

INTEGRATED WASTE MANAGEMENT PLAN (IWMP)

Prepared for:



On behalf of:



Prepared by:



EOH Coastal & Environmental Services

EAST LONDON

25 Tecoma Street

East London, 5201

043 726 7809

Also in Grahamstown, Cape Town, Johannesburg, Port Elizabeth and Maputo

www.cesnet.co.za | www.eoh.co.za

CONTENTS

1.	Introduction	9
1.1.	The impact of waste	9
1.2.	Waste life cycle (value chain) and its handling	11
1.3.	Historical overview in the development of iwmps	12
1.4.	The IWMP Process	13
1.5.	Waste definitions and key concepts	14
1.5.1.	Waste Definitions.....	14
1.5.2.	Waste Management Activities	15
1.5.3.	Integrated Waste Management Principles.....	16
1.6.	Key Legislation: Waste and the Law	17
1.6.1.	The Constitution of South Africa (Act 106 of 1996).....	17
1.6.2.	The National Environmental Management Act (Act 107 of 1998) as amended in 2010.....	18
1.6.3.	The National Environmental Management: Waste Act (No. 59 of 2008) (NEM: WA)	19
1.6.4.	National Environmental Management: Waste Amendment Act (No 26 of 2014) (NEM: WAA).....	22
1.6.5.	National Water Act (Act 36 of 1998) (NWA)	22
1.6.6.	National Health Act (63 of 2003).....	23
1.6.7.	The National Waste Management Strategy (NWMS) (2012).....	23
1.6.8.	National Domestic Waste Collection Standards, January 2011	24
1.6.9.	National Policy for the provision of basic refuse removal services to indigent households.....	25
1.6.10.	Municipal Solid Waste Tariff Strategy (2012).....	25
1.6.11.	National Pricing Strategy for Waste Management Charges (2014)	25
1.6.12.	Municipal Structures Act and Municipal Systems Act	26
1.6.13.	Local Government: Municipal Systems Act (Act 32 of 2000).....	26
1.6.14.	Municipal Waste Management By-Laws.....	26
1.6.15.	Other Relevant Legislation Pertaining to Waste Management	27
1.6.16.	Applicable National Environmental Standards and Guidelines	27
1.6.17.	Other Applicable Waste Management Regulations	29
1.6.18.	Relevant Regulations under the OHS Act, 1993.....	30
1.6.19.	International Obligations.....	30
2.	Defining the geographical area	31
3.	Situation analysis	33
3.1.	Demographics (Population and development profiles).....	33
3.2.	Determining current waste generation and estimating future waste generation rates and quantities 34	
3.3.	Waste quantities and types	35
3.3.1.	Waste Information System	35
3.3.2.	Weighbridge	36
3.3.3.	Volume density estimation system	37
3.3.4.	Waste stream analysis	38
3.4.	Waste disposal, treatment and recycling.....	43
3.4.1.	Status Quo of Waste Disposal Facilities.....	43
3.4.2.	Status Quo of Waste Treatment Facilities	52
3.4.3.	Status Quo of Waste Recyclers.....	52

3.4.4. Illegal dumping	54
3.5. Status of waste collection services.....	54
3.5.1. General waste collection services	55
3.5.2. General waste collection equipment.....	57
3.6. Financing of waste management.....	58
3.6.1. Budget: Income and expenditure.....	60
3.6.2. Tariff Structure.....	61
3.7. Organisational and Institutional matters	62
3.7.1. Organisational structure at Makana LM.....	64
4. Desired end state.....	66
4.1. Setting strategic goals, targets and indicators.....	66
5. Identify, evaluate and select alternatives	84
5.1. Strategic goals, targets, timeframe, budget.....	84
6. Communication and Stakeholder Participation	85
6.1. Consultation Process Summary	85
7. Implementation Instruments.....	87
7.1. Partnerships.....	87
7.1.1. Public-Public Partnerships.....	87
7.1.2. Public-Private Partnerships	87
7.1.3. NGO/CBO Partnerships	88
7.2. Legislative instruments: Development and enforcement of by-laws	88
7.3. Funding mechanisms	89
7.3.1. Funding Instruments.....	90
7.4. Implementation Plan (summary of an IWMP Planning Process)	91
8. Reporting on Monitoring.....	100
8.1. Waste management implementation and Monitoring programme	100
8.2. review of the IWMP	103
References.....	104
APPENDIX A.....	105

LIST OF FIGURES

Figure 1.1: Waste life-cycle.....	12
Figure 1.2: Integrated Waste Management Planning Process	13
Figure 1.3: Waste Management hierarchy	21
Figure 2.1: Location and ward distribution of Makana LM within the Sarah Baartman DM.	31
Figure 3.1: Map showing the route plan for kerbside waste collection in Grahamstown. Darkened (black) line indicates the routes of kerbside collection.....	56

LIST OF TABLES

Table 1.1: Typical disposal costs (2012) (DST, 2013).....	11
Table 1.2: Estimated recycling unit values for waste streams.....	11
Table 3.1: Racial distribution of the Makana LM by ward (StatsSA, 2011).....	33
Table 3.2: Age versus gender distribution for the Makana LM population (StatsSA, 2011)	33

Table 3.3: Average households income levels for the Makana LM population (StatsSA, 2011)	33
Table 3.4: Employment status of the Makana LM (StatsSA, 2011)	34
Table 3.6: Projected waste generation figures by mass and volume in Makana LM.	38
Table 3.7: Makana LM waste stream compositions	40
Table 3.8a: Summary of status of the Grahamstown landfill site.....	43
Table 3.8b: Operation of the Grahamstown landfill site as per the DWAF minimum requirements for landfill operation	44
Table 3.9a: Summary of status of the Alicedale landfill site.	46
Table 3.9b: Operation of the Alicedale landfill site as per the DWAF minimum requirements for landfill operation	47
Table 3.10a: Summary of status of the Riebeeck East landfill site.....	49
Table 3.10b: Operation of the Riebeeck East landfill site as per the DWAF minimum requirements for landfill operation	50
Table 3.11: Summary of domestic waste collection services provided within Makana LM.....	55
Table 3.12: Refuse removal by ward in the Makana LM (StatsSA, 2011)	55
Table 3.13: Makana LM solid waste management fleet database	57
Table 3.14: Makana LM waste management budget 2015/16 financial year.	60
Table 3.15: Makana LM tariff structure for 2015/2016 financial year.....	61
Table 3.16: Responsibilities of National, Provincial, and Local WMOs.	63
Table 3.17: Personnel responsible for waste collection, cleansing and landfilling at Makana LM.	65
Table 4.1: Summary of the main waste management issues in Makana LM.	66
Table 4.2: Key legal/policy requirements for Integrated Waste Management.	67
Table 4.3: The National Waste Management Strategy goals for municipalities aligned with the desired end state for Makana LM.	70
Table 4.4: Waste management priorities, objectives, targets and actions per the Eastern Cape IWMP (2010). Items highlighted orange are relevant to Makana LM.	71
Table 4.5: Proposed goals and objectives for Makana LM.....	76
Table 7.1: Proposed Makana LM Implementation Plan.....	92
Table 8.1: Programme for monitoring the implementation of the Makana LM IWMP	100

ACRONYMS & ABBREVIATIONS

CBD	Central Business District
CBO	Community Based Organisation
DEA	Department of Environmental Affairs
DEDEAT	Department of Economic Development, Environmental Affairs & Tourism
DoH	Department of Health
DWAF	Department of Water Affairs and Forestry
DWS	Department of Water and Sanitation
EMI	Environmental Management Inspectors
EPIP	Environmental Protection and Infrastructure Programme
EPWP	Extended Public Works Programme
HCRW	Health Care Risk Waste
IDMS	Infrastructure and Development Municipal Services
IDP	Integrated Development Plan
IWMP	Integrated Waste Management Plan
IWMSA	Institute of Waste Management of South Africa
LDV	Light Delivery Vehicle
LED	Local Economic Development
MLM	Makana Local Municipality
MEC	Member of Executive Council
MIG	Municipal Infrastructure Grant
MRF	Material Recovery Facility
MSA	Municipal Systems Act
NEMA	National Environmental Management Act
NEMWA	National Environmental Management Waste Act
NEMWAA	National Environmental Management Waste Amendment Act
NGO	Non-Governmental Organisation
NWMS	National Waste Management Strategy
REDISA	Recycling and Economic Development Initiative of South Africa
SAWIS	South African Waste Information System
SBDM	Sarah Baartman District Municipality
SMME	Small, Medium, Micro Enterprises
SoER	State of Environment Report
UCC	Universal Container Carriers
WIS	Waste Information System
WMO	Waste Management Officer
WtE	Waste to Energy
WWTW	Wastewater Treatment Works

EXECUTIVE SUMMARY

The Makana Local Municipality (LM) Integrated Waste Management Plan (IWMP) has been developed in line with the requirements of the Waste Act and the Department of Environmental Affairs (DEA) Guideline for the Development of Integrated Waste Management Plans.

Makana LM has a total population of approximately 80 400 persons and 21 384 households with an average of 3.7 persons per household. Based on Census data from 2011, about 19 014 (89%) households receive weekly waste collection services. A total of 8% households either utilise their own dumpsite or have no refuse disposal facilities. These are mostly farmers.

Important waste management issues identified in the Makana LM include:

- Limited capacity relating to waste management within the LM
- Landfill sites not managed to legal standards
- Limited resources allocated to waste management
- Waste management services are not financially sustainable
- There is limited knowledge and awareness among officials and communities relating to waste management
- Waste recovery and recycling initiatives are limited
- Waste by-laws and enforcement thereof is limited

Waste Management Officer

Success in the implementation of the Makana LM IWMP will hinge significantly on the municipality having formally appointed a competent, well capacitated and appropriately qualified Waste Management Officer (WMO). In terms of the Waste Act, it is mandatory for LMs to appoint a WMO. It is also one of the priority issues of the Department of Economic Development Environmental Affairs and Tourism (DEDEAT) that all LMs appoint a WMO. The roles and functions of a WMO are also described in the report.

It is further believed that a properly capacitated WMO could address most of the issues and actions identified without having to outsource to external service providers or consultants. The appointment of a competent WMO would therefore be well worth the investment.

Desired End State and Implementation Plan

A number of tables in the report document the various analyses and main outcomes of the current IMWP. The following table summarises the main elements of the Makana LM IWMP for achieving the Desired End State:

GOAL 1: INTEGRATED WASTE MANAGEMENT PLANNING AND IMPLEMENTATION	
OBJECTIVES	TARGETS
Promote integrated waste management planning and implementation.	Establish effective waste management programme that promotes Integrated Waste Management Planning in Makana LM.
	Elevate status of waste management in the IDP process.
	Implement the South African Waste Information system (SAWIS) reporting system.

	Ensure annual reporting on the IWMP
	Promote timeous IWMP Review
GOAL 2: WASTE MINIMIZATION AND RECYCLING AND RECOVERY	
OBJECTIVES	TARGETS
Promote waste minimization, recycling and recovery of waste.	Promote waste minimization and recycling in the densely populated areas of Makana LM (i.e. Grahamstown, Alicedale and Riebeeck East).
	Establish recycling opportunities driven by Makana LM.
	Promote waste minimization to achieve 20% reduction in land-filled waste within 5 years.
	Increase recycling by 20% within 5 years, to align with National target.
	Encourage private recyclers and establish opportunities to partner with private recyclers.
	Monitor non-municipal recycling initiatives within the Makana LM.
GOAL 3: DELIVERY OF WASTE SERVICES	
OBJECTIVES	TARGETS
Ensure the effective and efficient delivery of waste services.	Expand waste collection services in un-serviced areas, also aligned with proposed housing developments.
	Invest in adequate and functional waste management equipment.
GOAL 4: WASTE MANAGEMENT BY-LAWS/LEGISLATIVE TOOLS	
OBJECTIVES	TARGETS
Ensure that by-laws are developed and that they are consistent with the Waste Act and other applicable legislation.	Promote awareness of existing waste by-laws in the Makana LM.
GOAL 5: FINANCIAL MANAGEMENT	
OBJECTIVES	TARGETS
Ensure sound budgeting and financing of waste management services.	Improve financial sustainability of waste management in Makana LM.
GOAL 6: WASTE DISPOSAL FACILITIES	
OBJECTIVES	TARGETS
Ensure the safe and proper disposal of waste and management of facilities.	Develop, improve and maintain landfill sites to comply with Legislative Requirements and Makana LM needs.
	Ensure all waste disposal and storage sites are operated in terms of DWAF Minimum Requirements for Landfill Disposal and compliance with national and provincial waste and environmental legislation.
	Ensure operation of landfill sites by skilled operators.

GOAL 7: EDUCATION AND AWARENESS	
OBJECTIVES	TARGETS
Promote public awareness concerning waste management, recycling and littering.	Promote clean and healthy environment in Makana LM.
	Promote general awareness on waste related matters among Makana LM officials.
	Expand waste management awareness campaigns.
GOAL 8: COMPLIANCE AND ENFORCEMENT	
OBJECTIVES	TARGETS
Enforce compliance with waste by-laws and other legal policies and guidelines.	Ensure enforcement of Makana LM waste by-laws.
	Monitor effectiveness of waste by-law implementation.
GOAL 9: INSTITUTIONAL ARRANGEMENTS	
OBJECTIVES	TARGETS
Ensure effective waste management institutional arrangement.	Clarify structure and responsibilities for all waste management related positions, and identify gaps in the Makana LM organogram.
GOAL 10: MEDICAL, COMMERCIAL AND INDUSTRIAL AND HAZARDOUS WASTE	
OBJECTIVES	TARGETS
Develop tools to regulate appropriate disposal of medical, commercial, hazardous and industrial waste and diapers.	Prevent special waste streams from entering general waste sites throughout Makana LM.

1. Introduction

The Makana Local Municipality (LM) is one of seven (7) local municipalities forming part of the Sarah Baartman District Municipality (SBDM) in the Eastern Cape. The main towns in Makana LM are Grahamstown, Alicedale, Riebeek East and Sidbury.

In terms of the National Environmental Management: Waste Act (59 of 2008), all spheres of government that are responsible for waste management, including local municipalities, must develop an Integrated Waste Management Plan (IWMP). The IWMP is also a critical sector plan forming part of the Integrated Development Plan (IDP) that all municipalities are required to develop in terms of the Municipal Systems Act (32 of 2000). The promulgation of the Waste Act on 1 July 2009 was a key milestone in a bid to have common goals and understanding of how South Africa's waste should be managed.

In order to assist municipalities in the development of IWMPs, the Department of Environmental Affairs (DEA) has developed a document entitled '*Guideline for the Development of Integrated Waste Management Plans*'. This current Makana LM IWMP follows the structure of the DEA guideline.

The first Makana LM IWMP was compiled in 2007 in fulfilment of its legal obligations. The current report constitutes the first review of the Makana LM IWMP.

1.1. THE IMPACT OF WASTE

While poorly managed waste has the potential to impact negatively on the society, the economy and the environment, well managed waste can contribute to economic growth and improve the living conditions of people while reducing the negative impacts on the environment. It is therefore important to look at both the positive and negative impacts of integrated waste management. Waste should be looked at from both perspectives on:

- Society
- The Environment; and
- The Economy

Impact on society

Waste management starts at home where members of society consume food and other goods and discard of the waste. One can argue that waste management starts with the choice of what we buy and how long it will be used before it is discarded as waste.

Waste is a cost to society in that households have to pay waste collection fees to the municipality or the cost of poor health and living conditions when exposed to poorly managed waste. Therefore, the costs to society can be reduced if the amount of waste being discarded can be reduced.

Waste separation at source is a good place to start at household level as it will allow for good quality, clean recyclables becoming available for re-introduction into the economy and thereby stimulating job creation. It also allows for household composting of organic waste which can be used as soil enhancers in local gardens. Converting organic waste to compost which is used for food production in vegetable gardens contribute to food security and reduce the negative environmental impacts of waste disposal as discussed in the next section.

Impact on the environment

Historic problems experienced with municipal waste disposal facilities include waste disposal sites that are poorly sited, designed and operated and thus impact negatively on both the environment and quality of life (DEA, 2000). Environmental impacts of waste relate to impacts on air, soil and water (surface and groundwater). Each of these will be discussed briefly.

Air

Air pollution from waste is typically emissions as the result of uncontrolled burning of waste and the decomposition of organic waste when disposed of at landfill. Toxic substances such as dioxins are released into the atmosphere when chlorinated plastics such as PVCs are burnt at low temperatures. The organic waste fractions (garden and food waste) generate methane gas (a greenhouse gas with a climate change potential at least 20 times worse than mere carbon dioxide) when left to decompose, in a landfill.

Landfill gas extraction is the best way of mitigating air pollution from landfills. The extracted gas can be flared; converting the methane to CO₂ which is less harmful to the environment, or used as fuel or even to generate electricity.

Prevention of greenhouse gas emissions from waste is however always the best option. Composting of organic waste is one way of reducing the greenhouse gas emissions as composting is an aerobic process and therefore does not generate methane.

Soil

Waste disposal sites may result in soil pollution if not designed, constructed and managed properly. Illegal dumping sites is of particular concern as contaminants can leach from the waste into the soil, rendering the land unfit for certain uses i.e. agriculture, town development etc. Remediation of contaminated land is a cumbersome and costly process.

Water

One of the biggest impacts of waste on water in urban areas is as a result of littering. Litter causes blockages in stormwater systems, which can result in flooding of built-up areas.

Decomposition of organic waste in landfills is one of the main causes of leachate which, if not managed properly, can lead to both surface and groundwater pollution. Rainfall is also a contributing factor to leachate as the rain percolates through the waste body, dissolving contaminants and acting as transport medium for pollution into the surrounding environment.

Impact on economy

A survey of the South African formal waste sector (Department of Science Technology (DST), 2013) depicts the sector in 2012. The waste sector provides formal employment to at least 29,833 people and has a financial value of R15.3 billion, or 0.51% of GDP. The majority of this revenue (88% of private sector revenue and 80.4% of public sector revenue) is situated in large enterprises and metropolitan municipalities.

The typical landfilling costs of different types of waste are provided in Table 1.1. These typical costs vary substantially as it is not currently based on full cost accounting.

Table 1.1: Typical disposal costs (2012) (DST, 2013)

Waste type	(R/tonne)
General waste	100-150
Unclassified waste	100-150
Hazardous waste	600-800

An assessment to estimate the economic value of the resources currently being recovered through recycling in South Africa found that R8.2 billion worth of resources is currently being recovered and recycled back into the economy (based on 2012 data) (DST, 2014). This value could increase to R25.2 billion, if all the recyclable material going to landfill could be recovered, (DST, 2014). Estimated unit values for 13 selected waste streams are provided in Table 1.2. Unit values (R/tonne) for 13 selected waste streams (2013) (DST, 2014).

Table 1.2: Estimated recycling unit values for waste streams

Waste stream	Range in prices (R/t)	Unit value (R/t)
Municipal waste (non-recyclable portion)	N/A	367.38
Organic component of municipal Waste	N/A	188.63
Biomass waste from industry	N/A	188.63
Construction and demolition waste	85 - 90	87.50
Paper	200 - 2000	744.47
Plastic	1900 - 3960	3119.54
Glass	450.500	490.00
Metals	1000 - 7000	2270.00
Tyres	N/A	367.00
Waste Electrical and Electronic Equipment (WEEE)	1000	1000.00
Slag	170 - 180	175.00
Ash	0 - 5	3.00
Waste oils	2777.78	2777.78

1.2. WASTE LIFE CYCLE (VALUE CHAIN) AND ITS HANDLING

The life cycle of waste starts at the manufacturing of consumer goods using virgin resources and ends when the consumer goods reach the end of its useful life. The end of life handling of waste depends on the waste type. Where possible, end-of-life products should be reconditioned for re-use or sent for recycling where the maximum resource value of the material can be realised. The waste life cycle is illustrated in Figure 1.1 and includes generation, collection, transport, reuse, recycling, recovery and disposal.

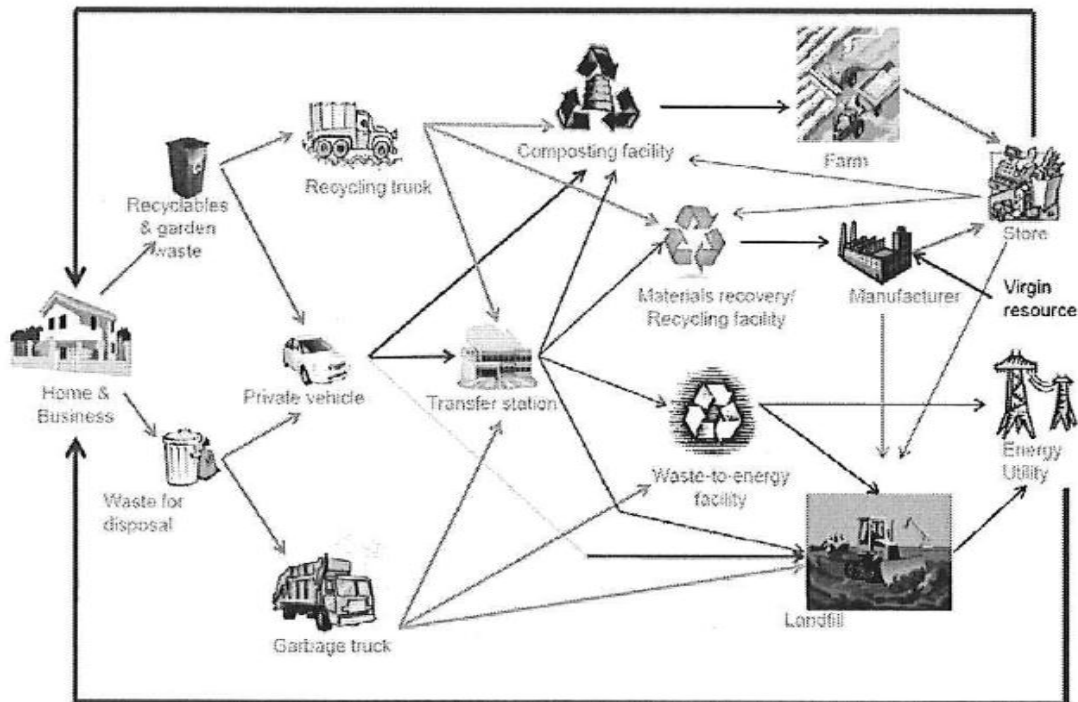


Figure 1.1: Waste life-cycle

Waste handling infrastructure includes:

- Receptacles in the form of bins, bags or other suitable containers
- Drop-off sites i.e. garden sites
- Transfer stations — bulking facilities where waste is compacted and loaded onto long-haul vehicles for transport to landfill
- Buy-back centres
- Materials recovery facilities (MRF)
- Composting sites
- Waste-to-energy facilities
- Waste treatment facilities
- Waste disposal facilities (landfills)

1.3. HISTORICAL OVERVIEW IN THE DEVELOPMENT OF IWMPs

South Africa has come a long way with regard to the management of waste. Historically, waste was managed by various pieces of legislation that were governed by different government departments and which were fragmented in nature, resulting in gaps and poor waste management practises. The promulgation of the National Environmental Management: Waste Act (At 59 of 2008) was a key milestone in South Africa's environmental policy and legislation, and gives effect to the principles of the Constitution, NEMA and the White Paper on Integrated Pollution and Waste Management (IP&WM). Apart from providing a coherent regulatory framework for sound waste management practices, it presents a great opportunity to ensure that the country's approach to waste management contributes to environmental wellness as well as support the country's economic and social priorities. Waste management also has an important role to play in mitigating climate change, and the successful implementation of the waste hierarchy is a part of a range of responses aimed at reducing the country's greenhouse gas emissions. A transition to a low carbon "green" economy as anticipated in a coherent national

response to climate change would see a proliferation of green jobs in the waste sector ranging from life-cycle engineering to informal waste recovery.

The IWMP must as a minimum contain all aspects listed in Section 12 of NEM: WA from generation of waste, through to primary storage, collection, transport, separation, alternative waste treatment and final disposal of the waste. Financial planning, funding of the service, setting of tariffs, participation of the community, partnerships with other role players, and the role of suppliers of equipment should all be covered in an IWMP.

1.4. THE IWMP PROCESS

One of the first steps in the development and implementation of an effective IWMP is to ensure that there is clarity as to the overriding policy/political goals of the plan including the following:

- Policy principles specified in NEMA, NEM:WA, IP&WM e.g. accountability, cradle-to-grave, equity, full cost accounting, good governance, integration, open information, participation and polluter pays
- Job creation, focusing on previously disadvantaged communities
- Waste management hierarchy
- Secondary resources economy

The primary objective of integrated waste management planning is to integrate and optimise waste management, in order to maximise efficiency and minimise the associated environmental impacts and financial costs, and to improve the quality of life of all South Africans. The integration must be both horizontal and vertical within the government departments as well as in sectors. The diagram below (Figure 1.2) summarises the integrated waste management planning process.

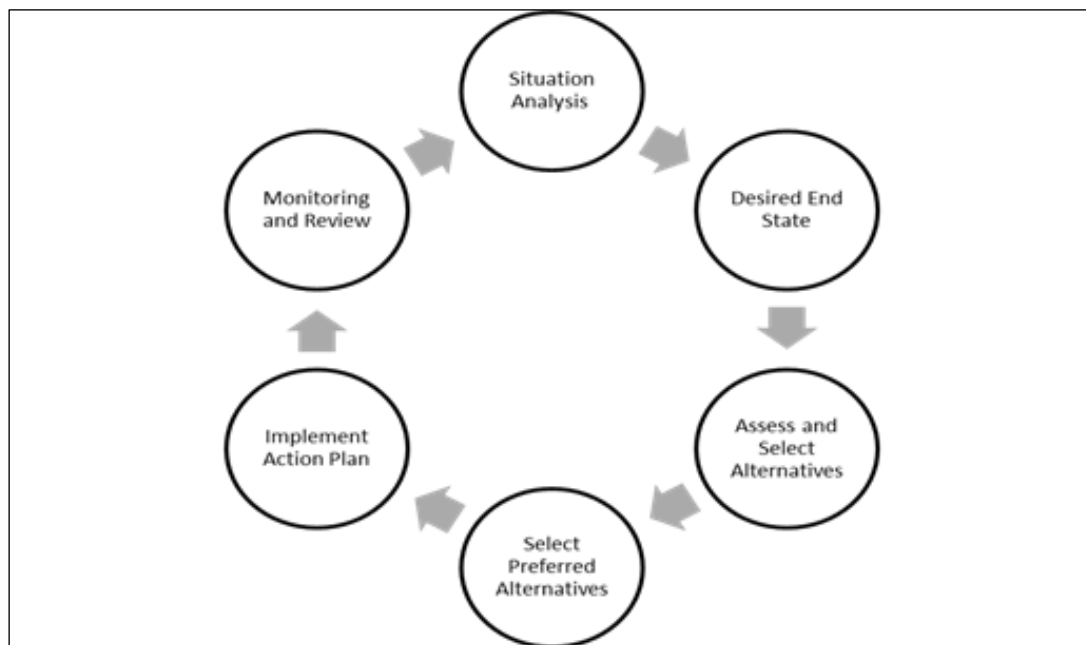


Figure 1.2: Integrated Waste Management Planning Process

The development of an IWMP includes a situation analysis which includes the following:

- A description of the population and development profiles of an area to which the plan relates;
- An assessment of the quantities and types of waste that are generated in that area;

- A description of the services that are provided or that are available for collection, minimisation, reuse, recycling, and recovery, treatment and disposal of waste; and
- It must also include the number of persons in the area who are not receiving waste collection services.

Furthermore, the situation analysis must also be completed in terms of institutional, financial, political, legal and physical conditions. When the situation analysis is completed, the assessor must then define the desired end state for the overall management of waste. The desired end state sets out the goals and targets to achieve in the implementation of the IWMP.

The next step in the planning process of the IWMP deals with the identification of alternatives to achieve the goals and targets that have been set in the desired end state. The identified alternatives should then be evaluated to assess environmental, technical, social, financial, institutional and organisational arrangements and impacts. The evaluation of alternatives will inform municipalities on choosing the best alternative to achieve its goals and targets set during the desired end state.

It is crucial to develop an implementation plan for the implementation of an IWMP. This section must include a concise and clear description of instruments that will be used for implementing the IWMP. It must describe how institutional and organisational matters; financial matters; education and training and management of assets will be addressed in order to reach the goals and targets.

Performance assessment is the last step in the IWMP process, although this happens outside the development of the plan. This includes the evaluation and review of the plan to ensure the respective objectives are being met.

A municipality must ensure that it has the necessary capacity in terms of human and financial resources to develop an IWMP. Co-operation between all departments responsible for waste management within a municipality such as Community services, Engineering, Parks, Planning and Finances, will be required to ensure all aspects related to integrated waste management are covered and addressed in the final IWMP.

In order to assist municipalities in the development of IWMPs, the Department of Environmental Affairs (DEA) has developed a document entitled Guideline for the Development of Integrated Waste Management Plans. This current Makana Local Municipality IWMP follows the structure of the DEA guideline.

1.5. WASTE DEFINITIONS AND KEY CONCEPTS

1.5.1. Waste Definitions

Waste management activities are regulated by law and therefore it is important to look at the legal definition of waste as defined in the National Environmental Management Waste Act (NEMA: WA or Waste Act) (Act 59 of 2008) as amended by the National Environmental Management: Waste Amendment Act (NEMA: WAA) (Act 26 of 2014):

"Waste" means -

- a) any substance, material or object, that is unwanted, rejected, abandoned, discarded or disposed of, or that is intended or required to be discarded or disposed of, by the holder of that substance, material or object, whether or not such substance, material or object can be re-used, recycled or recovered and includes all wastes as defined in Schedule 3 to this Act; or
- b) any other substance, material or object that is not included in Schedule 3 that may be defined as a waste by the Minister by notice in the Gazette

Defining waste has its origins in the sound management of unwanted and discarded material, which historically was disposed of as waste without consideration for the reuse or recycling potential. Realising the potential value of waste as a resource, the Act goes further by providing "end-of waste" criteria as follows:

Any waste or portion of waste, referred to in paragraph (a) and(b) ceases to be waste-

- i. once an application for its re-use, recycling or recovery has been approved or, after such approval, once it is, or has been re-used, recycled or recovered;
- ii. where approval is not required, once a waste is, or has been re-used, recycled or recovered;
- iii. where the Minister has, in terms of section 74, exempted any waste or a portion of waste generated by a particular process from the definition of waste; or
- iv. where the Minister has, in the prescribed manner, excluded any waste stream or a portion of a waste stream from the definition of waste.

A second legal definition of waste contained in the National Water Act (Act 36 of 1998) defines waste in terms of polluting potential, rather than its unwanted nature, as is the case in NEM: WA.

Furthermore, Schedule 3 of the NEM: WAA (Act 26 of 2014) defines hazardous waste and business waste as:

'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 waste, have a detrimental impact on health and the environment and includes hazardous substances, materials or objects within business waste, residue deposits and residue stockpiles

'Business waste' means waste that emanates from premises that are used wholly or mainly for commercial, retail, wholesale, entertainment or government administration purposes.

1.5.2. Waste Management Activities

There are rules and regulations that have to be complied with in terms of the law when dealing with certain waste management activities. The following activities are defined as waste management activities:

- Importation of exportation of waste;
- The generation of waste, including the undertaking of any activity or process that is likely to result in the generation of waste;
- The accumulation and storage of waste;
- The collection and handling of waste;
- The reduction, re-use, recycling and recovery of waste;
- The trading in waste;
- The transportation of waste

- The transfer of waste;
- The treatment of waste; and
- The disposal of waste

1.5.3. Integrated Waste Management Principles

There are a number of principles for integrated waste management provided in South African law. Application of these principles in integrated waste management will promote compliance is within relative easy reach despite constant changes in regulations and the addition of norms and standards. The principles include:

- **Sustainable Development:** the integration of social, economic and environmental factors into planning, implementation and future generations
- **Access to Information:** The Promotion of Access to Information Act (PAIA), 2 of 2000, and NEMA gives effect to the Constitution right to access information that is held by the state or private body that is required to exercise to protect a right. The (right to know) consists of two components, the right to environmental education and the right to be informed of decisions, which may affect the environment, it is submitted that both are related-(if one is ignorant about matters environmental one cannot make informed decisions concerning the environment)
- **Precautionary Principle:** Where information is lacking, the worst case scenario shall be taken. For example, if a waste is unknown, the treatment method must be for the most known hazardous component of the waste.
- **Duty of Care:** Anyone that generates a waste is responsible for their waste from cradle to grave. Section 28 of NEMA imposes a general duty of care which applies to every person which has caused causes or may cause significant pollution. NEMA applies a retrospective obligation on a polluter
- **Preventative Principle:** This principle requires that activities that will cause environmental pollution be prevented.
- **Polluter Pays Principle:** The costs of pollution should be borne by the person/company responsible for the pollution and not by the state or society at large.
- **Best Practicable Environmental Option (B.PEO):** The option that provides the most benefit or causes the least damage to the environment as a whole, at a cost acceptable to society, in the long term as well as in the short term.
- **Cooperative Governance:** All spheres of government to participate in environmental management decisions and implementation
- **Global and International Obligations:** Obligations must be discharged and upheld in the public interest
- **Integrated Environmental Management:** acknowledgement that all elements of the environment are linked and potential effects of decisions made regarding environmental management
- **Environmental Justice:** Seeks a fair and equitable distribution of environmental degradation and pollution through social and environmental transformation enhancing the quality of life and resource preservation
- Participatory
- **The participation of all interested and affected parties** in environmental governance must be promoted
- **Equitable access** to environmental resources

1.6. KEY LEGISLATION: WASTE AND THE LAW

Central to the development and implementation of an IWMP at local government level is the identification of the relevant government policies and legislation so that specific legal aspects of the IWMP are properly addressed. The following section highlights relevant national and local legislation that are relevant to the Makana LM IWMP.

Below is a brief overview of the key laws under which solid waste management is governed in South Africa.

1.6.1. The Constitution of South Africa (Act 106 of 1996)

The Constitution is the supreme law of the Republic of South Africa and any act or conduct inconsistent with it is invalid and will have no force of law. Environmental provisions are included in the Bill of Rights in Chapter 2 of the Constitution Act, No. 108 of 1996. In terms of section 24 of the Act, everyone has the right:

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

The Constitution provides the legal basis for allocating powers to different spheres of government, and is thus relevant to the institutional regulation of integrated pollution and waste management. The table (Table 1.6.1) below provides a summary of duties relevant to Makana LM in terms of the Constitution.

Table 1.6.1 Summary of waste management related powers allocated in terms of the Constitution

Constitution Competency: Schedule 5B	The Division in section 84(1) and (2) of the Municipal Structures Act		
		District Municipality – section 84(1)	Local Municipality – section 84(2)
Cleansing	Provision of service to clean and maintain public streets and public places and the regulation and control thereof	No powers	Full powers in the area of jurisdiction
Refuse removal, refuse dumps and solid waste disposal	Establishment, operation, management, control and regulation of a system for the removal refuse Establishment, operation, management, control and regulation of refuse dumps and solid waste disposal sites	Solid waste disposal sites, insofar as it relates to – (i) the determination of a waste disposal strategy (ii) the regulation of waste disposal (iii) the establishment, operation and control of waste disposal sites, bulk waste transfer facilities and waste disposal facilities for more than one local municipality in the district	Remaining powers in the area of jurisdiction, including the establishment, operation, management, control and regulation of refuse dumps and of solid waste disposal sites that serve the area of local municipality

1.6.2. The National Environmental Management Act (Act 107 of 1998) as amended in 2010

The objective of National Environmental Management Act (NEMA) No.107 of 1998 is: *“To provide for co-operative environmental governance by establishing principles for decision-making on matters affecting the environment, institutions that will promote co-operative governance and procedures for coordinating environmental functions exercised by organs of state; and to provide for matters connected therewith.”*

NEMA seeks to realise the environmental rights, which are enshrined in the Constitution of the Republic of South Africa. The National Environmental Management Act is the framework law that provides for environmental protection in South Africa. The principles endorsed within this Act therefore form the basis for dealing with environmental issues in this country.

National Environmental Management Principles

NEMA stipulates that development must be socially, environmentally and economically sustainable. Sustainable development requires, amongst other factors, that all necessary steps be taken to avoid:

- a) The disturbance of ecosystems and the loss of biological diversity; pollution and degradation of the environment;
- b) The disturbance of culturally important landscapes and sites;
- c) The pollution and degradation of the environment;
- d) Waste or where it cannot be altogether avoided, minimized and reused or recycled where possible and otherwise disposed of in a responsible manner.

Furthermore it requires the responsible use and exploitation of non-renewable natural resources and that the use of renewable resources does not exceed the level beyond which their integrity is jeopardised. Finally sustainable development requires the prevention of negative impacts on the, environment by the early anticipation of such impacts.

Participation of all interested and affected parties in governance is encouraged as well as community wellbeing and empowerment. Of particular importance is the recognition of the fact that the environment is held in public trust for the people, the beneficial use of environmental resources must serve the public interest and the environment must be protected as the people's common heritage.

Another important principle within NEMA is that social, economic and environmental impacts of activities, including disadvantages and benefits, must be considered, assessed and evaluated through an Environmental Impact Assessment (EIA), and decisions taken must be appropriate in the light of such consideration and assessment.

The NEMA Second Amendment Act (2010) makes provision for the Minister, with the concurrence of the MEC to identify activities which may not be commenced without prior authorisation from the Minister or MEC and to identify existing authorised and permitted activities which must be considered, assessed, evaluated and reported on.

Organs of state are also entitled to have access to information relating to the environment held by any person where that information is necessary to enable organs of state to carry out their duties in terms of NEMA or any other law concerned with the protection of the environment.

1.6.3. The National Environmental Management: Waste Act (No. 59 of 2008) (NEM: WA)

NEMA: WA, commonly referred to as **The Waste Act**, came into effect on 3 July 2009 and was amended in November 2013 and again in June 2014.

The Waste Act covers a wide spectrum of issues including requirements for a National Waste Management Strategy, definition of priority waste, waste minimisation, treatment and disposal of waste, Industry Waste Management Plans, licensing of activities, and waste information management. It now forms the central waste legislation for South Africa. This Act aims to enforce an integrated approach to waste management, with emphasis on prevention and reduction of waste at source and, where this is not possible, to encourage reuse and recycling in preference to disposal.

The municipal responsibilities as defined by the Waste Act are summarised in the Table 1.6.2 below.

Table 1.6.2 Summary of municipal waste management responsibilities as defined in the NEM: Waste Act No. 59 of 2008

Relevant Section	Municipal Responsibilities
Chapter 2	National Waste Management Strategy, Norms and Standard
Waste service standards	
(9)	<p>(1) <i>A municipality must exercise its executive authority to deliver waste management services, including waste removal, waste storage and waste disposal services, in a manner that does not conflict with section 7 or 8 of this Act.</i></p> <p>(2) <i>Each municipality must exercise its executive authority and perform its duty in relation to waste services, including waste collection, waste storage and waste disposal services, by –</i></p> <ul style="list-style-type: none"> <i>a) adhering to all national and provincial norms and standards;</i> <i>b) integrating its waste management plans with its integrated development plans;</i> <i>c) ensuring access for all to such services;</i> <i>d) providing such services at an affordable price, in line with its tariff policy referred to in Chapter 8 of the Municipal Systems Act;</i> <i>e) ensuring sustainable services through effective and efficient management;</i> <i>f) keeping separate financial statements, including a balance sheet of the services provided.</i> <p>(3) <i>In exercising its executive authority contemplated in subsection (1), a municipality may furthermore, amongst other things, set—</i></p> <ul style="list-style-type: none"> <i>a) local standards for the separation, compacting and storage of solid waste that is collected as part of the municipal service or that is disposed of at a municipal waste disposal facility;</i> <i>b) local standards for the management of solid waste that is disposed of by the municipality or at a waste disposal facility owned by the municipality, including requirements in respect of the avoidance and minimisation of the generation of</i>

	<p>waste and the re-use, recycling and recovery of solid waste;</p> <p>c) local standards in respect of the directing of solid waste that is collected as part of the municipal service or that is disposed of by the municipality or at a municipal waste disposal facility to specific waste treatment and disposal facilities; and</p> <p>d) local standards in respect of the control of litter.</p> <p>(5) (a) Whenever a municipality intends passing a by-law so as to give effect to subsection (1), it must follow a consultative process provided for in Chapter 4 of the Municipal Systems Act.</p> <p>(b) Paragraph (a) need not be complied with if the by-law is amended in a non-substantive manner.</p>
Chapter 3	Institutional and Planning Matters
Designation of waste management officers	
(10)	(3) Each municipality authorised to carry out waste management services by the Municipal Structures Act, 1998 (Act No. 117 of 1998), must designate in writing a waste management officer from its administration to be responsible for co-ordinating matters pertaining to waste management in that municipality.
Certain organs of state to prepare integrated waste management plans	
(11)	(4) (a) Each municipality must— (i) submit its integrated waste management plan to the MEC for approval and (ii) include the approved integrated waste management plan in its integrated development plan contemplated in Chapter 5 of the Municipal Systems Act. (7) (b) A municipality must, before finalising its integrated waste management plan, follow the consultative process contemplated in section 29 of the Municipal Systems Act, either as a separate process or as part of the consultative process relating to its integrated development plan contemplated in that section.
Chapter 4	Waste Management Measures
Waste collection services	
(23)	(2) Every municipality must, subject to this Act, and as far as is reasonably possible, provide containers or receptacles for the collection of recyclable waste that are accessible to the public.

The Waste Act introduces the waste management hierarchy (Figure 1.3) as the basis for waste management decision making.

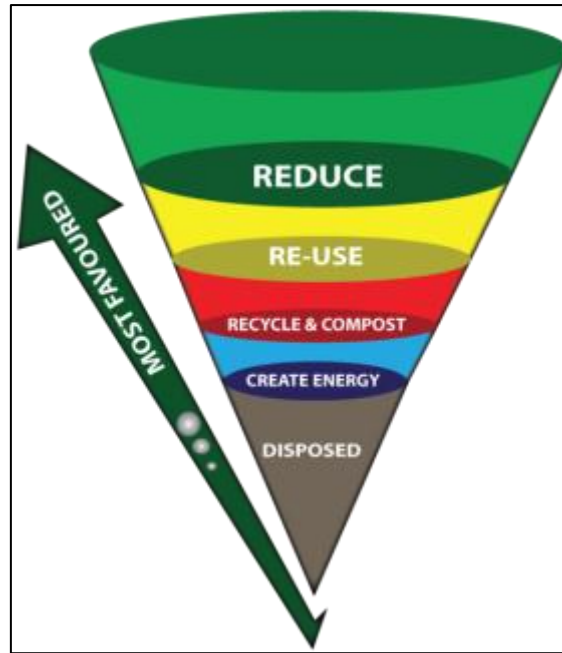


Figure 1.3: Waste Management hierarchy

According to the National Environmental Management Act: Waste Act and Waste Amended Act the waste hierarchy definitions are as follows:

Re-use: means 'to utilise the whole, a portion of or a specific part of any (articles) substance, material object from the waste stream (again) for a similar or different purpose without changing the form or properties of such substances, materials or objects';

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'

Recovery: means the 'controlled extraction (of material) or retrieval of (energy) any substance (or) material object from waste (to produce a product)'

The overall purpose of the Waste Act is to regulate the management of waste in order to protect the health of people as well as the environment (plants, animals, land, air, water, etc.). The Waste Act makes businesses and industries that create waste responsible for the waste they generate. It also holds businesses involved in waste management and recycling accountable for the waste they manage. This helps minimise illegal dumping, pollution and with it, harmful effects on human health and the environment.

To ensure that waste is managed correctly across all sectors (from the household to businesses and government); the Waste Act regulates the licensing and control of waste management activities. A list of waste management activities, requiring a licence have been published in 2009 and an updated list on 29 November 2013. The 'Listed Activities' include:

- Storage of waste
- Recycling and recovery of waste
- Treatment of waste
- Disposal of waste
- Construction, expansion or decommissioning of facilities and associated structures and infrastructure

Only activities exceeding the thresholds as published in the Government Gazette require a waste management license.

The Waste Management Listed Activities are divided into the three categories below:

- **Category A** requires a Basic Assessment Process set out in the Environmental Impact Assessment Regulations under section 24(5) of NEMA, 1998 (Act 107 of 1998) as part of a waste management license application.
- **Category B** requires a Scoping and Environmental Impact Assessment Process set out in the EIA Regulations under section 24(5) of NEMA, 1998 (Act 107 of 1998) as part of the application process before a Waste Management License may be issued.
- **Category C** requires the prospective operator to comply with the relevant Norms and Standards that are provided for the storage, recycling or recovery of waste as determined by the minister:
 - Norms and standards for the storage of waste, 2013; or
 - Standards for Extraction, Flaring or Recovery of Landfill Gas, 2013; or
 - Standards for Scrapping or Recovery of Motor Vehicles, 2013

1.6.4. National Environmental Management: Waste Amendment Act (No 26 of 2014) (NEM: WAA)

This amendment act does not repeal the Waste Act; it merely adds to and amends certain sections of the Waste Act. The Waste Act and the Amendment should be read together.

The Waste Amendment Act, 2014 is important to note since it introduced:

- A new definition of waste;
- Established the Waste Management Bureau to:
 - Function as a specialist implementing agent within DEA
 - Promote and facilitate waste minimisation, re-use, recycling and recovery of waste
 - Manage the disbursement of incentives and funds derived from waste management charges
 - Monitor the implementation of industry waste management plans
 - Progressively build capacity within the Bureau to provide specialist support for the development and implementation of the municipal waste management plans
 - Support and advice on the development of waste management plans, tools, instruments, processes, systems, norms, standards and municipal waste management plans and capacity building programmes
- A Pricing Strategy for imposing waste management charges; and
- Schedule 3 which contain a list of defined waste streams.

1.6.5. National Water Act (Act 36 of 1998) (NWA)

National Water Act (36 of 1998) (NWA) is the main statute dealing with managing and controlling the nation's water resources. General Authorisations in terms of Section 39 of the Act provides for the discharge of waste or water containing waste into a water resource through a pipe, canal, sewer or other conduit; and disposing in any manner of water which contains waste from, or which has been heated in, any industrial or power generation process.

The authorisation permitted in terms of this Schedule replaces the need for a water user to apply for a license in terms of the National Water Act provided that the discharge is within the limits and conditions set out in the Act. Discharge up to 2 000 m3 of wastewater on any given day into a non-listed Water Resource must adhere to the General Limit Values while wastewater discharge into a Listed Water Resource must adhere to the Special Limit Values provided for in the Act. Discharge of Complex Industrial Wastewater is however prohibited in both cases.

For all these forms of water uses one will need a water license unless the activities fall under general authorisation or exempted water uses. Makana LM will have to make a clear provision on how it intends to deal with its waste water or water containing waste.

1.6.6. National Health Act (63 of 2003)

The purpose of the National Health Act, 2003 (Act 61 of 2003) is to regulate national health and to provide uniformity in respect of health services across the nation. According to the Act, medical waste is classified as Hazard Rating 1 or Extreme Hazard waste and must be incinerated before disposal at a landfill. Alternative methods for disposal are pre-treatment by sterilisation, direct irradiation or micro-waving to render inactive, prior to its final disposal by landfilling at an hazardous waste (H:H or H:h) landfill site.

1.6.7. The National Waste Management Strategy (NWMS) (2012)

The National Waste Management Strategy (NWMS) was gazetted by DEA in 2012. The strategy aims at giving effect to the objectives of the Waste Act. The strategy effectively defines South Africa's vision for waste management highlighting the waste management hierarchy which encourages waste disposal only as a last resort. The NWMS is structured around a framework of eight goals together with targets which must be met by 2016. To accomplish the goals municipalities are expected to have achieved the following:

- All metropolitan municipalities, secondary cities and large towns have initiated separation at source programmes aimed at promoting waste minimisation, re-use, recycling and recovery;
- 80% of municipalities are running local awareness campaigns to ensure that people are aware of the impact of waste on their health, well-being and the environment;
- All municipalities have integrated their IWMPs with their IDPs, and have met the targets set in IWMPs; and
- All municipalities that provide waste services have conducted full-cost accounting for waste services and have implemented cost reflective tariffs.

	DESCRIPTION	TARGETS (2016)
Goal 1	Promote waste minimization, re-use, recycling and recovery	<ul style="list-style-type: none"> • 25% of recyclables diverted from landfill sites for re-use, recyclables or recovery. • All metropolitan municipalities, secondary cities and large towns have initiated separation at source programmes. • Achievement of waste reduction and recycling targets set industrial IWMPs for paper and packaging, pesticides, lighting (CFLs) and tyre industries.

Goal 2	Ensure the effective and efficient delivery of waste services	<ul style="list-style-type: none"> 95% of urban households and 75% of rural households have access to adequate levels of waste collection services 80% of waste disposal sites have permits
Goal 3	Grow the contribution of the waste sector to the green economy	<ul style="list-style-type: none"> 69, 000 new jobs created in waste sector 2, 600 additional SMEs and cooperatives participating in waste service delivery and recycling
Goal 4	Ensure that people are aware of the impact of waste on their health, well-being and the environment	<ul style="list-style-type: none"> 80% of municipalities running local awareness campaigns. 80% of schools implementing waste awareness programmes.
Goal 5	Achievement integrated waste management planning	<ul style="list-style-type: none"> All municipalities have integrated their IWMPs with their IDP's, and have met the targets set in IWMPs. All waste management facilities required to report to SAWIS have waste quantification systems that report information to Waste Information System.
Goal 6	Ensure sound budgeting financial management for waste services	<ul style="list-style-type: none"> All municipalities that provide waste services have conducted full-cost accounting for waste services and have implemented cost reflective tariffs
Goal 7	Provide measures to remediate contaminated land	<ul style="list-style-type: none"> Assessment complete for 80% of sites reported to the contaminated land register Remediation plans approved for 50% of confirmed contaminated sites
Goal 8	Established effective compliance with and enforcement of the Waste Act	<ul style="list-style-type: none"> 50% increase in the number of successful enforcement actions against non-compliant activities. 800 EMIs appointed in the three spheres of government to enforce the Waste Act.

1.6.8. National Domestic Waste Collection Standards, January 2011

The main purpose of the Waste Collection Standards is to redress past imbalances in provision of waste collection services, where it has become imperative that acceptable, affordable and sustainable waste collection services be rendered to all South Africans. The provision of waste collection services will improve the quality of life of citizens and will ensure that citizens live in a clean and more acceptable environment. The lack of waste collection services can result in a number of environmental and human and health problems and therefore proper planning is crucial.

It is the responsibility of the Makana LM to:

- Provide equitable waste collection services to all households within its jurisdiction. In areas where travelling distances and the resulting costs may render regular waste collection services impractical, the municipality,

through by-laws, must allow for more feasible alternative ways of waste handling, such as appropriate and regularly supervised on-site disposal;

- Provide clear guidelines to households regarding types of waste, the sorting of the waste, appropriate containers, and removal schedules for each type of waste;
- Encourage community involvement in recycling and provide an enabling environment for household to recycle domestic waste. Where the LM does not provide for kerbside collection of the recyclable component of source separated waste, it must co-operate with the recycling sector to ensure the provision of facilities where recyclables can be dropped-off for collection by service providers; and
- Ensure that communal collection points for recyclables are kept tidy at all times.

1.6.9. National Policy for the provision of basic refuse removal services to indigent households

This National Policy for the Provision of Basic Refuse Removal Services to Indigent Households paves the way for municipalities in South Africa to provide basic refuse removal services within their areas of jurisdiction. It has emerged over the years that South Africa has a backlog in terms of provisioning of basic refuse removal services. Most of the households that suffer from the prolonged lack of refuse removal are those from previously disadvantaged localities such as the high density, low-income areas. These are, in many instances the same households that are currently eligible for receiving free basic water and free basic electricity.

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

1.6.10. Municipal Solid Waste Tariff Strategy (2012)

The Municipal Solid Waste Tariff Strategy (2012) provides guidelines to assist municipalities in improving the financial sustainability of waste services within their jurisdiction. The strategy covers areas such as:

- Scope of services and service levels
- Financial and subsidy framework
- Revenue streams and tariff approaches
- Costing of services
- Principles of municipal solid waste tariff setting
- Municipal solid waste tariff options (e.g. flat rate vs waste generated)
- Implementation

1.6.11. National Pricing Strategy for Waste Management Charges (2014)

The National Pricing Strategy for Waste Management Charges (2014) provides a framework for the implementation of economic instruments in the South Africa waste sector.

The strategy addresses economic instruments both at a national and local level with the main aim of implementing economic instruments which will:

- Mainstream the Polluter Pays Principle
- Reduce generation of waste
- Increase diversion of waste away from landfill toward reuse, recycling and recovery

- Support the growth of the SA secondary resource economy from waste

Of particular relevance to local government are the possible “down-stream” instruments for setting waste management charges including:

- Flat rates
- Volumetric tariffs or “pay-as-you-go”
- Disposal taxes

Other factors that needed to be considered when deciding of a tariff mechanism include:

- Existing pricing of waste services
- Monitoring and enforcement capacity
- Local socio-economic conditions
- Pricing against the demand for the service

1.6.12. Municipal Structures Act and Municipal Systems Act

The Municipal Structures Act (Act 117 of 1998) and the Municipal Structures Amendment Act (Act 33 of 2000) provides for the establishment of municipalities provides for the establishment of municipalities in accordance with the requirements relating to categories and types of municipality and defines the structures these municipalities must provide for government function.

Section 84(1) of the Act relates to the function and powers of the District Municipality including:

- Integrated development planning
- The regulation of waste disposal
- The establishment, operation and control of waste disposal sites, bulk transfer stations and disposal facilities for more than one local municipality in the district.

General refuse removal remains the responsibility of the local municipality. However, section 88 deals with the co-operation required between the District and Local Municipalities.

1.6.13. Local Government: Municipal Systems Act (Act 32 of 2000)

The Municipal Systems Act is part of a series of legislation which aims to empower local government fulfil its Constitutional Objectives, including empowering local government for the provision of waste management services. The act further provides that the national Minister responsible for local Government may take regulations or issue guidelines for incentives and penalties to encourage the efficient use of resources when providing services, the recycling of waste and other environmental objectives. It dictates community participation in its decision making processes, implementation of by-laws & integrated development plans amongst other managerial functions.

Local Government planning is done through the integrated Development (IDP’s), every 5 years with an annual review on their progress. Waste management is a core component of the IDP and is often supported by an integrated Waste Management Plan.

The Municipal Finance Management Act (2003) ensures sound and sustainable management of the financial affairs of municipal and other institutions in local sphere of government.

1.6.14. Municipal Waste Management By-Laws

In terms of the Local Government Municipal Systems Act, 2000 (Act 32 of 2000), read with section 156 of The Constitution of the Republic of South Africa, a municipality may make and administer by-laws for the effective administration of the matters which it has the right to administer. According to the Constitution, a by-law that conflicts with national and provincial legislation is invalid. A municipal by-law may only be enforced after it has been published in the official gazette of the relevant province, upon request by the municipality. Municipal by-laws must also be accessible to the public.

Makana LM has under Section 156 of The Constitution of the Republic of South Africa, enacted the Refuse Removal By-Law. The by-law has been published in the official Provincial Gazette, as stipulated under Section 162 of The Constitution of the Republic of South Africa (Act 106 of 1996) and is enforced by the Makana LM traffic officers. The Makana LM further relies on the waste management regulations and policies to act on waste related issues.

1.6.15. Other Relevant Legislation Pertaining to Waste Management

The following Acts (and their amendments) are to be noted when understanding the requirements for management of waste in South Africa:

- The NEM: Integrated Coastal Management Act (Act 24 of 2008)
- The NEM: Air Quality Act (Act 39 of 2004) (NEM: AQA)
- The Hazardous Substances Act (Act 15 of 1973) as amended in 1992 and regulations
- The Occupational Health and Safety Act (Act 85 of 1993) (OHSA) and regulations
- The National Road Traffic Act (Act 93 of 1996) and regulations
- Physical Training Act (Act of 125 of 1991)
- The National Petroleum Resources Development Act (Act 28 of 2002)
- Mineral and Petroleum Resources Development Act (Act 28 of 2002)
- Consumer Protection Act (Act 68 of 2008)
- The NEM: Protected Areas Act (Act 45 of 2003) (Act No.57 of 2003)
- The NEM: Biodiversity Act (Act No.10 of 2004)
- National Environmental Management Laws Second Amendment Act (Act 201 of 2013)
- Second Hand Goods Act (Act 6 of 2009)

1.6.16. Applicable National Environmental Standards and Guidelines

Norms and Standards for assessment of waste for landfill disposal

- The *National Norms and standards for assessment of waste for landfill and disposal* specify the analysis required to identify the chemical substances present in the waste and defines the threshold limits for the total concentration and leachable concentration of a particular element or chemical substance in a waste.
- In terms of the Norms and Standards, certain wastes are prohibited or restricted for disposal to landfill and these have various effective dates/compliance time frames from the date of the promulgation of the Norms and Standards.

Norms and standards for storage of waste

- The National Norms and Standards for the Storage of Waste, GN 926 of 29 November 2013, provide for the following requirements in terms of storage of waste:
 - A uniform national approach to the management of waste storage facilities;
 - To ensure best practice in the management of such facilities;

- To implement minimum standards for the design and operation of new and existing facilities.

A **“general waste storage facility”** is defined as a facility that has a capacity to store in excess of 100m³ of general waste continuously.

A **“hazardous waste storage facility”** is defined as a facility that has a capacity to store in excess of 80m³ of hazardous waste continuously.

It is therefore important that the waste has been classified Hazardous or General in order to correctly apply the Norms and Standards.

The norms and standards apply to any person storing wither general or hazardous waste. No Basic Assessment or waste license will be required but the facility must comply with the norms and standards. The norms and standards do not apply to the storage of general or hazardous waste in surface impoundments or lagoons. New facilities must be registered with the competent authority within 90 days prior to construction taking place. In locating the facility, consideration must be given to the public health and environmental protection.

A new hazardous waste storage facility must be located in an industrial demarcated zone. A facility not located in such a zone must have a buffer zone of at least 100m unless there is a prescribed buffer zone by the relevant municipality. The location must also take into account the hazards, including the flammability and toxicity of the waste stored and applicable codes and standards (e.g. SANS codes and standards).

A general waste storage facility may be located in a residential area and must be easily accessible to the public. Both facilities must be easily accessible to emergency response personnel and equipment. The Norms and Standards also list several construction and design requirements, including building requirements, impermeable and chemical resistant floor requirements.

Access to the facilities must be controlled and weatherproof, durable and legible signs in at least three official languages must be displayed. The signs, as a minimum, must indicate the risks involved in entering the site, hours of operation, name and contact details of the person responsible for the facility. Access to hazardous waste storage facilities must be limited to employees trained in the operation of such a facility and emergency response procedures. Various requirements for waste storage containers, including above and underground storage facilities, are included in the norms and standards. Continuous training must be provided to all employees working with waste and to all contract workers that may be exposed to the waste.

All storage facilities must have an emergency preparedness plan dealing with at least the following:

- Hazardous identification
- Prevention measures
- Emergency planning
- Emergency response
- Remedial actions

Section 15 of the Norms and standards sets out various monitoring and inspection requirements. Some inspections are as frequent as weekly. A registered engineer must inspect tanks containing hazardous waste at least once a year to determine tank integrity, corrosion, piping, valves, bunding and impermeability of the bund wall and floor.

Internal audits must be conducted bi-annually and each occasion an official report must be compiled by the relevant auditor which must be made available to the external auditor. An independent external auditor must audit the facility biennially, and must submit his/her report to the relevant authority. Various requirements for the external audit report are set out in section 16 of the Norms and Standards. The norms and standards do not set out what qualifications an external auditor must have, but this would presumably be somebody with relevant experience in waste management and auditing of waste management facilities.

Records dealing with the number of storage containers or tanks must be kept, so to the date of collection as well as the authorised collector(s) and proposed final point of treatment, recycling or the disposal. If it is intended to discontinue a waste storage facility it must be rehabilitated to the satisfaction of the relevant authority.

A person who lawfully operated a facility prior to 29 November 2013 may continue with the activity for the duration stipulated in the permit or license until such a document expires, where after compliance with the Norms and Standards is required.

1.6.17. Other Applicable Waste Management Regulations

- National Waste Management Strategy (DEA, 2011)
- Minimum Requirements for the Handling, Classification and Disposal of Hazardous Waste, 3rd ed. (DWAF, 2005a)
- Minimum Requirements for Waste Disposal by Landfill, 3rd ed. (DWAF, 2005b)
- Minimum Requirements for Water Monitoring at Waste Management Facilities, 3rd ed. (DWAF, 2005c)
- White Paper on Integrated Pollution and Waste Management for South Africa (2000)
- Waste Classification and Management Regulations, Government Notice R634 of 2013
- National Norms and Standards for Disposal of Waste to Landfill, Government Notice R636 of 2013
- Guidelines for the Utilization and Disposal of Wastewater Sludge (Vol.1 to 5) DWAF, 2006
- Framework for the Management of Contaminated Land (DEA, 2010)
- Draft Standards for Assessment of Waste for Landfill Disposal. Notice 613 of 2012
- Waste Classification and Management Regulations 2013
- National Norms and Standards for the Remediation of Contaminated Land and Soil Quality 2014
- National Policy on Thermal Treatment of General and Hazardous Waste GG32439, GN777, 24 July 2009
- Waste Tyre Regulation, GG31901, GN 149, 2009
- Framework for the Management of Contaminated land, 2010
- Change of licensing authorities in terms of Section 43(3), GG34019, GN 77, 19 February 2011
- Draft Regulations for site Assessment and Reports, 35161, GN 234, 19 March 2012
- Municipal waste sector plan, GG35206, GN 270, 30 March 2012
- Draft regulations regarding health Care Risk Waste Management (HCRW), 35405, GN 452, 1 June 2012
- Proposed national standards for validation of the treatment efficacy and operation of a non-combustion technology for the treatment of health care waste, 1 June 2012
- National Waste Information Regulations, GG35583, GN 615, 13 August 2013
- Waste Classification & Management Regulations, GG36784, GN 634, 23 August 2013
- National Norms and Standards for Assessment for Waste for Landfill Disposal, GG36784, GN 635, 23 August 2013
- National Norms and Standards for Disposal of Waste to Landfill, GG36784, GN 636, 23 August 2013
- National Standards for Extraction, flaring or recovery to landfill gas, GG37087, GN 925, 29 November 2013

- National Standards for the Scrapping or Recovery of Motor Vehicles, GG37088, GN 926, 29 November 2013
- Draft national norms and standards for organic waste composting, 7 February 2014
- National Norms and Standards for Remediation for Contaminated Land and Soil Quality, GG37603, GN 331, 2 May 2014
- Radioactive Waste Management Policy and Strategy for South Africa

1.6.18. Relevant Regulations under the OHS Act, 1993

- Hazardous Substances Regulations, GN R1179, August 1995
- Asbestos Regulations, GN R155, February 2001 and GN 30904, March 2008
- Major Hazard Installation Regulations, GN Regulations, GN R692, July 2001
- Hazardous Biological Agents Regulations, GN R1390, December 2001
- Construction Regulations, 2003, and amendment 2014

1.6.19. International Obligations

Environmental legislation gives effect to South Africa's obligations in terms of international Environmental agreements. *The Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, 22 March 1989 (Basel)* is one example of an international agreement, ratified by the South African Government that is applicable to waste management.

2. Defining the geographical area

Makana Local Municipality (Makana LM) is situated approximately 120km east of Port Elizabeth and about 180km west of East London in the Eastern Cape Province (Figure 2.1). Makana LM is one of seven local municipalities within Sarah Baartman District Municipality. The other municipalities are Ndlambe, Sundays River Valley, Blue Crane Route, Kouga, Kou-Kamma and Dr Beyers Naude Local Municipalities.

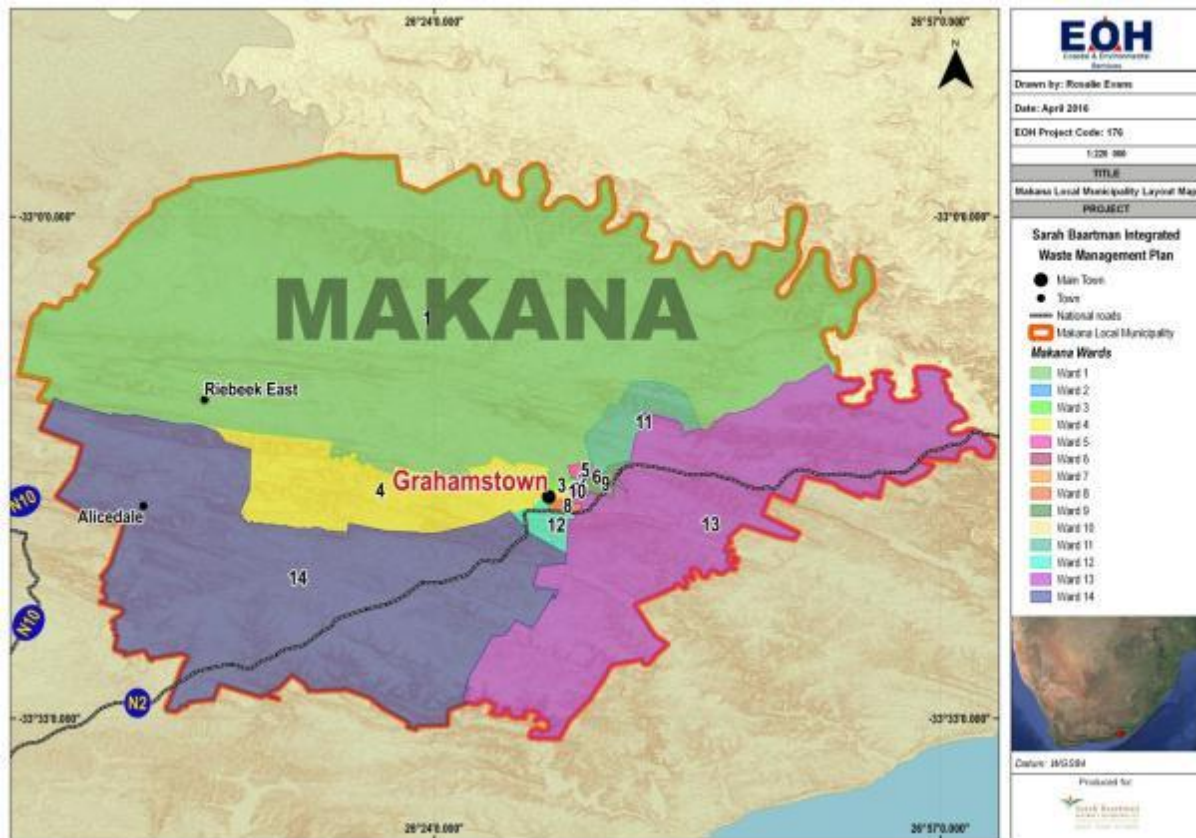


Figure 2.1: Location and ward distribution of Makana LM within the Sarah Baartman DM.

Makana LM encompasses 9 main towns and villages divided into 14 wards and covers an area of approximately 4 375.62km² with a total of approximately 21 384 households (Census, 2011). The total population is approximately 80 390 people with 91% living in areas classified as urban while the remaining 9% live on farms (Census, 2011). Makana LM is a relatively densely populated with approximately 18.4 persons/km², with Grahamstown having the largest concentration of people (Makana, IDP, 2015/2016).

Existing main settlement areas in the Makana Local Municipality are:

- Grahamstown
- Riebeeck East
- Alicedale
- Seven Fountains
- Fort Brown
- Salem
- Sidbury

The land surrounding Salem is subject to land claim; and this may result in the need to expand the settlement. Furthermore, Sidbury no longer performs a true human settlement function as it is entirely surrounded by game farms and has become the administrative centre for game farming, (Makana LM, IDP, 2015/2016).

The majority of the Makana Municipality population (80%) is situated in Grahamstown. Alicedale comprises of approximately 10% of the population while Riebeek East and the rural areas comprise of 5% and 4% respectively (Makana LM, IDP, 2015/2016).

Urban housing developed has increased in the Makana LM from 2001 to 2011. The ward reflecting the highest growth percentage with an increase of almost 70% is ward 4. Wards 11 and 8 have remained static. It is expected that most of the growth and housing demand will occur in the Grahamstown area, (Makana LM, IDP, 2015/2016).

3. Situation analysis

3.1. DEMOGRAPHICS (POPULATION AND DEVELOPMENT PROFILES)

Makana LM has a total population of approximately **80 400** persons in **21 388** households with an average of 3.4 persons per household. Ward 4 and 5 have the highest percentage of the population with approximately 10% each, with wards 1, 7 and 12 being the least populated at approximately 3.6% each (Table 3.1). The majority of the population in the Municipality is Black African at 78%.

Table 3.1: Racial distribution of the Makana LM by ward (StatsSA, 2011)

Wards/ Population group	Black African	Coloured	Indian/Asi an	White	Other	Total population/ ward	Total % population/ward
Ward 1	2 212	423	3	313	3	2 954	3.67
Ward 2	7 034	13	10	22	17	7 096	8.83
Ward 3	2 265	3 349	53	739	60	6 466	8.04
Ward 4	2 804	3 191	199	2 180	96	8 469	10.54
Ward 5	7 836	435	9	1	38	8 320	10.35
Ward 6	4 668	20	8	3	8	4 708	5.86
Ward 7	2 880	34	3	1	20	2 938	3.65
Ward 8	2 459	327	70	1 643	88	4 587	5.71
Ward 9	4 930	17	3	30	30	5 011	6.23
Ward 10	6 627	44	7	44	29	6 751	8.4
Ward 11	6 868	12	11	2	21	6 915	8.6
Ward 12	1 656	150	116	996	8	2 928	3.64
Ward 13	5 888	67	3	516	20	6 495	8.08
Ward 14	4 574	1 642	29	482	25	6 752	8.4
Total population	62701	9725	525	6974	464	80389	
Total % population	78,00	12,10	0,65	8,68	0,58		100

Table 3.2: Age versus gender distribution for the Makana LM population (StatsSA, 2011)

Age	0 - 18	0 - 18	19 - 35	19 - 35	36 - 60	36 - 60	61 - 120	61 - 120
Gender	Male	Female	Male	Female	Male	Female	Male	Female
Percentage (%)	15.78	15.64	15.98	16.55	12.5	15.0	3.23	5.32

According to the census 2011, approximately 12.7% of households have no form of income. The majority (20.53%) of households reported earnings less than R19 601 per annum (Table 3.3). Only 19 236 (24%) people in the municipality are employed (Table 3.4).

Table 3.3: Average households income levels for the Makana LM population (StatsSA, 2011)

	W 1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12	W13	W14	Total Hous ehold s	Total %
No income	36	291	243	249	270	108	96	258	159	381	240	9	168	210	2 718	12.73

R 1 - R 4800	18	66	54	24	141	63	54	18	75	138	90	-	90	75	906	4.24
R 4801 - R 9600	51	75	84	36	243	108	60	30	90	129	135	-	129	96	1 266	5.93
R 9601 - R 19 600	174	459	270	171	471	216	243	117	300	477	480	-	432	345	4 155	19.46
R 19 601 - R 38 200	249	393	264	228	534	231	228	153	348	381	516	3	411	444	4 383	20.53
R 38 201 - R 76 400	123	294	243	261	354	189	123	132	192	297	252	9	240	321	3 030	14.19
R 76 401 - R 153 800	60	228	177	393	144	177	63	225	126	219	99	21	108	126	2 166	10.14
R 153 801 - R 307 600	33	93	177	432	54	102	15	243	72	75	48	30	63	57	1 494	7
R 307 601 - R 614 400	24	33	117	297	30	33	3	153	30	24	18	18	39	39	858	4.02
R 614 001 - R 1 228 800	6	6	51	96	6	3	-	36	6	-	3	3	18	15	249	1.17
R 1 228 801 - R 2 457 600	-	6	12	27	-	3	-	6	3	3	-	-	9	6	75	0.35
R 2 457 601 or more	-	-	6	24	-	-	-	12	-	-	-	3	-	6	51	0.24
Unspecified	-	-	-	-	-	-	-	-	-	-	-	-	-	3	3	0.01
Total Household Number /ward	774	1 944	1 698	2 238	2 247	1 233	885	1 383	1 401	2 124	1 881	96	1 707	1 743	21 354	100
Total Household % / ward	3.62	9.1	7.95	10.48	10.52	5.77	4.14	6.48	6.56	9.95	8.81	0.45	7.99	8.16	100	

W = Ward

Table 3.4: Employment status of the Makana LM (StatsSA, 2011)

Employment status	Number	Percentage (%)
Employed	19 233	23.93
Unemployed	9 261	11.52
Discouraged work-seeker	3 195	3.97
Other not economically active	24 087	29.96
Not applicable	24 612	30.62

Approximately 15% of people in the Makana LM have completed high school, while approximately 8% have higher education. Only 5% of the people in the LM have no form of schooling.

3.2. DETERMINING CURRENT WASTE GENERATION AND ESTIMATING FUTURE WASTE GENERATION RATES AND QUANTITIES

While population growth is not expected to increase materially over the next five years, probably the main driver of waste generation will be the rate of urbanisation and the change in the socio-economic profile of the LM's population.

The main change to the profile of waste collection in Makana LM will be the development/expansion of the urban centres, especially Grahamstown as a result of the rural to urban migration and the development of these areas. This could manifest itself in the following manner:

- The establishment of new low and middle income housing
- Informal settlements (if migration is not managed)
- Increased service-based industry to support the demands of the influx of people and the development of the region in general; and
- Peri-urban type settlements along the main transport corridors.

Other anticipated trends include:

- Low or negative rural population growth rates
- An aging rural population

With reference to domestic waste, there will be a need to expand household waste collection services in urban areas of Makana LM as new housing developments come on line. As per the Makana LM IDP Final Review 2015/16, the total estimated housing demand resulting from population growth is 4430 additional households by 2030. Most of this demand would be accommodated in Grahamstown. The IDP also reflects an analysis based on the Census 2011 data which reflects the housing demand associated with the eradication of informal dwellings to be 723 households and that associated with backyard shacks to be 1432 households.

3.3. WASTE QUANTITIES AND TYPES

3.3.1. Waste Information System

The South African Waste Information System (SAWIS) is national waste information system developed by the DEA in order to provide a mechanism to record monthly data on the handling of waste throughout South Africa. The Waste Information Regulations require the Minister to establish a waste information system for the recording, collection, management and analysis of data and information which must include the quantity, type and characteristics of waste generated, reused, recycled recovered, stored, transported, treated, transformed and disposed of and a register of waste management activities that have been licensed. The SAWIS was voluntarily implemented over the period 2004-2007.

The *National Waste Information Regulation, Government Gazette No. 35583, 13 August 2012*, came into effect on 1 January 2013. These regulations changed the SAWIS from voluntarily to a mandatory reporting. They also provide guidance on data required to be reported and those who are required to submit data.

The process of Waste Categorisation and Reporting:

- 1) Waste classification as per SANS 10234.
- 2) Registration on SAWIS – List of Activity (Generators Hazardous waste >20kg's per day, Recovery, recycling, treatment, disposal or exportation).
- 3) Waste Categorisation.
- 4) Reporting to SAWIS commencing 90 days on a quarterly basis.

It is mandatory for the following activities to register and report to SAWIS:

- **Generators of Waste**
 - Generators of hazardous waste in excess of 20kg per day.
- **Recovery or recycling of waste**
 - Recovery of the energy from the waste in excess of three tons per day.
 - Recovery of waste at a facility that has the capacity to process in excess of 10 tons of general waste or in excess of 500kg of hazardous waste per day, excluding recovery that takes place as an integral part of an internal manufacturing process within the same premises.
 - The scrapping or recovery of motor vehicles at a facility that has an operational area in excess of 500m².
 - Recycling of general waste at a facility that has an operational area in excess of 500m².
 - Recycling of hazardous waste in excess of 500kg per day as a monthly average.
- **Treatment of waste**
 - Treatment of general waste using any form of treatment at a facility that has the capacity to process in excess of 10 tons of general waste per day or 500kg of hazardous waste per day excluding the treatment of effluent, wastewater or sewerage.
 - Treatment of health care risk waste regardless of size of capacity of the facility.
- **Disposal of waste**
 - Disposal of general waste to land covering an area in excess of 200m².
 - Disposal of quantity of hazardous waste to land.
- **Exportation of hazardous waste**

Hazardous waste exported from the Republic of South Africa.

3.3.2. Weighbridge

There are three landfill sites in Makana LM at the following main centres:

- Grahamstown;
- Alicedale; and
- Riebeeck East.

Only one of these, the Grahamstown landfill site, has a weighbridge. However, this is also currently not in use. The exact quantities of waste disposal are unknown, although a certain level of record-keeping (i.e. vehicle size and type of waste) takes place at the Grahamstown landfill site. There is no form of waste quantification at Alicedale and Riebeeck East landfill sites.



Weighbridge at Grahamstown landfill site

3.3.3. Volume density estimation system

In a case where there is no weighbridge, the Minimum Requirements for Waste Disposal by Landfill prescribes that daily tonnage of waste generation may be calculated on the basis of incoming volumes. This involves counting incoming vehicles and estimating the volumes carried in cubic meters. Daily tonnages may also be obtained by applying per capita waste generation rates to the figures for the population served. Generally, these rates vary with the socio-economic standing of the population ranging from 0.4kg per capita per day in the poor areas to 1.29kg per capita per day in the affluent areas (SA SoER, 2006).

The DEA IWMP Guidelines also 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.
- Direct measurement techniques – Even more costly than physical sampling.

For the purpose of the Makana LM IWMP, a modelling approach was adopted (as per the IWMP Guidelines section 2.2.3) to estimate waste generation.

The South African State of the Environment Report (SA SoER) estimated that each individual person generates approximately 0.7kg of waste each day. This is further broken down according to income category as follows:

- Low Income 0.41kg/capita/day
- Middle Income 0.74kg/capita/day
- High Income 1.29kg/capita/day

The reference waste generation averages for different income levels were applied to income categories sourced from Census 2011 data.

Based on the above, the estimation of the amount of waste generated within the Makana LM indicated in Table 3.6 below:

Table 3.6: Projected waste generation figures by mass and volume in Makana LM.

	Households	People	Total persons by income group	SA SoER (kg/capita/day)	Daily Mass (kg/day)	Waste density (kg/m ³)	Volume (m ³ /day)
No income	2 718	10 022					
R 1 - R 4800	906	3 341					
R 4801 - R 9600	1 266	4 668	18 031	0.41	7 393	330	22
R 9601 - R 19 600	4 155	15 321					
R 19 601 - R 38 200	4 383	16 162					
R 38 201 - R 76 400	3 030	11 173					
R 76 401 - R 153 800	2 166	7 987	50 643	0.74	37 476	330	114
R 153 801 - R 307 600	1 494	5 509					
R 307 601 - R 614 400	858	3 164					
R 614 001 - R 1 228 800	249	918					
R 1 228 801 - R 2 457 600	75	277					
R 2 457 601 or more	51	188					
Unspecified	3	11	10 067	1.29	12 986	330	39
Grand Total	21 354	78 741		Total kg per day	57 855		175
Average persons per household	3.69			Total kg per year	21 116 934		
				Total tons per year	21 117		

Based on the analysis above (Table 3.6), it is conservatively estimated that the domestic waste generated in Makana LM is in the order of approximately **21 000 tons** per year.

3.3.4. Waste stream analysis

Waste can be categorised as general and hazardous waste based on the characteristics of the waste.

General Waste	<ul style="list-style-type: none"> • Domestic waste; • Business waste not containing hazardous waste or hazardous chemicals; • Non-infectious animal carcasses; • Garden waste; • Waste packaging; • Waste tyres; • Building and demolition waste not containing hazardous waste or hazardous chemicals; and • Excavated earth material not containing hazardous waste or hazardous chemicals.
Hazardous Waste	<p>As general rule of thumb all industrial waste should be considered potentially hazardous until it has been classified (following the precautionary approach).</p> <p>Pre-classified hazardous waste streams include:</p> <p>Waste Products:</p> <ul style="list-style-type: none"> • Asbestos waste; • PCB waste or PCB containing waste (> 50 mg/kg or 50 ppm); and • Expired, spoilt or unusable hazardous products(e.g. paint, used oil, etc.)
Mixed Waste	<ul style="list-style-type: none"> • General waste, excluding domestic waste, which contains: hazardous waste or hazardous chemicals.

	<ul style="list-style-type: none"> • Mixed, hazardous chemical wastes from analytical laboratories and laboratories from academic institutions in containers less than 100 litres.
Other Waste	<ul style="list-style-type: none"> • Commercial waste • Industrial waste • Mining waste • Healthcare risk waste

Waste generated in Makana LM can generally be categorised as follows:

Domestic waste

In Makana LM, domestic waste consists of paper, plastic, metal, glass, electronics, putrescibles/food waste, garden, and building and demolition rubble.

Commercial waste

In Makana LM, commercial waste consists mainly of paper, cardboard, plastic, glass, tin and metal from wholesalers, warehouses, etc.

Industrial waste

There are no major waste generating industries or mines that operate in the Makana LM. Therefore, the possibility of hazardous industrial waste disposal on the landfill sites is minimal. The municipality does not experience any problems with the disposal of hazardous waste on the landfills.

Healthcare risk waste

Typical healthcare risk waste includes hazardous medical waste such as needles, syringes, swabs, body parts, and other infectious waste from clinics, hospitals, doctors and funeral parlours.

The primary health care facilities within the Makana LM area are as follows:

- Fort England Hospital
- Settlers Day Hospital
- Settlers Hospital
- Temba SANTA Hospital
- Grahamstown Mobile 1
- Grahamstown Mobile 2
- Grahamstown Mobile 3
- Grahamstown Mobile 4
- Grahamstown Clinic
- Grahamstown FP Clinic
- Middle Terrace TLC Clinic
- Middle Terrace Clinic
- Joza Clinic
- Riebeeck East Clinic
- Kwa-Nonzwakazi Clinic
- NG Dlukulu Clinic
- Anglo African Street Clinic
- Tanty Clinic
- Raglan Road Clinic

- Alicedale Clinic
- Assumption Clinic
- Albany Road Clinic

None of the typical healthcare risk waste was observed at any of the Makana LM landfill sites. All (medical) waste types from the medical facilities listed above is collected and transported by a private company to an approved medical health treatment facility in Port Elizabeth for incineration, treatment or disposal. The municipality generally does not have a problem with medical waste being disposed at the landfill sites.

Agricultural waste

Agricultural waste typically includes waste such as pesticides, herbicides, and fertilizer residues or containers. These may also be categorised as hazardous waste. In Makana LM, the greatest challenge with agricultural waste is the disposal of chillies and abattoir waste at the Grahamstown landfill site.

Hazardous waste

Hazardous waste typically includes sewage sludge, animal carcasses (sometimes infectious) , paint, oil, asbestos and disposable nappies. At all Makana LM landfill sites, disposable nappies are a significant waste type (they may also be categorized as healthcare risk waste).

For the waste stream analysis, the waste categories have been broken down into 10 streams that include both recyclable and non-recyclable material. Table 3.7 below indicates the typical waste composition in Makana LM, the quantity of each waste stream is not known since the municipality has no waste quantification data available.

Table 3.7: Makana LM waste stream compositions

Waste stream composition at Makana LM	Percentage
Building Rubble	Present but not quantified
Organic	Present but not quantified
Garden	Present but not quantified
Metal	Present but not quantified
Glass	Present but not quantified
Plastic	Present but not quantified
Paper and Cardboard	Present but not quantified
Tyres	Present but not quantified
Disposable diapers	Present but not quantified
Other (electronics, pesticides, paint, furniture etc.)	Present but not quantified

The images below show some of the waste streams observed at the Grahamstown, Alicedale and Riebeeck East landfill sites:



Plastic, paper and cardboard at Grahamstown landfill



Plastic bottles at Grahamstown landfill



Plastics and cardboard at Grahamstown landfill



Mixed waste at Alicedale landfill (i.e. plastic, cardboard, tins, organic waste, etc.)



Organic (food) waste and textile at Grahamstown landfill



Garden waste arriving at Grahamstown landfill, and building rubble



Waste tyres at Grahamstown landfill. Some tyres are burned for reclaiming copper. Tyres are a negligible waste stream in Makana LM landfills.



Tins at Alicedale landfill



Rusty coiled copper at Riebeeck East landfill



Building and demolition rubble at Riebeeck East landfill

Main observations and issues

- Waste streams are not characterized or quantified at the Alicedale and Riebeeck East landfills and thus no SAWIS reporting.
- Industrial-agricultural waste (i.e. residues from Peppadew Factory) and abattoir waste are disposed of at the

3.4. WASTE DISPOSAL, TREATMENT AND RECYCLING

3.4.1. Status Quo of Waste Disposal Facilities

Makana LM has three landfill sites all situated in municipal property, at the following main centres:

- Grahamstown;
- Alicedale; and
- Riebeeck East.

Grahamstown Landfill Site

The Grahamstown landfill site is an old quarry located 2km north-west of town (33° 17' 29.57"S 26° 29'33.88"E). The site was permitted by the then Department of Water Affairs and Forestry (DWAF) on 10 September 1996 as a G:M:B⁺ landfill site in terms of Section 20 of the Environment Conservation Act (No 73 of 1989). The site is medium by classification, and it is estimated that the site receives approximately 125 tons of waste a day. The expected lifetime of the site is approximately 20 years.

Table 3.8a: Summary of status of the Grahamstown landfill site.

Position of site	Located approximately 2km from town at co-ordinates: 33° 17' 29.57"S 26° 29'33.88"E
Permit	Yes
Year issued	10 September 1996
Classification of site	G:M:B ⁺
Type of operation (end-tip, trench, cell)	Cell method, filling quarry
Estimated size of site	Approximately 10ha
Total capacity (m³)	Unknown
Remaining capacity (m³)	Unknown
Estimated remaining life of site	Unknown
Separation of fresh and contaminated water	Yes
Groundwater monitoring	6 monthly monitoring of downstream borehole located at neighboring farmer – no problems with ground water pollution encounter
Volumes per day, week or month	It is estimated that the site receives approximately 125 tons of waste per day
Is cover material available?	Yes, from quarry and building rubble
Is the drainage sufficient?	Yes
Is there access control?	Yes, but record keeping of incoming waste should be improved
Is the site fenced?	Yes
Does the site have a sufficient buffer zone?	Yes (2km)
Type of equipment utilised on site?	Kamatsu Bulldozer
Site facilities, i.e. ablutions, guard house	Yes
Operating hours	The site is open 24 hours

Saving plan for closure	No estimate regarding closure exists. The municipality must budget for the closure and rehabilitation timeously.
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T6table 3.8b below assesses compliance of the Grahamstown landfill site with the permit conditions for the site as provided in the Minimum Requirements for Waste Disposal by Landfill, published by DWAF in 1998.

Table 3.8b: Operation of the Grahamstown landfill site as per the DWAF minimum requirements for landfill operation

DWAF Minimum requirements		Grahamstown Landfill Site (B ⁺)
Signposting	R	No visible sign at the entrance to the landfill
All weather roads	F	Yes, there is adequate road access
Waste acceptance procedure	R	Only general waste is accepted. This is regulated and inspected by a security guard at entrance gate.
Fencing	R	The site is adequately fenced
Control of vehicle access	R	Access is controlled through a gated single entrance point regulated by a security guard
Site security	F	There is a security guard during landfill site operating hours
Operating plan	R	There is no landfill operating plan
Response action plan	N	Not required
Waste load allocations	N	Not required
Liquid Co-disposal ratios	N	Not required
Encapsulation specifications	N	Not required
Weighbridge	F	There is a weighbridge, but it is not currently operating
Collection of waste disposal tariffs	F	Yes
Site office	R	Yes
Laboratory	N	Not required
Adequate plant and equipment	R	1 x bulldozer
Responsible person	R	The assistant director of Environmental Health & Cleansing is responsible for overseeing operations at the landfill site.
Sufficient qualified staff	R	No sufficient qualified staff at the landfill site
Compaction of waste	R	No purpose-built landfill compactor. A bulldozer is used to compact the waste.
Daily cover	R	Cover material is readily available from the quarry and building rubble, waste is covered regularly but not on a daily basis.
Two week's cell or trench capacity	R	Unknown
Protection of unsafe excavations	R	None
One week's wet weather cell capacity	R	Unknown
Immediate covering of putrescibles	R	No
End-tipping prohibited	N	Not required
Three day stockpile of cover	R	Yes
Final cover	R	When cell is full

Waste reclamation prohibited	F	Waste reclamation/salvaging not controlled
Any reclamation operation formalised in operation plan	R	No formalised operation plan, and no recycling plan
Registration of reclaimers	R	Some reclaimers are registered with IWARS and some are informal.
Protection of reclaimers	R	Yes, the site is guarded
Protective clothing	R	No protective clothing for landfill workers
Control of nuisances	R	Yes, the site is guarded
Waste burning prohibited	F	Yes, waste is not burned on site
Draining water away from the waste	R	Yes
Contaminated run-off contained	F	Yes
Leachate contained	R	Yes, leachate drains into a leachate pond
Storm water diversions measures	R	Yes
0,5m freeboard for diversion and impoundments	R	Yes
Grading cover/avoiding ponding	R	Yes
General site maintenance	R	Yes
Sporadic leachate reporting	R	Yes
Landfill gas control	F	No landfill gas control
Rehabilitation and vegetation	R	No rehabilitation yet
R = Requirement F = Flag: special consideration to be given by expert or departmental representative N = Not a requirement		

The images below show a series of observations made on 3rd March 2016 at the Grahamstown landfill site:



	
<p align="center">Cover material/building rubble at Grahamstown landfill site.</p>	<p align="center">Leachate pond at Grahamstown landfill site.</p>

<p>Additional features and main issues of the Grahamstown landfill site</p> <ul style="list-style-type: none"> • Waste coming into the landfill site is recorded but not consistently and adequately. • There are reclaimers and salvagers illegally accessing the site.

Alicedale Landfill Site

The Alicedale landfill site is an old sandstone quarry located approximately 500m west of town (33° 19' 3.88"S 26° 4'35.69"E). The site was authorised in May 2005 through Directions in terms of Section 20(5)(b) of the then Environment Conservation Act (No 73 of 1989) as a G:C:B⁻ landfill site. The site is classified as a communal landfill and it receives approximately 1.56 tons of waste a day. The expected lifetime of the site is approximately 20 years.

Table 3.9a: Summary of status of the Alicedale landfill site.

Requirement	Detail
Position of site	Located approximately 500m from town at co-ordinates: 33° 19' 3.88"S 26° 4'35.69"E
Permit	Yes , controlled through Directions
Year issued	2005
Classification of site	G:C:B ⁻
Type of operation (end-tip, trench, cell)	Filling of sandstone quarry, but no proper operational method is followed as waste is burned.
Estimated size of site	Approximately 0.9Ha
Total capacity (m³)	Unknown
Remaining capacity (m³)	Unknown
Estimated remaining life of site	Unknown
Separation of fresh and contaminated water	No
Groundwater monitoring	Not required
Volumes per day, week or month	It is estimated that the site receives approximately 1.56 tons per day
Is cover material available?	Yes, from quarry
Is the drainage sufficient?	No

Is there access control?	No
Is the site fenced?	No
Does the site have a sufficient buffer zone?	Yes, 500m
Type of equipment utilised on site?	No permanent equipment, a bulldozer is hired once a year for covering purposes.
Site facilities, i.e. ablutions, guard house	No
Operating hours	There are no official operating hours
Saving plan for closure	No estimate regarding closure exists. The municipality must budget for the closure and rehabilitation timeously.


Table 3.9b below assesses compliance of the Alicedale landfill site with the permit conditions for the site as provided in the Minimum Requirements for Waste Disposal by Landfill, published by DWAF in 1998.

Table 3.9b: Operation of the Alicedale landfill site as per the DWAF minimum requirements for landfill operation

DWAF Minimum requirements		Alicedale Landfill Site (B')
Signposting	R	No visible sign at the entrance to the landfill
All weather roads	N	Not required
Waste acceptance procedure	R	Site meant for general waste, but no procedure in place to regulate the acceptable waste
Fencing	R	Site is not adequately fenced
Control of vehicle access	R	Access is not controlled
Site security	N	Not required
Operating plan	N	Not required
Response action plan	N	Not required
Waste load allocations	N	Not required
Liquid Co-disposal ratios	N	Not required
Encapsulation specifications	N	Not required
Weighbridge	N	Not required
Collection of waste disposal tariffs	N	Not required
Site office	N	Not required
Laboratory	N	Not required
Adequate plant and equipment	R	No operating equipment
Responsible person	R	No responsible person
Sufficient qualified staff	R	No staff on site
Compaction of waste	N	Not required
Daily cover	F	None, waste is not covered on daily basis
Two week's cell or trench capacity	R	No proper operation method followed
Protection of unsafe excavations	R	No excavation occurring on site
One week's wet weather cell capacity	N	Not required
Immediate covering of putrescibles	R	Waste is not covered
End-tipping prohibited	N	Not required
Three day stockpile of cover	F	No cover material available
Final cover	R	Waste is covered once a year

Waste reclamation prohibited	F	No control of waste reclamation/salvaging
Any reclamation operation formalized in Operation plan	R	No formal reclamation plan and no Operation Plan
Registration of reclaimers	R	No registered reclaimers
Protection of reclaimers	R	No registered reclaimers, no protection of informal reclaimers
Protective clothing	R	None, no workers on site
Control of nuisances	R	None
Waste burning prohibited	F	No, waste is burned on site
Draining water away from the waste	R	None
Contaminated run-off contained	F	None
Leachate contained	N	Not required
Storm water diversions measures	R	No stormwater diversion measures
0,5m freeboard for diversion and impoundments	F	No
Grading cover/avoiding ponding	R	No
General site maintenance	R	Site is not maintained
Sporadic leachate reporting	R	No leachate reporting
Landfill gas control	N	Not required
Rehabilitation and vegetation	F	No rehabilitation currently occurring
R = Requirement F = Flag: special consideration to be given by expert or departmental representative N = Not a requirement		

The images below show a series of observations made on 3rd March 2016 at the Alicedale landfill site:

	
Alicedale landfill in sandstone quarry, uncovered waste.	Waste burned at Alicedale landfill site.



- Additional features and main issues of the Alicedale landfill site**
- There is no supervisory staff at the landfill site.
 - The site is not fenced or gated, and therefore there is no access control/regulation.
 - Waste is burned at the landfill site.
 - Waste is not compacted or covered (waste is only covered once a year).
 - Waste is not sorted or separated.
 - Waste volumes are not recorded or quantified.
 - Carcasses are disposed at the landfill site.

Riebeeck East Landfill Site

The site is located approximately 2km east of town (33° 12' 35.79"S 26° 10'58.82"E). The site was authorised in May 2005 through Directions in terms of Section 20(5)(b) of the then Environment Conservation Act (No 73 of 1989), by the Department of Water Affairs and Forestry (DWAF) as a G:C:B⁻ landfill site. The site is classified as a communal landfill and receives approximately 0.56 tons of waste a day. The expected lifetime of the current disposal area is approximately 10-15 years.

Table 3.10a: Summary of status of the Riebeeck East landfill site.

Position of site	Located approximately 2km from town at co-ordinates: 33° 12' 35.79"S 26° 10'58.82"E
Permit	Yes , controlled through Directions
Year issued	2005
Classification of site	G:C:B ⁻
Type of operation (end-tip, trench, cell)	No proper operational method followed, waste is burned
Estimated size of site	Approximately 0.5Ha
Total capacity (m³)	Unknown
Remaining capacity (m³)	Unknown
Estimated remaining life of site	Unknown
Separation of fresh and contaminated water	None in place
Groundwater monitoring	No, not required
Volumes per day, week or month	It is estimated that the site receives approximately 0.56

	tons per day
Is cover material available?	Yes
Is the drainage sufficient?	No
Is there access control?	No
Is the site fenced?	Yes, but needs maintenance
Does the site have a sufficient buffer zone?	Yes, 2km from nearest house
Type of equipment utilised on site?	No permanent equipment, a bulldozer is hired once a year for covering purposes.
Site facilities, i.e. ablutions, guard house	No
Operating hours	There are no official operating hours
Saving plan for closure	No estimate regarding closure exists. The municipality must budget for the closure and rehabilitation timeously.

Table 3.10b below assesses compliance of the Riebeeck East landfill site with the permit conditions for the site as provided in the Minimum Requirements for Waste Disposal by Landfill, published by DWAF in 1998.

Table 3.10b: Operation of the Riebeeck East landfill site as per the DWAF minimum requirements for landfill operation

DWAF Minimum requirements		Riebeeck East Landfill Site (B)
Signposting	R	No visible sign at the entrance to the landfill
All-weather roads	N	Not required
Waste acceptance procedure	R	Site meant for general waste, but no procedure in place to regulate acceptable waste
Fencing	R	Site is fenced
Control of vehicle access	R	Access is not controlled
Site security	N	Not required
Operating plan	N	Not required
Response action plan	N	Not required
Waste load allocations	N	Not required
Liquid Co-disposal ratios	N	Not required
Encapsulation specifications	N	Not required
Weighbridge	N	Not required
Collection of waste disposal tariffs	N	Not required
Site office	N	Not required
Laboratory	N	Not required
Adequate plant and equipment	R	No plant and equipment
Responsible person	R	No responsible person
Sufficient qualified staff	R	No staff on site
Compaction of waste	N	Not required
Daily cover	F	None, waste is not covered on daily basis
Two week's cell or trench capacity	R	No proper operation method followed
Protection of unsafe excavations	R	No excavation occurring on site
One week's wet weather cell capacity	N	Not required
Immediate covering of putrescibles	R	Waste is not covered

End-tipping prohibited	N	Not required
Three day stockpile of cover	F	No cover material available
Final cover	R	Waste is covered once a year
Waste reclamation prohibited	F	No control of waste reclamation/salvaging
Any reclamation operation formalized in Operation plan	R	No formal reclamation plan and no Operation Plan
Registration of reclaimers	R	No registered reclaimers
Protection of reclaimers	R	No registered reclaimers, no protection of informal reclaimers
Protective clothing	R	None, no workers on site
Control of nuisances	R	None
Waste burning prohibited	F	No, waste is burned on site
Draining water away from the waste	R	None
Contaminated run-off contained	F	None
Leachate contained	N	Not required
Storm water diversions measures	R	No stormwater diversion measures
0,5m freeboard for diversion and impoundments	F	No
Grading cover/avoiding ponding	R	No
General site maintenance	R	Site is not maintained
Sporadic leachate reporting	R	No leachate reporting
Landfill gas control	N	Not required
Rehabilitation and vegetation	F	No rehabilitation currently occurring
R = Requirement F = Flag: special consideration to be given by expert or departmental representative N = Not a requirement		

The images below show a series of observations made on 3rd March 2016 at the Riebeeck East landfill site:

	
Riebeeck East landfill site, with access gate and fenced	Uncovered waste at Riebeeck East landfill site

	
<p align="center">Waste burned at Riebeeck East landfill site</p>	<p align="center">Waste disposed outside the landfill boundary/fence</p>

<p align="center">Additional features and main issues of the Riebeeck East landfill site</p> <ul style="list-style-type: none"> • There is no supervisory staff at the landfill site. • Waste is burned at the landfill site. • Waste is not compacted or covered (waste is covered once a year). • Waste volumes are not quantified or recorded. • Waste is not sorted or separated. • The landfill site is inadequately fenced. • Access to the site is not regulated.
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3.4.2. Status Quo of Waste Treatment Facilities

There are no general waste treatment facilities within Makana LM. Sanitation waste is a waste stream that should not be ignored in Makana LM. Although sanitation is Water Services Authority (WSA) mandate, there are various sanitation waste streams that should also be considered as part of integrated waste management planning, namely:

- Discharges of treated effluent from sewage or wastewater treatment works.
- Disposal of screen material and other sludge from wastewater treatment works.
- Disposal of sludge from various forms of conservancy tanks/septic tanks.
- Effluent from abattoirs, etc.

3.4.3. Status Quo of Waste Recyclers

Integrated Waste and Recycling Services (IWARS) are the lead reclaimers and recyclers in Makana LM. The IWARS programme organizes people to collect recyclable materials from the landfill sites and transfer stations. Thereafter, waste is separated and transported to main processing sites through a waste transit system that has already been established by the IWARS. IWARS has registered reclaimers in Makana LM as part of the “Masihlule Programme”.



Reclaimed material storage facilities at the Grahamstown landfill site



Separated paper and cardboard, stored at the storage facilities for sorting

There are also informal/unregistered reclaimers within the landfill sites, collecting tins and plastic bottles to sell at other reclaiming companies around town.



Plastic bottles reclaimed at Grahamstown landfill site.



Cans and bottles collected at Alicedale landfill site.

There are two operating recyclable material buy-back centres in Grahamstown, one in town and another at the Grahamstown landfill site. Makana LM is also currently busy establishing two other buy-back centres at

Grahamstown north and at Joza location near the old age home. Makana LM also plans in future to establish and operate recyclable material buy-back centres at Alicedale and Riebeeck East.

Makana LM initiated a two-bag voluntary system, to promote household separation, and to support this, there are plans to pull a trailer with the compactor truck during collection, so that all the sorted recyclable material is collected separately and can immediately be delivered at the designated recycling centres.

Currently, most of the recoverable organic waste (e.g. peppadews and domestic food waste) disposed at the Grahamstown landfill site is re-directed to a composting facility in Grahamstown. This will significantly reduce the amount putrescible waste at the landfill site.

Makana LM has signed to establish a Waste to Energy project in Grahamstown, in conjunction with the Cacadu Development Agency (CDA). Currently, the project's pre-feasibility stage is completed and a Technical Action Committee was established, to move the project forward to conclude the feasibility/bankable stage.

Recycling Main Issues

- Reclaimers at landfill sites are not all registered with the municipality.

3.4.4. Illegal dumping

The illegal dumping of waste is common throughout the boundaries of Makana LM. A total of 49 illegal dumping spots have been identified in a total of 11 wards, where the communities may dump their garden refuse. A schedule to clean these identified spots has been drawn up by the municipality, but challenges with manpower makes it a problem to properly fulfil this task.

Due to the increasing number of illegal dump spots, the Makana LM recognized the need for educating communities on waste management. As a result, the Makana LM facilitates an Extended Public Works Programme (EPWP) for community environmental awareness and employs one environmental facilitator for each ward to facilitate education and awareness campaigns that promote source-separation, re-use, reduction and recycling.



3.5. STATUS OF WASTE COLLECTION SERVICES

3.5.1. General waste collection services

Makana LM collects domestic waste from approximately 26 373 households, this number includes the urban residential, townships and informal settlements. Commercial waste is also collected from 1441 business units within the Central Business District (CBD), as summarised in Table 3.11 below. The Makana LM also provides refuse bags to all households receiving waste collection services.

Table 3.11: Summary of domestic waste collection services provided within Makana LM.

	Urban	Informal	Rural	Total
Total households	25 614	759	648	27 021
Total households serviced	25 614	759	0	26 373
Total households un-serviced	0	0	648	648
Total indigent households	Unknown	Unknown	Unknown	Unknown
Total serviced indigent	Unknown	Unknown	Unknown	Unknown
Total un-serviced indigent	Unknown	Unknown	Unknown	Unknown

Table 3.12 below summarises the waste collection services provided in Makana LM according to the Statistics SA 2011 data:

Table 3.12: Refuse removal by ward in the Makana LM (StatsSA, 2011)

Wards	Removed by local authority/private company at least once a week	Removed by local authority/private company less often	Communal waste site	Own disposal site	No rubbish disposal	Other	Total households
Ward 1	321	39	27	300	27	63	777
Ward 2	1 926	6	-	6	-	3	1 941
Ward 3	1 659	12	6	24	3	-	1 704
Ward 4	2 154	21	9	36	12	9	2 241
Ward 5	2 238	-	3	3	-	-	2 244
Ward 6	1 230	3	-	3	-	-	1 236
Ward 7	864	15	6	-	3	-	888
Ward 8	1 332	6	6	27	6	6	1 383
Ward 9	1 314	3	3	9	3	75	1 407
Ward 10	2 058	3	15	15	30	-	2 121
Ward 11	1 863	-	3	6	6	-	1 878
Ward 12	102	-	-	-	-	3	105
Ward 13	954	9	30	528	120	69	1 710
Ward 14	999	27	78	492	117	30	1 743
Total households	19 014	144	186	1 449	327	258	21 378
Total households %	88.94	0.67	0.87	6.78	1.53	1.21	100

According to Statistics SA 2011 data, 88.9% of the total households in Makana LM receive weekly municipal solid waste collection services. A total of 8.31% households either utilise their own dump or have no refuse disposal facilities.

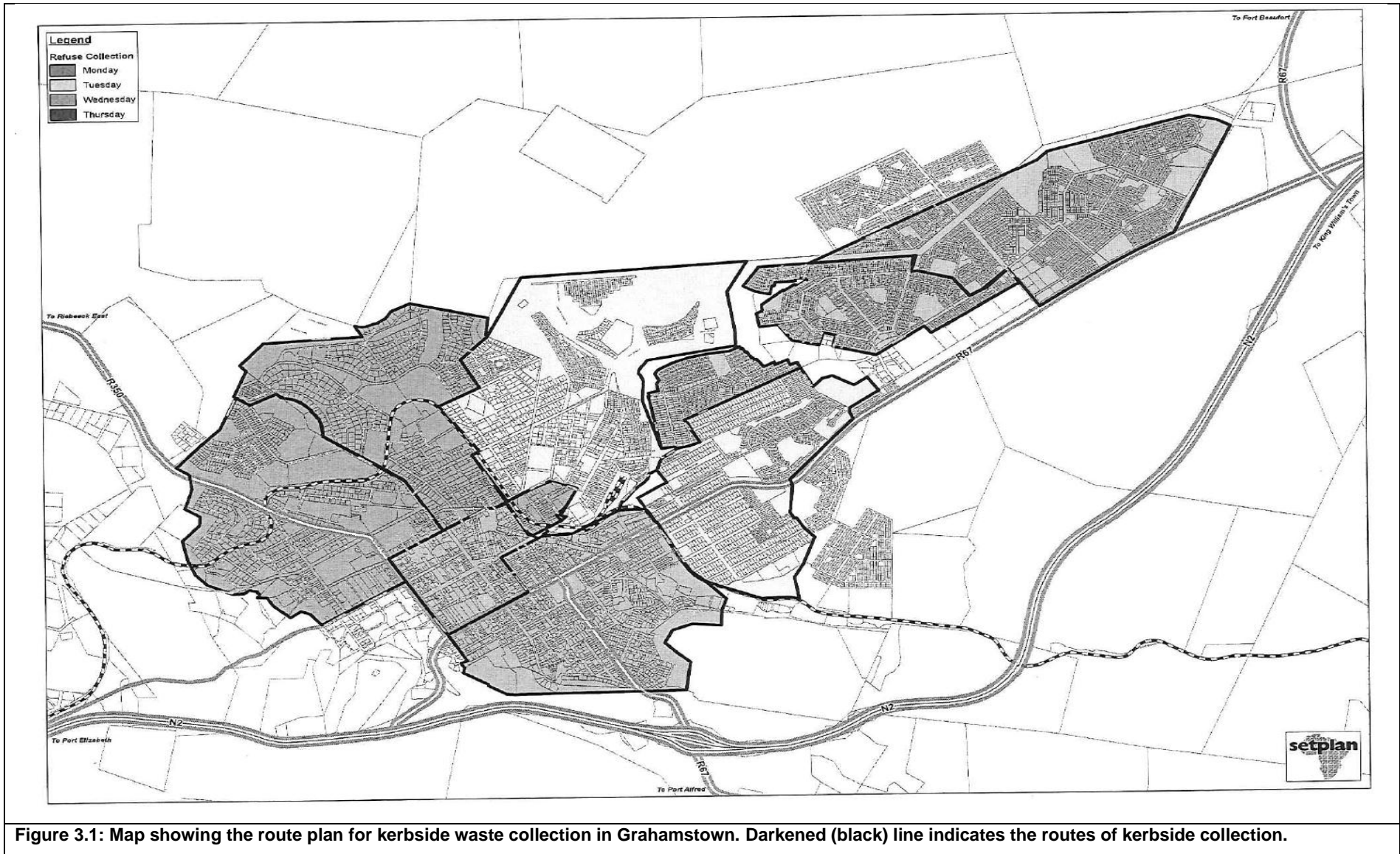


Figure 3.1: Map showing the route plan for kerbside waste collection in Grahamstown. Darkened (black) line indicates the routes of kerbside collection.

3.5.2. General waste collection equipment

The Makana LM solid waste management fleet status is summarized in Table 3.13 below.

Table 3.13: Makana LM solid waste management fleet database

Vehicle description	Model	Registration number	Area	Condition
Isuzu FTR 850 Compactor	2012	FXH 408 EC	Grahamstown	Not confirmed
Isuzu FTR 850 Compactor	2012	FXH 415 EC	Grahamstown	Not confirmed
Isuzu FTR 800 Compactor	2006	DVF 044 EC	Grahamstown	Not confirmed
New Holland 5610 Tractor	2008	DZR 954 EC	Grahamstown	Not confirmed
Ford Tractor	1986	BMP 028 EC	Alicedale	Not confirmed
Trailer	-	BKH 932 EC	Alicedale	Not confirmed
Komatsu Bulldozer	2005	-	Grahamstown	Not confirmed
Equipment shared with other departments				
Isuzu KB LDV	2009	FFZ 441 EC	Grahamstown (admin)	Not confirmed
Isuzu KB 200 LDV	2011	FPY 913 EC	Grahamstown (sanitation)	Not confirmed
Isuzu FTR 850 Roll-on Roll-of	2012	FZL 811 EC	Grahamstown (sanitation)	Not confirmed
Isuzu KB LDV	2009	FFZ 436 EC	Grahamstown (sanitation)	Not confirmed
Isuzu KB LDV	2009	FDR 164 EC	Grahamstown (sanitation)	Not confirmed
New Holland 6610s Tractor skips	2012	FVX 449 EC	Grahamstown (sanitation)	Not confirmed
Isuzu F8000D Roll-on Roll-of	1994	BNN 227 EC	Grahamstown (sanitation)	Not confirmed
Isuzu NQR500 CM10 Truck	2011	FSB 414 EC	Grahamstown (sanitation)	Not confirmed
Duncan Trailer Skip trailer	2001	CTD 887 EC	Grahamstown (sanitation)	Not confirmed
Bell L120 Front End Loader	2009	FFT 001 EC	Grahamstown (sanitation)	Not confirmed
Tata 1518c Roll-on Roll-of	2007	DZJ 324 EC	Grahamstown (sanitation)	Not confirmed
Isuzu FTR 800 Tipper	2008	FBC 882 EC	Grahamstown (sanitation)	Not confirmed
Box trailer	?	CNM 466 EC	Grahamstown (sanitation)	Not confirmed
Nissan CM12 Tipper	1995	BPX 654 EC	Grahamstown (sanitation)	Not confirmed

Some of the equipment listed above was recently inspected. However, not all the equipment could be observed, especially the operating collection vehicles.

The images below show some of the equipment observed at the Grahamstown landfill site.



<p align="center">Compactor truck observed at the Grahamstown landfill site</p>	<p align="center">Truck observed at the Grahamstown landfill site</p>
	
<p align="center">Light delivery vehicle observed at the Grahamstown landfill site</p>	<p align="center">Bulldozer observed at the Grahamstown landfill site</p>
	
<p align="center">Truck observed at the Grahamstown landfill site</p>	

Main Issues with equipment

- There is no equipment specifically designated for waste collection at Riebeeck East.
- There is no equipment for operating the Alicedale and Riebeeck East landfill sites.
- Most of the equipment in Grahamstown is shared between departments; therefore equipment is not always readily available when required for waste management services.

3.6. FINANCING OF WASTE MANAGEMENT

A critical precondition for the successful implementation of the Makana LM IWMP is to ensure that there is access to sufficient funds to carry out the plan.

Funding instruments

The following funding instruments can be considered for financing various aspects of waste management.

Funding mechanisms for Waste Prevention, Minimisation and Recycling:

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

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

Privately funded programmes should be promoted where possible.

Funding mechanisms for Waste Collection and Transportation:

Possible sources for waste collection and transportation include:

- Payment for services (tariff revisions)
- Municipal budget allocations (equitable share)
- Donor funding for specific projects
- Public-private partnerships.

Funding mechanisms for Waste Treatment and Disposal:

The cost associated with general waste disposal should mainly be funded by service fees (tariffs) or as part of other waste charges for the municipality.

The following two strategy documents must be consulted by the LM when reviewing and revising its tariff structure.

- DEA - Municipal Solid Waste Tariff Strategy (2012)
- DEA - National Pricing Strategy for Waste Management Charges (2014)

The National Pricing Strategy for Waste Management (NPSWM) was published in August 2016 with the aim of providing the basis and guiding methodology for setting waste management charges. The NPSWM identifies the following primary instruments for solid waste management:

Category	Instrument
Downstream instruments	<ul style="list-style-type: none"> • Volumetric tariffs (“pay-as-you-throw”) • Waste disposal taxes (including landfill and incineration taxes)
Upstream instruments	<ul style="list-style-type: none"> • Material and input taxes • Product taxes • Advance recycling fees (also known as advance disposal fees) • Deposit-refund schemes • Extended Producer Responsibility (EPR) fees
Subsidy-based instruments	<ul style="list-style-type: none"> • Recycling subsidies • Tax rebates and benefits • Capital financing

More detail on the above funding instruments is provided in the NPSWM. However, it is important when considering an instrument or combination thereof, that “double taxation” is avoided.

Based on our review of the Makana LMs current situation, it is suggested that the LM investigate implementing waste tariffs that are volumetric based or “pay-as-you-go” versus a flat rate where there is no incentive to reduce waste and proper matching of costs.

User Guide for DEA Solid Waste Tariff

Coming out of the Municipal Solid Waste Tariff Strategy, DEA has developed User Guide for DEA Solid Waste Tariff. Municipalities can access the tariff strategy, guidelines, step-by-step guide and the excel based spreadsheet through the DEA website - <http://sawic.environment.gov.za/>

3.6.1. Budget: Income and expenditure

The following waste management budget has been developed by Makana LM for the 2015/2016 financial year.

Table 3.14: Makana LM waste management budget 2015/16 financial year.

REFUSE AND CLEANSING			
REFUSE		LANDFILL SITE	
INCOME		INCOME	
Annual charges: Refuse	206 451	Use of refuse site	100 359
Monthly charges: Refuse	11 469 915		
Subsidy: Equitable share	6 076 513		
Sale: Refuse bags	27 779		
Other income	3 700		
TOTAL INCOME	17 784 358		100 359
EXPENSES		EXPENSES	
TOTAL - Salaries, wages and allowances	1 660 394		150 644
Establishment charge	456 930		-
Free basic services	6 076 513		-
Purchase refuse bags	900 000		-
Protective clothing	22 050		1 320
Tyres and tubes	65 000		-
Insurance, licenses, etc.	45 416		-
Petrol, oil and greases	240 000		90 000
Other: skills levy, UIF, travel, etc.	53 007		45 505
TOTAL - General expenses	7 858 916		136 825
Repairs and maintenance buildings	25 000		20 000
Repairs and maintenance: fencing			70 000
Repairs and maintenance: vehicles	220 000		140 000
TOTAL - Repairs and maintenance	245 000		230 000
Leave pay	13 812		1 266
Provision for working capital	1 440 000		
TOTAL - Contributions	1 453 812		1 266
TOTAL EXPENSES	11 218 122		518 735

SURPLUS/(DEFICIT)	6 566 236	-418 376
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Main issues and observations with financing of waste management

- The budget projects a deficit of about R400 000 for landfill site operation.
- While the Equitable Share of over R6 million is recorded as revenue, the same amount is recorded as an expense as indigent free basic service. This should not be reflected as an expense since the costs associated with are not additional to the other expenses. If these monies were specifically allocated to free basic services, they should be retained within the waste management budget.
- The budget does not include an allocation for capital items, which could be funded via MIG.

3.6.2. Tariff Structure

The following tariff structure is currently in place at Makana LM.

Table 3.15: Makana LM tariff structure for 2015/2016 financial year.

Monthly refuse removal charges	2015/2016
Domestic	R 56.09
Business	R 112.22
Removal of Garden Refuse	R 439.25
Removal of Garden Refuse (domestic notice)	R 533.49
Removal of condemned goods	R 266.75
Illegal dumping of Refuse (domestic or other)	R 439.25
Special refuse removals (festival)	No charge

3.7. ORGANISATIONAL AND INSTITUTIONAL MATTERS

As informed by the Constitutional assignment of powers and functions, the Waste Act assigns clear responsibilities for waste management activities to each sphere of government. Some of the responsibilities require partnerships between government, communities and the private sector.

Waste Management in South Africa is administered at three spheres of government: National Government, Provincial Government, and Local Government.

National Government is responsible for National policy formulation and regulatory framework, national standards, funding and maintenance of national information systems. The Minister must designate in writing an officer in the Department as the national management officer responsible for co-ordinating matters pertaining to waste management in the national government.

Provincial Government is responsible for the enforcement of legislation, establishment of provincial waste management plans and regulating local government matters; cleansing, control of public nuisances, refuse removal, refuse dumps and solid waste disposal. The MEC must designate in writing an officer in the provincial administration as the provincial waste management officer responsible for co-ordinating matters pertaining to waste management in the province.

Local Government is responsible for municipal planning and service provision of sewage disposal systems, cleansing control of public nuisances, refuse removal, refuse dumps and solid waste disposal and the implementation of regulating systems (by-laws) and information collection and the maintenance thereof. The municipality authorised to carry out waste management services by the Municipal Structures Act (Act No. 117 of 1998) must designate in writing a Waste Management Officer (WMO) from its administration to be responsible for co-ordinating matters pertaining to waste management in the municipality.

A power delegated or a duty assigned to a Waste Management Officer (WMO) may be sub-delegated or further assigned by that officer to another official in the service of the same administration, subject to such limitations or conditions as may be determined by the municipality. A WMO must co-ordinate its activities with other waste management activities in the manner set out in the national waste management strategy.

In terms of Section 10(1-3) the Waste Act, any organ of state (including a municipality) that is authorized to carry out waste management services, **MUST** designate in writing a Waste Management Officer (WMO) to coordinate waste management within the municipality. This addresses the historical fragmentation of waste management functions within government by ensuring that a dedicated authority in each sphere of government is responsible for implementing the policy and regulations of the Waste Act. Department of Environmental Affairs has produced guidelines for the designation of WMOs, setting out their role, powers, profile and rank. The duties and responsibilities that the Waste Act and the NWMS assign to each sphere of government determine the roles and powers of their WMOs.

WMOs perform a regulatory function and should be located in functional divisions separate from service-delivery functions where possible. This is particularly important for overseeing adherence to national norms and standards, which is fundamental to achieving the objectives of the Waste Act.

The Act assigns specific regulatory powers to the National WMO and Provincial WMOs. They may request that holders of waste management licences appoint waste management control officers, and they may require waste impact reports when waste management licences are being reviewed.

The responsibilities of the national, provincial, and local WMOs are summarised in Table 3.16 below.

Table 3.16: Responsibilities of National, Provincial, and Local WMOs.

National Waste Management Officer	Provincial Waste Management Officer	Local Waste Management Officers
Chairperson of the National Waste Forum.	Chairperson of Provincial Waste Forum	
Advises the Minister about the declaration of priority waste, EPRs, and mandatory Industry Waste Management Plans.	Advises the MEC.	
Sorting out co-operative governance issues.	Sorting out co-operative governance issues.	
Address overlapping mandates, particularly at national and provincial level.		
Manage stakeholders in Waste Act implementation.	Manage stakeholders in Waste Act implementation.	Manage stakeholders in Waste Act implementation.
Liaise with national EMI compliance monitoring activities.	Liaise with provincial EMI compliance monitoring activities.	Liaise with EMI compliance monitoring activities in the municipality.
National IWMP: align planning and reporting cycles.	Provincial IWMP: align planning and reporting cycles	Municipal IWMP: planning and reporting cycles.
Build capacity in relation to Waste Act implementation.	Build capacity in relation to Waste Act implementation	Build capacity in relation to Waste Act implementation.
Formulate and oversee Waste Act implementation plan.		Monitor adherence to norms and standards in the delivery of waste services.

Furthermore, the designation of a WMO at a municipal level is important in order to ensure that there is constant communication between all three spheres of government on the implementation of the Waste Act. In relation to the development of IWMP, a WMO could potentially play a critical role in ensuring that a municipality develops its IWMP for compliance purposes. This includes the development and implementation of IWMPs which will assist Provinces or the National department in obtaining any information pertaining to the implementation of the IWMPs, i.e. reporting on a municipality's progress with regards to reaching its targets as per the IWMP, as well as ensuring that a municipality includes IWMP reporting in the annual performance reports as called for by the Municipal Systems Act (MSA).

As part of their regulatory functions, the WMOs support the Environmental Management Inspectors (EMIs) who enforce the provisions of the Waste Act. This requires a close working relationship between WMOs and EMIs. The WMOs will assist the DEDEAT Environmental Management Inspectorate to identify priorities for monitoring activities that present a significant threat to health and the environment. WMOs and EMIs will also work together to prepare Waste Impact reports. Under certain circumstances, both the EMI and WMOs can request a waste impact report, which will be done in consultation and co-operation with each other.

3.7.1. Organisational structure at Makana LM

This section describes the institutional aspects of the Makana LM waste management section, particularly by describing the allocated human resources. Solid Waste Management in Makana LM is coordinated by the Community and Social Services Directorate.

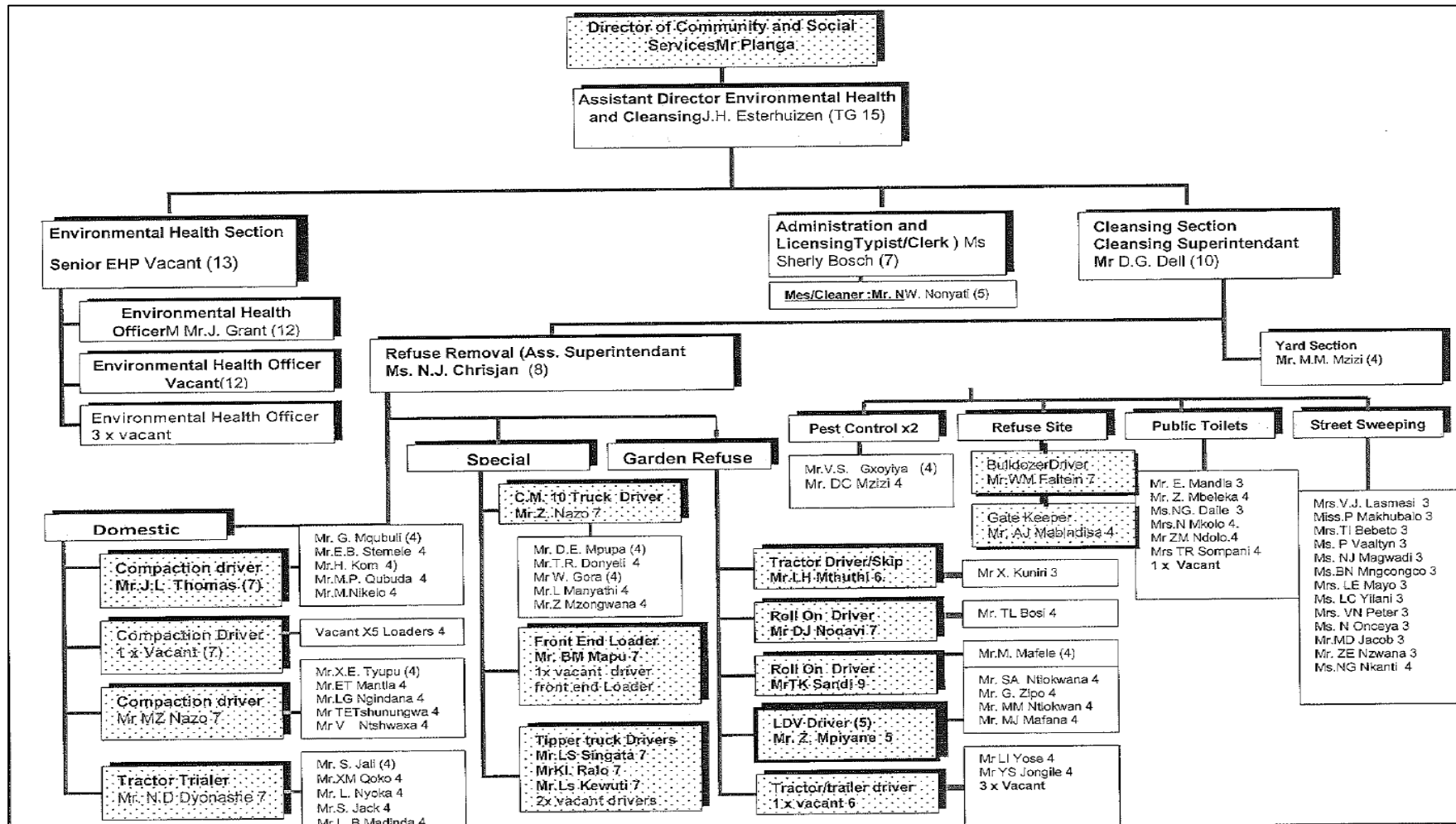


Table 3.17 below summarises the personnel structure at Makana LM for solid waste management, which includes waste collection, cleansing of the towns and operation and management of the landfill sites.

Table 3.17: Personnel responsible for waste collection, cleansing and landfilling at Makana LM.

Description	Number		Employment status	Where utilized
	Existing Posts	Vacant Posts		
Director: Community and Social Services	1	0	Permanent	Overall directorate management
Assistant Director: Environmental Health & Cleansing	1	0	Permanent	Assisting in overall management of environmental health
Cleansing Superintendent	1	0	Permanent	Supervising cleansing section
Assistant Superintendent: Refuse Removal	1	0	Permanent	Supervising waste removal (GHT)
Compactor drivers: Domestic Waste	3	1	Permanent	Domestic waste collection (GHT)
Tractor trailer driver: Domestic waste	1	0	Permanent	Domestic waste collection (GHT)
Runners	20	5	Permanent	Domestic waste loaders (GHT)
			Permanent	
CM 10 truck driver	1	0	Permanent	Special waste collection (GHT)
FEL driver	2	1	Permanent	Special waste collection (GHT)
Tipper truck driver	5	2	Permanent	Special waste collection (GHT)
Skip tractor driver	1	0	Permanent	Garden waste collection (GHT)
Roll on driver	2	0	Permanent	Garden waste collection (GHT)
LDV driver	1	0	Permanent	Garden waste collection (GHT)
Tractor trailer driver	1	1	Permanent	Garden waste collection (GHT)
Runners	12	3	Permanent	Garden waste loaders (GHT)
Bulldozer driver	1	0	Permanent	Operation at landfill site (GHT)
Gate keeper	1	0	Permanent	Gate keeping at landfill site (GHT)
Street cleansing	13	0	Permanent	Street cleaning (GHT)

Based on the organogram and Table 3.18 above, it is noted that there are approximately 68 personnel employed under the waste and cleansing sub directorate of the Makana LM Community and Social Services Directorate, 13 of these positions are vacant.

Main Issues

- There is no designated Waste Management Officer
- There is a shortage of personnel, which places an extra burden on existing employees and the ability to provide efficient services.
- There is no waste management staff in Alicedale and Riebeeck East.

4. Desired end state

4.1. SETTING STRATEGIC GOALS, TARGETS AND INDICATORS

The main issues in Makana LM are summarised in Table 4.1 below using the information gathered on the historical and present waste management situation in Makana LM. The desired end state for Makana LM is informed by these issues, which in turn assists in the development of strategic goals and objectives.

Table 4.1: Summary of the main waste management issues in Makana LM.

Themes	Issues and Observations
Landfills and Landfill Operations	<ul style="list-style-type: none"> • Waste streams are not characterized or quantified at the Alicedale and Riebeeck East landfills and thus no SAWIS reporting. • Industrial-agricultural waste (i.e. residues from Peppadew Factory) and abattoir waste are disposed of at the Grahamstown landfill site. • Grahamstown landfill site: <ul style="list-style-type: none"> ○ Waste coming into the landfill site is recorded but not consistently and adequately. ○ There are reclaimers and salvagers illegally accessing the site. <p>MAIN RECOMMENDATION: IMPROVE COMPLIANCE AND MANAGEMENT OF LANDFILL SITE, INCREASE CAPACITY TO ACCOMMODATE FOR CONVERSION TO A REGIONAL LANDFILL SITE.</p> • Alicedale landfill site: <ul style="list-style-type: none"> ○ There is no supervisory staff at the landfill site. ○ The site is not fenced or gated, and therefore there is no access control/regulation. ○ Waste is burned at the landfill site. ○ Waste is not compacted or covered (waste is only covered once a year). ○ Waste is not sorted or separated. ○ Waste volumes are not recorded or quantified. ○ Carcasses are disposed at the landfill site. <p>MAIN RECOMMENDATION: IMPROVE COMPLIANCE AND MANAGEMENT OF LANDFILL SITE</p> • Riebeeck East landfill site: <ul style="list-style-type: none"> ○ There is no supervisory staff at the landfill site. ○ Waste is burned at the landfill site. ○ Waste is not compacted or covered (waste is covered once a year). ○ Waste volumes are not quantified or recorded. ○ Waste is not sorted or separated. ○ The site is inadequately fenced. ○ Access to the site is not regulated. <p>MAIN RECOMMENDATION: IMPROVE COMPLIANCE AND MANAGEMENT OF LANDFILL SITE</p>
Waste Minimisation (separation, recycling, awareness campaigns)	<ul style="list-style-type: none"> • Reclaimers at landfill sites are not all registered with the municipality. <p>REFER TO IMPLEMENTATION PLAN FOR DETAILED RECOMMENDATIONS</p>
Waste Collection Infrastructure (equipment, collection points and routes and serviced areas)	<ul style="list-style-type: none"> • There is no equipment specifically designated for waste collection at Riebeeck East. • There is no equipment for operating the Alicedale and Riebeeck East landfill sites. • Most of the equipment in Grahamstown is shared between departments; therefore equipment is not always readily available when required for waste management

	<p>services.</p> <p>MAIN RECOMMENDATIONS: PURCHASE/LEASE EQUIPMENT FOR WASTE COLLECTION AT RIEBEECK EAST.</p>
Waste Management Financial Resources	<ul style="list-style-type: none"> The budget projects a deficit of about R400 000 for landfill site operation. While the Equitable Share of over R6 million is recorded as revenue, the same amount is recorded as an expense as indigent free basic service. This should not be reflected as an expense since the costs associated with are not additional to the other expenses. If these monies were specifically allocated to free basic services, they should be retained within the waste management budget. The budget does not include an allocation for capital items, which could be funded via MIG. <p>REFER TO IMPLEMENTATION PLAN FOR DETAILED RECOMMENDATIONS</p>
Institutional Capacity and Human Resources	<ul style="list-style-type: none"> There is no designated Waste Management Officer There is a shortage of personnel, which places an extra burden on existing employees and the ability to provide efficient services. There is no waste management staff in Alicedale and Riebeeck East. <p>MAIN RECOMMENDATIONS: APPOINT DEDICATED LANDFILL OPERATOR/SUPERVISOR FOR GRAHAMSTOWN LANDFILL SITE.</p>

Table 4.2 below reflects the current waste related policies, legislation and guidelines applicable to Makana LM. All key requirements are listed, regardless of whether the Makana LM complies or not.

Table 4.2: Key legal/policy requirements for Integrated Waste Management.

Theme	Legal/Policy Requirement
Waste planning	<p>National Environmental Management: Waste Act (59 of 2008):</p> <ul style="list-style-type: none"> Makana LM must submit an IWMP to the MEC for approval. Makana LM must integrate the IWMP into the IDP. Municipality must also follow the consultative process in Section 29 of the Municipal Systems Act (MSA) (separately or as part of the IDP). Each municipality must formally designate a Waste Management Officer (WMO). Makana LM must submit annual reports of the implementation of the IWMP in terms of Section 46 of the MSA. <p>National Policy for the Provision of Basic Refuse Removal (BRR) Services to Indigent Households (GN413 of 2011)</p> <ul style="list-style-type: none"> Makana LM to integrate the national BRR policy into their Indigent Policy, if present. Makana LM to consider formally identifying deserving households/areas for BRR services. Makana LM to implement and maintain indigent register system in line with policy, and implement management programmes to minimise fraudulent activities. Makana LM to regularly update the indigent register. <p>Eastern Cape Provincial IWMP (DEDEAT, 2010, draft)</p> <ul style="list-style-type: none"> All local authorities to have current IWMPs to meet requirements by end of 2011. All local authorities to designate WMOs by 2012. All local authorities to implement waste management by-laws which include NEMWA requirements, by 2012.
Financial Management	<p>National Environmental Management: Waste Act (59 of 2008):</p> <ul style="list-style-type: none"> All municipalities must keep separate financial statements including a balance sheet of services provided.

<p>Waste Information Management System</p>	<p>National Waste Information Regulations (GNR 625, 13 August 2012)</p> <ul style="list-style-type: none"> • All those conducting activities listed in Annex 1 must register on SAWIS. • Activities at different facilities must be registered individually. Includes landfills. Excludes transfer stations. • Quarterly information to be submitted to the SAWIS. • All information submitted must be kept for minimum of 5 years. <p>Eastern Cape Provincial IWMP (DEDEAT, 2010, draft)</p> <ul style="list-style-type: none"> • DEDEAT to set up a waste reporting system and all local authorities to be reporting municipal waste figures to Province by 2013 (system yet to be established by DEDEAT). • All local authorities to be reporting on National WIS by 2013.
<p>Waste Reduction, Recovery, Re-use and Recycling</p>	<p>National Environmental Management: Waste Act (59 of 2008):</p> <ul style="list-style-type: none"> • Makana LM must put in place measures that seek to reduce the amount of waste generated, and where generated, measures to ensure that it is re-used, recycled and recovered, treated and disposed of. <p>National Domestic Waste Collection Standards (GN21 of 2011)</p> <ul style="list-style-type: none"> • Makana LM must provide guidelines to households on how to separate waste. • Makana LM must encourage community involvement in recycling. • Makana LM must provide an enabling environment for household recycling to include either a) undertaking kerbside collection of recyclables, or b) ensuring Communal Collection Points for recyclables (including “nonmainstream recyclables” such as batteries, fluorescent tubes etc.) for collection by private service providers. • Collection of full containers from drop-off centres must be done within 24hours of being reported full. <p>Eastern Cape Provincial IWMP (DEDEAT, 2010, draft)</p> <ul style="list-style-type: none"> • DEDEAT to assess feasibility of drop-off centres and if feasible, develop a rollout programme and commence rollout by 2012, in line with NEMWA and National Domestic Waste Collection Standards. • DEDEAT to develop a waste minimisation / recycling plan by 2013.
<p>Waste Collection</p>	<p>National Domestic Waste Collection Standards (GN21 of 2011)</p> <ul style="list-style-type: none"> • Non-recyclable waste (i.e. domestic): A weekly service is required as a minimum. There are approximately 203 households receiving no collection service, and 101,716 households receiving a fortnightly service. • Weekly collections must be consistent – the same day of the week, the time which waste is put out for collection must be stipulated. • If a collection is missed or the service is interrupted the service must resume as soon as possible and the waste must be removed no later than on the next scheduled collection day. • Changes to collection service e.g. public holidays must be publicized in advance. • Recyclable waste: to be collected once every two weeks. • Bulk containers and Communal Collection Points: to be collected when full, or within 24hrs of reported as full, but not less than once per week. • All refuse collection workers must receive regular medical check-ups, appropriate PPE and health and on-going health and safety training. • Roadworthiness of all collection vehicles to be ensured. • Waste must be transported in closed vehicles. • Skips should be managed in line with the Collection Standards

	<p>National Policy for the Provision of Basic Refuse Removal Services to Indigent Households (GN413 of 2011)</p> <ul style="list-style-type: none"> • Makana LM must identify indigent households and maintain a register of indigent households (GN 34385). • Households to be provided with free receptacles for refuse storage. • Appropriate collection frequencies are a) weekly for biodegradable waste, b) monthly for recyclables (rural areas), c) fortnightly for recyclables (in urban areas). • Skips must be considered a last resort, and should be cleared often enough to prevent dumping. <p>Eastern Cape Provincial IWMP (DEDEAT, 2010, draft)</p> <ul style="list-style-type: none"> • All residential areas within urban settlements to receive appropriate weekly collection service by 2013.
Storage of Waste	<p>Waste Tyre Regulations (2008)</p> <ul style="list-style-type: none"> • If owning or managing stockpiles, Makana LM may have responsibilities under Section 8 of these regulations for waste tyre stockpiles (>500 m²). • Waste Tyre Storage Plans by any industry are to be approved by the Makana LM Fire Department.
Landfill sites	<p>National Standards for the Disposal of Waste to Landfill (GN 636 of 2013)</p> <ul style="list-style-type: none"> • Makana LM to note likely future restrictions on disposal of certain waste e.g. E-waste (cease within 8 years), whole tyres (immediate) quartered tyres (cease within 5 years), and required reduction in garden waste disposal 25% reduction in 5 years).
Transfer Stations	<p>National Norms and Standards for the Storage of Waste (GN 926 of 2013)</p> <ul style="list-style-type: none"> • Any new waste management facility with the capacity to store more than 100m³ of general waste must be registered with DEDEAT before construction commences. • The site must be operated to avoid nuisance emissions, odours and litter. • Waste must be separated into categories at source. A documented procedure must be implemented to prevent any mixing of general or hazardous waste. • Training must be provided to all employees working on site. • An emergency preparedness plan must be developed. • Internal audits must be conducted bi-annually. • External audits must be completed annually. • Records of waste entering the site and being recycled must be kept.
Public Awareness and Communication	<p>National Domestic Waste Collection Standards (GN 21 of 2011)</p> <ul style="list-style-type: none"> • All complaints regarding waste must be dealt with promptly, and responded to within 24hours. • An effective register of complaints must be kept. • Makana LM must create awareness around key waste issues as defined in the standards including illegal dumping, recycling and composting • Makana LM must provide clear guidelines on different domestic waste types, source separation, appropriate containers for domestic waste and disposal methods for waste not collected by kerbside refuse collection service
Capacity Building and Training	<p>National Policy for the Provision of Basic Refuse Removal Services to Indigent Households (GN 413 of 2011)</p> <ul style="list-style-type: none"> • Makana LM must implement education and awareness training regarding the BRR services in relevant areas.

The National Waste Management Strategy (NWMS) provides a set of goals that municipalities must achieve within five years in order to give effect to the Waste Act. The NWMS also contains an action plan with various targets to be achieved by municipalities within the five years until 2016. It is important that there should be a

target date by which municipal strategic goals and targets are to be attained within the five years from the date the IWMP has been approved. Table 4.3 below summarises the NWMS goals and further aligns them with the desired end state goals for Makana LM.

Table 4.3: The National Waste Management Strategy goals for municipalities aligned with the desired end state for Makana LM.

NWMS GOALS	DESCRIPTION	TARGETS (2016)	Makana LM GOALS
Goal 1:	Promote waste minimisation, re-use, recycling and recovery of waste.	<ul style="list-style-type: none"> • 25% of recyclables diverted from landfill sites for re-use, recycling or recovery. • All metropolitan municipalities, secondary cities and large towns have initiated separation at source programmes. • Achievement of waste reduction and recycling targets set in Industry WMPs for paper and packaging, pesticides, lighting and tyres industries. 	Goal 2
Goal 2:	Ensure the effective and efficient delivery of waste services	<ul style="list-style-type: none"> • 95% of urban households and 75% of rural households have access to adequate levels of waste collection services. • 80% of waste disposal sites have permits. 	Goal 3
Goal 3:	Grow the contribution of the waste sector to the green economy	<ul style="list-style-type: none"> • 69 000 new jobs created in the waste sector. • 2 600 additional SMEs and cooperatives participating in waste service delivery and recycling 	Goal 1
Goal 4:	Ensure that people are aware of the impact of waste on their health, well-being and the environment.	<ul style="list-style-type: none"> • 80% of municipalities running local awareness campaigns. • 80% of schools implementing waste awareness programmes. 	Goal 7
Goal 5:	Achieve integrated waste management planning.	<ul style="list-style-type: none"> • All municipalities have integrated their IWMPs with their IDPs, and have met the targets set in IWMPs. • All waste management facilities required to report to SAWIS have waste quantification systems that report information to WIS. 	Goal 1 and 9
Goal 6:	Ensure sound budgeting and financial management for waste services.	<ul style="list-style-type: none"> • All municipalities that provide waste services have conducted full-cost accounting for waste services and have implemented cost reflective tariffs 	Goal 5
Goal 7:	Provide measures to remediate	<ul style="list-style-type: none"> • Assessment complete for 80% of sites reported to the contaminated land 	Goal 6

NWMS GOALS	DESCRIPTION	TARGETS (2016)	Makana LM GOALS
	contaminated land.	<ul style="list-style-type: none"> register. Remediation plans approved for 50% of confirmed contaminated sites. 	
Goal 8:	Establish effective compliance with and enforcement of the Waste Act.	<ul style="list-style-type: none"> 50% increase in the number of successful enforcement actions against non-compliant activities. 800 Environmental management inspectors appointed in the three spheres of government to enforce the Waste Act. 	Goal 4, 8 and 10

The Eastern Cape Integrated Waste Management Plan (2010) provided a high-levelled plan for waste management in the Province and focuses particularly on the roles and responsibilities of the Province (DEDEAT) and the DMs and LMs comprising the province.

Table 4.4 below summarises the main priority areas and proposed actions for implementation and highlights those items that are the responsibility of the LM. It is also important for the LM to know what responsibilities the Province carries, particularly as they relate to mechanisms that Province undertaking to support waste management at the LM level, such as providing training or reporting requirements.

Table 4.4: Waste management priorities, objectives, targets and actions per the Eastern Cape IWMP (2010). Items highlighted orange are relevant to Makana LM.

PRIORITIES	OBJECTIVES	TARGET	ACTIONS	RESPONSIBILITY
PRIORITY 1 Improved strategic waste planning	OBJECTIVE 1: Legally compliant IWMP process	DEDEAT to develop standardised IWMP reporting framework for LM IWMPs by 2011	DEDEAT to develop reporting framework for LM IWMPs within the Province (e.g. table of contents, information checklist)	DEDEAT
		DEDEAT to develop an LM IWMP reviewing and approval system by 2012	DEDEAT to develop LM IWMP review and approval system	DEDEAT
			DEDEAT to implement LM IWMP review and approval system	DEDEAT
		LMs to have current (i.e. reviewed within the last 5 years) IWMP's, which meet requirements by end 2011	LMs with existing IWMPs to revise them to meet requirements of NEMWA, and provincial requirements	LMs
		LMs with no IWMP to compile them in line with requirements of NEMWA, and provincial requirements	LMs	
	OBJECTIVE 2: Provide landfill facilities throughout the Province	Develop regional waste facilities in high priority areas as identified in the PIWMP (2010)	Inform and provide support to DMs and LMs in high priority areas to develop these facilities	DEDEAT

PRIORITIES	OBJECTIVES	TARGET	ACTIONS	RESPONSIBILITY	
PRIORITY 2 Improve Waste Services and Facilities	OBJECTIVE 1: Provide an acceptable minimum waste collection service in all areas	Residential areas within urban settlements to receive appropriate weekly collection service by 2013	DEDEAT to define in consultation with DLGTA what constitutes "urban settlement" and thereafter capacitate LMs on reporting requirements.	DEDEAT	
			Undertake a survey to determine areas receiving unsatisfactory service, and formulate a response strategy	DEDEAT/LMs	
			Implement response strategy	LMs	
			Defining a waste collection target and strategy for rural settlements	DEDEAT to consult with DLGTA and LMs to define target and strategy for implementation in line with FBRR policy	DEDEAT
			An acceptable basic level of waste service in priority areas by 2014	Define priority areas for waste services (e.g. coastal resorts, and settlements in or close to nature reserves)	DEDEAT
				Develop and implement response strategy	DEDEAT/LMs
	OBJECTIVE 2: Achieve legal compliance of waste facilities	Compliance with national legal requirements for waste facilities	DEDEAT to undertake annual, Province-wide landfill compliance monitoring	Develop a strategy for licensing and closure of non-compliant facilities in the Province	DEDEAT
				Implement the licensing strategy	LMs
				DEDEAT to develop a province wide annual landfill compliance monitoring programme	DEDEAT
				DEDEAT to review resource needs to give effect to compliance monitoring requirements	DEDEAT
			DEDEAT to implement compliance monitoring programme. Minimum of one audit per facility per year	DEDEAT	
PRIORITY 3 Improved Recovery and Recycling	OBJECTIVE 1: Legal / policy compliance in terms of recycling	LMs to assess feasibility of drop-off centres and if feasible, develop a rollout programme and commence rollout by 2013, in line with NEMWA and draft National Domestic Waste Collection Standards	LMs to formally determine feasibility of development of drop-off centres and develop where feasible.	LMs	
	OBJECTIVE 2:	Provincial recycling strategy to	Provincial recycling strategy	DEDEAT	

PRIORITIES	OBJECTIVES	TARGET	ACTIONS	RESPONSIBILITY
	Maximise recycling opportunities in the Province	be developed by 2012	to be developed	
		DEDEAT to develop and implement an annual recycling awareness programme	DEDEAT to develop and implement an annual waste minimisation/recycling industry and public awareness programme (underway)	DEDEAT
		LMs to develop a waste minimisation/recycling plan by 2013	LMs to ensure waste minimisation/recycling infrastructure and operations needs form part of IWMPs	LMs
PRIORITY 4 Improve Institutional Functioning	OBJECTIVE 1: Develop appropriate capacity within DEDEAT to implement PIWMP	DEDEAT to acquire resources for implementation of this PIWMP by 2011	DEDEAT to undertake resource assessment for implementation of this plan	DEDEAT
			DEDEAT to allocate required resources to fulfil PIWMP	DEDEAT
	OBJECTIVE 2: DEDEAT to allocate required resources to fulfil PIWMP	Provincial WMO to be designated by 2011	MEC to formally designate, in writing, a Provincial WMO, as required by NEMWA	DEDEAT
		WMOs to be designated in all applicable LAs by 2012	All LAs to formally designate, in writing, a Waste Management Officer and notify DEDEAT of this i.e. provide name and contact details	LMs
	OBJECTIVE 3: Institutional capacity building for WMOs	Waste Management Forum for WMOs to be established by 2012	DEDEAT to establish forum and provide secretariat	DEDEAT
	OBJECTIVE 4: Develop / revise by-laws in line with NEMWA	All local authorities to adopt and enforce waste management by laws by 2013 which include NEMWA requirements.	DEDEAT to provide guidance on minimum standards for LM by-laws.	DEDEAT
LAs to revise by-laws or adopt new ones where they do not exist			LMs	
PRIORITY 5 Improved Financial management of Waste Services	OBJECTIVE 1: Institutional capacity building for waste management financing	DEDEAT to prepare guidelines by 2012	Prepare guidelines covering FCA and best practice in financial management of waste services	DEDEAT
	OBJECTIVE 2: Improved waste budgeting process	All LMs to consider requirements of PIWMP in IDP budgeting processes	All LMs to consider requirements of PIWMP in IDP budgeting processes	LMs
PRIORITY 6 Improved	OBJECTIVE 1: Establish a	Develop operational Municipal Waste Reporting System	DEDEAT to develop, together with DLGTA and	DEDEAT

PRIORITIES	OBJECTIVES	TARGET	ACTIONS	RESPONSIBILITY
Information Management and Monitoring	Municipal Waste Reporting System		LMs, a Municipal Waste Reporting System	
			Roll-out the system and provide training to LAs on the use of Municipal Waste Reporting System	DEDEAT
		All of local authorities to report using Municipal Waste Report by 2013	LMs to report waste information to DEDEAT, on an annual basis, using Municipal Waste Report	LMs
	OBJECTIVE 2: Improve use of the National WIS	All government organisations to report using National WIS by 2013	Government organisations (LMs, DMs, and Provincial departments) to report waste information on national WIS on a monthly basis	LMs
		DEDEAT to undertake annual audits of government organisations reporting performance	DEDEAT to undertake annual audits of government organisations compliance with National WIS reporting requirements	DEDEAT
		DEDEAT to undertake annual audits of industry's waste registration and reporting performance	DEDEAT to compile list of key industries, and advise them of registration requirements	DEDEAT
			DEDEAT to undertake annual review of progress of registration of industries on WIS	DEDEAT
	OBJECTIVE 3: Improve records management	DEDEAT to develop an appropriate in-house e-filing and document management system by 2012	Develop (underway) and maintain appropriate document and e-filing system	DEDEAT
			DEDEAT to hold e-copies of all latest IWMPs for the province.	DEDEAT
	OBJECTIVE 4: PIWMP monitoring to meet legal requirements	PIWMP Annual Performance Report to be submitted to MEC and Minister for approval	Undertake annual review of implementation of this PIWMP as per NEMWA and submit report for approval	DEDEAT

The table below (Table 4.5) summarises the current proposed goals and objectives for Makana LM. The objectives have been formulated taking into account the gaps and shortfalls in the existing waste management services and the needs of the respective communities within Makana LM. The goals and objectives are also aligned with the requirements of the Waste Act.

The timeframe for achieving strategic goals is divided as follows:

Immediate: 1 year

Short term: 2-3 years

Medium term: 3-5 years
Long term: 5-10 years

Table 4.5: Proposed goals and objectives for Makana LM.

Goal 1: Integrated waste management planning and implementation				
Objectives	Targets	Activities (preferred alternatives)	Alternatives (other)	Timeframe
Promote integrated waste management planning and implementation	Establish effective waste management programme that promotes Integrated Waste Management Planning in Makana LM.	Appoint a designated Waste Management Officer.	Officially designate an existing senior staff member as WMO.	Immediate
	Elevate status of waste management in the IDP process.	<ul style="list-style-type: none"> Establish Makana LM Waste Management Forum/Committee and include the following directorates/departments: PMU, housing, engineering, LED, finance, community services, recyclers, packers, I&APs, etc. WMO to actively participate in Environmental Quality Management (EQM) Forum to be established by DM and DEDEAT EQM Waste Forum. 	Keep waste management within directorate committee, but invite other relevant directorates/departments to form part of the forum/committee.	Immediate
	Implement the South African Waste Information system (SAWIS) reporting system.	<ul style="list-style-type: none"> Register with South African Waste Information System (SAWIS) and report on waste quantities. Engage with DEDEAT Waste Forum concerning Provincial reporting requirements and programmes. Seek assistance from DEDEAT to establish a LM based pilot WIS reporting project. 		Short term
		Engage with DEA on waste characterisation techniques, particularly for waste sites with no weigh-bridges or weigh-pads.		Short term
	Ensure annual reporting on IWMP	Monitor and report on success of IWMP annually. The success of the IWMP must be included in the performance reviews of the waste department.		Ongoing

	Promote timeous IWMP Review	Review IWMP after every 5 year cycle		Long term
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Goal 2: Waste minimization and recycling and recovery				
Objectives	Targets	Activities (preferred alternative)	Alternatives (other)	Timeframe
Promote waste minimization, recycling and recovery of waste	<ul style="list-style-type: none"> Promote waste minimization and recycling in the densely populated areas of Makana LM (i.e. Grahamstown, Alicedale and Riebeeck East). Establish recycling opportunities driven by Makana LM. Promote waste minimization to achieve 20% reduction in land-filled waste within 5 years. Increase recycling by 20% within 5 years, to align with National target. 	Establish a Waste Recycling Forum (WRF) within Makana LM to promote recycling awareness and potential business opportunities.		Short term
		Establish recyclable material drop-off centres at strategic points in residential areas of Riebeeck East and Alicedale,		Short term
		Establish a central material recovery facility (MRF) in Grahamstown.		Short term
		Provide different colour refuse bags to residents (mainly in township areas) to promote waste separation at source.		Short term
		Encourage source separation of waste by establishing communal collection points with different receptacles for different waste types, at inaccessible townships and informal settlements and where services are currently not provided.		Short term
		Investigate other recycling programmes in other DMs and LMs and identify recycling business opportunities by engaging with recyclable waste producers and purchasers of scrap metal, paper, waste oil and other waste towards developing a business plan.		Short term
		Maintain a project and recycled material database and review annually.		Ongoing

	<ul style="list-style-type: none"> Encourage private recyclers and establish opportunities to partner with private recyclers. Monitor non-municipal recycling initiatives within the Makana LM. 	<ul style="list-style-type: none"> Register all formal and informal reclaimers and assist with registering cooperatives. Identify and document in a database all existing private recycling initiatives in Makana LM, recording types and quantities of waste recycled and buyers. Investigate Extended Public Works Programme opportunities (District and EPIP), e.g. Youth Jobs in Waste. Facilitate recycling entities gaining access to waste streams and possibly invite reputable recycling entities to present proposals. 		Short term
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Goal 3: Delivery of waste services				
Objectives	Targets	Activities (preferred alternative)	Alternatives (other)	Timeframe
Ensure the effective and efficient delivery of waste services	Expand waste collection services in un-serviced areas, also aligned with proposed housing developments.	<ul style="list-style-type: none"> Investigate and decide on different service levels for different areas, in line with the National Domestic Waste Collection Standards. E.g.: <ul style="list-style-type: none"> Frequency of collection Collection methods Establish communal collection points for high density areas where houses are inaccessible or where services are currently not provided, such as townships and informal settlements. This will also discourage illegal dumping. 		Short term
		Review tariff structure according to different service levels rendered at different areas.		Short term

		Outsource collection of garden waste to a private service provider and possibly link in with the composting facility.		Short term
	Invest in adequate and functional waste management equipment.	WMO to maintain database of all waste management assets and assess reliability, adequacy and functionality and remaining useful life.		Ongoing
		WMO to prepare and maintain an ongoing equipment maintenance database.		Ongoing
		Develop an asset <u>replacement plan/budget</u> and ensure inclusion in annual IDP budgeting process.	Outsource waste collection services at Alicedale and Riebeeck East to a service provider.	Short term

Goal 4: Waste management by-laws/legislative tools

Objectives	Targets	Activities (preferred alternative)	Alternatives (other)	Timeframe
Ensure that by-laws are developed and that they are consistent with the Waste Act and other applicable legislation. <i>Refer to Goal 8 for enforcement of by-laws and Goal 10 for special waste by-laws.</i>	Promote and ensure waste related legal compliance within Makana LM.	Promote awareness of existing waste management by-laws within Makana LM.		Short term

Goal 5: Financial Management

Objectives	Targets	Activities (preferred alternative)	Alternatives (other)	Timeframe
Ensure sound budgeting and financing of waste management services.	Improve financial sustainability of waste management in Makana LM.	Develop a waste management budget that includes all realistic costs associated with the provision of waste services.		Immediate

		Review tariffs according to level and cost of waste services rendered.		Immediate
		Ensure accurate annual waste management budget preparation in line with the short and medium term targets.		Ongoing
		Allocate adequate resources to waste management from existing budget and other sources of funding.		Short term
		Initiate and explore measures to increase the revenue stream from other waste streams and recycling.		Short term
		Identify funding sources for capital projects (e.g. MIG) and motivation of waste projects in IDP and other budgeting processes.		Ongoing
		Engage with DEA concerning waste management funding model.		Immediate
		Ensure ongoing annual review of waste services financial plan.		Ongoing

Goal 6: Waste disposal facilities				
Objectives	Targets	Activities (preferred alternative)	Alternatives (other)	Timeframe
Ensure the safe and proper disposal of waste and management of facilities.	<ul style="list-style-type: none"> Develop, improve and maintain landfill sites to comply with Legislative Requirements and Makana LM needs. Ensure all waste disposal and storage sites are operated in terms of DWAF Minimum Requirements for Landfill Disposal and 	Improve compliance of the Alicedale landfill site in line with the permit and legislative requirements.	Obtain permit to operate the Alicedale landfill site as a waste transfer station.	Immediate
		Improve compliance of the Riebeeck East landfill site in line with the permit and legislative requirements.	Obtain permit to operate the Riebeeck East landfill site as a waste transfer station.	Immediate
		Improve compliance of the Grahamstown landfill site in line with the permit and legislative		Immediate

	compliance with national and provincial waste and environmental legislation.	requirements.		
		Investigate the feasibility of converting the Grahamstown landfill site into a regional waste site.		Medium term
	Ensure operation of landfill sites by skilled operators.	Appoint new landfill site operators with the necessary skills to operate landfill sites.	Train existing foremen on skills required for landfill operations.	Short term

Goal 7: Education and awareness

Objectives	Targets	Activities (preferred alternative)	Alternatives (other)	Timeframe
Promote public awareness concerning waste management, recycling and littering.	Promote clean and healthy environment in Makana LM.	<ul style="list-style-type: none"> Develop waste management related awareness materials for communities and schools. Initiate "greenest community" competitions. 		Ongoing
	Promote general awareness on waste related matters among Makana LM officials.	Develop waste management related training and awareness materials for Makana LM officials and councillors and collaborate with DM.		Short term
	Expand waste management awareness campaigns.	Expand awareness campaigns to two campaigns every quarter.		Immediate

Goal 8: Compliance and enforcement

Objectives	Targets	Activities (preferred alternative)	Alternatives (other)	Timeframe
Enforce compliance with waste by-laws and other legal policies and guidelines.	Ensure enforcement of Makana LM waste by-laws.	Train law enforcement officers to ensure efficient implementation and enforcement of waste by-laws.		Short term
		Clarify responsibility for enforcement of waste by-laws.		Immediate

		Develop communication materials for informing on the consequences of not complying with waste by-laws and legislation.		Short term
		Develop Waste Legal Register and initiate an internal legal compliance monitoring programme.		Short term
	Monitor effectiveness of waste by-law implementation.	Monitor effectiveness of waste by-law implementation by conducting annual internal and external legal compliance monitoring/audits.		Ongoing

Goal 9: Institutional arrangements				
Objectives	Targets	Activities (preferred alternative)	Alternatives (other)	Timeframe
Ensure effective waste management institutional arrangements	Clarify structure and responsibilities for all waste management related positions, and identify gaps in the Makana LM organogram.	Identify needs and gaps including vacancies in the waste management institutional structure.		Immediate
		Appoint a dedicated Waste Management Officer (WMO) and allocate responsibilities.	Formally designate an existing senior staff member as WMO.	Immediate
		Prioritise the filling of vacant waste management positions (within 3 months of vacancy).		Short term
		Recruit and appoint unfunded key waste staff.		Short to Medium term
		Identify suitable training requirements and opportunities for all levels of waste management staff.		Medium term
		WMO to participate in DEDEAT EQM Waste Management Forum.		Ongoing
		WMO to attend all District EQM quarterly meetings.		Ongoing
		WMO to attend The Institute of Waste Management of South Africa (IWMSA) Waste Con conference.		Ongoing

		WMO to ensure regular meetings of Makana LM Waste Committee with relevant IDP sectors, at least quarterly.		Ongoing
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Goal 10: Medical, commercial and industrial and hazardous waste

Objectives	Targets	Activities (preferred alternative)	Alternatives (other)	Timeframe
Develop tools to regulate appropriate disposal of medical, commercial, hazardous and industrial waste and diapers.	Prevent special waste streams from entering general waste sites throughout Makana LM.	Identify waste types within the Makana LM that require dedicated waste management protocols.		Short term
		Identify and document key sources of medical, commercial, industrial and hazardous waste.		Short term
		Develop a database of all clinics, medical facilities (GPs, pharmacies, funeral parlours, etc.), commercial wholesalers, abattoirs, vehicle repairs, etc.		Short term
		Develop a programme for drafting and implementing by-laws for special waste streams.		Medium term
		Investigate status of DoH initiatives for hospitals and clinics and maintain contact relevant DoH district official.		Short term
		Investigate feasibility of implementing a "returns" programme or policy for pharmacies, GPs, etc.		Medium term
		Provide ongoing training and awareness of proper medical, commercial and industrial waste management practices.		Ongoing

5. Identify, evaluate and select alternatives

5.1. STRATEGIC GOALS, TARGETS, TIMEFRAME, BUDGET

Please refer to Section 4, Table 4.5 above.

6. Communication and Stakeholder Participation

6.1. CONSULTATION PROCESS SUMMARY

The following key stakeholders have been identified as part of the IWMP review process:

- Sarah Baartman District Municipality (SBDM)
- Local Municipality officials
- Regulatory departments, namely:
 - Department of Environmental Affairs (DEA)
 - Department of Economic Development, Environmental Affairs and Tourism (DEDEAT)
 - Department of Water and Sanitation (DWS)

A key stakeholder engagement meeting was held on 14th October 2016 at the Sarah Baartmaan District Municipality (SBDM) in Port Elizabeth. See Appendix A for the attendance registers.

Makana LM participated in the stakeholder engagement and expressed the following key issues concerning the draft IWMP review report which was presented:

Issues raised/ Concerns	General Comments	Response
The draft IWMP review reports must not refer to the unlicensed waste sites as “landfill sites”, as this creates an impression that the sites are/were licensed. The reports must refer to all unlicensed sites as “waste disposal sites” and those that are not regulated by the municipalities must be referred as “dump sites”.	None	Noted. The terminology in the draft IWMP review reports will be addressed accordingly.
The draft IWMP review reports reflect that all municipalities do not have law enforcement officers. None of the municipalities have waste designated law enforcement officers. The municipal law enforcement officers generally deal with the implementation and enforcement of by-laws for all departments. Environmental Health Practitioners (EHPs) are also	None	Noted. This will be corrected and recorded accordingly in the draft IWMP review reports. The draft IWMP review reports will further recommend training for municipal law enforcement officers on the waste by-laws, to ensure efficient and effective implementation and enforcement of waste by-laws.

Issues raised/ Concerns	General Comments	Response
responsible for assisting in the implementation and enforcement of waste by-laws.		
None	The draft IWMP review reports must recommend and reflect the need for DEDEAT to establish and provide technical support for a pilot WIS at one LM in the district. When the procedure is successfully implemented in one LM, then it can be duplicated in other LMs.	Noted. This will be recommended in the draft IWMP review reports.
None	The implementation plan must provide clear action plans towards achieving the ultimate desired end state goals. This is particularly important for the management of waste disposal sites, equipment requirements, organisational and institutional arrangements, etc.	Noted. Standard action plans will be provided in the draft IWMP review reports.
None	The process of integrating the IWMP projects into the IDP is not an issue. The issue is with prioritization of the waste projects. As such, no/inadequate budget is allocated towards the waste management projects, and as such, they cannot be implemented.	Noted. This will be reflected in the planning and implementation process of the IWMP reports.
None	Makana LM and BCRM are in the final feasibility stage of establishing Waste to Energy projects at their LMs, in conjunction with the Cacadu Development Agency.	Noted. The initiative will be reflected in the draft IWMP reports for Makana LM and BCRM.

7. Implementation Instruments

7.1. PARTNERSHIPS

An effective waste management system requires participation from various stakeholders. It is thus important for Makana LM to develop partnerships with different stakeholders as an important mechanism for providing services and facilities required to promote good waste management practices. There are a wide range of partnerships that can be formed; including Public-Public, Public-Private and Non-Governmental Organisations (NGO) or Community Based Organisations (CBO) partnerships.

7.1.1. Public-Public Partnerships

Institutional partnerships already exist relating mainly to:

- DEDEAT – compliance with environmental legislation and EIA regulations, permitting of landfills and other waste activities, quarterly Environmental Quality Management Forum (EQM)
- DWS – sewage treatment facilities, cemeteries, catchment management etc. compliance with water legislation and regulations.
- DEA – Extended Public Work Programme (EPWP) and Environmental Protection and Infrastructure Projects (EPIP).

It is recommended that other opportunities should be explored with other DMs and LMs within the Eastern Cape, for co-operation and learning. LM's within the SBDM can also learn from each other.

7.1.2. Public-Private Partnerships

Public-private partnerships (PPP) can be described as government services or private business ventures funded and operated through a partnership between the government and one or more private sector companies. PPP are mainly for collaborating on financial assistance for waste services, establishment of waste management facilities, establishment of source-separation, establishment of MRFs, transfer stations and recycling facilities. Some of the partnerships that should be considered are as follows:

Basic Refuse Removal

Partnerships with small community based SMMEs can be established to collect general waste in areas that are currently not receiving waste services and to dispose this waste in designated skip bins for ultimate collection by the municipality. This means that the municipality will be able to provide widespread waste collection services. The SMMEs can be provided with basic collection equipment such as carts and trolleys to collect from areas where trucks cannot easily reach.

Composting

Organic waste can be collected by the municipality and deposited at a composting site. The waste can be fed into a chipper and compost made using basic low technology and cost effective methods. The composting site can be managed by a community partner.

There are limited existing public-private partnerships in place that are relevant to waste management in Makana LM. Those that are known include:

- Compass Waste Services – provides medical waste services to certain clinics and hospitals in Makana LM.
- Hazardous and Medical Waste collection sub-contractors

Developing partnerships with the private sector is critical for the implementation of particularly waste minimization, reuse and recycling opportunities. In this regard, the following commercial entities should be approached:

- SAPPI and Mondi for paper recycling
- Scrap metal recyclers
- Glass Recycling
- Used oil recyclers
- Waste tyres recyclers

7.1.3. NGO/CBO Partnerships

Makana LM should explore opportunities for collaboration with respect to waste management programmes with the following organisations:

- **South African Local Government Association (SALGA)**
 - SALGA provides support in a broad range of disciplines, including waste management - <http://www.salga.org.za/>
- **Clean City Campaign Africa (CCCA)**
 - CCC, which includes the Recycling Forum and gathers important stakeholders including councillors, private companies and NGOs - http://www.foundation-development-africa.org/africa_clean_city_campaign/
- **Institute for Waste Management South Africa (IWMSA)**
 - Makana LM officials should participate in the various programmes offered by the IWMSA, including the Eastern Cape and KwaZulu Natal chapters - <http://www.iwmsa.co.za/>
- **Other waste recycling organizations**
 - Makana LM officials should engage with the various recycling industry groups, such as:
 - National Recycling Forum - <http://www.recycling.co.za/>
 - Remade Recycling - <http://www.remade.co.za/>
 - Redisa Waste Tyre Recycling - <http://www.redisa.org.za/>
 - The Glass Recycling Company - <http://www.theglassrecyclingcompany.co.za/>
 - Paper Recycling Association of South Africa - <http://www.theglassrecyclingcompany.co.za/>
 - National Oil Recycling Association of South Africa - <http://www.norasa.co.za/splash.asp>
 - Rose Foundation - <http://www.rosefoundation.org.za/>

7.2. LEGISLATIVE INSTRUMENTS: DEVELOPMENT AND ENFORCEMENT OF BY-LAWS

A critical component to the implementation of the IWMP is the supporting legal framework. The Integrated Waste Management Policies and by-laws are tools for assisting local municipalities in driving an effective and sustainable waste management service throughout its area of jurisdiction. Local municipalities have the legal capacity in terms of the Municipal Systems Act to develop by-laws to supplement national and provincial regulatory requirements and to address issues and challenges that are specific or unique to the LM.

Objectives

By-laws must aim to give effect to Section 24 of the Constitution relating to the “protection of the environment for the benefit of present and future generations” including the effective management of waste within the jurisdiction

of the LM. By-laws must provide an effective legal and administrative framework to give effect to the objectives of the Waste Act, which amongst other things include:

- Minimising the consumption of natural resources;
- Avoiding and minimising the generation of waste;
- Reducing, reusing, recycling and recovery of waste;
- Treating and disposing of waste as a last resort;
- Preventing pollution and ecological degradation; and
- Achieving integrated waste management reporting and planning.

The Waste Act also specifically places an obligation on LMs to provide for the compliance with the above measures.

Municipalities also need to enforce any waste by-laws that they may have promulgated through municipal mechanisms such as Environmental Management Inspectors (EMI's), Peace Officers, WMO's or Environmental Health Practitioner's (EHPs) or other delegated authority within the municipality.

Whatever the designated enforcement agency, the LM should explore appropriate training on its waste by-laws and related matters to ensure that they are equipped to issue fines for non-compliance with waste by-laws. The Makana LM waste by-law is appended to this IWMP.

7.3. FUNDING MECHANISMS

A critical precondition for the successful implementation of waste management services is accurate costing and securing access to sufficient funds. All costs associated with providing waste services need to be identified (both capital and operational costs) so that appropriate tariffs can be levied.

Some of the interventions that can be implemented include undertaking a full cost accounting exercise, implementing recycling programme to lower disposal costs, as well as initiating incentives for recycling and waste minimisation by introducing "pay-as-you-throw" principles to lower collection charges.

Funding will possibly be required for the following recommended priority projects:

- Funding for various proposed programmes:
 - Waste management training and awareness programme for officials and councillors
 - Waste management training and awareness programme for the public
 - Waste management awareness information for rural villages and their ward councillors
 - Schools waste awareness programmes
 - Capacitating of officials and enforcement of by-laws
 - Formulate and implement an Operations Management Plan for expanding waste services by investigating alternative service delivery mechanisms, such as:
 - Communal bins or skips, especially in the illegal dumping hotspots
 - Establishing specific waste collection points
 - Implementation of the Waste Information System
 - Audit programme for operating waste sites
 - Conducting legal compliance audit
- Operational funding for:

- Maximum implementation of the Makana LM waste minimisation/recycling plan
- Expanded services and alternative services
- Better management of existing permitted sites
- Capital funding for
 - New equipment
- Funding for the development of various business plans:
 - Cleaner town and anti-litter awareness campaign and the cleanest town competition
 - Paper waste
 - Communal collection points
 - Used oil recycling

7.3.1. Funding Instruments

The successful implementation of this IWMP will require both capital and operational costs and can be funded through potential funding instruments as listed below:

Funding mechanisms for Waste Prevention, Minimisation and Recycling

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

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

Privately funded programmes should be promoted where possible.

Funding mechanisms for Waste Collection and Transportation

Possible sources for waste collection and transportation include:

- Payment for services
- Municipal budget allocations
- Donor funding for specific projects
- Public-private partnerships.

Funding mechanisms for Waste Treatment and Disposal

The cost associated with general waste disposal will mainly be funded by service fees (tariffs) or as part of waste charges for the municipality.

As already described above, the following two strategy documents must be consulted by the LM when reviewing and revising its tariff structure.

- Municipal Solid Waste Tariff Strategy (2012)
- National Pricing Strategy for Waste Management Charges (2014)

In particular, it is suggested that the LM investigate implementing waste tariffs that are volumetric based or “pay-as-you-throw” versus a flat rate where there is no incentive to reduce waste and proper matching of costs. Additional sources of funding which can also serve to achieve some of the IWMP objectives, is the implementation of taxes. The use of taxes can encourage and/or discourage certain attitudes towards waste management. Certain taxes can encourage recycling and discourage production of certain products of the usage of certain materials in the production process.

Financial plan for the implementation of the IWMP

A financial plan should be developed for the implementation of the Makana LM IWMP.

User Guide for DEA Solid Waste Tariff

Coming out of the Municipal Solid Waste Tariff Strategy, DEA has developed User Guide for DEA Solid Waste Tariff. Municipalities can access the tariff strategy, guidelines, step-by-step guide and the excel based spreadsheet through the DEA website - <http://sawic.environment.gov.za/>

7.4. IMPLEMENTATION PLAN (SUMMARY OF AN IWMP PLANNING PROCESS)

Table 7.1 below constitutes an Implementation Plan of targets and activities that should be implemented by Makana LM to achieve its strategic goals with respect to waste management, and includes:

- Desired end state (goals)
- Targets
- Timing
- Selected alternatives (selected activities)
- Resources, comprising:
 - Human
 - Equipment and
 - Finance

Some indicative budgets are provided which mainly relate to the engagement of specialist waste management consultants. However, such tasks could just as well be undertaken by a well capacitate municipal WMO. It is believed that a properly capacitated WMO could address most of the issues without having to outsource to external service providers or consultants. **The appointment of a competent WMO would therefore be well worth the investment.**

Table 7.1: Proposed Makana LM Implementation Plan

Situation Analysis	Desired end state (goals)	Targets	Y1	Y2	Y3	Y4	Y5	Selected alternatives (activities)	Implementation mechanisms (Resources)		
									Human Resource (HR)	Equipment (EQP)	Finance (HR + EQP)
<ul style="list-style-type: none"> There is no designated Waste Management Officer. The status of waste management is not prioritised in IDP process. Waste streams are not quantified at all landfill sites and thus there is no SAWIS reporting. IWMP is not timeously reviewed. 	Goal 1: Promote integrated waste management planning and implementation	Establish effective waste management programme that promotes Integrated Waste Management Planning in Makana LM.	x					Appoint a designated Waste Management Officer.	1 additional personnel	N/A	R500 000 pa.
		Elevate status of waste management in the IDP Process.	x					<ul style="list-style-type: none"> Establish Makana LM Waste Management Forum/Committee and include the following directorates/departments: PMU, housing, engineering, LED, finance, community services, recyclers, packers, I&APs, etc. WMO to actively participate in Environmental Quality Management (EQM) Forum to be established by DM and DEDEAT EQM Waste Forum. 	In house	N/A	N/A
		Implement the South African Waste Information system (SAWIS) reporting system.		x				<ul style="list-style-type: none"> Register with South African Waste Information System (SAWIS) and report on waste quantities. Engage with DEDEAT Waste Forum concerning Provincial reporting requirements and programmes. Seek assistance from DEDEAT to establish a LM based pilot WIS reporting project. 	In house	N/A	N/A
			Engage with DEA on waste characterisation and quantification techniques, particularly for waste sites with no weigh-bridges or weigh-pads.						In house	N/A	N/A
Ensure annual reporting on IWMP			x	x	x	x	x	Monitor and report on success of IWMP annually. The success of the	In house	N/A	N/A

Table 7.1: Proposed Makana LM Implementation Plan

Situation Analysis	Desired end state (goals)	Targets	Y1	Y2	Y3	Y4	Y5	Selected alternatives (activities)	Implementation mechanisms (Resources)			
									Human Resource (HR)	Equipment (EQP)	Finance (HR + EQP)	
								IWMP must be included in the performance reviews of the waste department.				
		Promote timeous IWMP Review					x	Review IWMP after every 5 year cycle	In house	N/A	N/A	
									Outsourced (service provider)	N/A	R200 000	
	Goal 2: Promote waste minimization, recycling and recovery of waste	<ul style="list-style-type: none"> Promote waste minimization and recycling in the densely populated areas of Makana LM (i.e. Grahamstown, Alicedale and Riebeeck East). Establish recycling opportunities driven by Makana LM. Promote waste minimization to achieve 20% reduction in land-filled waste within 5 years. Increase recycling by 20% within 5 years, to align with National target. 		x				Establish a Waste Recycling Forum (WRF) within Makana LM to promote recycling awareness and potential business opportunities.	2 additional personnel	N/A	R200 000 pa.	
				x					Establish recyclable material drop-off centres at strategic points in residential areas of Riebeeck East and Alicedale,	In house	Drop off facilities and recyclable waste receptacles for at least one new facility.	R250 000
				x					Establish a central material recovery facility (MRF) in Grahamstown.	In house	MRF infrastructure in GHT and waste receptacles	R300 000
				x					Provide different colour refuse bags to residents (mainly in township areas) to promote waste separation at source.	In house	Refuse bags	R200 000 pa.
				x					Encourage source separation of waste by establishing communal collection points with different receptacles for different waste types, at inaccessible townships and informal settlements and where services are currently not provided.	In house	Waste receptacles	R200 000

Table 7.1: Proposed Makana LM Implementation Plan

Situation Analysis	Desired end state (goals)	Targets	Y1	Y2	Y3	Y4	Y5	Selected alternatives (activities)	Implementation mechanisms (Resources)		
									Human Resource (HR)	Equipment (EQP)	Finance (HR + EQP)
				x				Investigate other recycling programmes in other DMs and LMs and identify recycling business opportunities by engaging with recyclable waste producers and purchasers of scrap metal, paper, waste oil and other waste towards developing a business plan.	In house	N/A	N/A
			x	x	x	x	x	Maintain a project and recycled material database and review annually.	In house	N/A	N/A
		<ul style="list-style-type: none"> Encourage private recyclers and establish opportunities to partner with private recyclers. Monitor non-municipal recycling initiatives within the Makana LM. 		x				Register all formal and informal reclaimers and assist with registering cooperatives.	In house	In house	N/A
				x				Identify and document in a database all existing private recycling initiatives in Makana LM, recording types and quantities of waste recycled and buyers.	In house	In house	N/A
				x				Investigate Extended Public Works Programme opportunities (District and EPIP), e.g. Youth Jobs in Waste.	In house	In house	N/A
				x				Facilitate recycling entities gaining access to waste streams and possibly invite reputable recycling entities to present proposals.	In house	In house	N/A
<ul style="list-style-type: none"> According to StatsSA 2011 data, approximately 11% of Makana LM households do not receive municipal waste collection services. This may include farms, rural areas and some inaccessible informal settlements. There is no equipment dedicated for waste collection at Riebeeck East. There is no equipment for operating the Alicedale and Riebeeck East landfill sites. 	Goal 3: Ensure the effective and efficient delivery of waste services	Expand waste collection services in un-serviced areas, also aligned with proposed housing developments.		x				<ul style="list-style-type: none"> Investigate and decide on different service levels for different areas, in line with the National Domestic Waste Collection Standards. E.g.: <ul style="list-style-type: none"> Frequency of collection Collection methods Establish communal collection points for high density areas where houses are inaccessible or where 	In house	Waste receptacles (e.g. skip bins)	R500 000

Table 7.1: Proposed Makana LM Implementation Plan

Situation Analysis	Desired end state (goals)	Targets	Y1	Y2	Y3	Y4	Y5	Selected alternatives (activities)	Implementation mechanisms (Resources)		
									Human Resource (HR)	Equipment (EQP)	Finance (HR + EQP)
<ul style="list-style-type: none"> Most of the equipment in Grahamstown is shared between departments; therefore equipment is not always readily available when required for waste management services. 								services are currently not provided, such as townships and informal settlements. This will also discourage illegal dumping.			
				x				Review tariff structure according to different service levels rendered at different areas.	In house	N/A	N/A
				x				Outsource collection of garden waste to a private service provider and possibly link in with the composting facility.	Outsourced (service provider)	N/A	Uncertain
		Invest in adequate and functional waste management equipment.	x	x	x	x	x	WMO to maintain database of all waste management assets and assess reliability, adequacy and functionality and remaining useful life.	In house	N/A	N/A
			x	x	x	x	x	WMO to prepare and maintain an ongoing equipment maintenance database.	In house	N/A	N/A
				x				Develop an asset <u>replacement plan/budget</u> and ensure inclusion in annual IDP budgeting process.	In house	Waste collection and landfill operation equipment	Uncertain
				x				Outsource waste collection services at Alicedale and Riebeeck East to a service provider.	Outsourced (service provider)	N/A	Uncertain
Waste by-laws are not sufficiently communicated throughout the communities.	Goal 4: Ensure that by-laws are developed and that they are consistent with the Waste Act and other applicable legislation.	Promote and ensure waste related legal compliance within Makana LM.		x				Promote awareness of existing waste management by-laws within Makana LM	In house	N/A	R50 000
<ul style="list-style-type: none"> The budget projects a deficit of about R400 000 for landfill site operation. 	Goal 5: Ensure sound budgeting and financing	Improve financial sustainability of waste management in	x					Develop a waste management budget that includes all realistic costs	In house	N/A	N/A

Table 7.1: Proposed Makana LM Implementation Plan

Situation Analysis	Desired end state (goals)	Targets	Y1	Y2	Y3	Y4	Y5	Selected alternatives (activities)	Implementation mechanisms (Resources)		
									Human Resource (HR)	Equipment (EQP)	Finance (HR + EQP)
<ul style="list-style-type: none"> While the Equitable Share of over R6 million is recorded as revenue, the same amount is recorded as an expense as indigent free basic service. This should not be reflected as an expense since the costs associated with are not additional to the other expenses. If these monies were specifically allocated to free basic services, they should be retained within the waste management budget. The provision for bad debts appears excessive. The budget does not include an allocation for capital items, which could be funded via MIG. 	of waste management services.	Makana LM.						associated with the provision of waste services.			
			x					Review tariffs according to level and cost of waste services rendered.	In house	N/A	N/A
			x	x	x	x	x	Ensure accurate annual waste management budget preparation in line with the short and medium term targets.	In house	N/A	N/A
				x				Allocate adequate resources to waste management from existing budget and other sources of funding.	In house	N/A	N/A
				x				Initiate and explore measures to increase the revenue stream from other waste streams and recycling.	In house	N/A	N/A
			x	x	x	x	x	Identify funding sources for capital projects (e.g. MIG) and motivation of waste projects in IDP and other budgeting processes.	In house	N/A	N/A
			x					Engage with DEA concerning waste management funding model.	In house	N/A	N/A
			x	x	x	x	x	Ensure ongoing annual review of waste services financial plan.	In house	N/A	N/A
Landfill sites are not operated in compliance with the permit and other waste legislative requirements.	Goal 6: Ensure the safe and proper disposal of waste and management of facilities.	<ul style="list-style-type: none"> Develop, improve and maintain landfill sites to comply with Legislative Requirements and Makana LM needs. Ensure all waste disposal and storage sites are operated in terms of DWAF Minimum Requirements for Landfill Disposal and compliance with national and provincial waste and 	x					Improve compliance of the Alicedale landfill site in line with the permit and legislative requirements.	In house	N/A	Refer to action plan
			x					Improve compliance of the Riebeeck East landfill site in line with the permit and legislative requirements.	In house	N/A	Refer to action plan
			x					Improve compliance of the Grahamstown landfill site in line with the permit and legislative requirements.	In house	N/A	Refer to action plan
					x			Investigate the feasibility of converting the Grahamstown landfill site into a	In house	N/A	R500 000

Table 7.1: Proposed Makana LM Implementation Plan

Situation Analysis	Desired end state (goals)	Targets	Y1	Y2	Y3	Y4	Y5	Selected alternatives (activities)	Implementation mechanisms (Resources)		
									Human Resource (HR)	Equipment (EQP)	Finance (HR + EQP)
		environmental legislation.						regional waste site.			
		Ensure operation of landfill sites by skilled operators.		x				Appoint new landfill site operators with the necessary skills to operate landfill sites.	1 additional personnel	N/A	R300 000 pa.
Insufficient waste education and awareness campaigning.	Goal 7: Promote public awareness concerning waste management, recycling and littering.	Promote clean and healthy environment.	x	x	x	x	x	<ul style="list-style-type: none"> Develop waste management related awareness materials for communities and schools. Initiate “greenest community” competitions. 	In house / outsourced	N/A	R100 000 pa.
		Promote general awareness on waste related matters among Makana LM officials.		x				Develop waste management related training and awareness materials for Makana LM officials and councilors and collaborate with DM.	In house / outsourced	N/A	Obtain quote
		Expand waste management awareness campaigns.	x					Expand awareness campaigns to two campaigns every quarter.	In house / outsourced	N/A	Obtain quote
Law enforcement officers are not specifically trained and capacitated to implement and ensure efficient enforcement of waste by-laws.	Goal 8: Enforce compliance with waste by-laws and other legal policies and guidelines.	Ensure enforcement of municipal by-laws.		x				Train law enforcement officers to ensure efficient implementation and enforcement of waste by-laws.	In house	N/A	N/A
			x					Clarify responsibility for enforcement of waste by-laws.	In house	N/A	N/A
				x				Develop communication materials for informing on the consequences of not complying with waste by-laws and legislation.	In house	N/A	N/A
				x				Develop Waste Legal Register and initiate an internal legal compliance monitoring programme.	In house	N/A	Obtain quote
		Monitor effectiveness of by-law implementation.	x	x	x	x	x	Monitor effectiveness of by-law implementation by conducting annual internal and external legal compliance monitoring/auditing.	In house and DM	N/A	N/A
<ul style="list-style-type: none"> There is no designated WMO There is a shortage of personnel, which places 	Goal 9: Ensure effective waste management	Clarify structure and responsibilities for all positions, and identify gaps in	x					Identify needs and gaps including vacancies in the waste management institutional structure.	In house	N/A	N/A

Table 7.1: Proposed Makana LM Implementation Plan

Situation Analysis	Desired end state (goals)	Targets	Y1	Y2	Y3	Y4	Y5	Selected alternatives (activities)	Implementation mechanisms (Resources)		
									Human Resource (HR)	Equipment (EQP)	Finance (HR + EQP)
an extra burden on existing employees and the ability to provide efficient services. • There is no landfill supervisory staff in Alicedale and Riebeeck East landfill sites.	institutional arrangements	organogram.	x					Appoint a dedicated Waste Management Officer (WMO) and allocate responsibilities.	1 additional personnel	N/A	Already accommodated for in Goal 1
				x				Prioritise the filling of vacant waste management positions (within 3 months of vacancy).	In house	N/A	
				x	x			Recruit and appoint unfunded key waste staff.	Required additional personnel	N/A	Uncertain
					x			Identify suitable training requirements and opportunities for all levels of waste management staff.	In house	N/A	N/A
			x	x	x	x	x	WMO to participate in DEDEAT EQM Waste Management Forum.	In house	N/A	Uncertain
			x	x	x	x	x	WMO to attend all District EQM quarterly meetings.	In house	N/A	Uncertain
			x	x	x	x	x	WMO to attend The Institute of Waste Management of South Africa (IWMSA) Waste Con conference.	In house	N/A	Uncertain
			x	x	x	x	x	WMO to ensure regular meetings of Makana LM Waste Committee with relevant IDP sectors, at least quarterly.	In house	N/A	N/A
There is no system for regulating and ensuring proper disposal of special waste (e.g. hazardous, medical, and industrial, diapers, etc.).	Goal 10: Develop tools to regulate appropriate disposal of medical, commercial, hazardous and industrial waste and diapers.	Prevent special waste streams from entering general waste sites.		x				Identify waste types within the Makana LM that require dedicated waste management protocols.	In house	N/A	N/A
				x				Identify and document key sources of medical, commercial, industrial and hazardous waste.	In house	N/A	N/A
				x				Develop a database of all clinics, medical facilities (GPs, pharmacies, funeral parlours, etc.), commercial wholesalers, abattoirs, vehicle repairs, etc.	In house	N/A	N/A
					x			Develop a programme for drafting and	In house	N/A	N/A

Table 7.1: Proposed Makana LM Implementation Plan

Situation Analysis	Desired end state (goals)	Targets	Y1	Y2	Y3	Y4	Y5	Selected alternatives (activities)	Implementation mechanisms (Resources)		
									Human Resource (HR)	Equipment (EQP)	Finance (HR + EQP)
								implementing by-laws for special waste streams.			
				x				Investigate status of DoH initiatives for hospitals and clinics and maintain contact relevant DoH district official.	In house	N/A	N/A
						x		Investigate feasibility of implementing a "returns" programme or policy for pharmacies, GPs, etc.	Outsourced (service provider)	N/A	R200 000
			x	x	x	x	x	Provide ongoing training and awareness of proper medical, commercial and industrial waste management practices.	In house / outsourced	N/A	R200 000

8. Reporting on Monitoring

Section 13(3) of the Waste Act requires that annual performance reports prepared in terms of Section 46 of the Municipal Systems Act must contain information on the implementation of the municipal IWMP, including:

- The extent to which the IWMP 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 undertaken to secure the efficient delivery of waste management services.
- 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.
- The measures taken to make necessary amendments to the plan.

Makana LM should determine whether it has complied with the above requirements when reporting on the implementation of the IWMP.

8.1. WASTE MANAGEMENT IMPLEMENTATION AND MONITORING PROGRAMME

Table 8.1 below provides a framework for monitoring the implementation of the Makana LM current IWMP.

Table 8.1: Programme for monitoring the implementation of the Makana LM IWMP

Key Performance Indicator	Target Date	Responsibility
Immediate (1 year)		
Appoint a designated Waste Management Officer.	June 2017	Municipal Manager
<ul style="list-style-type: none"> • Establish Makana LM Waste Management Forum/Committee and include the following directorates/departments: PMU, housing, engineering, LED, finance, community services, recyclers, packers, I&APs, etc. • WMO to actively participate in Environmental Quality Management (EQM) Forum to be established by DM and DEDEAT EQM Waste Forum. 	June 2017	WMO
Develop a waste management budget that includes all realistic costs associated with the provision of waste services.	June 2017	WMO
Review tariffs according to level and cost of waste services rendered.	June 2017	WMO
Engage with DEA concerning waste management funding model.	June 2017	WMO
Improve compliance of the Alicedale landfill site in line with the permit and legislative requirements.	June 2017	WMO
Improve compliance of the Riebeeck East landfill site in line with the permit and legislative requirements.	June 2017	WMO
Improve compliance of the Grahamstown landfill site in line with the permit and legislative requirements.	June 2017	WMO
Clarify responsibility for enforcement of waste by-laws.	Oct 2017	WMO
Expand awareness campaigns to two campaigns every quarter.	Oct 2017	WMO
Identify needs and gaps including vacancies in the waste management institutional	Oct 2017	WMO

structure.		
Short term (2 – 3 years)		
<ul style="list-style-type: none"> Register with South African Waste Information System (SAWIS) and report on waste quantities. Engage with DEDEAT Waste Forum concerning Provincial reporting requirements and programmes. Seek assistance from DEDEAT to establish a LM based pilot WIS reporting project. 	June 2018	WMO
Engage with DEA on waste characterisation and quantification techniques, particularly for waste sites with no weigh-bridges or weigh-pads.	June 2018	WMO
Establish a Waste Recycling Forum (WRF) within Makana LM to promote recycling awareness and potential business opportunities.	June 2018	WMO
Establish recyclable material drop-off centres at strategic points in residential areas of Riebeeck East and Alicedale.	June 2018	WMO
Establish a central material recovery facility (MRF) in Grahamstown.	June 2018	WMO
Provide different colour refuse bags to residents (mainly in township areas) to promote waste separation at source.	June 2018	WMO
Encourage source separation of waste by establishing communal collection points with different receptacles for different waste types, at inaccessible townships and informal settlements and where services are currently not provided.	June 2018	WMO
Investigate other recycling programmes in other DMs and LMs and identify recycling business opportunities by engaging with recyclable waste producers and purchasers of scrap metal, paper, waste oil and other waste towards developing a business plan.	June 2018	WMO
Register all formal and informal reclaimers and assist with registering cooperatives.	June 2018	WMO
Identify and document in a database all existing private recycling initiatives in Makana LM, recording types and quantities of waste recycled and buyers.	June 2018	WMO
Investigate Extended Public Works Programme opportunities (District and EPIP), e.g. Youth Jobs in Waste.	June 2018	WMO
Facilitate recycling entities gaining access to waste streams and possibly invite reputable recycling entities to present proposals.	June 2018	WMO
Appoint new landfill site operators with the necessary skills to operate landfill sites.	June 2018	WMO
<ul style="list-style-type: none"> Investigate and decide on different service levels for different areas, in line with the National Domestic Waste Collection Standards. E.g.: <ul style="list-style-type: none"> Frequency of collection Collection methods Establish communal collection points for high density areas where houses are inaccessible or where services are currently not provided, such as townships and informal settlements. This will also discourage illegal dumping. 	Oct 2018	WMO
Review tariff structure according to different service levels rendered at different areas.	Oct 2018	WMO
Outsource collection of garden waste to a private service provider and possibly link in with the composting facility.	Oct 2018	Service Provider
Develop an asset <u>replacement plan/budget</u> and ensure inclusion in annual IDP budgeting process.	Oct 2018	WMO
Outsource waste collection services at Alicedale and Riebeeck East to a service provider.	Oct 2018	Service Provider
Promote awareness of existing waste management by-laws within Makana LM.	Oct 2018	WMO
Allocate adequate resources to waste management from existing budget and other	Oct 2018	WMO

sources of funding.		
Initiate and explore measures to increase the revenue stream from other waste streams and recycling.	Oct 2018	WMO
Appoint new landfill site operators with the necessary skills to operate landfill sites.	Oct 2018	WMO
Identify funding sources for capital projects (e.g. MIG) and motivation of waste projects in IDP and other budgeting processes.	Oct 2018	WMO
Develop waste management related training and awareness materials for LM officials and councilors and collaborate with DM.	Oct 2018	WMO
Train law enforcement officers to ensure efficient implementation and enforcement of waste by-laws.	Oct 2018	WMO
Develop communication materials for informing on the consequences of not complying with waste by-laws and legislation.	Oct 2018	WMO
Develop Waste Legal Register and initiate an internal legal compliance monitoring programme.	Oct 2018	WMO
Prioritise the filling of vacant waste management positions (within 3 months of vacancy).	Oct 2018	WMO
Identify waste types within the Makana LM that require dedicated waste management protocols.	June 2019	WMO
Identify and document key sources of medical, commercial, industrial and hazardous waste.	June 2019	WMO
Develop a database of all clinics, medical facilities (GPs, pharmacies, funeral parlours, etc.), commercial wholesalers, abattoirs, vehicle repairs, etc.	June 2019	WMO
Investigate status of DoH initiatives for hospitals and clinics and maintain contact relevant DoH district official.	June 2019	WMO
Medium term (3-5 years)		
Investigate the feasibility of converting the Grahamstown landfill site into a regional waste site.	Oct 2019	WMO
Recruit and appoint unfunded key waste staff.	Oct 2019	WMO
Identify suitable training requirements and opportunities for all levels of waste management staff.	Oct 2019	WMO
Develop a programme for drafting and implementing by-laws for special waste streams.	Oct 2019	WMO
Investigate feasibility of implementing a "returns" programme or policy for pharmacies, GPs, etc.	Oct 2020	WMO
Long term (5-10 years)		
Review IWMP after every 5 year cycle	Oct 2021	WMO
Ongoing (every year)		
Monitor and report on success of IWMP annually. The success of the IWMP must be included in the performance reviews of the waste department.	Annually	WMO
Maintain a project and recycled material database and review annually.	Annually	WMO
WMO to maintain database of all waste management assets and assess reliability, adequacy and functionality and remaining useful life.	Annually	WMO
WMO to prepare and maintain an ongoing equipment maintenance database.	Annually	WMO
Ensure accurate annual waste management budget preparation in line with the short and medium term targets.	Annually	WMO
Identify funding sources for capital projects (e.g. MIG) and motivation of waste projects in IDP and other budgeting processes.	Annually	WMO
Ensure ongoing annual review of waste services financial plan.	Annually	WMO
<ul style="list-style-type: none"> Develop waste management related awareness materials for communities and schools. 	Annually	WMO

• Initiate “greenest community” competitions.		
Monitor effectiveness of by-law implementation by conducting annual internal and external legal compliance monitoring/auditing.	Annually	WMO
WMO to participate in DEDEAT EQM Waste Management Forum.	Annually	WMO
WMO to attend all District EQM quarterly meetings.	Annually	WMO
WMO to attend The Institute of Waste Management of South Africa (IWMSA) Waste Con conference.	Annually	WMO
WMO to ensure regular meetings of Makana LM Waste Committee with relevant IDP sectors, at least quarterly.	Annually	WMO
Provide ongoing training and awareness of proper medical, commercial and industrial waste management practices.	Annually	WMO

The results of the Makana LM IWMP monitoring activities must be compiled into a monitoring report. Makana LM must compile a report on the implementation of the IWMP **on an annual basis and submit to DEDEAT.**

8.2. REVIEW OF THE IWMP

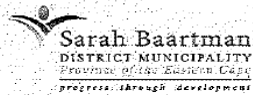
A critical evaluation and review of the monitoring reports will provide information for assessing the achievement of the Makana LM IWMP objectives and strategies. This process will ensure the re-appraisal of the IWMP and assess the relevance of policies, goals and objectives, and whether they need to be amended and adjusted. **An IWMP must be reviewed every five years**, in line with the IDP requirements.

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- National Environmental Management Act (NEMA) (Act No. 107 of 1998).
- National Health Act (Act No. 63 of 2003).
- National Pricing Strategy for Waste Management Charges, 2014.
- National Water Act (Act No. 36 of 1998)
- South African Constitution (Act No. 108 of 1996).
- Statistics South Africa: Census 2011 Data.

APPENDIX A

Stakeholder Engagement Attendance Register



ATTENDANCE REGISTER
 Sarah Baartman IWMP – Stakeholder Engagement
 14 October 2016 @ 09h00
 SBDM Council Chambers, Port Elizabeth



Name	Organisation	Email	Tel no.	NATURE
Nonde Suka	EOH CES	n.suka@cesnet.co.za	043 726 7809	
Alan Carter	EOH	alan.carter@ech.co.za	043 726 7809	
JHESTERHUIZEN	MAKANA	JohanneEsterhuizen@makana.gov.za		
Joe Mokoelle	SRVM	teboho.mokhoeleng@mail.co.za	0736022826	
Philiso Tukwano	DEA	ptukwano@eruvonamedia.co.za	0798906339	
Chris Julius	DEBEAT	chris.julius@dedee.gov.za	0415085845	
MASIXOLE NTONGANA	DEBEAT	Masixole.Ntongana@dedee.gov.za		
Jeffrey Ruiters	Koukamma	jeffrey.ruiters@kukamma.gov.za	041 001 9645	
NC. Booysse-Willy	Ndlambe LM	nbooyse@ndlambe.gov.za	083 990 559	
Naleli Williams	SBDM/IKWEZI LM	nawilliams@sbdm.co.za	041 508 7095	
Kelabo Makgala	SBDM	kmakgala@sbdm.co.za	041 508 7075	
Nomsa Ngqise	BERM	nomsan@berm.gov.za	0422436400	
AURNEY NORDMAN	Koukamma	yanayes@gmail.com	042-2731337	

APPENDIX B

Standard Operation Procedures and Operational Action Plans