficient resources for the successful implementation of the IWMP and • Develop complaint registers.
Decommissioning WDF	Decommissioning of this Murraysburg waste disposal site has not commenced yet, while it is overdue.	The Municipality should develop a rehabilitation plan and ensure that funding is available for the closure and rehabilitation of the site

5.5 Waste Management Information

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

Table 5-5: Waste management information gaps and needs identified

THEME	GAP IDENTIFIED	RESULTING NEED
Reporting	There is inconsistency in reporting on IPWIS	• All waste logs for the WDFs must be uploaded onto IPWIS every month. • The Municipality must complete all pending IPWIS reports
Lack of information	There is a lack of information on how hazardous and medical waste from hazardous generators, surgeries, and households is managed	• The Municipality should develop a database of hazardous and medical waste generators, to ensure waste is disposed of appropriately.

5.6 Waste Education and Public Awareness

Table 5-6 provides the gaps identified in terms of waste education and initiatives.

Table 5-6: Waste education and initiatives gaps and needs

THEME	GAP IDENTIFIED	RESULTING NEED
Education and Awareness	• Insufficient education and awareness campaigns. • The Municipality has no permanent staff to conduct education and awareness campaigns.	• The Municipalityshould develop a plan for an education and awareness campaign and set aside the funds required to execute it. • Develop educational waste management materials for the public as well as schools. • Employ a variety of media, including radio and social media, to raise awareness. • The Municipality should employ permanent staff for waste management.
Illegal dumping	• Illegal dumping is a challenge in the Municipality despite explicit signage indicating that waste dumping is not permitted.	• The Municipalityshould educate people about the implications of illegal dumping and ensure that there are penalties for non-compliance.

5.7 Human and Financial Resource Management

Table 5-7 provides the gaps identified in terms of staff and financial management.

Table 5-7: Staff and financial management gaps and needs identified

THEME	GAP IDENTIFIED	RESULTING NEED
Budget	• Insufficient budget allocated for waste management • The are no tariffs for waste disposals	• A sufficient budget should be allocated for effective waste management services • Waste disposal should be included in the tariffs.
Human Resource	• Currently, there is insufficient permanent staff dedicated to waste management and there are 22 vacancies in the organisational structure. • There are no permanent staff to manage the waste disposal facility • There are no peace officers and EMIs	• The Municipality should make provisions to fill all vacant positions for the successful implementation of the IWMP and, ultimately provide efficient waste management services. • The Municipality need to revise the organisational structure to include permanent staff for the waste disposal facility. • The Municipality should designate Law enforcement officer as peace officer and have available official trained as EMIs.

5.8 Integrated Waste Management Planning

Integrated waste Management planning is essential in ensuring that a waste management service can comply with changing legislation and best practice guidelines. **Table 5-8** provides the gaps identified in terms of integrated waste management with the associated need to effectively address the gap.

Table 5-8: Integrated waste Management gaps and needs identified

THEME	GAP IDENTIFIED	RESULTING NEED

THEME	GAP IDENTIFIED	RESULTING NEED
Waste Management Planning	• NEMWA) requires the IWMP to be IDP. • The Municipality must submit annual reports of the implementation of the IWMP as per Section 46 of the MSA • The Waste Act requires the IWMP to be reviewed every 5 years. • The Municipality has no EMI. • Waste pickers are not integrated. • Waste Management By-laws are not finalised.	• The Municipality should ensure that the final endorsed IWMP is incorporated into the Integrated Development Plan (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. • The Municipality should ensure that waste management By-laws are finalised, gazetted and implemented.

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 for pollution, litter and illegal dumping.

7.2 Western Cape Provincial Integrated Waste Management Plan (PIWMP)

Western Cape Provincial, DEADP developed a Provincial Integrated Waste Management Plan (PIWMP) 2023-2027. Six objectives were defined based on the results of the needs analysis namely:

- **Goal 1:** Strengthened education, capacity, awareness and advocacy towards Integrated Waste Management
- **Goal 2:** Improved integrated waste management planning and implementation for efficient waste services, technologies and infrastructure
- **Goal 3:** Effective and efficient utilisation of resources
- **Goal 4:** Improved compliance with the environmental regulatory framework.

7.3 Goals Identified for the BWM's IWMP

To align BMW's goals with the Western Cape PIWMP as well as the NWMS 2020, the following goals have been formulated:

- **Goal 1**: Effective and efficient solid waste service delivery.
- **Goal 2**: Promote waste minimisation and recycling
- **Goal 3**: Improve hazardous and medical waste management • **Goal 4**: Improve management and compliance of waste facilities
- **Goal 5**: Improve waste management information.
- **Goal 6**: Improve waste education and awareness
- **Goal 7**: Strengthen human and financial resources management.
- **Goal 8**: Improve 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 landfills are 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 Municipality 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 BMW IWMP align with the NWMS 2020 and Western Cape PIWMP goals.

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

BMW GOAL	WC PIWMP GOAL	NWMS 2020 GOALS
Goal 1: Effective and efficient solid waste service delivery.	**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 wellmanaged 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 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.

BMW GOAL	WC PIWMP GOAL	NWMS 2020 GOALS
Goal 4: Improve management and compliance of waste facilities	**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 wellmanaged and financially sustainable.
Goal 5: 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 wellmanaged and financially sustainable.
Goal 6: Improve 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 for pollution, litter and illegal dumping.
Goal 7: Strengthen human and financial resources 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 wellmanaged and financially sustainable.

Goal 8: Improve integrated waste management planning.	**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 wellmanaged and financially sustainable.

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

The strategic goals, objectives, targets, indicators, and alternatives to assist the Municipality close the identified gaps are listed in Error! Reference source not found. 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: EFFECTIVE AND EFFECTIVE SOLID WASTE SERVICE DELIVERY				
Objective	**Target**	**Key Performance Indicator**	**Responsible Department**	**Alternative**
Objective 1: Efficient and adequate waste management fleet.	• Develop vehicle replacement and maintenance plant to ensure the waste management fleet is operational and roadworthy.	• Vehicle replacement and maintenance plan.	LM	There are no feasible alternatives to this project. This is to ensure the waste management fleet remains operational and in good condition.

GOAL 2: PROMOTE WASTE MINIMISATION AND RECYCLING				
Objectives	**Target**	**Key Performance Indicator**	**Responsible Department**	**Alternatives**

Objective 1: Improve partnerships with recycling facilities.	• Establish partnerships with the metal recyclers. • Request recyclable volumes from metal recyclers	• Partnerships with the metal recyclers. • Records of recyclable volumes.	LM & DM	There are no feasible alternatives to this project. This will assist the Municipality in ensuring that all

GOAL 2: PROMOTE WASTE MINIMISATION AND RECYCLING				
Objectives	**Target**	**Key Performance Indicator**	**Responsible Department**	**Alternatives**
				volumes of recycled waste are reported.

Objective 2: Promote recycling and waste minimisation.	• Promote recycling initiatives through advocacy and education. • Collaborate with schools to encourage waste recycling and minimisation e.g. competitions. • Partner with businesses, government institutions, and manufacturers to explore ways in which they may contribute to waste minimization and prevention. • Conduct waste characterisation seasonally.	• Education and awareness conducted. • Collaborations with schools. • Partnerships with PROs. • Waste characterisation study.	LM & DM	There are no feasible alternatives to these projects.
	• Conduct a small-scale pilot to determine willingness to engage in the separation-at-source initiative. • Determine the cost associated with the establishment of a separation-at-source program. • Partner with PROs through the EPR to assist with	• Separation-at-source program pilot study. • Detailed costing for separation at source program. • Partnerships with PROs.	LM	There are no feasible alternatives to these projects.

GOAL 2: PROMOTE WASTE MINIMISATION AND RECYCLING				
Objectives	**Target**	**Key Performance Indicator**	**Responsible Department**	**Alternatives**

	required needs for recycling programs for products under the EPR schemes. • Establish industrial symbiosis projects by developing a system for registering businesses with various waste streams, allowing waste to be exchanged between companies.	• A system for registering businesses with various waste streams		
Objective 3: Divert Organic waste from the WDF.	• Develop a waste diversion plan.	• Waste diversion plan.	LM	There are no feasible alternatives to this project.
	• Partner with composting company to compost organic waste.	• Organic waste facility.	LM	An alternative to this can be establishing an organic waste facility.

GOAL 3: IMPROVE HAZARDOUS AND MEDICAL WASTE MANAGEMENT.				
Objective	**Target**	**Key Performance Indicator**	**Responsible Department**	**Alternative**

Objective 1: Ensure appropriate disposal of hazardous waste.	• Develop a database of hazardous waste generators. • Develop a monitoring program in collaboration with district EHPs to ensure appropriate disposal of hazardous waste. • Request safe disposal certificates from waste generators.	• Database of hazardous waste generators. • A monitoring program. • Improved disposal of hazardous waste from households.	LM & DM	There are no feasible alternatives to this project. The Municipality needs to have a list of hazardous waste generators to ensure waste is disposed of appropriately.
	• Pilot the National household hazardous waste strategy developed by DFFE. • Make provisions such as drop-off centres for the disposal of household hazardous waste. • The Municipality should collaborate with PROs under the ERP scheme for the collection of hazardous waste.	• Hazardous waste drop of centres. • Established drop-off centres. • Partnerships with PROs.	LM & DM	There are no feasible alternatives to this project. The Municipality needs to conduct the study to determine the feasibility of the project.

GOAL 3: IMPROVE HAZARDOUS AND MEDICAL WASTE MANAGEMENT.				
Objective	**Target**	**Key Performance Indicator**	**Responsible Department**	**Alternative**

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	• Partnerships with health facilities. • Number of awareness conducted.	LM & DM	There are no feasible alternatives to this project. The project will assist the Municipality in ensuring that household medical waste is safely disposed of.

GOAL 4: IMPROVE MANAGEMENT AND COMPLIANCE OF WASTE FACILITIES				
Objective	**Target**	**Key Performance Indicator**	**Responsible Department**	**Alternative**
Objective 2: Improve management and maintenance of the landfill site.	• Provision of electricity for Valkopppies. • Establish a groundwater monitoring network for Valkopppies and Merweville WDFs.	• Availability of electricity. • Groundwater monitoring networks.	LM	There is no feasible alternative to this project

GOAL 4: IMPROVE MANAGEMENT AND COMPLIANCE OF WASTE FACILITIES

Objective	Target	Key Performance Indicator	Responsible Department	Alternative
	• Construct ablution facilities at Merveville WDF • Establish drop-off centres.	• Construct ablution facilities • Drop-off centres.	LM	There is no feasible alternative to this project
Objective 3: Adequate yellow fleet for operating & maintaining the WFs	• Acquire the necessary yellow fleet ▯ Bulldozer ▯ TLB ▯ Woodchipper ▯ Low Bed	• Acquired yellow fleet.	LM, Province, DFFE & Provincial COGHSTA	There is no feasible alternative to this project
GOAL 5: IMPROVE WASTE MANAGEMENT INFORMATION				
Objective	**Target**	**Key Performance Indicator**	**Responsible Department**	**Alternative**

Objective 1: Improve reporting on IPWIS	• Ensure consistency in reporting in reporting on IPWIS.	Report accuracy, timeliness of reporting, Compliance with reporting requirements	LM & Province	There are no feasible alternatives to this project. Reporting on IPWIS is a legislative requirement.

GOAL 5: IMPROVE WASTE MANAGEMENT INFORMATION				
Objective	**Target**	**Key Performance Indicator**	**Responsible Department**	**Alternative**
Objective 2: Improve waste management information	• Develop a database of hazardous and medical waste generators.	database of hazardous and medical waste generators.	LM	There are no feasible alternatives to this

GOAL 6: IMPROVE WASTE EDUCATION AND AWARENESS				
Objective	**Target**	**Key Performance Indicator**	**Responsible Department**	**Alternative**

Objective 1: Expand education and 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	• Annual education and awareness plan. • Partnerships developed. • Door-to-door campaigns. • Education and awareness campaigns conducted.	LM	There is no feasible alternative to these projects.

GOAL 6: IMPROVE WASTE EDUCATION AND AWARENESS				
Objective	**Target**	**Key Performance Indicator**	**Responsible Department**	**Alternative**
	awareness campaigns. • Use other platforms to promote awareness such as municipal website, newsletters, radio, posters, and social media.	• Awareness campaigns conducted on other platforms.		

	• Acquire graduates to assist with awareness campaigns.	• Graduates	LM & National	There is no feasible alternative to this project
Objective 2: Combat illegal dumps	• Combat illegal dumps through education and advocacy. • Get coordinates for all major illegal dumps.	• Awareness conducted. • coordinates for all major illegal dumps	LM	There is no feasible alternative to this project

GOAL 7: STRENGTHEN HUMAN AND FINANCIAL RESOURCES MANAGEMENT				
Objective	**Target**	**Key Performance Indicator**	**Responsible Department**	**Alternative**

Objective 1: Strengthen human resources.	• Revise the current organisational structure to include personnel for waste disposal facility. • Identify training requirements, such as EMIs, and have personnel trained & & designated.. • Designate Law Enforcement officer as peace officer.	• Revised organisational structure • Training certificates	LM	There is no feasible alternative to this project. This is to ensure that there are dedicated personnel for waste management.
Objective 2: Ensure Sound budgeting and financing of waste management services.	• Review waste disposal tariffs to include waste disposal fees and have different fees for businesses and households. • Ensure all waste projects are included in the IDP.	• Waste disposal tariffs • Waste projects included in the IDP.	LM	There is no feasible alternative to this project.

GOAL 8: IMPROVE INTEGRATED WASTE MANAGEMENT PLANNING				
Objective	**Target**	**Key Performance Indicator**	**Responsible Department**	**Alternative**

Objective 1: Ensure integrated waste management planning.	• Finalise waste management and gazetted waste management By-laws.	Gazette waste management By-laws	LM	There is no feasible alternative to this project.
	• Ensure that waste projects are included in the IDP. • Ensure that the approved IWMP is endorsed by MEC. • Develop annual reports on the implementation of the IWMP. • Develop a plan for waste pickers integration.	• Waste project included in the IWMP. • IWMP endorsement letter. • Annual reports • waste pickers integration plan.	LM	There is no feasible alternative to this project.
	• Available officials to be trained as EMIs.	• Trained EIMs	LM	There is no feasible alternative to this project.

GOAL 8: IMPROVE INTEGRATED WASTE MANAGEMENT PLANNING

Objective	Target	Key Performance Indicator	Responsible Department	Alternative
	• Ensure that the IWMP is reviewed every five years.	• Reviewed IWMP	LM	There is no feasible alternative to this project. A review of the IWMP is a legal requirement.

10 IMPLEMENTATION PLAN

An implementation strategy to help the BMW 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 BMW meet its goals. The projects that have been selected have been ranked in order of priority and cover the years 2025–2029. The implementation plan 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

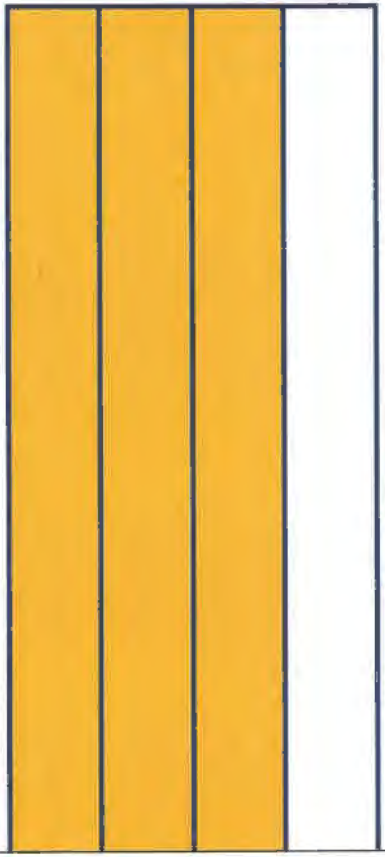
GOAL	OBJECTIVE	ACTIVITY	TIMEFRAME					RESPONSIBLE DEPARTMENT	HUMAN RESOURCES/ESTIMATED BUDGET REQUIRED
			2025	2026	2027	2028	2029		
Goal 1: Effective and efficient solid waste service delivery.	Objective 1: Efficient and adequate waste management fleet.	Develop vehicle replacement and maintenance plan to ensure the waste management fleet is operational and roadworthy.						LM	Human Resources
Goal 2: Promote waste minimisation and recycling	Objective 1: Improve partnerships with recycling facilities.	Establish partnerships with the metal recyclers. Request recyclable volumes from metal recyclers						LM & DM	Human Resources

	Objective 2: Promote recycling and waste minimisation.	Develop a waste minimisation strategy. Promote recycling initiatives through advocacy and						LM & DM	Human Resources

GOAL	OBJECTIVE	ACTIVITY	TIMEFRAME					RESPONSIBLE DEPARTMENT	HUMAN RESOURCES/ESTIMATED BUDGET REQUIRED
			2025	2026	2027	2028	2029		

		education. Collaborate with schools to encourage waste recycling and minimisation e.g. competitions. Partner with businesses, government institutions, and manufacturers to explore ways in which they may contribute to waste minimization and prevention. Conduct waste characterisation seasonally.						
		Conduct a small-scale pilot to determine willingness to					LM	Internal expenditure as determined by operations.

GOAL	OBJECTIVE	ACTIVITY	TIMEFRAME					RESPONSIBLE DEPARTMENT	HUMAN RESOURCES/ESTIMATED BUDGET REQUIRED
			2025	2026	2027	2028	2029		

		engage in the separation-atsource initiative. Determine the cost associated with the establishment of a separation-at-source program. Partner with PROs through the EPR to assist with required needs for recycling programs for products under the EPR schemes. Establish industrial symbiosis projects by developing a system for registering businesses with			Human Resources

GOAL	OBJECTIVE	ACTIVITY	TIMEFRAME	RESPONSIBLE DEPARTMENT	HUMAN

			2025	2026	2027	2028	2029		RESOURCES/ESTIMATED BUDGET REQUIRED
		various waste streams, allowing waste to be exchanged between companies.							
	Objective 3: Divert Organic waste from the WDF.	Develop a waste diversion plan.						LM	Human Resources
		Partner with composting company to compost organic waste.						LM	Human Resources.
Goal 3: Improve hazardous and medical waste management	Objective 1: Ensure appropriate disposal of hazardous waste.	Develop a database of hazardous waste generators. Develop a monitoring program in collaboration with district EHPs to ensure						LM & DM	Human Resources

GOAL	OBJECTIVE	ACTIVITY	TIMEFRAME					RESPONSIBLE DEPARTMENT	HUMAN RESOURCES/ESTIMATED BUDGET REQUIRED
			2025	2026	2027	2028	2029		
		appropriate disposal of hazardous waste. Request safe disposal certificates from waste generators.							
		Pilot implementation of National household hazardous waste strategy developed by DFFE. Make provisions such as drop-off centres for the disposal of household hazardous waste.						LM	Internal expenditure as determined by operations.

	Objective 2: Ensure	Collaborate with health facilities such as clinics,						LM	Human Resources

GOAL	OBJECTIVE	ACTIVITY	TIMEFRAME					RESPONSIBLE DEPARTMENT	HUMAN RESOURCES/ESTIMATED BUDGET REQUIRED
			2025	2026	2027	2028	2029		
	appropriate disposal of medical waste.	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.							

Goal 4: Improve management and compliance of waste facilities	Objective 1: Ensure compliance with licensing conditions.	Develop a plan to close all the identified noncompliances and the required budget. Develop an organic waste diversion plan.						LM	Human Resources

GOAL	OBJECTIVE	ACTIVITY	TIMEFRAME					RESPONSIBLE DEPARTMENT	HUMAN RESOURCES/ESTIMATED BUDGET REQUIRED
			2025	2026	2027	2028	2029		
	Objective 2: Improve management and maintenance of the landfill site.	Provision of electricity for Valkopppies. Establish a groundwater monitoring network for Valkopppies and Merweville WDFs.						LM	Internal expenditure as determined by operations

		Construct ablution facilities at Merveville WDF Establish drop-off centres.					LM	R800 000
	Objective 3: Adequate yellow fleet for operating & maintaining the WFs.	• Acquire the necessary yellow fleet ▯ Landfill Compactor ▯ Bulldozer ▯ TLB ▯ Tipper Truck. ▯ Woodchipper ▯ Excavator					LM, Province, DFFE & Provincial COGHSTA	▯ R11 106 010 ▯ R1 500 000 ▯ R1 330 840 ▯ R903 700 ▯ R1 400 000

GOAL	OBJECTIVE	ACTIVITY	TIMEFRAME					RESPONSIBLE DEPARTMENT	HUMAN RESOURCES/ESTIMATED BUDGET REQUIRED
			2025	2026	2027	2028	2029		
									▯ R6 500 000
Goal 5: Improve waste management information.	Objective 1: Improve reporting on IPWIS	Ensure consistency in reporting in reporting on IPWIS.						LM & Province	Human Resources

	Objective 2: Lack of information	Develop a database of hazardous and medical waste generators.						LM	Human Resources
Goal 6: Improve waste education and awareness	Objective 1: Expand education and awareness programmes.	Develop an annual education and waste awareness calendar. Partner with schools and other stakeholders. Develop awareness materials.						LM	Human Resources

GOAL	OBJECTIVE	ACTIVITY	TIMEFRAME					RESPONSIBLE DEPARTMENT	HUMAN RESOURCES/ESTIMATED BUDGET REQUIRED
			2025	2026	2027	2028	2029		

		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
		Acquire graduates to assist with awareness campaigns.						LM & National	DFFE Programme & SANBI
	Objective 2: Combat illegal dumps	Combat illegal dumps through education and advocacy.						LM	Human Resources

GOAL	OBJECTIVE	ACTIVITY	TIMEFRAME					RESPONSIBLE DEPARTMENT	HUMAN RESOURCES/ESTIMATED BUDGET REQUIRED
			2025	2026	2027	2028	2029		
		Get coordinates for all major illegal dumps.							
Goal 7: Strengthen human and financial resources management.	Objective 1: Strengthen human resources.	Fill vacant positions for the successful implementation of the IWMP. Identify training requirements, such as EMIs, and have personnel trained & designated.						LM LM, Province & DFFE	Internal expenditure as determined by operations.

	Objective 2: Ensure Sound budgeting and financing of waste management services	Review waste disposal tariffs to include waste disposal fees and have different fees for businesses and households. Ensure all waste projects						LM	Human Resources

GOAL	OBJECTIVE	ACTIVITY	TIMEFRAME					RESPONSIBLE DEPARTMENT	HUMAN RESOURCES/ESTIMATED BUDGET REQUIRED
			2025	2026	2027	2028	2029		
		are included in the IDP.							
Goal 8: Improve integrated waste	Objective 1: Ensure Integrated waste	Finalise waste management and gazette waste management By-laws.						LM	R200 000

management planning.	management planning.	Ensure that waste projects are included in the IDP. Ensure that the approved IWMP is endorsed by MEC. Develop annual reports on the implementation of the IWMP. Develop a plan for waste pickers integration.						LM	Human Resources
GOAL	OBJECTIVE	ACTIVITY	TIMEFRAME					RESPONSIBLE DEPARTMENT	HUMAN RESOURCES/ESTIMATED BUDGET REQUIRED
			2025	2026	2027	2028	2029		
		Trained available officials as EMIs.						LM	R10 000,00 each

		Ensure that the IWMP is reviewed every five years.						LM	Internally free and externally R500 000.00

11 MONITORING AND REVIEW OF THE IWMP

It is necessary to continuously and regularly monitor the Implementation Plan to ensure the IWMP's targets, goals, and objectives are met within the allotted timelines.

According to Section 13(2) of the NEMWA, 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 BMW must appoint a WMO who will be responsible for implementing and managing the IWMP. The BMW'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 IWMP. The following should be included in the report:

- Strategic Issues: The effectiveness of the BMW 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

To continuously improve on the current level of waste management services in the BMW, 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 BMW.

12 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 BWM IWMP will be incorporated into the final BWM IWMP.

13 CONCLUSION

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

The IWMP 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 BWM.

Based on current information, from Stats SA, 2022, there has been an increase in population growth from 49 586 which was recorded in 2011 to 72 972 recorded in 2022. Total number of households increased from 13 088 to 19 216. 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 four (04) WDFs which the Municipality manages. All These WDFs are licensed except for Murraysburg. The Vaalkoppies WDF is the only landfill with a weighbridge, however not in use. Waste recycling is limited within the Municipality. Illegal dumping is a challenge, however; the Municipality has a cleaning and greening program to conduct cleanup campaigns and awareness campaigns. Challenges that the Municipality encounters include amongst others limited human resources, non-compliance with conditions of the WDFs, poor management of WDFs, challenges with waste management vehicles, poor infrastructure, and absence of electricity and water supply in the WDF.

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 BMW can be summarized as follows:

- Effective and efficient solid waste service delivery
- Promote waste minimisation and recycling

- Improve hazardous and medical waste management
- Improve management and compliance of waste facilities
- Improve waste management information
- Improve waste education and awareness
- Strengthen human and financial resources management
- Improve integrated waste management planning

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 BMW to implement 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 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.

14 REFERENCES

Beaufort West Municipality 5th Generation Integrated Development Plan, 2022-2027.

Beaufort West municipality: Integrated waste management plan Draft Implementation Plan.

Department of Environmental Affairs Integrated Waste Management Plan Guidelines (2022).

Department of Environmental Affairs, 2011. National Domestic Waste Collection Standards (GG No. 33935 GN. No. 21). Pretoria: Govemment Printers.

Department of Environmental Affairs, 2020. National Waste Management Strategy. Pretoria: Government Printers.

Department of Water Affairs and Forestry, 1998. Minimum Requirements for Waste Disposal by Landfill.

Republic of South Africa, 1996. The Constitution of the Republic of South Africa (Act No. 108 of 1996). Cape Town: Government Printers.

Republic of South Africa, 1998. National Water Act, No. 36 of 1998.

Republic of South Africa, 2000. Local Government: Municipal Systems Act (Act No. 32 of 2000). Cape Town: Government Printers.

Republic of South Africa, 2008. National Environmental Management Act: Waste Act (Act No. 59 of 2008). Cape Town: Govemment Printers.

Republic of South Africa, 2012. Government Gazette No. 35583 No. 625 National Waste Information Regulations.

Republic of South Africa, 2013 Government Gazette No. 36784 No. 635 National Norms and Standards for the Assessment of Waste for Landfill Disposal.

Republic of South Africa, 2013 Government Gazette No. 36784 No. 636 National Norms and Standards for the Assessment of Waste for Landfill Disposal.

Republic of South Africa. 1998, Government Gazette No 19519 Volume 401, National Environmental Management Act (Act 107 of 1998). 27 November 1998 No 1540.

Republic of South Africa. 2004, Government Gazette No 26595 Volume 469, National Health Act (Act 61 of 2003). 23 July 2004 No 869.

Statistics South Africa. 2011 Census.

Statistics South Africa. 2022 Census.

The Council for Scientific and Industrial Research, 2020. Revision of the Municipal Integrated Waste Management Planning Guidelines.

Western Cape Integrated Waste Management Plan 2017-2022.