



INTEGRATED WASTE MANAGEMENT PLAN

2016-2020

Nelson Mandela Bay Municipality Integrated Waste Management Plan

Foreword

This is a copy of the Nelson Mandela Bay Municipality's (NMBM) second generation Integrated Waste Management Plan (IWMP). This document will follow the same trend as the first IWMP with exception that it now follows National and Provincial trends with more focus on waste minimisation and recycling.

The first generation IWMP dated 2005 to 2010 closed down on 26 October 2010, when an item was submitted to the Public Health Standing Committee and the status report forms part of this document.

A substantial Public Perception Survey was completed in 2011 with key findings which were used to draft the Need Analysis and the key objectives. This also guided the Waste Management Sub-Directorate to compile appropriate projects to ensure that the needs are addresses and that all stakeholders will benefit from the IWMP.

An indepth public participation process for the IWMP was undertaken in 2016. The public participation process consisted of 32 meetings including 18 public meetings. The IWMP report was also placed on the NMBM website for review and at all municipal libraries ward councillors officers, waste management depots and some NMBM buildings for review.

The Waste Management Sub-directorate appreciates stakeholders input and opinion on this IWMP and the Public Participation Process is important to ensure that the necessary input are made to ensure that the process is transparent and that we can rely on your understanding and support.

ACKNOWLEDGMENTS

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1 EXECUTIVE SUMMARY

1.1 Introduction

This is the second Integrated Waste Management Plan (IWMP) to be completed by the Nelson Mandela Bay Municipality (NMBM). The first IWMP was completed in 2005 and defined the NMBM's plan for solid waste management for the period 2005 to 2010. This has now been revised, and this second generation IWMP addresses the period 2015 – 2019. The NMBM IWMP is applicable to all areas falling within the jurisdiction of the NMBM. It has been compiled by the Waste Management section of the Public Health Directorate but has relevance to all directorates of NMBM.

The purpose of an IWMP is to define the vision, objectives and targets for the provision of solid waste management services. Hence IWMPs need to address all aspects of waste management from waste generation to waste reduction, recycling, treatment and disposal in order to reduce waste to landfill. This IWMP consists of the following eight sections:

- Section 1: Introduction
- Section 2: Situational Analysis
- Section 3: Institutional Management
- Section 4: Public Participation
- Section 5: Needs Analysis
- Section 6: Waste Management Objectives
- Section 7: Implementation Plan
- Section 8: Conclusion and Way Forward

1.2 Policy and Legislation

In terms of Section 11(4)(a) of the National Environmental Management: Waste Amendment Act (26 of 2014), all provincial and local authorities are required to compile an IWMP, submit it to the MEC for endorsement, and include it in the local authority's Integrated Development Plan (IDP). Two key pieces of legislation define how IWMPs are to be compiled and what they should contain:

- National Environmental Management: Waste Act (Act 59 of 2008) (NEMWA): Section 12(1) of the NEMWA specifies the minimum content of IWMPs which includes:
 - a Situation Analysis including, amongst other things, an analysis of waste types, a description of services, and an indication of the number of persons not receiving waste collection services
 - An indication of how the local authority intends to give effect to, amongst others, the objectives of the NEMWA, to provide for implementation of waste minimization and recycling, and best environmental practice;
 - Setting out of priorities and objectives for waste management;
 - Establishing targets for collection, minimization, re-use and recycling;
 - Setting the approach for the planning of new facilities;
 - Indicating financial resources required for giving effect to the plan; and
 - Describing how the authority will give effect to the plan.
- Municipal Systems Act (act 32 of 2000) (MSA): Section 25 of the MSA describes how plans such as the IWMP must be incorporated into the broader IDP of the local authority, which considers a range of areas such as building

safe communities, promoting active participation in local government, building the local economy, employment creation and improvement of public services. The MSA also calls for IWMPs to undergo public participation processes.

1.3 Approach

Before targets and objectives can be established an in depth understanding of the current waste management service is required. A number of approaches were used to establish the status quo of waste management in the NMBM area.

- Data from NMBM was used to assess the number of serviced and unserved households;
- Site inspections of a total of 22 waste management facilities were undertaken. These included the two municipal landfill sites, drop-off centres, transfer stations and temporary skip sites.
- A waste characterisation survey of the domestic waste stream was undertaken to determine the typical composition of the municipal waste stream.
- Interviews were conducted with waste management staff from different depots and offices and spanning a range of different posts from refuse collectors to directors.
- Meetings were scheduled with a number of private recycling contractors operating in the NMB area to gain an insight into the type and volume of recyclables being removed from the area.
- An in depth public perception survey was undertaken which included face-to-face and online surveys.
- A 'Needs List' was drawn up using the results of the above. The needs list presented all the waste management issues identified in the NMBM area and grouped them under common headings.
- Key issues identified from the Needs List were used to develop waste management objectives.
- Workshops were held during which a number of waste projects were proposed. These projects will serve as the vehicles through which the objectives will be met.
- An in-depth public participation process which involved:
 - Presentation to the Portfolio Committee
 - An industry meeting
 - A Councillor workshop
 - 18 public meetings
 - 11 ward committee meetings
 - Placing the report on the NMBM website and at venues across the NMB area was undertaken.

1.4 Waste Characterisation

Waste from the following four neighbourhoods in the NMB area were surveyed:

- Mill Park (upper income). Black bags from 47 houses were collected on 14th June 2011. A total of 778 kg of waste was separated and characterised.
- Algoa / Young Park (medium income). Black bags from 67 houses were collected on 21st June 2011. A total of 539 kg of waste was separated and characterised.

- Soweto on Sea (low income). Black bags from 57 houses were collected on 15th September 2011. A total of 327 kg of waste was separated and characterised.
- New Brighton (low income): Wheelie bins from 70 houses were collected on 11th October 2011. A total of 774 kg of waste was separated and characterised.

The organic fraction was the largest waste fraction by weight for all areas surveyed and made up on average 39% of the domestic waste stream. Recyclables (paper, cardboard, metal, glass and plastics) were found to make up approximately 37%. Hazardous waste (e.g. batteries, fluorescent tubes, and paints), which included infectious and health care risk waste (e.g. sharps, medicines, used nappies), ranged from 6-17% of the waste stream in different areas.

1.5 Public Perception Survey

A survey was undertaken which aimed to determine the public's perception of, and satisfaction with, NMBM's current solid waste management service. It covered a range of topics including collections, disposal, and recycling. A total of 1,111 surveys were completed using the following:

- Face to face surveys: These were undertaken through door to door visits in low income areas, interviews in a number of shopping centres across the NMBM area, and at municipal drop-off centres. A total of 810 surveys were completed.
- Self completed hardcopies: A total of 52 hardcopy stations were set up at clinics, libraries, waste management depots and customer care centres across the metro. A total of 154 completed surveys were returned.
- Internet survey – an online survey was hosted on the NMBM website. A total of 147 responses were received.

Some of the key results are presented below, and indicate that there remains much room for improvement of services.

- 55% of respondents view the refuse collection service as good or very good
- 51% of respondents view their area as good or very good in terms of litter
- 75% of respondents are unaware of who to contact regarding illegal dumping
- 58% of respondents are unaware of the location of their nearest drop-off centre
- 79% of respondents do not recycle
- 52% of respondents are unaware of what constitutes domestic hazardous waste
- 55% of respondents view the current waste management service as good, very good or excellent

1.6 Public Participation Process

A public participation process for the IWMP was undertaken in 2016. The public participation process consisted of 32 meetings including 18 public meetings. The IWMP report was also placed on the NMBM website for review and at all municipal libraries, ward councillors offices, waste management depots and some NMBM buildings.

1.7 Needs Analysis

Numerous issues were raised by the public and NMBM staff during the above process. From these, key issues were distilled and are presented in the table below.

TOPIC	FINDING
INSTITUTIONAL ISSUES	
Internal capacity	<i>NMBM Waste Management has a general shortage of staff.</i> There are a number of vacant posts. There is a lack of technical waste management and engineering skills at senior level.
Waste Planning	<i>There is a lack of long term infrastructure and operation planning.</i> No plan exists which presents the long term infrastructure vision for the waste management in the NMBM. As the NMBM expands, new sites need to be identified and purchased for future landfill sites and transfer stations
Waste Information and Data Management	<i>Data management is lacking in some areas</i> A review of the categories used for waste records is required. Categories need to be descriptive. Employees need to be informed of the waste related data available on the central server. Need to improve information feed down through the department to all levels, e.g. IMWP project implementation.
SERVICE DELIVERY ISSUES	
Recycling	<i>Only limited recycling of domestic waste at source is occurring and NMBM needs to put systems in place to achieve its legal recycling mandate.</i> There are insufficient recycling facilities available to the public
Collection services	<i>Collection services in some areas do not conform to the National Domestic Waste Collection Standards (GN 21, Jan 2011)</i> A weekly collection service is presented in the National Domestic Waste Collection Standards (GN 21, Jan 2011) as being the minimum requirement. At present approximately 94.8% 94,399 households have a weekly refuse collection service. Approximately 5% of households are using a communal collection point.
Waste management fleet	<i>Much of the waste management fleet is old and requires replacement.</i> Due to the nature of the work, poor roads, overloading and the age of the vehicles, they frequently suffer from mechanical problems and breakdown. Vehicles with specialized lifting gear are required for wheelie bin collection rounds and the NMBM does not have backup wheelie bin compactors. Many of the vehicles require replacing. Furthermore, the fleet needs to be increased in order to phase out fortnightly collections.
Landfills	<i>The landfill sites are not meeting permit requirements</i> Security is a major issue on the landfill sites, there is poor access control. Up to 300 informal recyclers have been recorded on Arlington.
By-laws and Enforcement	<i>Effective enforcement of the waste management by-laws is not being achieved</i> Additional town rangers are required to enforce by-laws and address illegal dumping. Mobile CCTV cameras are needed in illegal dumping hot spots. Support is needed from Safety and Security Department to bring repeat offenders to court Public need to be informed of who to contact should they witness illegal dumping
PUBLIC AWARENESS AND COMMUNICATION ISSUES	
Waste Management Awareness	<i>Waste Management is not "mainstreamed" in the NMBM area</i> There is a lack of awareness regarding key waste management issues such as what can be recycled, where to drop off recyclables, the by-laws and their

	enforcement and how to report illegal dumping cases. Communication between NMBM Waste management and the public as well as industry can be improved.
Complaints management	<p><i>Complaints management is not meeting the requirements of the National Domestic Waste Collection Standards (GN21 of 2011)</i></p> <p>Clear standards have been defined for managing incoming complaints (must be responded to with 24hrs and a register maintained) which are currently not being achieved.</p>

1.8 Objectives

Six objectives were defined based on the results of the needs analysis namely:

1.8.1 Objective 1. Improved Waste Infrastructure and Operational Future Planning

While residential development within the NMBM area continues to expand, so too does the need for waste management infrastructure including landfill sites, transfer stations, and drop-off centres. A long term plan is required to identify potential sites for such facilities.

1.8.2 Objective 2. Provide an Enabling Environment for Recycling

The NMBM has a legal obligation to provide an enabling environment for recycling in terms of the National Domestic Waste Collection Standards (GN 21 of 2011) (NDWCS). The NMBM needs to enable recycling through the provision of recycling facilities at transfer stations and drop-off centres and the use of public awareness campaigns to promote these facilities.

1.8.3 Objective 3: Improve Infrastructure Management

Failing infrastructure, safety and access control are some of reasons for waste management infrastructure including landfill sites, drop-off centres and transfer stations failing to meet permit requirements. The NMBM needs to improve management and infrastructure to ensure these facilities are compliant with permit requirements by 2019.

1.8.4 Objective 4: Reduce Illegal Dumping

The NMBM will reduce illegal dumping by 50% by 2019 by continuing regular audits, public awareness campaigns and operating a functional, and capacitated waste law enforcement unit. The unit will investigate and implement the best methods for detecting illegal dumping (e.g. CCTV monitoring of hotspots) and administering fines.

1.8.5 Objective 5: Improve Public Awareness

Change in waste management practice is being driven by rapidly changing legislation and there will be a growing need to communicate with the residents of the NMB area as the NMBM responds to these changes.

1.8.6 Objective 6: Improve Public Perception

In public perception surveys conducted in 2006 and 2011 approximately 55% of respondents viewed the NMBM’s waste management service positively. The NMBM will work towards increasing this to 70% by 2019 through improved service delivery, and generating awareness amongst its residents.

1.9 Projects and Way Forward

An implementation plan has been developed to assist the NMBM in meeting the objectives described above. The plan contains a number of projects and initiatives which, if property executed, should move the NMBM towards realising these objectives. The 34 projects listed below have been identified spanning a period of 5 years.

No.	Project	2016		2017				2018				2019				2020				2021		
		Quarter	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2
IWMP PLANNING PROJECTS																						
1	Waste Infrastructure and Operational Demand Masterplan																					
2	Waste beneficiation and waste to energy (planning phase)																					
3	Waste Guidelines and Development Standards																					
4	Waste Characterisation and Sampling standards																					
5	Feasibility Study: Recycling of Domestic Hazardous Waste																					
6	Revision of Waste Management Organogram and Resources																					
7	To pursue the utilisation of Community Based Co-operatives in execution of Waste Management Functions																					
8	Wheely bin replacement policy																					
WASTE MINIMISATION																						
9	Develop a Waste Minimisation Strategy																					
10	“Where and How to Recycle” Information Document.																					
11	To facilitate Recycling at all																					

No.	Project	2016		2017				2018				2019				2020				2021		
		3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	
	Transfer Stations and Drop-off Centres																					
12	To Facilitate In-House Municipal Recycling																					
13	Formal Review of Blue Horizon Bay Recycling Project																					
14	Expansion of the Two Bag Source Separation Recycling project																					
15	Pilot Centralised Composting at Blue Horizon Bay																					
16	Review and upgrade of online Waste Exchange																					
WASTE COLLECTION																						
17	To investigate the most appropriate and cost-effective utilisation of Municipal Fleet in waste management																					
WASTE TRANSFER & DISPOSAL																						
18	Increasing the nr of Transfer stations / Drop-off Centres in line with WM Strategy																					
19	Ensure compliance with all permit conditions and applicable legislation at Landfill Sites																					
ILLEGAL DUMPING																						
20	Implementation of the Illegal Dumping Strategy																					
PUBLIC AWARENESS & COMMUNICATION																						
21	Public Awareness Strategy and Plan																					
22	Review Public Awareness & Education programme																					
23	Preparing a Public Perception Protocol document																					
24	Review of the Complaints Management System																					

No.	Project	2016		2017				2018				2019				2020				2021		
		3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	
25	Develop an information leaflet on "How to handle your waste"																					
26	Waste Information Calendar																					
INFORMATION MANAGEMENT																						
27	In-house Waste Info Portal																					
28	Review of the weighbridge software and the current categorisation system																					
LEGISLATION AND ENFORCEMENT																						
29	Review By-laws																					
30	Enforcement strategy																					
STAFF DEVELOPMENT																						
31	Review of induction material																					
32	Review of Skills Plan and Identify Relevant Waste Training																					
33	IWMP Awareness Campaign. Repeat in-house awareness campaign																					
FINANCIAL																						
34	Investigate possible alternative funding sources																					

Regular and on-going monitoring of the IWMP is required to ensure the objectives of the IWMP are accomplished. Monitoring of the success of projects during the IWMP implementation phase will ensure that corrective action is taken when necessary.

A close down report will be completed in 2021 at the end of this IWMP's 5 year lifespan. The closedown report will evaluate the successes and challenges associated with the proposed projects.

Nelson Mandela Bay Municipality Integrated Waste Management Plan 2016 Review

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ABBREVIATIONS

AFR	Alternative Fuels and Raw Materials
APPA	Atmospheric Pollution Prevention Act
ASP	Africa Stockpiles Programme
DDT	Dichloro-diphenyl-trichloroethane
DEA	Department of Environmental Affairs
DEAT	Department of Environmental Affairs and Tourism
DEDEAT	Department of Economic Development, Environmental Affairs and Tourism
DM	District Municipality
DOC	Drop-off Centre
DoE	Department of Education
DoH	Department of Health
DWA	Department of Water Affairs (formerly DWAF)
DWAF	Department of Water Affairs and Forestry
DWEA	Department of Water and Environmental Affairs
ECA	Environment Conservation Act (73 of 1989)
ECDC	Eastern Cape Development Corporation
ECIC	Eastern Cape Implementation Committee
ECP	Eastern Cape Parks
EIA	Environmental Impact Assessment
eWASA	e-Waste Association of South Africa
FBRR	Free Basic Refuse Removal
GDPR	Gross Domestic Product per Region
GWMP	General Waste Management Plan
HCB	Hexachlorobenze
HCRW	Health Care Risk Waste
HCW	Health Care Waste
HWMP	Hazardous Waste Management Plan
IDP	Integrated Development Plan
IDZ	Industrial Development Zone
IEM	Integrated Environmental Management
IPWM	Integrated Pollution and Waste Management
IT	Information Technology
IWM	Integrated Waste Management
IWMP	Integrated Waste Management Plan
IWMSA	Institute of Waste Management South Africa
KZN	KwaZulu Natal
LAs	Local Authorities (Local and District level authorities)
LM	Local Municipality
MEC	Member of Executive Council
MIIU	Municipal Infrastructure Investment Unit
MRF	Material Recovery Facility
NEMA	National Environmental Management Act
NEMWA	National Environmental Management: Waste Act (59 of 2008)
NHA	National Health Act (61 of 2003)
NMB (area)	Nelson Mandela Bay area
NMBM	Nelson Mandela Bay Municipality

NWMS	National Waste Management Strategy
OHSA	Occupational Health and Safety Act (85 of 1993)
PCBs	Polychlorinated Biphenyls
PERCCI	Port Elizabeth Regional Chamber of Commerce and Industry
PE-HD	Polyethylene high density
PE-LD-	Polyethylene low density
PET	Polyethylene Terephthalate
PIC	Prior Informed Consent
PIWMP	Provincial Integrated Waste Management Plan
POP(s)	Persistent Organic Pollutant(s)
PP	Polypropylene
PS	Polystyrene
PSC	Project Steering Committee
PUDSS	Permissible Utilisation and Disposal of Sewage Sludge
PVC	Polyvinyl Chloride
RDP	Reconstruction and Development Programme
ROSE	Recycling Oil Saves the Environment
RSA	Republic of South Africa
SABS	South African Bureau of Standards
SANBI	South African National Biodiversity Institute
SATRP	South African Tyre Recycling Process Company
SAWIC	South African Waste Information Centre
SIDA	Swedish International Development Corporation Agency
UN	United Nations
WHO	World Health Organisation
WIS	Waste Information System
WMO(s)	Waste Management Officer(s)
WRC	Water Resource Commission
WWTW	Waste Water Treatment Works

DEFINITIONS

Basic refuse removal	A baseline service level as established under Clause 9.1 of the National Policy of Basic Refuse Removal to indigent Households
Best Practicable Environmental Option	The outcome of a systematic and consultative decision-making procedure. The option that provides the most benefit and the least damage to the environment (across air, water and land) as a whole, at acceptable cost, in the long term as well as in the short term. (NEMWA, 2008)
Best Practice	Process, technique, or innovative use of technology, equipment or resources that has a proven record of success in providing significant improvement in cost, schedule, quality, performance, safety, environment, or other measurable factors which impact on an organisation.
Bioremediation	Process whereby natural organisms (e.g., bacteria, fungi or plants) or enzymes are used to degrade contaminants.
Buy-back centre	A centre where people sell recyclable material they have collected. Recycling companies buy recyclable materials from the buy-back centres and pay only for the materials they can use. (Draft Municipal Waste Sector Plan, 2011)
By-law	Legislation passed by the council of a municipality binding in the municipality on the persons to whom it applies (Municipal Systems Act, 2000)
Carcinogen	A Chemical substance or mixture of chemical substances which induce cancer or increase its incidence when inhaled, ingested or absorbed through the skin (SANS 10234, 2007)
Clean Production	The continuous application of integrated preventative environmental strategies to process, products and services to increase overall efficiency and to reduce the impact of such processes, procedures and services on health and the environment (NEMWA, 2008)
Communal Collection Point	In informal areas where a door to door refuse collection service is impossible due to poor road infrastructure, the municipality will identify a centralised point where residents can place their refuse bags and the refuse collection teams will collect it from these point on collection days
Composting Facility	Facility for the aerobic decomposition of biodegradable organic matter to produce compost (Draft Municipal Waste Sector Plan, 2011)
Disposal	The burial, deposit, discharge, abandoning, dumping, placing or release of any waste into, or onto any land (NEMWA, 2008)
Domestic waste	Waste excluding hazardous waste, that emanates from premises that are used wholly or mainly for residential, educational health care, sports or recreation purposes (NEMWA, 2008)
Drop-off centre	A facility where the public is able to drop off <u>garden refuse, source separated recyclables and bulky waste</u> , for which there is no kerb-side collection service. These are formal, constructed sites. These sites are for residents only and trade waste is not accepted. These facilities were previously referred to as Garden Refuse Transfer Stations by the NMBM.
Duty-of-care principle	Any person handling or managing hazardous substances or related equipment is ethically responsible for applying the utmost care.
Environment	The surroundings within which humans exist and that are made up of- (i) the land, water and atmosphere of the earth (ii) micro-organisms, plant and animal life (iii) any part of combination of (i) and (ii) and the interrelationships among and between them: and (iv) the physical, chemical, aesthetic and culture properties and conditions of the foregoing that influence human health and well-being: (NEMA, 1998)
General waste	Waste that does not pose an immediate hazard or threat to health or to the environment, and includes— (a) domestic waste; (b) building and demolition waste; (c) business waste: and

	(d) inert waste. (NEMWA, 2008)
Hazardous waste	Any waste that contains organic or inorganic elements or compounds that may, owing to the inherent physical, chemical or toxicological characteristics of that waste, have a detrimental impact on health and the environment.(NEMWA, 2008)
Incineration	Any method, technique or process to convert waste to flue gases and residues by means of oxidation (NEMWA, 2008).
Industry	Includes commercial activities, commercial agricultural activities, mining activities and the operation of power stations; (NEMWA, 2008)
Inert waste	Waste that (a) does not undergo any significant physical, chemical or biological transformation after disposed (b) does not burn, react physically or chemically biodegrade or otherwise adversely affect any other matter or environment with which they may come into contact and (c) does not impact negatively on the environment, because of its pollutant content and because of the toxicity of its leachate is insignificant (NEMWA, 2008)
Landfill	Site for the controlled disposal of waste materials (Draft Municipal Waste Sector Plan, 2011)
Minimisation	When used in relation to waste, means the avoidance of the amount and toxicity of waste that is generated and, in the event where waste is generated the reduction of the amount and toxicity of waste that is disposed of (NEMWA, 2008)
Minimum Requirements	Refers to the Minimum Requirements series of documents relating to the handling, classification, treatment and disposal of general and hazardous waste, published by DWAF in 1998 and updated periodically.
Materials Recovery Facility (MRF)	A facility where waste is temporarily stored and ideally sorted, before it is transported more economically to either recycling centres or landfills (Draft Municipal Waste Sector Plan, 2011)
Nelson Mandela Bay area	The geographical area which falls within the jurisdiction of the Nelson Mandela Bay Municipality.
Nelson Mandela Bay Municipality (NMBM)	The local authority administrating the Nelson Mandela Bay area which includes Port Elizabeth, Uitenhage and Dispatch. It is a category A (Metropolitan) municipality.
Policy	Provides guidance for legislation and administration. Does not refer to the development of implementation plans; does not refer to operational issues; does not define roles and responsibilities.
Polluter Pays Principle	The Polluter Pays Principle is a principle in international environmental law where the polluting party pays for the damage done to the natural environment.
Precautionary Principle	The precautionary principle permits a lower level of proof of harm to be used in policy-making whenever the consequences of waiting for higher levels of proof may be very costly and/or irreversible: Where a risk is unknown; the assumption of the worst case situation and the making of a provision for such a situation; and Principle adopted by the United Nations Conference on the Environment and Development (1992) that, in order to protect the environment, a precautionary approach should be widely applied, meaning that where there are threats of serious or irreversible damage to the environment, lack of full scientific certainty should not be used as a reason for postponing cost-effective measures to prevent environmental degradation.
Recovery	The controlled extraction of a material or the retrieval of energy from waste to produce a product (NEMWA, 2008).
Recycle	The 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 (NEMWA, 2008)
Recycling Point	A facility where the public can drop off source separated recyclable materials into marked containers/ bins, no money is paid for the recyclables. Recycling points are usually found at schools, libraries and vehicle service stations. These facilities are

	owned and serviced by the private sector.
Re-use	To utilise articles from the waste stream again for a similar or different purpose without changing the form or properties of the articles (NEMWA, 2008).
Sharps	Items such as needles, syringes, blades of clinical glass, that are capable of causing cuts, abrasions or puncture wounds (Draft National Norms and Standards for the Storage of Waste, 2011)
Sustainable Development	The integration of social, economic and environmental factors into planning, implementation and decision-making so as to ensure that development serves present and future generations (NEMA, 1998)
Temporary Skips	These are large bulk skips placed in communities for receiving only surplus <u>garden waste and bulky waste</u> , which is not collected as part of the household collection service. These skips are provided in an attempt to discourage illegal dumping. The skips are not permanent features and are moved by NMBM as required. These skips are not manned.
Transfer stations	A facility where waste is temporarily stored before it is transported more economically to either recycling centres or landfills (Draft Municipal Waste Sector Plan, 2011). In NMBM these formal facilities are similar to the drop-off centres in design, but in addition to accepting garden refuse, recyclables and bulky waste, they also accept <u>all general domestic waste</u> . These are typically in outlying areas and are used to accumulate waste before it is transported to the landfill sites.
Treatment	Any method, technique or process that is designed to (a) change the physical, biological or chemical character or composition of a waste; or (b) remove, separate, concentrate or recover a hazardous or toxic component of a waste; or (c) destroy or reduce the toxicity of a waste in order to minimise the impact of the waste on the environment prior to further use of disposal (NEMWA, 2008).
Waste	(a) any substance, material or object, that is unwanted, rejected, abandoned that is surplus, unwanted, rejected, discarded, abandoned 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 substance, material or object that is not included in Schedule 3 that may be defined as a waste by Minister by notice in the Gazette. but any waste or portion of waste, referred to in paragraphs (a) and (b) ceases to be a waste- (i) once an application for its re-use, recycling or recovery has been approve, or after such approval, once it is, or has been re-used, recycled or recovered; (ii) where approval is 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 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 portion of a waste stream from the definition of waste. National Environmental Management: Waste Amendment Act (Act No, 26 of 2014).
Waste Avoidance	Preventing waste generation altogether (i.e. zero waste generation)
Waste Co-operative	An enterprise jointly owned and managed by its employees, which provides waste-related services (e.g. litter-picking, street sweeping) to the communities as per contract with an authority. They are envisioned to bring about an improved feeling of ownership and responsibility in communities and generate entrepreneurship in previously disadvantaged communities.
Waste disposal facility	Any site or premise used for the accumulation of waste with the purpose of disposing of that waste at that site or on that premise (NEMWA, 2008).
Waste Exchange	The activity that takes place when waste is exchanged between companies, individuals or organisations, in order for it to be of mutual benefit to both parties. Waste from one could even be raw materials for the other.

Waste Generation	The weight or volume of materials and products that enter any given waste stream before recycling, composting, land filling or combustion takes place. Can also represent the amount of waste generated by a given source or category of sources.
Waste Management Hierarchy	The Waste Management Hierarchy reflects the different waste management options, from reduction (more preferred) through to re-use, recycling, recovery, treatment/destruction, and lastly disposal (least preferred), that should all form part of an integrated waste management system (NEMA, 2008)
Waste Information System	A computerised database containing information about waste management organisations and agencies, as directed to be established as part of the implementation of the National Waste Management Strategy of South Africa.
Waste Management Licence	A license issued in terms of section 49 of the National Environmental Management, Waste Act 2009 (NEMWA, 2008)
Waste Management Officer	A waste management control officer designated in terms of section 10 (NEMWA, 2008).
Waste Management Services	Waste collection, treatment, recycling and disposal services (NEMWA, 2008)
Waste Reuse / Recovery	The recovery or reapplication of a package or product for uses similar or identical to its originally intended application, without manufacturing or preparation processes that significantly alter the original package or product. Recovery can also refer to the recovery of energy from waste.
Waste Stream	The total flow of waste falling under a particular waste category from activity areas, businesses units, and operations that is recovered, recycled, reused, or disposed of in landfills e.g. domestic waste, hydrocarbon waste, etc.
Waste Transfer Facility	A facility that is used to accumulate and temporarily store waste before it is transported to a recycling, treatment or waste disposal facility (NEMWA, 2008)
Waste Transporter	A company or individual that provides a commercial service as a transporter of waste must be registered as a Waste Transporter with on the Nelson Mandela Bay Municipality in terms of the NMBM Waste Management By-Laws.
Waste Treatment Facility	Any site that is used to accumulate waste for the purpose of storage, recovery, treatment, reprocessing, recycling or sorting of that waste (NEMWA, 2008).
Wheelie bin	A 240l plastic wheeled container used by households for disposal of domestic waste

The definitions used in this report are taken from a number of sources

- South African National Standard (SANS) (2007) Globally Harmonized System of Classification and labelling of Chemicals (GHS)
- DEAT. (2009). National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) National Domestic Waste Collection Standards.
- National Environmental Management Act No 62 of 2008
- Local Government: Municipal Systems Act, 2000
- DEA (2011) Draft Municipal Waste Sector Plan
- NEMWA (59/2008): National Norms and Standards for the Storage of Waste

1 Introduction

1.1 Defining Waste and Integrated Waste Management Planning

1.1.1 A Definition of Waste

The National Environmental Management: Waste Amendment Act (Act 59 of 2008) defines waste as:

- a) any substance, material or object, that is unwanted, rejected, abandoned that is surplus, unwanted, rejected, discarded, abandoned 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 substance, material or object that is not included in Schedule 3 that may be defined as a waste by Minister by notice in the *Gazette*.

but any waste or portion of waste, referred to in paragraphs (a) and (b) ceases to be a 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 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 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 portion of a waste stream from the definition of waste

The last few years have seen South Africa taking significant steps towards improved waste management at a policy, legislation and planning level; most significantly with the promulgation of the National Environmental Management: Waste Act (59 of 2008), the revised National Waste Management Strategy published in 2011. In terms of Schedule 5B of the Constitution (Act 108 of 1996) waste management is a local government competency that must be executed to protect human and environmental health. Hence it is largely at the local authority level where waste policies and plans are physically implemented and hence it is vital that waste planning at this level receives the attention it deserves. Integrated Waste Management Planning plays a key role in this.

1.1.2 Integrated Waste Management Planning and IWMPs

The ‘integrated’ aspect of Integrated Waste Management Planning, means that all aspects of waste management are considered, from waste generation to waste reduction, recycling, treatment and disposal. This approach is illustrated in Figure 1 which shows the “waste hierarchy” as defined in the National Waste Management Strategy (DEA, 2011) illustrating how the majority of waste should be addressed via the lower tier activities, and how disposal should be applied as a last resort. It gives a clear illustration of the best environmental practice concerning waste management and aims to reduce the production of waste and to divert resources away from landfill sites where possible.

The National Waste Management Strategy (DEA, 2011) (NWMS) states that the overall approach of the NWMS is “to give effect to the objects of the Waste Act, which are to protect health, well-being and the environment through sound waste management

and application of the waste management hierarchy. The strategy provides a plan to give practical effect to the Waste Act, and as such it seeks to ensure that responsibility for waste management is properly apportioned”.

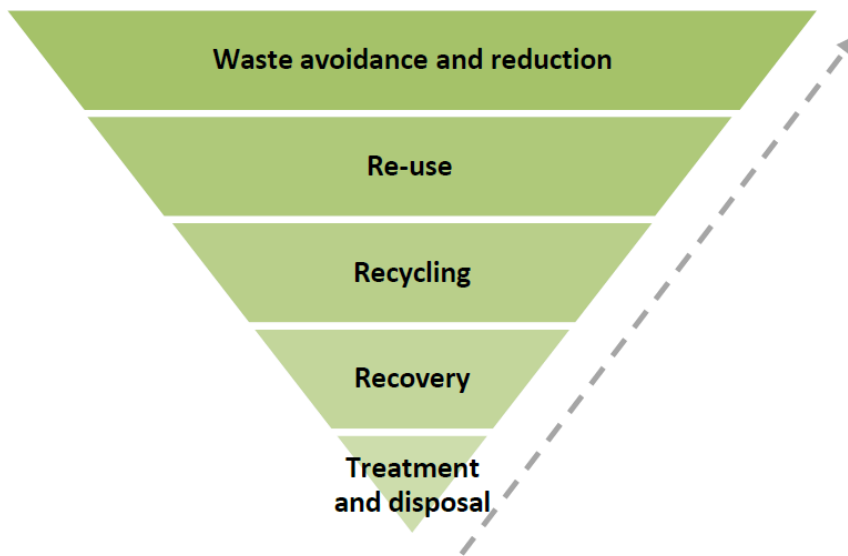


Figure 1: The waste hierarchy as per the National Waste Management Strategy (DEA, 2011)

An Integrated waste Management Plan (IWMP) is a plan which defines the vision, objectives and targets for the provision of waste management services. They are compiled by provincial and local authorities. IWMPs are revised typically on a five yearly cycle aligned to the review of the Integrated Development Plan (IDP) and to ensure the information remains up to date and to accommodate any new development in waste management or legislation. The formulation thereof should include identifying existing gaps in the provision of waste services, identifying objectives and targets, and defining actions and an implementation plan to realize these objectives.

1.1.3 Why Undertake an IWMP?

In terms of Section 11(4) (a) of the National Environmental Management: Waste Amendment Act (26 of 2014), all provincial and local authorities are required to compile an IWMP, submit it to the MEC for endorsement, and include it in the local authority's IDP.

1.1.4 What Should an IWMP Contain?

Due to the varying nature and scale of waste services in different local authorities, IWMPs vary in content and to some degree, in structure. Two key pieces of legislation define how IWMPs are to be compiled and what they should contain:

- National Environmental Management: Waste Amendment Act (Act 26 of 2014):
Section 12(1) of the NEMWA specifies the minimum content of IWMPs which includes:
 - a Situation Analysis including, amongst other things, an analysis of waste types, a description of services, and an indication of the number of persons not receiving waste collection services;

- An indication of how the local authority intends to give effect to, amongst others, the objectives of the NEMWA, to provide for implementation of waste minimization and recycling, and best environmental practice;
- Setting out of priorities and objectives for waste management;
- Establishing targets for collection, minimization, re-use and recycling;
- Setting the approach for the planning of new facilities;
- Indicating financial resources required for giving effect to the plan; and
- Describing how the authority will give effect to the plan.
- Municipal Systems Act (act 32 of 2000): Section 25 of the MSA describes how plans such as the IWMP must be incorporated into the broader IDP of the local authority, which considers a range of areas such as building safe communities, promoting active participation in local government, building the local economy, employment creation and improvement of public services. The MSA also calls for IWMPs to be participatory processes.

This IWMP has fulfilled these requirements as best possible with the information and data available at the time of its compilation. The Policy and Legislation Review section of this IWMP (Appendix A) presents other policy and guideline documents which inform the principles and objectives of IWMPs.

All areas of waste management should be address by the IWMP, from the generation of waste to minimization, reuse, collection and transportation, treatment, recycling and finally the disposal of waste. The IWMP should ultimately guide the local authority towards achieving reduced waste to landfill as per the waste hierarchy presented in Figure 1. The IWMP should also address institutional and financial arrangements pertaining to waste management so as to ensure sustainable management thereof.

1.2 Context of this IWMP

1.2.1 Policy Context

As mentioned, South Africa has made significant progress recently with drafting waste legislation and guidelines. A detailed description of these, as well as applicable international legislation, is presented in Appendix A. In order to understand the context of this plan, the key legislation and local policies applicable to this IMWP are introduced briefly below.

(a) National Environmental Management: Waste Act (Act 59 of 2008)

The NEMWA is South Africa's core waste legislation, and was promulgated 01 July 2009. The act covers a wide spectrum of issues including requirements for a National Waste Management Strategy, IWMPs, definition of priority wastes, waste minimisation, treatment and disposal of waste, Industry Waste Management Plans, licensing of activities, waste information management, as well as addressing contaminated land.

(b) National Waste Management Strategy

The first NWMS was published in 1999 by the then DEAT and the then DWAF. It was the first strategy for addressing South Africa's waste management challenges. The strategy effectively defines South Africa's vision for waste management highlighting themes such as "cradle to grave" management of waste products and the waste management hierarchy which encourages waste disposal only as a last resort.

The NWMS was revised in line with Chapter 2, Part 1, of the Act which requires the establishment of a NWMS within two years of the Act coming into effect. The revised NWMS was published in 2011. Significant changes include the addition of “remediation” to the waste management hierarchy, and the consolidation of what was previously many different action plans into a single action plan.

(c) Municipal Waste Sector Plan (2012)

The Municipal Waste Sector plan was published in March 2012. The plan seeks to address poor waste management performance of municipalities and to “effectively” address the management of “backlogs” in municipal solid waste service delivery and infrastructure.

(d) Provincial IWMP, Eastern Cape (not yet published)

The Department of Economic Development and Environmental Affairs, the Eastern Cape Provincial authority responsible for waste management, drafted an IWMP in 2010 but the plan has yet to be gazetted. It consisted of separate general and hazardous waste management plans. While the key focus of the plans addressed provincial performance, they do have implications for local authorities in the Eastern Cape. The following objectives were highlighted:

- General waste: Six objectives including improved strategic waste planning; improved waste services and facilities; improved recovery and recycling; improved institutional functioning; improved financial management for waste services; and improved information management and monitoring.
- Hazardous waste: Six objectives including hazardous waste management capacity and awareness; promoting awareness; improved minimisation and recycling; improved hazardous waste storage, collection and transportation; improved treatment and disposal; improved monitoring and information management.

Hazardous waste management is not a local authority responsibility, however, the domestic waste stream does have a small hazardous waste component, and hence the above should be considered.

(e) NMBM Integrated Development Plan

The NMBM's 13th edition of the IDP covers the period 2011 – 2016. It notes a commitment to providing quality and sustainable waste management services to the residents of Nelson Mandela Bay Municipality, and includes the following waste management targets:

- 100% of households within the urban edge to receive a domestic waste collection service (this excludes informal areas on privately owned erven and erven not earmarked for human settlements development).
- Conversion of 30,000 households within the urban edge from a bi-weekly to weekly collection service.
- Sustain 20 waste management community-based contractors.

(f) NMBM Integrated Environmental Policy

The NMBM's present integrated environmental policy was published in 2012 and confirmed the commitment of the NMBM to a number of the "Chapter 1" principles of the National Environmental Management Act (Act 107 of 1998) (NEMA) such as sustainable use of resources, and the polluter pays principle. The policy includes sector specific commitments, including waste. It states that in order to manage waste effectively in line with the national waste management hierarchy, the Municipality endeavours to:

- Maintain and review an IWMP as required by the Waste Act.
- Implement the waste objectives as highlighted in the IWMP.
- Prevent and minimise waste through initiatives such as the NMBM waste exchange.
- Promote public awareness campaigns with NMB civil society on the dangers of illegal dumping.

1.2.2 Scope

This IWMP has been produced for NMBM and is applicable geographically to all areas falling within the jurisdiction of NMBM (see Figure 2). As a municipal plan, it is applicable to all directorates of NMBM.

1.2.3 IWMP History in Nelson Mandela Bay Municipality

This is the second (IWMP) to be developed for the NMBM. The first IWMP was completed in 2005, and addressed the period 2005 to 2010. Funding and technical advice for the drafting thereof was obtained from Swedish International Development Co-operation Agency (SIDA).

1.2.4 Timeframes and Approvals

This IWMP is intended to inform the revision of the IDP. Historically however, the first IDP for NMBM preceded the relevant sector plans, and hence the updating of these sector plans has continued to occur after the revision of the IDP. The IDP for NMBM was revised in 2011. The IWMP was adopted by Council on 01 December 2016. It was submitted to the MEC, Department of Economic Development Environmental Affairs and Tourism for endorsement and endorsed on 28 March 2017 (refer to Appendix F).

1.3 Context of Role and Responsibilities

National waste legislation, policy and guidelines place specific responsibilities onto local authorities. The NEMWA requires the provision of waste collection services including collection, storage and disposal. Local authorities are also required to facilitate recycling and manage waste information appropriately. Further detailed obligations are presented in the Legislation and Policy section in Appendix A.

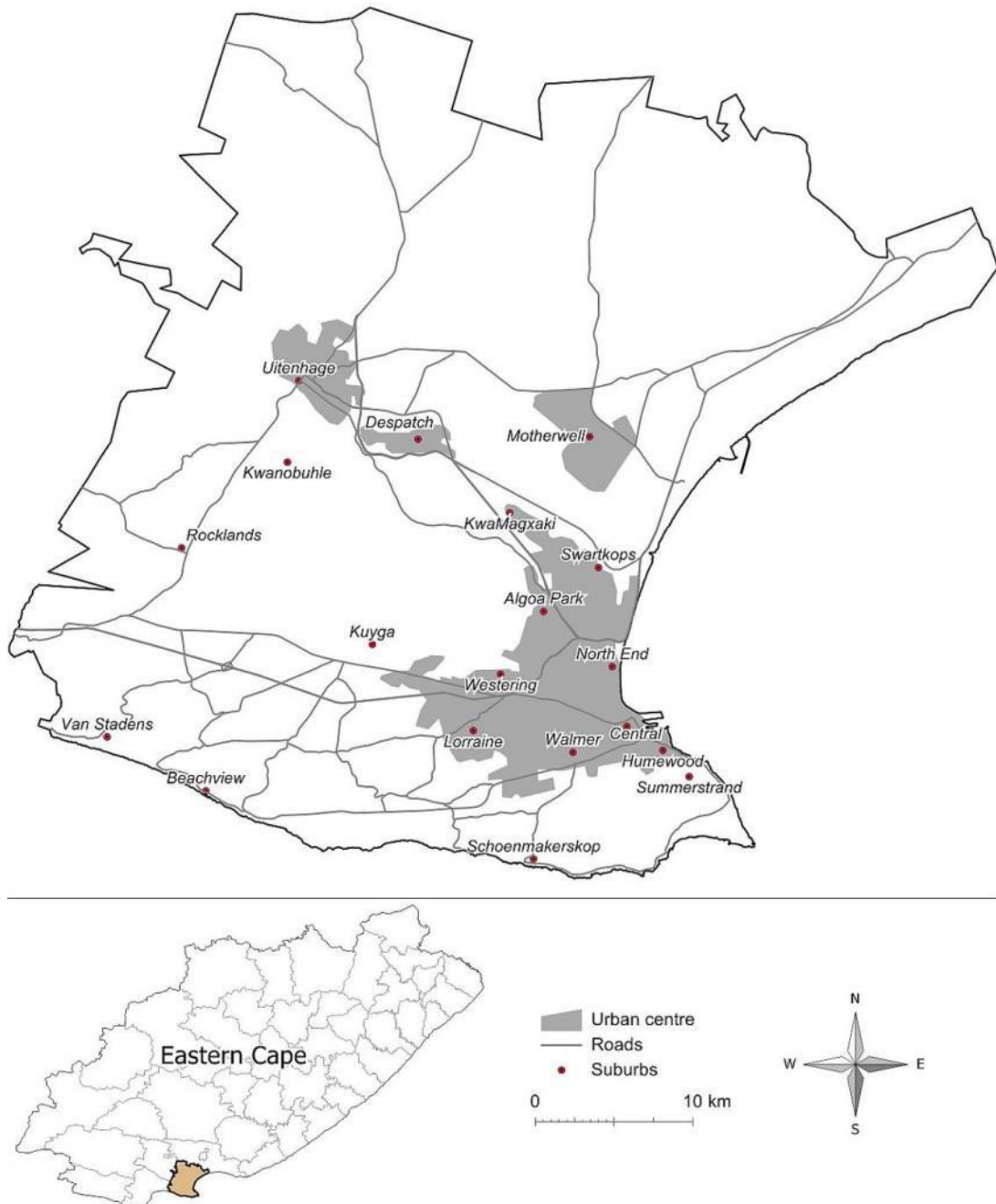


Figure 2: The jurisdictional area of the Nelson Mandela Bay Municipality.

1.4 Approach to this IWMP

This section describes the approach applied during the compilation of the various components of this IWMP.

1.4.1 Situational Analysis

(a) Literature Review

Numerous reference documents were consulted during this IWMP process. These have been listed under Section 8 (References).

(b) Waste Characterisation

A detailed waste characterisation exercise was undertaken to profile the municipal residential waste stream. Waste from the following four residential areas, including low, medium and high income areas, was characterized:

- Mill Park (upper income). Black bags from 47 houses were collected on 14th June 2011. A total of 778 kg of waste was separated.
- Algoa / Young Park (medium income). Black bags from 67 houses were collected on 21st June 2011. A total of 539 kg of waste was separated.
- Soweto on Sea (low income). Black bags from 57 houses were collected on 15th September 2011. A total of 327 kg of waste was separated.
- New Brighton (low income): Wheelie bins from 70 houses were collected on 11th October 2011. A total of 774 kg of waste was separated.

The characterisation survey, including the methodology details and results, are presented in the Waste Characterisation Report: A Component of the Integrated Waste Management Plan (NMBM, 2012).

(c) Facility Inspections

As part of the infrastructure review, a total of 21 Drop-Off Centres and Transfer Stations, Communal Collection Points and Temporary Skips sites were inspected. The two landfill sites (Arlington and Koedoeskloof), were also inspected. Summary “fact file” inspection sheets are shown in Appendix C.

(d) Interviews

NMBM Staff Interviews

Staff interviews were conducted in face to face meetings with NMBM staff to gain an understanding of the issues they face regarding waste management and areas they feel require improvement. The questionnaire is presented in Appendix E. Meetings were completed with staff from a variety of different posts from refuse collectors to directors. Representatives from different offices and depots were selected for the survey to gain a broad understanding of waste management across the waste sub-directorate. A total of 14 interviews were conducted as shown in Table 1.

Table 1: Staff interviews conducted

Position	No. of interviews conducted
Director, Waste Management (Acting)	1
Assistant Director, Landfills, Transfer Stations and Drop off Centres	1
Assistant Director, Operations Manager (Acting)	1
Planner, Waste Management	1
Community Liaison Officer	1
Street sweeper	2
Supervisor (Acting)	1
Driver	1
Development officer	1

Position	No. of interviews conducted
GIS / Data Manager	1
Refuse Carrier	2
Toilet Attendant	1
Total	14

Waste Contractor Interviews

A total of six private waste service providers were consulted and interviewed in order to obtain waste data and understand challenges facing the industry. These included a health care risk waste (HCRW) contractor, general waste contractors, and the operator of the only hazardous waste landfill facility in the region. Recycling contractors were consulted to gain an understanding of the volumes of recyclables being removed from the NMB area and the ultimate destination of recyclables. The interviews allowed contractors to raise any concerns about waste management in NMBM and possible methods for improvement. Data obtained from the interviews has been used to calculate rough recycling figures for different waste types (see Section 2.6: Waste Minimization and Recycling).

(e) Public Perception Survey

A Public Perception Survey was undertaken to understand how the public views waste management in NMBM, and to identify the problems and challenges facing the public in this regard. The surveys included face to face interviews including house calls, interviews at shopping centres and interviews at drop off centres. An on-line survey was also undertaken. A total of 1,111 surveys were completed. The detailed methodology and results are presented in the report titled Waste Public Perception Survey: A Component of the Integrated Waste Management Plan (NMBM, 2012).

(f) Public Participation

(i) Review and Commenting Period for the Draft IWMP

The draft IWMP was made available for public review for a period of 30 days and hardcopies of the draft IWMP were available for review. The draft IWMP was also available for download from the NMBM website. Further details are provided in Section 4.

(ii) Public Meetings

A total of 18 public meetings were held. Further details are provided in Section 4. All details of the public participation process will be presented in a Public Participation Report which will form part of the final IWMP.

(g) Project Committee

An IWMP Working Group was established to ensure it was well informed by different directorates in the NMBM. A total of three focus group meetings were held. The list below presents details of the focus group members

Table 2: Details of IWMP Working Group

Name	Designation	Organisation - Directorate
Mr T Mkumatela	Acting Assistant Director: Operations Uitenhage/ Motherwell	NMBM / Waste Management
Mrs A Dyakala	Assistant Director Operations Harrower Road Depot	NMBM / Waste Management
Ms C Mnamata	Assistant Director Disposal– Harrower Road Dept.	NMBM / Waste Management
Mrs M Labuscagne	GIS Operator/ Data Manager	NMBM / Waste Management
Mr R le Roux – Chairperson	Acting Director Waste Management	NMBM / Waste Management
Mr P Mralaza	Community Liaison Officer	NMBM / Waste Management
Mrs L Mgijima	Assistant Director Operations: Gail Road and Struanway Depot	NMBM / Waste Management
Mr D Visagie	Superintendent Gail Road Depot	NMBM / Waste Management
Mr R Bovey	Assistant Superintendent Refuse Addo Road Depot	NMBM / Waste Management
Mr C Nel	Waste Planner	NMBM / Waste Management
Mr K Faltein	Superintendent Refuse Harrower Road Depot	NMBM / Waste Management
Mr A Snyders	Contracts Officer	NMBM / Waste Management
Ms N Mnguni	Community Liaison Officer – Harrower Road Depot	NMBM / Waste Management
Mr N Dolo	Acting Development Officer	NMBM / Waste Management
Mrs E Barnard	Secretary	NMBM / Waste Management
Ms P Klaas	Secretary	NMBM / Waste Management
Ms K. Parkinson	Environmental Scientist	GIBB
Mr W. Fyvie	Associate	GIBB

(h) Formulation of Objectives, Targets and Project Plans.

The objectives, targets and project plans were drafted by the IWMP working group.

1.5 Assumptions and Limitations

This Situation Analysis has drawn information from a number of sources including that made available from the NMBM records, sourced from NMBM staff interviews. It is assumed that the information is accurate.

2 **Situational Analysis**

This section provides an overview of Nelson Mandela Bay area and the present waste management activities undertaken by the municipality. It introduces the demographics of the NMB area, and then discusses waste management under the themes adopted in the NWMS.

2.1 **Demographics of the NMBM**

The information used in this section is sourced from the following reports:

- Statistics South Africa, Census 2011 result Nelson Mandela Bay Municipality, http://beta2.statssa.gov.za/?page_id=1021&id=nelson-mandela-bay-municipality, accessed 17 November 2014.
- Eastern Cape Socio-Economic Consultative Council, District Demographic and Socio-Economic Indicators Census 1996; 2001; 2011.
- Nelson Mandela Bay, 2012 11th Edition of the Integrated Development Plan 2011-2016
- Statistics South Africa, 2011, Statistical Release P0302, Mid-Year Population Estimates 2011.
- Statistics South Africa, 2007, Report No. 03-01-21 Community Survey 2007, Basic Results: Eastern Cape.
- Statistics South Africa, Census 2001 Key Results.
- Statistics South Africa, 2001, Report No. 03-02-04, Census 2001: Primary Tables South Africa, Census 1996 and 2001 compared
- Statistics South Africa, 2001, Report No.03-02-05, Census 2001: Primary Tables Eastern Cape 1996 and 2001 Compared.
- Nelson Mandela Bay Municipality. Integrated Development Plan 2011-2016. 13th Edition (2014/15 Financial Year)

2.1.1 **Population Profile**

The population of the Nelson Mandela Bay (NMB) area accounts for 2.2 % of the population of South Africa with a population of approximately 1.15 million people. This is approximately 17.6% of the total population of the Eastern Cape, which is approximately 6,562,053. The NMB area has a high mean population density of 588 persons/km² compared to the provincial average of 38.8 persons/km².

The population of South Africa increased by 13.4% between 2001 and 2011. By comparison, the population growth of the Eastern Cape and the NMB area are both below the national average at 6.7% and 1.4% respectively.

2.1.2 **Age Profile**

The working population of NMBM (persons aged between 15-64 years) accounts for 68.5% of the population, 6% of the population are at retirement age 65 years old or over and 25.5% are aged between 0-14 years.

2.1.3 **Ethnic Profile**

The majority of the population of the Eastern Cape and the NMB area are black African (87.5% and 60.1% respectively). Coloureds constitute the next largest ethnic group (7.4% of the Eastern Cape and 23.6% of the NMB area respectively). Whites make up 4.7% of the population of the Eastern Cape and 14.4% of the population of NMB area. Asian/Indians are the smallest population of the NMBM accounting for 1.1% of the total population.

2.1.4 Gender Profile

Approximately 52% of the South African population are female, but the Eastern Cape has a slightly higher ration of females to males, with 53% of the total population being female. The male to female ratio for the NMB area is 52% in line with the national average.

2.1.5 Language

The percentage of the population of NMBM using each of the official languages is shown below:

- Afrikaans: 28.9%
- English: 13.3%
- IsiNdebele: 0.3%
- IsiXhosa: 53.2%
- IsiZulu: 0.4%
- Sepedi: 0.2%
- Sesotho: 0.4%
- Setswana: 0.3%
- Sign language: 0.4%
- SiSwati: 0%

2.1.6 Unemployment

The unemployment rate in NMBM was 36.6% in 2011 a decrease from 46.4% in 2001.

2.1.7 Impact of HIV / AIDS

According to 2011 estimates 5.38 million people in South Africa are living with HIV; an estimated 16% of the adult population aged 15-49 years are HIV positive. The percentage of deaths caused by AIDS nationally is showing a slight year on year decrease. It fell from 49,2% in 2008 to 44,3% in 2010.

According to 2009 antenatal care statistics (Department of Health, 2009) the HIV/AIDS prevalence of antenatal woman in the NMB area is 30.7%. The Eastern Cape average is 28.1%. A significant number of people in the NMB area are treated with Anti-retroviral Therapy (ART) each year, which results in a large volume of medical waste being produced.

2.1.8 Housing

Of the 324,292 formal households in the NMBM, 71,239 (21.9%) are registered on the Municipalities indigent register. A total of 44% of households receive at least one social grant.

The average number of people per household in the Eastern Cape is 3.9 people. The average number of people per household in the NMB area decreased from 3.8 in 2001 to 3.6 in 2011.

2.1.9 Access to Piped Drinking Water

A total of 96.6% of households in NMB area have water provided by a regional or local water scheme. A total of 1.4% of the population source water from springs, rain water tanks, river or streams or from water vendors or water tanks.

2.1.10 Education

In 2011 a total of 10.5% of the population of the Eastern Cape have no schooling a decrease from 22.8% in 2001. Only 3.0% of the population of the NMBM have no schooling, a decrease from 6.7% in 2001. A total of 8.7% and 12.0% of the populations of the Eastern Cape and NMBM respectively had higher education in 2011.

2.1.11 Waste Removal

The percentage of households receiving not waste removal in the NMB area decreased from 3.1% in 2001 to 2.2% in 2011. Nationally the percentage of households receiving no waste removal decreased from 8.7% in 2001 to 7.1% in 2011. In 2011 the percentage of households in the NMB area receiving no waste removal was lower than the national average. The percentage of households receiving a weekly refuse collection service dropped from 86.1% in 2001 to 82.9% in 2011. According to the 2011-2015 IDP 99% of households excluding small holdings are provided with a basic level of refuse collection.

2.2 Socio-Economic Profile

The NMB area is the largest contributor to the Eastern Cape economy. It generates 41.2% of the provincial Gross Geographic Product (GGP). It is the primary manufacturing hub of the Eastern Cape, but is dependent largely on its automotive and component industry.

2.2.1 Automotive Industry

The automotive industry is traditionally seen as the major industry in the region. Half of all South Africa's passenger vehicles and 51% of the countries vehicle exports are produced in the Eastern Cape, with East London being the other contributor.

The government has supplied R30 million in funding to develop the automotive logistics park over the next five years to encourage further growth in the automotive industry. Growth in the automotive industry will also provide opportunities for materials supplies including metals and automotive component producers.

2.2.2 Tourism Industry

In 2004 an average of 70% of tourists who visited the Eastern Cape visited Port Elizabeth compared to only 25% visiting East London. Tourism in NMB is worth an estimated R4,7 billion annually (NMBM, 2011). The number of local and international visitors to NMBM is increasing by approximately 10% annually (web reference 8). The Eastern Cape is one of the few destinations globally able to offer tourists the chance to view the 'Big 7', the traditional 'Big 5' with the additions of the southern right whale

and the great white shark in a malaria free area. Port Elizabeth is used by many travellers as a gateway to the Garden Route or a stop off point to access the many game parks found in the Eastern Cape.

2.2.3 Coega Industrial Development Zone (Coega IDZ)

Located within the NMB area, Coega is South Africa's largest industrial development zone (IDZ) covering 11,000ha. It is conveniently located adjacent to Ngqura deep-water port for international shipping of produce. The main sectors of the Coega IDZ are metals, textiles, automotive, services, chemicals and energy. Coega continues to attract new businesses and thereby increasing employment opportunities, leading to job creation in the Eastern Cape and NMBM. Projects in the negotiation phase at the Coega IDZ are valued at R8.1 billion and a number of projects at a feasibility stage are valued at a total of R116.3 billion (web reference 7).

2.3 Domestic Waste Profile

To understand the waste profile of the NMB area, a detailed waste characterisation survey was carried out on domestic waste, as part of this IWMP. Waste was collected from four residential areas in NMBM. This section presents only an overview of the survey. Details of the methodology and results are presented in the report titled Waste Characterisation Report: A Component of the Integrated Waste Management Plan (NMBM, 2012).

2.3.1 Previous Surveys

Waste characterisations have been undertaken in the NMB area before. These have included:

- 2005. This survey informed the previous IWMP but was limited to sampling black bags from one residential area. The location of the waste characterisation was not recorded.
- 2009. A survey of Walmer, Blue Horizon bay and Colchester was undertaken.

2.3.2 Approach

Waste from the following four residential areas, including low, medium and high income areas, was characterized:

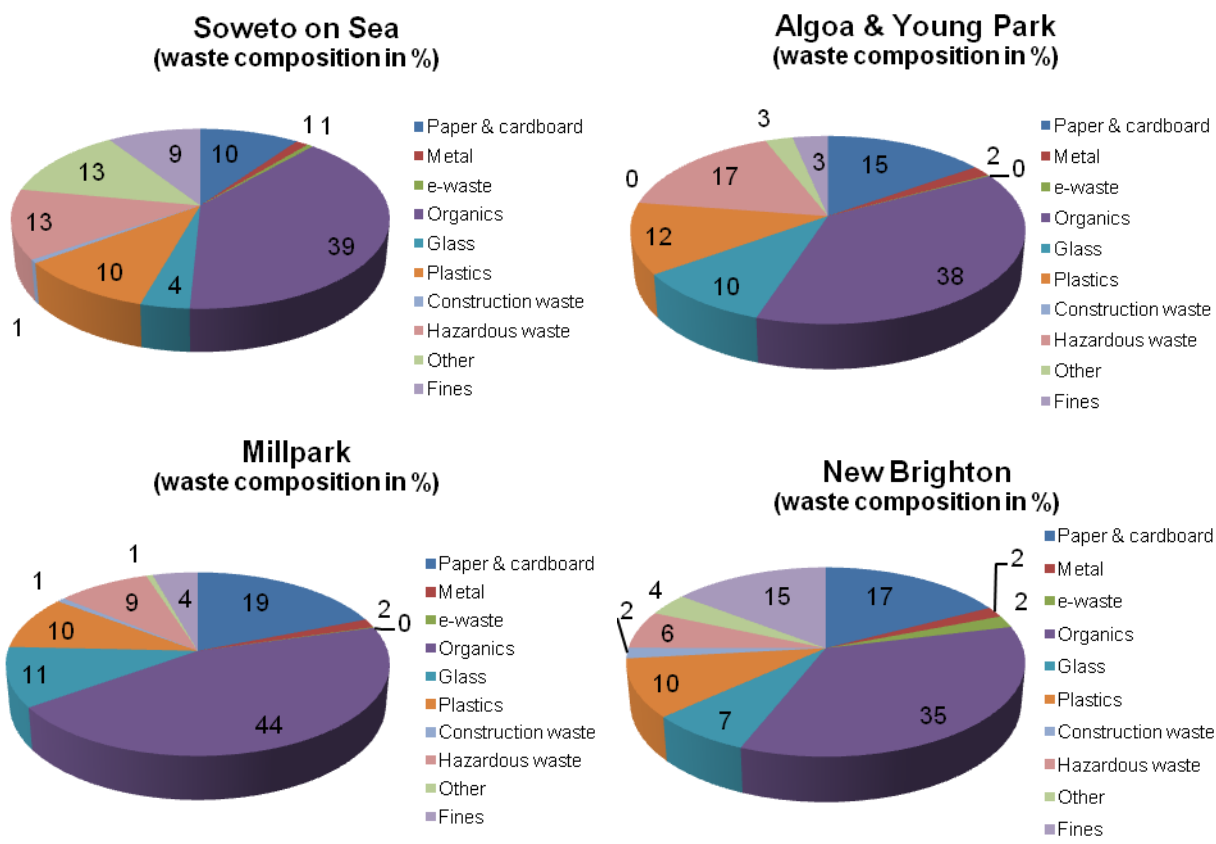
- Mill Park (upper income). Black bags from 47 houses were collected on 14th June 2011. A total of 778 kg of waste was separated.
- Algoa / Young Park (medium income). Black bags from 67 houses were collected on 21st June 2011. A total of 539 kg of waste was separated.
- Soweto on Sea (low income). Black bags from 57 houses were collected on 15th September 2011. A total of 327 kg of waste was separated.
- New Brighton (low income): Wheelie bins from 70 houses were collected on 11th October 2011. A total of 774 kg of waste was separated.

2.3.3 Categorisation Results

Table 3 and Figure 3 below present the survey results in terms of the broad categories of waste that was surveyed.

Table 3: Results of 2011 Waste Characterisation (% weight)

Waste Type	Millpark	Algoa / Young Park	Soweto on Sea	New Brighton	Average
Paper & Cardboard	19	15	10	17	15
Metal	2	2	1	2	2
e- Waste	0	0	1	2	1
Organics	44	38	39	35	39
Glass	11	10	4	7	8
Plastics	10	12	10	10	11
Construction waste	1	0	1	2	1
Hazardous waste	9	17	13	6	11
Other	1	3	13	4	5
Fines	4	3	9	15	8
Total (%)	100	100	100	100	100



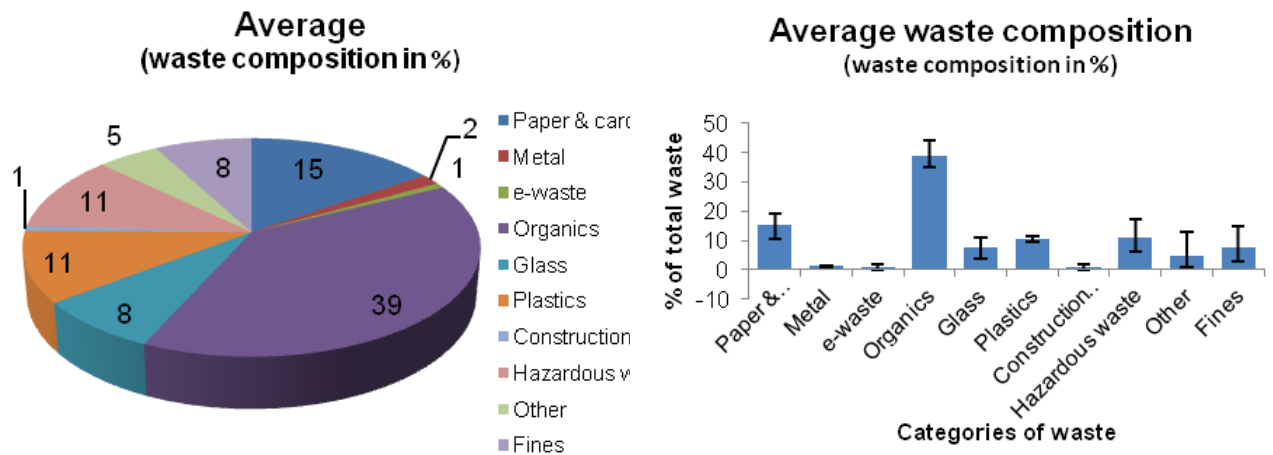


Figure 3: Results of the 2011 NMBM Waste Characterisation.

The characterisation revealed interesting trends between areas of different income levels. Recyclables (paper, cardboard, metal, glass and plastics) were found to make up approximately 37% of the domestic waste stream. Furthermore, organic material, which consisted mostly of kitchen and garden waste, and which could also be recycled, made up a further 39% of the waste. The following observations are made from the characterisation results:

(a) Paper and Cardboard

In two out of the four sites (Millpark and New Brighton) paper and cardboard was the second largest waste category by weight. Cardboard and paper ranged from 10-19% of the total waste weight.

(b) Metal

The results for percentage of metal being disposed of are very consistent for all four areas ranging from 1-2% of total waste

(c) E-waste

The results for percentage of e-waste being disposed of are very consistent for all four areas ranging from 0-2% of total waste. The expected increase in e-waste with income level was not observed.

(d) Organics

Organics contributed on average 39% of mass to the waste collected from the four areas, and was the most abundant waste category by weight for all areas surveyed. The percentage of organics being thrown away in residential waste is highest in Millpark, a high income area. This could in part be attributed to lawn cuttings and other garden waste in the upper income waste stream, which was not found in the lower income waste.

(e) Glass

The amount of glass being disposed of in residential waste is greater in the high and medium income areas (Millpark and Algoa and Young Park) than the lower income

areas (Soweto on Sea and New Brighton). On average glass contributed 8% to the domestic waste stream.

(f) Plastics

The amount of plastics being disposed of in residential waste is consistent across all four income areas. It ranged from 10-12%.

(g) Construction Waste

Construction waste ranged from 0-2% for the areas surveyed. In the lower income areas it consisted largely of shack components.

(h) Hazardous Waste

Hazardous waste ranged from 6-17% but there was no obvious correlation between the percentage of hazardous waste and the income in areas.

(i) Others

This category others covered textiles including clothing and shoes and old furniture. The amount of such waste ranged from 1-13%. The higher amounts in the lower income areas were due to greater volumes of old clothing and shoes. It is possible that second hand clothes find the end of their useful life in the lower income areas.

(j) Fines

This category included all waste material too small to be sorted into categories. It included mostly small fragments or organic material and sand or grit.

2.3.4 Plastics Categorisation

The plastics fraction of the characterised domestic waste was further separated to better understand the recycling potential for plastics. These separated into seven fractions as shown in the table below.

Table 4: Plastics Characterisation Categories used

SPI code *	Type	Acronym	Examples
1	Polyethylene Terephthalate	PET	Fizzy drink bottles
2	High density Polyethylene	PE-HD	Milk bottles, juice bottles and some detergent bottles, plastic bags
3	Polyvinyl Chloride	PVC	Food wrap, vegetable oil bottles
4	Low density Polyethylene	PE-LD	Bread bags, shopping bags
5	Polypropylene	PP	Butter and yoghurt containers
6	Polystyrene6	PS	Take away containers
7	-	-	CD's

* Containers made of plastic are often labelled with a Society of Plastic Industry code (SPI) these are codes were devised in 1988 and are voluntary on plastic packaging. The codes were devised to aid in identification of plastics for recycling purposes.

Table 5: Plastic characterisation results (% of plastic)

Type of plastic	Millpark	Aloga/Young Park	Soweto on Sea	New Brighton	Average
PET	16.22	21.21	17.65	16.88	17.99
PE-HD	23.51	19.09	21.76	23.38	21.94
PVC	5.41	3.03	11.76	7.79	7.00
PE-LD	30.54	32.52	31.18	31.17	31.33
PP	10.81	18.18	11.76	12.99	13.44
PS	8.11	6.06	5.88	7.79	6.96
Other	5.41	0.00	0.00	0.00	1.35
Total	100	100	100	100	100

PE-LD was the most prolific plastic and showed the smallest variation between sites. PE-HD was the second most common plastic, and occurred mostly in the form of shopping bags. Further comments on the plastics types are provided in the report titled Waste Characterization Report: A Component of the Integrated Waste Management Plan (NMBM, 2012).

2.4 Waste Information Management

The Waste Management unit of the NMBM manages its data and records in-house. All data is saved on a central server. They have in-house GIS ability and use GIS to map street sweeping and refuse rounds. GIS is used for the mapping and monitoring illegal dumping hot spots, the GIS information is linked to quarterly illegal dumping audits.

2.4.1 Waste Disposal Tonnages

Waste disposal tonnage records are collected at the landfill sites using electronic weighbridges and the records are backed up on a system at the landfill sites. The landfill sites are not currently linked up to the central server so data is transported via flash stick to a depot where it is uploaded onto a computer connected to the central server. The waste records include the following categories:

- Cleansing domestic
- Cleansing filling
- Cleansing garden
- Cover material
- Cleansing rubble
- Cleansing trade
- Cleansing unclassified
- Clean and green specials
- Dead animals/carcasses
- Cleansing domestic
- Cleansing filling
- Cleansing garden
- Cover material
- Cleansing rubble
- Cleansing trade
- Fine dust
- Feathers
- Foodstuffs
- Glass
- Garden refuse
- Junk/car bodies
- Mayoral projects
- Mixed waste
- Off-cuts steel
- Private waste
- Rubble and concrete
- Rubber, plastic and textiles
- Sewerage screenings
- Tree stumps
- Tyres

- Cleansing unclassified
- Clean and green specials
- Dead animals/carcasses
- Domestic dumping
- Uncut belting
- Wool
- Wood and paper

A review of these categories is currently being undertaken to ensure they are consistent and descriptive. For example some categories are descriptive (glass, tyres) while others are a description of the source of the waste (mayoral projects, clean and green specials). The categories used to report on the Waste Information System (WIS) should be considered as alternative categories for the NMBM waste records.

Government Notice 718 of 2010, National Waste Information Regulations in Terms of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) gives guidance on the waste types which should be reported on the South African Waste Information Centre (SAWIC).

2.4.2 South African Waste Information Centre (SAWIC) Reporting

The SAWIC was developed in 2005 by the DEA as a method for reporting waste information. The public, industry, businesses and the government can all access waste information on the SAWIC. The NMBM has been reporting waste management activities on the SAWIC since their involvement in a DEA pilot project in 2006.

Table 6: Web reference 9. SAWIC Records for 2014 for the Nelson Mandela Bay Municipality.

Report				
Tonnes of Waste for 2015, Waste Disposal, Eastern Cape				
By: Municipality (receiving waste)				
Group	No. Facilities	General	Hazardous	Total
Amahlathi (EC124)	1	1,522.1	0.0	1,522.1
Buffalo City (EC125)	2	15,701.3	0.0	15,701.3
Elundini (EC141)	3	16,688.0	0.0	16,688.0
Emalahleni (EC136)	1	758.0	0.0	758.0
Great Kei (EC123)	1	1,386.0	0.0	1,386.0
Intsika Yethu (EC135)	1	1,611.4	0.0	1,611.4
Mhlontlo (EC156)	1	4,645.0	0.0	4,645.0
Nelson Mandela Bay (NMA)	3	538,090.0	36,886.8	574,976.8
Total	13	580,401.9	36,886.8	617,288.7

2.4.3 Hazardous Waste Information Management

Hazardous waste tonnages for the NMBM are reported on the SAWIC. The source of the information on SAWIC is not available. It can therefore not be determined if all private hazardous waste management companies are reporting on the SAWIC. It is also likely that some hazardous waste is being mixed with general waste and is being disposed of general landfill sites and hence is not being recorded.

2.5 Waste Generation

2.5.1 General Waste

(a) Present Situation

No specific up to date waste generation rates are reported for the NMBM. The previous IWMP states that the citizens and companies of the NMBM generate somewhere between 300,000 and 350,000 tons of general (non-hazardous) waste each year. This figure is however out-dated. The NMBM 2009/10 annual report states that approximately 500,000 tons of waste is generated annually, although this figure includes hazardous waste. Landfill tonnages for 2015 were 635,170 tonnes; hence it is likely that the NMB area is producing in excess of 700,000 of waste. While numerous recycling initiatives are undertaken in the NMB area, there are no significant initiatives to reduce initial waste generation.

(b) Future Projection

The population of NMBM is growing by approximately 4.5% per year. A population growth of at least this amount could be expected on an annual basis.

2.5.2 Hazardous Waste Generation

No comprehensive figures for hazardous waste generation exist for the NMB area; disposal figures are the only real indication of waste generation. According to the WIS 36,886.8 tonnes of hazardous waste were generated in the NMBM in 2015.

Coega Industrial Development Zone is the largest IDZ in South Africa and continues to attract investors. In 2008, 14 investors signed agreements with Coega Development Corporation (CDC). The waste stream from these industries will be a combination of general waste and hazardous waste. An estimated 39,562 tons per annum of industrial and hazardous waste will be produced by the new developments in Coega IDZ (Jones & Wagener, 2008). Coega currently relies on Aloes II as a hazardous waste disposal facility. The hazardous waste stream entering Aloes II has been estimated to reach 34,800 tons per annum by 2013 (Jones & Wagener, 2008).

Jones & Wagener completed the final feasibility study for a new hazardous waste landfill in 2007, a detailed EIA and permitting phase was underway in 2008. Due to a lack of hazardous waste landfill sites in the Eastern Cape it is likely that the majority of hazardous waste from outside NMB area is disposed of at Aloes II.

2.5.3 Health Care Risk Waste

The report titled "National Waste Management Strategy Implementation South Africa, Projections for Health Care Risk Waste Treatment (2006) provides estimates of the amount of Health Care Risk Waste (HCRW) generated in eight hospitals in NMB area. The following eight hospitals in the NMB area were included:

- Uitenhage Hospital
- Dora Nginza Hospital
- Livingstone Hospital

- Port Elizabeth Provincial Hospital
- Elizabeth Donkin Hospital
- Empilweni TB Hospital
- J Pearson TB Hospital
- Orsmond Hospital

It is estimated that hospitals generate 92% of HCRW originating from the area. The eight hospitals generate an estimated 436.5 tons of HCRW annually. Seven of the eight hospitals surveyed make use of a HCRW commercial collection service. It was reported that the remaining hospital, Empilweni Hospital, has a functioning incinerator on site (DEAT, 2006) however this could not be confirmed. The accuracy of these quantity figures is questionable since it excludes clinics and HCRW generated from private organisations.

2.6 Waste Minimization and Recycling

2.6.1 Overview

The NMBM does not operate a metro-wide recycling programme although it has undertaken various initiatives to promote recycling the NMB area. A significant investment is required to develop the infrastructure required for recycling, as the NMBM has historically not budgeted for developing such facilities. The only NMBM facility which offers formalised recycling facilities is the Kragga Kamma drop-off centre. The lack of such facilities was raised as a point of concern in the Public Perception Survey undertaken for this IWMP. Hence recycling is largely limited to the private sector. There are a large number of small recycling companies operating in the NMB area, the majority of which sell recyclables in bulk to a few large operations which transport it locally or export it. A number of private companies offer a domestic door to door collection service for recyclables for a small monthly fee. The following sections provide information regarding recycling of different waste types in the NMB area. Most of this information was obtained through interviews with local recyclers.

2.6.2 Glass

A high percentage of the glass waste generated in the area is collected. There are currently in excess of 120 bottle banks distributed across the area for public use and such bottle banks have proved a highly successful means of collecting glass. A major glass recycler in Port Elizabeth indicated that many of their bottle banks fill up within one week. Recyclers also collect glass using one ton bags, most commonly in low income areas and purchase glass from local collectors. Local contractors in the NMB area pay approximately R280/ton of glass.

Glass collected in the NMB area is sorted, crushed, and then transported to Cape Town for reprocessing. No actual reprocessing of glass is undertaken in the NMB area. One local major glass recycler was found to be transporting close to 800 tons of glass per month. Glass is also collected from Arlington landfill site by informal pickers and approximately 2 tons of glass is removed from Arlington monthly. Furthermore approximately 11 tons of returnable bottles are collected off the waste body Arlington monthly.

To contextualise these figures, the waste characterisation exercise undertaken for this IWMP review found that glass constituted approximately 8% of the unsorted domestic waste stream. From a review of the waste categories recorded at the landfill sites, it appears that up to 20,000 tons/month of the waste entering the site could consist largely of domestic waste. This would mean that glass could make up to 1,600 tons/month of the monthly waste going to the two municipal landfills.

2.6.3 Plastic

There are a few companies recycling plastic, especially PET, in NMB area, Plastic is generally sold to local markets. Recycling contractors in the NMB area pay approximately R800/ton for 'uncleaned' (with labels and caps) plastic PET bottles and up to R1,200/ton for "clean" PET plastic bottles (labels and caps removed).

Some granulation of plastics is undertaken in the area. Locally produced pellets (HDPE and LDPE) and are used by a local company in Korsten for producing recycled plastic "timber" products such as those used to construct the 2 km long plastic boardwalk on the Summerstrand boardwalk.

Contractors remove monthly at least 20.5 tons of PET and 30 tons of LDPE from the waste stream in this manner. Plastics (approximately 14 tonnes/month) are also removed from Arlington landfill site. This is made up of PET (2 tonnes), soft plastics (2 tonnes) and mixed plastics (10 tonnes). Plastics are known to constitute approximately 11% of the domestic waste stream and hence could account for up to 2,200 tons/month of the waste being disposed of at the two landfill sites.

2.6.4 Cardboard

Cardboard is collected by numerous small recyclers in the NMB area, who are paying anywhere up to 25c/kg for it. Smaller cardboard recyclers generally sell to larger national players. It is anticipated that 85% of the cardboard collected by the contractors is exported; the remaining 15% is sold to local markets. A significant amount is transported to local mills in KwaZulu-Natal where it is consumed in the production of new cardboard. Large and small recycling contractors remove at least 690 tons of cardboard monthly. A further 200 tons per month is removed from Arlington landfill site.

2.6.5 Paper

Similarly, paper collected in the NMB area is transported to mills outside of the Eastern Cape Province, where it is pulped and used to manufacture grey cardboard. (web reference 6). Approximately 57 tons of paper is removed from the area monthly. A further 25 tons of paper is removed from Arlington landfill site monthly. The paper mill in Port Elizabeth that was operational for 47 years was closed in 2011 due to the age of the facility and high costs associated with running it.

2.6.6 Metal

Metals collected in the NMB area are sold to local and international markets. Approximately 60% of the non-ferrous metal is exported and the rest is transported to local smelters. 80% of ferrous metal is exported and the rest is sold to local markets. The majority of metal comes from the local car manufacturing and engineering industries.

At least 800 tons of non-ferrous and 7,500 tons of ferrous metal is removed from the waste stream in the area per month. Approximately 11 tons of metal is removed from Arlington landfill site monthly.

2.6.7 Municipal Initiatives

With the exception of the Kragga Kamma drop-off centre and the Blue Horizon Bay transfer station, the NMBM does not operate any formal recycling system. The NMBM does facilitate recycling through a number of initiatives. The NMBM identified unsatisfactory levels of recycling as a priority issue in the 2005 IWMP (NMMM, 2005) and stated that the municipality “must cooperate with the recycling industry, informal recyclers and the public in order to initiate and support recycling projects and programs throughout the Metro”. The NMBM has since launched a number of initiatives.

(a) Go-Green Campaign

The municipality launched the Go Green campaign that aimed at creatively and visibly communicating its initiatives towards conserving the environment. These initiatives, projects and actions of the NMBM are aimed at ensuring the effective and responsible use and management of our natural resources. A number of waste minimization and recycling initiatives have since been undertaken by the NMBM under the banner of the “Go Green” campaign.

(b) Blue Horizon Bay Two Bag System

The NMBM introduced a community based recycling initiative in the Blue Horizon Bay suburb, which encourages households to separate recyclables from the general waste. Residents put out two bags of waste on collection days, black bags containing non-recyclable waste and clear bags containing mixed recyclables. Equipment, including a container for sorting and other recycling infrastructure including a glass igloo were placed at the existing transfer station and private contractors and service providers were brought on board to transport the sorted recyclables obtained. The project has ran successfully from the launch in December 2008 to March 2013 when co-operatives contracts lapsed.

(c) Waste Exchange

The NMBM has developed a web-based Waste Exchange aimed at encouraging waste exchange in the area and thereby reducing the disposal of waste to landfill. The NMBM Waste Exchange Module allows communication between registered parties, allowing them to advertise their unwanted materials. Registration is free of

change and the database is accessible through the NMBM website: <http://www.nelsonmandelabay.gov.za/Waste/>

(d) Recycling at Landfills

Formal and informal recycling occurs on both Arlington and Koedoeskloof landfill sites. The NMBM had recently awarded tenders to formalise recycling on both site. The recycling on the landfill sites will be managed by service provider who will employ and manage pickers.

Formalising recycling on the site will reduce the number of informal recyclers and reduce health and safety and security problems. Pickers will be required to wear a PPE and a high visibility vest and will only be permitted to work on designated areas of the landfill site (e.g. area where compactors and vehicles are not operating in).

Collection from the waste body is not efficient as only small volumes of recyclables are removed. The majority of recyclables are buried by new waste and the recyclables collected in this way are of low quality as they are contaminated by other waste types.

(e) All Hands on Waste

The 'All Hands on Waste' campaign was launched in April 2010 and was an awareness campaign targeting primary schools, taxi ranks, communities, libraries and other public amenities. It was funded using the prize money from the 'Cleanest Town Competition' (runner up in 2007 and 2008 and winner in 2009). Between April - June 2011 the 'All Hands on Waste' mobile exchange unit together with the 'All Hands on Waste' road show team visited a total of 120 primary schools, visiting multiple schools each day. The 'All Hands of Waste' campaign was completed on 31st December after winning the 'Greening the Future Award' of the Mail and Guardian.



Figure 4: Mobile exhibition unit (left). Educational materials on board the MEU (right)

2.6.8 Recycling at Arlington and Koedoeskloof Landfill Sites

As mentioned, the NMBM has awarded a contract for recycling on the sites. The aim of formalising recycling on the landfill sites is to reduce the number in informal pickers and improve health and safety and security. Table 7 presents details of the waste salvages from Arlington and Koedoeskloof.

Table 7: Quantities (tons) of recyclables salvaged from Arlington and Koedoeskloof landfill sites (January 2014 - December 2014)

Category	Arlington		Koedoeskloof		Combined
	Annual total (tons)	Monthly average (tons)	Annual total (tons)	Monthly average (tons)	Annual total combined (tons)
Light steel	141.5	11.8	134.9	11.2	276.4
Light steel cans	149.4	12.5	127.7	10.6	277.1
Heavy steel	124.2	10.3	127.6	10.6	251.8
Copper	5.6	0.5	8.4	0.7	14
Aluminium	3.1	0.3	2.2	0.2	5.3
Stainless steel	2.5	0.2	6.9	0.6	9.4
Lead	1.8	0.1	2.1	0.2	3.9
Lead battery	1.9	0.2	3.4	0.3	5.3
Brass	3.0	0.3	9.6	0.8	12.6
Zinc	1.7	0.1	4.5	0.4	6.2
Cardboard	166.9	13.9	120.4	10.0	287.3
Empty bottles	-	-	18.6	1.6	18.6
PET	-	-	22.9	1.9	22.9
Paper	101.2	8.4	34.3	2.9	135.5
Plastic	27.4	2.3	32.9	2.7	60.3
TOTAL	730.2	60.9	656.2	54.7	1,386.4

In 2014 approximately 571,483 tonnes of waste was disposed of at the Arlington landfill and Koedoeskloof landfill sites. Only 1,386.4 tonnes of this waste was removed for recycling. Less than 0.25% of waste disposed of at the landfill site is being recycled.

2.6.9 Recycling facilities

(a) Recycling at Drop-Off Centres

Drop-off Centres are municipality facilities where garden refuse, bulky waste and source separated recyclables can be dropped off. At present there are a number of such drop-off centres operated by the NMBM however while they receive garden waste, only a few have formal facilities to receive recyclables.

Details of recycling at different sites are presented in the table below.

Table 8: Recycling summary table

Site	Status of recycling	Materials recycled	Comments
Blue Water Bay	Informal	Glass	Small scale
Ralo Street	Informal	Used engine oil	Used oil is collected and sold to farmers for use in leather tanning.
Umnulu	Informal	Glass, paper, plastic, cardboard	
Verwoerd Drive	Informal	Glass and metal	Furniture and bulky items which can be re-used are also removed.
Laksman Avenue	Informal	Glass	
Ditchling Street	Informal	Cardboard, paper and plastic	
Hunters Retreat	Formal	Glass, plastic, cardboard, scrap metal, e-waste	Bulky items which can be reused are also separated for resale. Clothes are collected for donation to community projects or for sale.
Strandfontein Road	Informal	Glass, cardboard, white paper.	Reclam collects recyclables.
Seaview	Informal	Glass	
Blue Horizon Bay	Formal	Glass, cans, paper and plastic.	The site is set up with labelled bins and signage.
Kragga Kamma	Formal	Plastic, glass, cardboard, tins.	The site is set up with labelled bins. The Waste Trade Company is removing recyclables.



Formal recycling station at Blue Horizon Bay.



Informal recycling of glass at Blue Water Bay drop-off centre.



Formal recycling at the Kragga Kamma drop-off centre.



Reclam provides a bin for cardboard at Ditchling Street drop-off centre.

Figure 5: Overview of the type of recycling occurring at drop-off centres and transfer stations.

The NMBM only has records of recycling occurring at the Kragga Kamma drop-off centre recycling as the rest of the sites (excluding Blue Horizon Bay) are informal.

For the period 07 April – 30 April 2016 9,085 tonnes of recyclable material was collected at the Kragga Kamma drop-off centre.

Table 9: Recycling data for Kragga Kamma drop-off centre (figures are for the period 07 April – 30 April 2016). Data provided by the NMBM

Category	Kilograms
White paper	602
Cardboard	2,615
Mixed paper	588
Newspaper	1,024
Magazines	252
Cans	108
Mixed plastic	191
High density plastic	76
Polyethylene terephthalate	269
Glass	3360
Total	9,085

(b) Recycling in the Private Sector

The private sector operates some drop-off points in the NMB area. These are typically at vehicle service stations, schools, libraries, churches, garages and at shopping centres. These are typically not manned and receive only limited types of recyclables. There have previously been issues with such drop off points not being serviced frequently enough leading to the area around them becoming heavily littered as people leave bags of recycling on the ground around the skips, igloos or bottle banks.



Figure 6: Example of a Recycling Drop-off Point in Summerstrand.



Figure 7: Recycling drop-off point at Walmer Methodist Church

The recycling points shown above are the only free recycling facility in the immediate local areas and hence both facilities receive a high volume of recyclables and are over-subscribed.

2.6.10 Composting

Organic waste including most garden waste and food waste can be composted to create a natural fertilizer, which has environmental advantages over artificial fertilizers. The 2011 waste characterisation survey indicated that organics constitute approximately 40% of the total mass of domestic waste. Also a large volume (approximately 50,000 tons per annum) of garden waste is disposed of at garden refuse stations, before being transported to landfill sites for disposal. Both these are potential sources of organic matter for composting.

A municipal composting facility was constructed at Driftsands in Port Elizabeth, with the intention of generating compost for use by the NMBM. The facility operated for a short period of time post construction but has since stalled due to operational challenges and a skills shortage.

2.6.11 Hazardous Waste Recycling

NMBM does not currently provide any recycling services or facilities for hazardous waste. Certain types of hazardous waste such as batteries and fluorescent light bulbs can be dropped off at certain private companies. A few private companies offer a collection service for domestic hazardous waste one company offers a collection service for fluorescent lightbulbs, customers are provided with a storage box for the lightbulbs and when the box is full the company collects the box.

2.6.12 E-waste

There is no formal definition of e-waste, but it is widely accepted to include “anything that runs on electricity”. Hence components such as mobile phones, light bulbs, computers, and household appliances would fall within this category. It often contains substances that are harmful to the environment and hence recycling is definitely preferable to disposal. A typical computer monitor may contain more than 6% lead by weight. E-waste can be deconstructed into recyclable materials such as metal and

plastic, however care has to be taken due to the presence of heavy metals such as lead, mercury and beryllium.

The e-Waste Association of South Africa (eWASA) was established in 2008 and manages the e-waste industry in South Africa. According to eWASA, there are three e-waste drop-off points within Port Elizabeth, including two private companies and one at Wessa. There are also two private companies who recycle components of e-Waste (web reference 5). In addition there are a number of e-waste collection points.

2.6.13 General Comment

To gain the greatest profit from recycling, and thereby make it sustainable, waste separation needs to occur at the source since separation of mixed waste is labour intensive and expensive. The Public Perception Survey undertaken as part of this IWMP review suggested that 79% of residents do not recycle. Approximately 19% of people who recycle pay a contractor to collect their recyclables, 68% transport the recyclables themselves to drop off facilities. The majority (91%) of the respondents stated that they would be willing separate waste, the majority of which said they would even be prepared to take it to a recycling facility. This suggests that the public interest and commitment to recycling exists, but that the profile of recycling in the NMB area needs to be raised, and more importantly, the appropriate infrastructure needs to be established to facilitate and encourage this process.

2.7 Waste Collection and Transportation

2.7.1 Domestic Waste Collection

The majority of households in the NMB area receive a kerb-side domestic refuse collection service. Refuse is collected in 85-litre black refuse bags or in 240-litre wheeled bins. In certain wheelie bin areas black bags are issued in addition to the bins. Refuse is collected at least once a week. Residents of flats and townhouse complexes dispose of their refuse bags into 1,100 litre sprico bins which are emptied by NMBM. Refuse trucks with specialised lifting gear are used to empty wheelie bins and spricos.



Figure 8: Refuse collection in a wheelie bin area

The NMBM issues each household in wheelie bin areas with one 240l wheelie bin. For the period August 2012 – December 2014 the NMBM issued 2,167 new wheelie

bins, as a result of bins being stolen or used incorrectly which results in their loss or damage. The high number of bins issued has resulted in the depletion of the municipal stores. The NMBM requires a policy which states that additional wheelie bins will only be provided to households where the bin has been damaged as a result of action of the NMBM, for example when they are emptied.

Table 10: Summary of waste collection serviced provided by NMBM.

Service	July – Sept 2014		Oct – Dec 2015		Jan – March 2016	
	No.	%	No.	%	No.	%
Serviced households	317,206	97.82	318,175	97.64	318,175	97.64
Unserviced households	233	0.07	853	0.26	853	0.26
Other refuse disposal (outside urban edge)	6,852	2.11	6,852	2.10	6,852	2.19
Total	324,291	100	325,880	100	325,880	100.00

The category ‘serviced households’ includes households serviced by a weekly kerbside collection of black bags, households serviced by a fortnightly collection of wheelie bins and households which do not receive a kerbside collection service but have access to communal collection points which are serviced weekly. The 853 households which receive no waste collection service include households which are located in informal areas which were not earmarked for human settlement development or are located on private land.

In 2016, 97.6% of all households in the NMBM were receiving refuse collection service, 0.26% were unserviced and 2.1% are located outside the urban edge and used an alternative method of waste disposal. This 2.1% of households are largely farms which are located outside the urban edge of the NMBM. A total of 100% of households in formal areas within the urban edge are serviced. A weekly collection service is available to 92.8% of households in the NMBM and 4.84% use communal collection points for waste disposal. Approximately 0.26% of households receive no refuse collection service.

The NMBM recently required new refuse compactors which has allowed them to extend the weekly collection service to areas which were previous serviced on a fortnightly basis. The new refuse compactors coupled with a re-adjustment of the refuse collection rounds taking into cognisance has allowed NMBM to provide a weekly collection service to an additional 44,965 households which were previously serviced fortnightly. A total of 5,774 in Helenvale and Barcelona, 282 in Joe Slovo, 31,592 households in Ibhayi and 7,317 households in Kwanobuhle have been upgraded to a weekly collection service.

A more detailed breakdown of waste collection services in NMBM can be found in tables in Appendix B.

It is noted that the National Domestic Waste Collection Standards (GN 21, Jan 2011) provide guidelines for types of receptacles to be used and should be adhered to.

A good refuse service is classified as weekly kerb-side collection of black bags or wheelie bins. ‘Elimination of illegal dumping’ report in November 2010, (NMBM, 2010) surveyed wheelie bins prior to collection and found 246 out of 269 wheelie bins were full and there were an additional 213 black bags put out for collection. These results show that fortnightly collections of wheelie bins were not sufficient. Furthermore, the National Domestic Waste Collection Standards require weekly collection. It is

envisaged that the replacement of fortnightly collection services with weekly collection services will help to reduce illegal dumping.

Table 11: Percentage distribution of households according to different waste services provided in NMBM (Stats SA, 2007a and Census 2011 results)

Service	Census 2001	Census 2011
Removed by LA/private company at least once/week	86.1	82.9
Removed by LA/private company less than once/week	3.5	8.6
Communal refuse dump	1.7	2.3
Own refuse dump	5.5	3.3
No rubbish disposal	3.1	2.2
Other	-	0.8
Total	100.0	100

Table 12: Summary of waste collection services provided by NMBM. Figures as of 24 May 2016 (data supplied by NMBM).

Service	No. households	% of households
Refuse removed at least weekly	302,410	92.80
Using a communal collection point	15,765	4.84
No refuse disposal (within urban edge)	853	0.26
Other refuse disposal (farms)	6,852	2.10
Total	325,880	100.00

According to the Census 2011, 82.9% of households in the NMBM receive a weekly waste collection service. This is a decrease from 86.1% in 2001. These figures need to be put in context as the number of households in the NMBM increased from 260,799 in 2001 to 324,291 in 2011. The percentage of households using a communal refuse dump, their own refuse dump and with no rubbish disposal all decreased from 2001 to 2011.

The NMBM provides the collection service to the majority of its households itself, but outsources the collection function to community based contractors in certain low income areas such as Motherwell, Soweto-on-sea, Missionvale etc.

2.7.2 Co-operatives

The NMBM previously appointed co-operatives to assist with provision of waste collection services. In 2012 there were 10 Community Co-operatives appointed which made use of a labour-intensive work methods. They also report job creation figures on the EPWP job creation program. A total of 255 jobs were created by these Co-operatives (end of June 2012). The contracts for co-operatives lapsed in March 2013 and no co-operatives have been appointed since this date. Co-operatives were unable to submit the required document required in terms of the NMBM's supply chain management policy and the tender period expired. The NMBM is in the process of appointing co-operatives through a revised tender.

Council resolved to expand the use of Co-operatives by converting the Ward Based Cleaning Program to Community Co-operatives in a further 30 wards. This will not only contribute to the cleanliness of the area, but also create more sustainable jobs.

2.7.3 Industrial / Commercial Waste Collection

NMBM provides a collection service for trade waste generated by shops, offices and industry with the exclusion of hazardous or industrial waste. Trade waste is collected for a monthly fee which is determined by a waste management inspector.


2.7.4 Waste Transporters Database

NMBM has established a waste transporters register in line with the NMBM waste bylaws, promulgated on 24 March 2010, registration started in June 2011. All companies or individuals providing a commercial service as a waste transporter must be registered with the NMBM Waste Management Sub-directorate. Additional requirements of transporters registered on the database are to keep weighbridge receipts for a period of 12 months and to provide clients with receipts for the volume and type of waste that is collected and subsequently disposed of. (web reference 4). See website (<http://www.nelsonmandelabay.gov.za/Waste/>).


2.7.5 Waste Drop-Off Facilities

There has been confusion regarding the appropriate terminology for the different types of waste transfer facilities used in the NMB area and hence the following standardised terms are proposed:

Table 13: Description of the various types of waste transfer facilities currently in use in the NMBM.

Facility type	Description	Photograph
Temporary skip sites	These are large bulk skips placed in communities for receiving only surplus <i>garden waste and bulky waste</i> , which is not collected as part of the household collection service. These skips are provided in an attempt to discourage illegal dumping. The skips are not permanent features and are moved by NMBM as required. These skips are typically not manned in the NMBM. There are 29 temporary skips across the NMB area.	

Facility type	Description	Photograph
Communal Collection Points	<p>These are large bulk skips placed in communities for receiving <u>garden waste</u>, <u>bulky waste</u> and <u>general domestic waste</u>. The NMBM places these in a centralised point in informal areas where a door to door refuse collection is not possible (often due to poor road infrastructure). There are three (3) communal collection points in the NMB area.</p>	
Recycling points	<p>Small facilities where the public can drop off separated recyclables. They typically consist of 3 or 4 small separate bins only for recyclables. In the NMBM they are currently provided by private organisations such as certain garages, churches and supermarkets. As defined in the National Domestic Waste Collection Standards (GN21 of 2011), these facilities are to be accessible and clean and are considered important for reinforcing the recycling behaviour in the city. The current facilities in the NMB area are all private facilities.</p>	
Drop-off centres	<p>These are municipal facilities where the public is able to drop off <u>garden waste</u>, <u>bulky waste</u>, and <u>source separated recyclable</u>. There is currently no municipal kerb-side collection service for these waste streams in the NMB area. These are formal, constructed sites with vehicle access ramps, receiving skips and are manned and fenced. There are 18 such centres in NMB area. The facilities were previously referred to as Garden Refuse Transfer Stations. These sites are for residents only and trade waste is not accepted. There are 18 such facilities in the NMB</p>	

Facility type	Description	Photograph
Transfer stations	<p>These municipal facilities are similar to the above in design, but in addition to accepting <u>garden waste, bulky waste, and source separated recyclable</u>, they also accept <u>general domestic waste</u>. These are typically in rural areas far from the landfill sites. The municipal collection service uses these sites for transferring collected waste into bulk transportation vehicles before sending waste to landfill. There are two (2) such facilities in the NMB area, namely Colchester and Blue Horizon Bay.</p>	

Appendix D presents a list of all the transfer facilities in NMB area with locations.

Table 14: Annual disposal tonnages for the 18 drop-off centres in NMBM (Sourced from NMBM)

Drop off centre	2010	2011	2012	2013	2014	2015
Tambo	977	1,254	662	734	1,129	1,716
Gillespie	7,038	8,180	4,134	4,164	7,202	8,709
Jolobe	437	588	290	229	292	429
Zolile	326	755	247	168	269	485
Sarili	130	160	107	98	77	177
Verwoerd	3,138	3,975	2,199	2,467	4,043	4,278
Ngeyakhe	439	638	395	278	256	504
Ntambanani	527	606	276	239	314	447
Laksman	813	1,016	661	693	770	998
Ralo Street	615	712	345	508	658	651
Ditchling Street	5,164	5,550	2,301	4,530	4,133	5,446
Hunters Retreat	8,767	10,359	5,254	15,569	16,911	15,736
Kragga Kamma	12,503	13,101	7,719	11	647	59
5th Avenue	4,978	6,622	3,111	7,685	8,562	7,994
Strandfontein	3,290	4,321	2,504	4,947	6,295	4,694
Stanford Road	352	561	373	578	403	924
Tippers Creek						1,793
Umnulu Street					51	147
Blue Water Bay	-	-	-	-	-	
Blue Horizon						251
Total	49,494	58,398	30,578	42,898	52,104	55,438

The types of waste being disposed of at these facilities is however not strictly controlled and during site visits it was observed that general domestic waste and trade waste is also being brought to the drop-off centres (reserved for garden waste,

bulky waste and source separated recyclables). Many of these facilities are in require improved infrastructure and management.

Appendix C presents one-pager “fact-files” for all the waste drop-off sites and municipal landfill sites in the NMB area. The NMBM has yet to undertake a master planning exercise in which the above figures will be reviewed and the required number and location of waste drop-off sites will be determined.

2.7.6 Hazardous Waste Collection

The NMBM does not presently manage hazardous waste and hence no facilities for the collection or transportation thereof exist. Certain types of hazardous waste such as batteries and fluorescent light bulbs can however be dropped off at certain private companies as discussed under Section 2.6.12.

2.7.7 Health Care Risk Waste

The waste characterisation survey found that health care risk waste (HCRW) constituted 90% of the hazardous waste in the areas surveyed. There are no licensed, commercial HCRW treatment facilities in the NMB area and hence the majority of this waste (in excess of 430 tonnes/year) is transported to facilities outside the NMB area. Approximately half of this is likely being sent to the Western Cape, while some is also being sent to East London for treatment in a private autoclave facility.

2.7.8 Waste receptacles

The National Domestic Waste Collection Standards (GN 21, Jan 2011) make reference to appropriate standards for collection receptacles and these should be adhered to. At present a number of receptacles, particularly those bulk containers at drop-off centres, are sub-standard.

2.8 Waste Treatment and Disposal

2.8.1 Treatment

The NMBM does not operate any waste treatment facilities. Commercial waste treatment facilities in the NMB area are limited to that at the Aloes hazardous landfill (chemical treatment such as liming) and at the Oricol liquid waste facility in Uitenhage. The Uitenhage facility treats contaminated or oily liquid waste by chemical dosing or separating out solids using dissolved air floatation. No commercial incinerators or autoclaves are operated in the NMB area.

A permitted municipal waste incinerator was previously operated in Eveready Road in Port Elizabeth but has closed. The land and the incinerator both belong to the NMBM. The DEDEAT has expressed interest in running the incinerator at one stage. Incineration of medical waste used to be undertaken at a small scale at a number of hospitals and clinics in the area, but has generally been shut down due to poor incinerator performance. At the time of the 2006 survey, two hospitals in NMB area (Empilweni Hospital and Uitenhage Hospital) we found to be operating incinerators, and there were an additional two incinerators in fair condition at Dora Nginza Hospital which were not in operation. Incinerator ash from the hospitals was taken to Aloes hazardous waste landfill site (DEAT, 2006).

2.8.2 Landfills

Arlington and Koedoeskloof are the two operational municipal landfill sites used for the disposal of solid waste in NMBM. Both landfill sites have been permitted by the Department of Water Affairs and Forestry. Koedoeskloof, which is licensed to receive certain hazardous liquid wastes, has been open and operational since 1984. Arlington, the largest landfill site in NMBM, is licensed as a general site, and was opened in 1984 but only started receiving waste in 1987.

Aloes landfill site is the only H:H landfill in the NMB area and is operated as a commercial site by a private operator. Aloes receives hazardous waste including cover material, solid industrial, solid hazardous, liquid, sludge liquids and sludge solid waste.

The tables below present further details for the landfills and Figure 9 shows the location of landfill sites in the NMB area.

Table 15: Permitted landfill sites in the NMBM.

Waste Site	Class	Status	Comments	Owner
Arlington	L	Permit Issued	-	NMBM
Koedoeskloof	H:h	Permit Issued	-	NMBM
Aloes Hazardous	H:H	Permit Issued	Managed by private sector. Allows general waste into site to be used during co-disposal.	Enviroserv

Table 16: Disposal tonnages for Arlington and Koedoeskloof landfill sites (sourced from NMBM).

Year	Arlington	Koedoeskloof	Total
2010	346,362	231,236	577,598
2011	291,754	203,795	495,549
2012	300,914	172,585	473,499
2013	296,805	203,470	500,275
2014	337,070	234,412	571,483
2015	359,334	275,845	635,179

(a) Arlington

Arlington landfill site is located on Victoria Road near the Walmer Township and is a general landfill site accepting only non-hazardous waste. A survey in June 2010 found that Arlington had enough free airspace to operate at the current level of waste for 24 years.

(b) Koedoeskloof

The Koedoeskloof site has a general waste area as well as a small H:h facility which receives liquid wastes. It was estimated that the site accepts approximately 276,000 tons of waste annually, including hazardous waste. Recent figures received from NMBM confirmed that the site receives approximately 6,147 tons of hazardous waste annually. Hazardous waste disposed of at the site is restricted to that generated in the Uitenhage and Despatch area (*pers comm.* NMBM).

Table 17: Quantities (tons/year) of hazardous waste disposed of at Koedoeskloof (data sourced from NMBM weighbridge records)

Year	2010	2011	2012	2013	2014
Hazardous waste (tons)	8,275	7,644	5,382	5,622	3,812

Koedoeskloof has experienced challenges regarding the types of wastes disposed there. In March 2011 the disposal of poultry waste was no longer accepted at Koedoeskloof due to the problems caused by informal pickers on the landfill. This waste has since been diverted to Aloes hazardous landfill site. With the present extension of the site and storm water design, the lifespan is expected to be extended to 26 years.

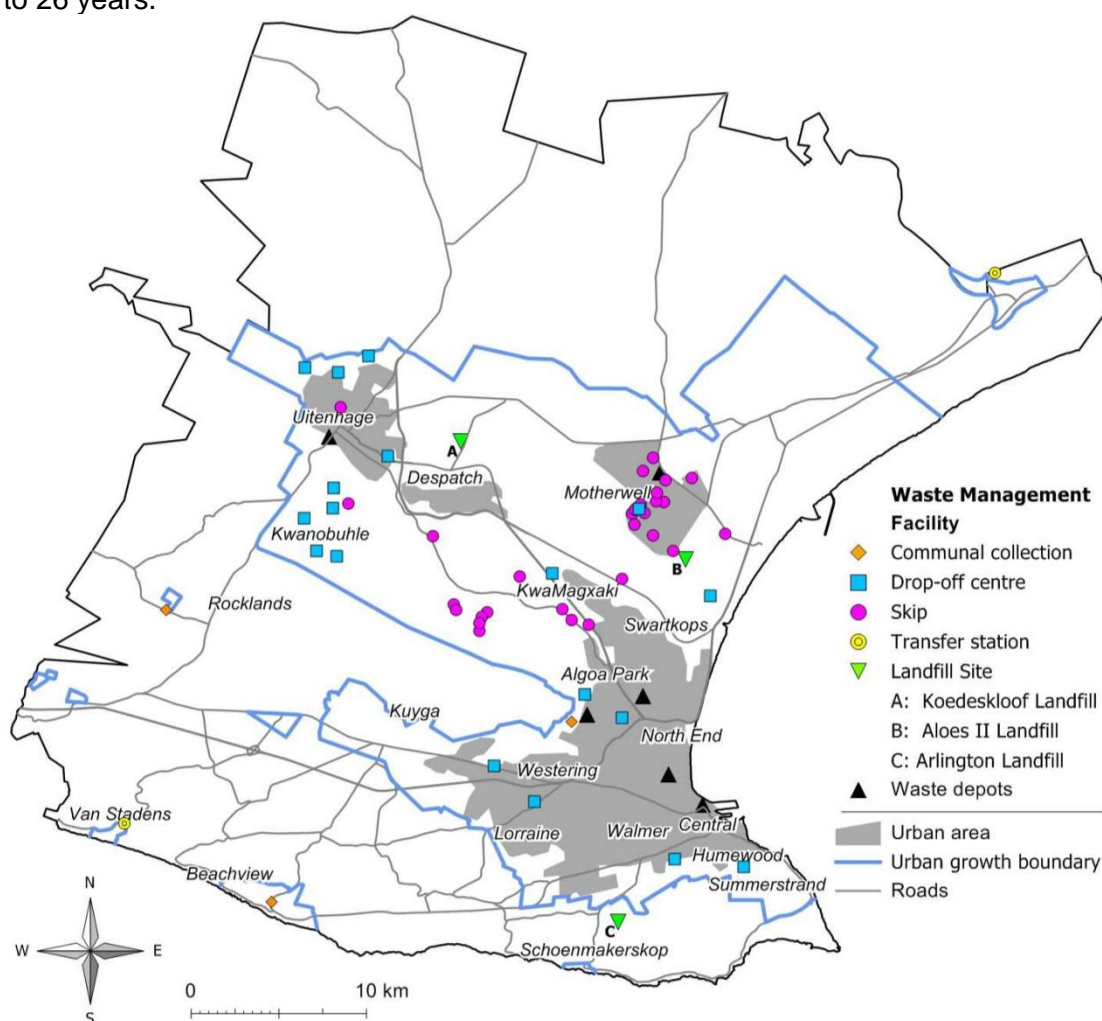


Figure 9: Landfill and drop-off facilities in the NMB area.

Historically the presence of a large number of informal recycler on Arlington and Koedoeskloof has been a significant issue in terms of health and safety and security. The presence of these informal recyclers poses a danger to both the landfill users and the pickers themselves as the conditions on the landfill sites are hazardous. The effectiveness of this method of recycling is also limited as the majority of recyclables are covered with the next delivery of waste before the pickers can remove them. The quality of the recyclables collected by pickers can also be low quality as materials are wet, dirty or contaminated. It has proved impossible to control the numbers of these informal recyclers due to poor access control at the sites.

The NMBM has recently awarded tenders for salvaging on Arlington and Koedoeskloof to formalise recycling on the sites.

(c) Aloes

The Aloes II landfill is a high hazardous (H:H) landfill site operated by the private sector. The site accepts a wide variety of wastes, mainly from within the Province, but also a small amount beyond the Province's boundaries. Construction of a new cell 'Aloes 3' was completed in 2014. This cell is already in use and has provided 25 years of airspace, based on current usage (*pers comm* Enviroserv). Approximately 5,500 tons of waste is disposed of monthly at Aloes. The table below presents detailed categories of hazardous waste disposed of at the two hazardous waste landfill facilities in the NMB area.

Table 18: Quantities (tons/year) of waste disposed of Aloes for the period April 2013 – March 2014

Waste category	Tons
Industrial	5,962
Liquid	6,533
Liquid sludge	17,446
Solid (hazardous)	43,385
Drums	867
Cover/ ash	5,774
Total	79,967

(d) Future Landfill Needs in the NMB area

The general comment from industry is that there are insufficient treatment and disposal options for hazardous waste in the Province. The table below presents details of future treatment capacity in the Province.

Table 19: Future of treatment/ disposal facilities in the Province.

Facility	Location	Status / Capacity
Aloes II	PE	25 years airspace, based on current rate of usage.
Koedoeskloof	Uitenhage	No further capacity. Intending to decommission once regional hazardous landfill site is commissioned. The planned extension of Koedoeskloof has been put on hold pending discussion on additional development on site.
Autoclave	Berlin, EL	Data not available
Resource Recovery Facility	Uitenhage	Authorisation obtained. Yet to be constructed and commissioned

The present and future landfill needs of the area should be assessed through a master planning exercise which considers future expansion of the area and costs associated with transporting waste.

2.8.3 Waste Diversion and Beneficiation Project

The NMBM commenced with a feasibility study in 2011 to investigate waste to energy options in the NMBM. This culminated in a feasibility study which considered various options for waste beneficiation, including waste diversion, processing and treatment. The project is currently at a final technical feasibility stage. The current

recommendation is that a single Waste Park be developed at a single location in NMBM. Waste diversion and beneficiation at the waste park is intended to significantly reduce waste to landfill and reduce transportation and operating costs. There will also be opportunities for revenue generation through recycling and energy production.

The exact operations of the waste park have not yet been finalised, but options include a regional transfer station and material recovery facility for sorting waste, aggregate processing plant for builders rubble, composting facility and a power generation plant using thermal combustion of waste. The project may be developed as a Public Private Partnership and the exact nature of the park would depend on the offerings of the private partner.

A number of sites have been considered for the waste park including the PPC West site.

As part of this project, a metro-wide scheme of associated infrastructure has been proposed including regional transfer stations, and material recovery facilities. The proposed location of these is given in the table below.

Table 20: Summary of Sites and Associated Infrastructure proposed as part of the Waste Diversion and Beneficiation Project (RHDHV, 2016: Stakeholder Report).

Site	Waste management infrastructure		Waste beneficiation infrastructure	
	RTS	MRF	Potential AD and composting infrastructure	Potential WtE
Koedoeskloof	✓	✓		✓
PPC West	✓	✓	✓	✓
Coega				✓
Greenbushes	✓	✓		
Markman	✓	✓		

2.8.4 Illegal Dumping

The NMBM commissioned the 'Elimination of Illegal Dumping Final Business Plan' which was completed in November 2010. It analysed waste being dumped illegally the NMB area. The results are shown in the table below.

Table 21: Summary of waste types being dumped illegally in NMBM (NMBM, 2010)

Type of waste	Percentage of total waste
Builders rubble	42
Domestic waste	22
Garden waste	17
A small amount of commercial waste, bulky waste, medical or hazardous waste	19

It concluded that illegal dumping is a significant problem in NMB area for the following reasons:

- Lack of enforcement of the by-laws due to an insufficient number of town rangers;
- Infrequent collections of wheelie bins in low income areas;
- Lack of public awareness;
- Building projects being signed off without tip slips;
- Lack of refuse disposal facilities, drop off centres only accept garden waste
- Restriction in access to drop off centres.

The results of the 2010 report show that a significant proportion of the waste being illegally dumped is builder's rubble, the lack of requirement for a tip slip from contractors when signing off a building project allows builders to save money and time by illegally dumping building material.



Figure 10: Illegal dumping in NMB area. A & B -Typical illegal dumping sites, C- builder rubble left after the completion of a housing project, D illegal dumping clean up

The illegal dumping strategy identified a phased approach as the most effective way of implementing the strategy. The illegal dumping strategy identified:

- Phase 1 tasks – tasks that can be implemented immediately
- Phase 2 tasks – tasks to be implemented in the short term
- Phase 3 tasks – tasks to be implemented in the medium to long term

The illegal dumping strategy was tabled at two Public Health Standing Committee meetings on 9 March 2012 and 20 July 2012. At both meetings the Committee recommended to the Executive Mayoral Committee that the Illegal Dumping Strategy be implemented subject to available funds.

The problem faced by Waste Management was lack of budget available to implement phases two and three of the strategy. No funds were allocated to the implementation of the illegal dumping strategy in the 2011/12 Waste Management Operating budget. The 2012/13 budget was cut and no budget was allocated for 2013/14.

One of the tasks in the Illegal Dumping Strategy was to increase the frequency of service to households from fortnightly to a weekly service, which should significantly reduce dumping. Funding for addressing this bi-weekly backlog is presently only sufficient for addressing 62,000 households (of the 139,000 households).

Waste Management has set up a CCTV control room to identify and monitor illegal dumping sites with the existing cameras installed by Safety and Security, Disaster Management and Infrastructure and Engineering in an effort to curb illegal dumping. The existing cameras are however not strategically placed in illegal dumping hotspots. The footage collected from the cameras can be used as evidence to issue fines. Support is needed from traffic and safety and security directorates to actively enforce the by-laws and issue fines. Fines for illegal dumping are currently set between R1,000 and R2,000, the higher fines being issued for dumping of waste in watercourses, in flood prone areas and in public areas and repeated offenders.

Waste Management has drawn up programmes for removing illegally dumped material from hotspots on municipal land. This is done at least on a quarterly basis.

A town ranger is employed full time in the NMB area to monitor and issue fines for illegal dumping. The town ranger is assisted by 21 'volunteers' who have received peace officer training. Volunteers work in their residential areas to monitor illegal dumping.

2.9 Other Services

The NMBM provides the following other waste services to the public.

2.9.1 Street Sweeping

All main roads in the municipality and high traffic secondary roads are swept either manually or mechanically. Street sweeping is organized into fixed rounds which are rotated and GIS is used to map the street sweeping and refuse collection rounds.



Figure 11: Manual street sweeping in the NMB area

2.9.2 Beach Cleaning

The beaches in the NMB area represent a significant tourist attraction and keeping them clean is a priority. Hence these are cleaned regularly. Humewood beach has been awarded world recognized 'Blue Flag' status for 2011.

2.9.3 Litter Picking

Specific litter picking programs are being run by the NMBM to combat littering and improve the cleanliness of the Metro. The Ward Based Cleaning Programme aims to improve the cleanliness of areas by making residents responsible and accountable for their areas and creating a sense of ownership.

Council resolved to expand the use of Co-operatives by converting the Ward Based Cleaning Program to Community Co-operatives in a further 30 wards, the scope will be enlarged beyond simply litter picking. This will not only contribute to the cleanliness of the area, but also create more sustainable jobs.



Figure 12: Litter picking programmes in NMB area

2.9.4 Cleaning Ablutions

Municipal-run public toilets are provided for the use of residents, and visitors to NMB area. The Waste Management Department is responsible 39 abluion blocks across the NMB area. Toilet attendants are responsible for the cleanliness of 39 abluion blocks; they also remove weeds from the area around the abluion blocks. In some cases toilet attendants are also involved with the maintenance of toilet facilities including repairs. In certain cases the cleaning of public toilets is outsourced to the private sector. Toilet cleaners have reported occupational challenges such as not having appropriate facilities or PPE to undertake their work.

2.9.5 Public Awareness Campaigns

The NMBM conducts a public awareness programme throughout the year. This includes door to door visits; distribution of flyers; loud hailing, school visits; community meetings; and litter picking services.



Figure 13: Public awareness campaign using MEU

Table 22: Number of the public awareness campaigns run in NMBM between July 2014 and-June 2015.

Event	No. of Events				TOTAL
	1st Q. July - Sept 2014	2nd Q Oct - Dec 2014	3rd Q Jan - March 2015	4th Q April - June 2015	
Door to door	0	14	135	444	593
Loud hailing	0	6	178	3	187
Awareness	0	0	2	1	3
Notice distribution	0	0	52	0	52
Meeting	0	6	3	14	23
TOTAL	0	26		321	858

3 Institutional Management

This section describes the institutional aspects of the NMBM Waste Management section including allocated and human and financial resources. Solid waste management in the NMBM is coordinated by the Waste Management Sub-directorate, within the Public Health Directorate.

3.1 Human Resources

There are approximately 705 people employed in the waste management sub-directorate at NMBM. A number of employees are working in acting positions due to vacant posts including the post of “Director” as well as one “Assistant Director” posts. At present a total of 44 posts are vacant.

The vacant positions are namely:

- Director: Waste Management
- Assistant Director: Waste Disposal
- Assistant Director: Operation
- Contracts Officer
- Community Liaison Officer
- Waste disposal clerk
- Arlington landfill site supervisor
- Arlington landfill site driver
- Assistant Superintendent
- Street Sweepers (20)
- Refuse Carriers (15)

The unfilled posts are largely due to budget cuts and a moratorium on filling unfilled posts which ran from 2003 - 2011. This has since been lifted and positions are now once again being filled. In 2011 a total of 79 appointments were made. The staff interviews confirmed that vacant posts have had significant impacts on the performance and standards of the waste management department. The retirement age is 65 years old, and 25 positions will become vacant in the next 3 years due to employees retiring.

The NMBM has a training plan in place which addresses skills development in the waste management department. The training plan outlines training requirements for staff ranging from refuse collectors to the director. The NMBM records the number of courses completed each year and also the courses required for each position within waste management. A total of 289 courses were completed or commenced between 2012 – 2014.

The training budget has been significantly increased for the period 2015 – 2016.

Table 23: Training budgets for 2012 – 2016

Period	Training budget
2012 – 2013	R 47,480.00
2013-2014	R 50,000.00
2014 - 2015	R 53,000.00
2015 - 2016	R 300,000.00
TOTAL	R 150,480

A key challenge is that the last full review of the organogram was undertaken in 2002. The 2002 organogram was reviewed again in 2008 but changes made to it were not approved. The demands on the municipal waste management system have changed significantly since then however the allocation and structure of posts have not. The organizational structure is presented in Appendix F.

3.2 Financial Resources

The budget allocations for waste management for the period 2009 – 2016 are presented in the table below.

Table 24: Waste management budgets in NMBM (sourced from NMBM).

Category	2009	2010	2011	2012	2013	2014	2015	2016
Employee Related Costs Total	7,284,010	87,253,260	105,641,880	118,975,450	120,228,180	131,914,300	69,944,720	78,607,780
General Expenses Total	82,907,370	93,308,960	86,581,440	98,239,560	97,545,040	114,603,210	115,273,930	129,630,670
Less : Amounts Charged Out Total	12,889,140	16,572,550	19,467,620	23,343,350	25,479,140	22,381,910	21,982,720	33,395,850
Other Income Total	16,416,110	17,408,460	21,068,040	16,239,360	17,730,670	17,920,150	19,030,200	20,194,940
Repairs and Maintenance Total	1,727,640	1,673,390	1,107,950	1,799,430	2,806,290	3,288,030	1,224,680	1,550,520
Service Charges Total	96,935,370	108,762,400	120,951,490	136,726,800	156,639,640	177,066,890	200,068,270	222,075,780

3.3 Facilities and Transportation Fleet

There are six depots across NMBM:

- Harrower Road
- Gail Road
- Cuyler Street
- Despatch
- Addo Road
- Struanway

These depots are used for management purposes and as a base for the staff operating in the area. Waste collection vehicles are also stored at the depots. The waste management fleet consists of a total of 111 vehicles, which includes stand by vehicles and the cleansing fleet. The fleet is composed of:

- 48 refuse compactors
- 1 mobile educational unit
- 4 flatbed trucks
- 3 high sided tippers
- 16 LDVs
- 2 4X4 LDVs
- 1 mobile high pressure cleaner
- 3 roll-on-roll-offs
- 13 side tippers
- 16 tippers

The table below gives a summary of the age of vehicles.

Table 25: Summary of waste management fleet

Vehicle type	1987-94	1995-99	2000-04	2005-09	2010-15	Total
Compactor	1	1	9	19	18	48
Educational Mobile Unit	0	0	0	1	0	1
Flatbed	2	1	0	1	0	4
High sided Tipper	3	0	0	0	0	3
LDV	0	0	9	6	1	16
LDV 4x4	0	0	0	1	1	2
Mobile High pressure cleaner	1	0	0	0	0	1
Roll-on Roll-off	3	2	1	0	1	7
Side Tipper	6	7	0	0	0	13
Tipper	15	1	0	0	0	16
Grand Total	31	12	19	28	21	111

A number of the vehicles require replacing due to their age or poor condition. The NMBM recently acquired eight dual black bag and wheelie bin compactors. The Waste Management Sub-directorate is not responsible for the replacement of the fleet, but is responsible for budgeting for additional vehicles.



Figure 14: Refuse compactors

4 Public Participation

4.1 Public Perception Survey

The public perception survey as described in Section 1.4.1(e) provided the public with a means of raising concerns regarding waste management in the NMB area. Different communities experience different issues and have different needs with regards to waste management therefore it is essential to gain feedback from a variety of different groups within the population to gain a broad view of waste management in NMBM as a whole. The detailed results are presented in the report titled Waste Public Perception Survey: A Component of the Integrated Waste Management Plan (NMBM, 2012).

4.1.1 Previous Public Perception Surveys

Two perception surveys have been undertaken previously:

- (a) 2001 survey. This survey of 800 respondents focused on disadvantaged communities. The results showed that 48% of participants rated the service they received as good or very good. The following was noted:
 - The NMBM will not remove grass cuttings because residents do not have black bags for it.
 - The municipality increases rates without informing residents
 - Waste collections are done too early
 - If more than five bags of refuse are put out for collection, the NMBM does not collect it.
 - Illegal dumping sites need to be fenced.
 - The skips are too high for some people to reach into.
- (b) 2006 survey. This survey of 558 respondents covered a range of different income areas and concluded that 74.9% of respondents felt that NMBM met their waste collection needs.
 - Recycling needs to be addressed;
 - Collection services must be reliable, follow a fixed day and time;
 - Waste management staff need to improve their communication with customers;
 - Sufficient numbers of black bags need to be provided to households;
 - A toll free number needs to be provided to handle complaints;
 - Safety and infrastructure need to be improved at drop off centres;
 - The use of SMS to inform the public of changes to collection dates or times; and
 - Weekly collections in low income areas

4.1.2 2011 Survey

This section gives an overview of the public perception survey more detailed methodology and results are presented in the report titled Public Perception Survey: A Component of the Integrated Waste Management Plan (NMBM, 2012).

(a) Methodology

Section 1.4.1(e) describes the approach to this survey in which 1,111 surveys were completed. The survey included face to face interviews, an online survey, and questionnaires made available in public places. The public perception survey ran from 30th November 2011 – 17th February 2012.

The survey consisted of 9 sections:

1. General information about respondent
2. Waste collection
3. Litter and illegal dumping
4. Drop off centres
5. Waste recycling
6. Waste disposal
7. Hazardous domestic waste
8. Waste management staff
9. General

(b) Results

The nature of the survey respondents are presented in Tables 21 and Table 27. Table 28 highlights the key results for the 9 different sections.

Table 26: Summary of public perception survey response

Location	No. events
Face to face surveys	810
Completed hardcopies	154
Internet surveys	147
Total	1,111

Table 27: Breakdown of face to face survey responses

Location	No. of surveys
Door to door	479
Shopping centre	228
Drop off centres	103
Total	810

Table 28: Key findings of the 2011 perception survey.

Topic	Finding
Waste collection service	<ul style="list-style-type: none"> • Significant response (53%) NMBM does not communicate changes in collection service • 55% view the refuse collection service as good or very good
Litter and illegal dumping	<ul style="list-style-type: none"> • 51% view their area as good or very good in terms of litter • 25% view their area as poor or very poor • 75% are unaware of who to contact regarding illegal dumping • 57% believe the NMBM is not doing enough to target illegal dumping
Drop off centres	<ul style="list-style-type: none"> • 58% of people are unaware of the location of their closest drop off centre • 64% of people don't use drop off centres • 34% believe the opening hours are convenient • 3% the opening hours are not convenient • 42% rate the drop off centres as good or very good
Waste recycling	<ul style="list-style-type: none"> • 79% of people do not recycle • Glass (29%) is the most commonly recycled material followed by paper and cardboard (22%), 9% of people recycle all recyclable materials. • 19% of those recycling pay a private contractor to collect their recyclables, 30% drop their recyclables off at community facilities such as schools or churches.
Waste disposal	<ul style="list-style-type: none"> • 87% of people never visit a landfill site • 58% of people are unaware that garden refuse and domestic building rubble can be disposed of free of charge at landfill sites • 39% of people rate the landfill sites as good or very good • 29% of people rate the landfill sites as poor or very poor
Hazardous domestic waste	<ul style="list-style-type: none"> • 52% are unaware of what constitutes domestic hazardous waste • 77% throw their household domestic waste away with general waste • 91% would be willing to separate their hazardous waste
Waste management staff	<ul style="list-style-type: none"> • 84% of people have no interaction with waste management staff • 38% of those interacting with waste management staff agree that they are helpful • 31% of those interacting with waste management staff agree that they are friendly when handling complaints • 23% those interacting with waste management staff agree that they handle complaints effectively
General	<ul style="list-style-type: none"> • 90% of those surveyed are unaware of the new waste management by-laws • 55% view the current waste management service as good, very good or excellent • 13% view the current waste management service as poor or very poor

4.1.3 Comparison with Previous Surveys

According to the 2006 survey 55.8% of people rated the waste management service as 'excellent' or 'very good'. By comparison, only 10% of respondents rated the waste management service as 'excellent' or 'very good' in 2011. Some of the quoted reasons for this drop in rating are likely to be the following:

- The bins are not collected in time;
- Wheelie bins are required as bags are easily damaged;
- More plastic bags are needed;
- Weekly collections are needed;
- Certain areas are given preference with regards to cleaning;
- NMBM is selective in the waste they collect;
- Illegal dumping;
- Waste collection is not consistent; and
- A community waste disposal facility is needed.

4.2 Public Participation

The Municipal Systems Act (32 of 2000) requires that municipal plans are subjected to public participation. The following have been undertaken as part of this IWMP process:

1. The public were engaged as part of the Public Perception Survey, which included door-to-door interviews, interviews at public locations like shopping centres, and online surveys. See Public Perception Report (NMBM, 2012a)
2. The draft IWMP was made available at the following locations:
 - All Municipal Libraries
 - Ward Councillors Offices
 - Waste Management Depots: Located in Addo Rd, Gail Rd, Harrower Rd, Struanway, Cuyler Street (Uitenhage)
 - 14th Floor Reception Lilian Diedricks Building, Govan Mbeki, Port Elizabeth
 - Nelson Mandela Bay Business Chamber, KPMG House, 200 Norvic Drive
 - All Customer Care Centres (see table below for details)

Table 29: Details of Customer Care Centres in NMBM

Location	Address
Cleary Park Office	Cleary Park Shopping Centre (cnr Norman Middleton and Stanford Rd)
Daleview Office	Cnr Hoog and Long Street, Despatch
Despatch Office	Main Road, Despatch
Eric Tindale Building	Govan Mbeki Avenue, Central
Khayamnandi Office	29 Chief Albert Luthuli Street, Despatch
Korsten Office	Ablett Street, Korsten
KwaNobuhle Office	Mkoko Steet, Kwanobuhle (next to Police station)
Motherwell Office	Raymond Mhlaba Sports Centre

Location	Address
Addo Road Office	Addo Road, Motherwell
New Brighton Office	Ntsekisa Road, New Brighton
Uitenhage Office	Town Hall Building Uitenhage
Walmer Office	The Avenues, Heugh Road
Zwide Office	Johnson Road, Zwide

The draft IWMP was also available for download from the NMBM website at the address below:

- NMBM website: <http://www.nelsonmandelabay.gov.za/>

3. Public meetings were held. Details of the public meetings are presented in the table below.

Table 30: Summary of Public Meetings (Note, attendance figures in the table includes the NMBM, Hluma Creations and GIBB project teams. Where people attended multiple meetings they were only counted once to give a total of 1,157)

Date	Venue	Meeting purpose	No. Attendees
09 February 2016	City Hall	Portfolio committee presentation	Unknown
05 March 2016	Zwide Rent Office	Ward committee meeting	50
06 March 2016	Bolo Punch Community Centre	Ward committee meeting	64
18 March 2016	Daku Hall	Councillor Workshop: Presentation to councillors	Meeting cancelled
23 March 2016	City Hall	Industry Meeting	22
30 March 2016	Raymond Mhlaba Sports Centre	Ward Committee Meeting	30
30 March 2016	Uitenhage Town Hall	Public Meeting	48
07 April 2016	West End Community Centre	Ward Committee Meeting	42
11 April 2016	Kuyga Community Hall	Public Meeting	43
11 April 2016	Kuyga Community Hall	Ward Committee Meeting	8
12 April 2016	Khayamnandi Community Hall	Ward Committee Meeting	5
12 April 2016	Khayamnandi Community Hall	Public Meeting	64
13 April 2016	NU 30 Community Hall	Public Meeting	58
14 April 2016	Walmer High School	Ward Committee Meeting	6
14 April 2016	Walmer High School	Public Meeting	61
18 April 2016	George Botha Sports Centre	Public Meeting	115
19 April 2016	Henry Fazzie Community Hall	Ward Committee Meeting	5
19 April 2016	Henry Fazzie Community Hall	Public Meeting	22
20 April 2016	Soweto-On-Sea Community Hall	Public Meeting	233
21 April 2016	Lillian Ngoyi Sports Centre	Public Meeting	52

Date	Venue	Meeting purpose	No. Attendees
21 April 2016	Lillian Ngoyi Sports Centre	Ward Committee Meeting	11
21 April 2016	Lillian Ngoyi Sports Centre	Ward Committee Meeting	5
25 April 2016	Daku Community Hall	Public Meeting	14
25 April 2016	Gelvendale Community Hall	Public Meeting	8
26 April 2016	Raymond Mhlaba Sports Centre	Ward Committee Meeting	4
26 April 2016	Raymond Mhlaba Sports Centre	Public Meeting	41
28 April 2016	Joe Slovo Tent	Public Meeting	69
03 May 2016	Jeff Masemola Hall	Public Meeting	48
04 May 2016	Allan Ridge Community Hall	Public Meeting	50
05 May 2016	Babs Madlakane Hall	Public Meeting	24
05 May 2016	Newton Park Library	Public Meeting	6
11 May 2016	Nangoza Jebe Hall	Public Meeting	67

Full results of the Public Participation Process are presented in a Public Participation Report (Appendix G).

5 Need Analysis

This section presents the waste management needs in the NMB area as identified through the IWMP process. It is limited to municipal services. The identified needs are presented in tables under the topics of:

- Institutional issues;
- Services; and
- Public awareness.

A further explanation of the key needs is presented at the end of the section. A comprehensive list of identified needs has been tabled to ensure that the IWMP is comprehensive, and that meaningful objectives can be defined for the next planning horizon.

5.1 Key Issues Identified in 2005 IWMP

A summary of the key issues identified during the 2005 IWMP process are listed in the following table. A response is also provided indicating to what extent the NMBM have been successful in addressing these needs over the last 5 years.

Table 31: Key issues identified in 2005 IWMP

Key issue	Details	Extent to which Need has been addressed since 2005
Lack of available waste-related information	Lack of on-going monitoring or control of waste generation, transport, treatment and disposal in NMB area.	Data collection has been improved since 2005.
Lack of uniform and effective waste by-laws	Waste by-laws are fragmented, ineffective and out of date.	The waste-by laws have since been revised and significantly improved in 2010.
Insufficient public awareness	Improper management of waste, excessive littering and burning of waste.	Significant awareness has been raised through the likes of the “Go-green Campaign” and “All Hands on Waste”. The NMBM Go Green Climate Change Advocacy Programme Project was undertaken from November 2013 – May 2014. Littering and illegal dumping however remain problems.
Insufficient service delivery	±900 households receive no refuse collection, no service in rural areas. Shortage of properly managed drop off centres.	The number of unserved households has decreased to 853. Approximately 15,765 households use a communal collection point and the rest of households (302,410) are on weekly kerbside collection service (figures provided by NMBM on 24 May 2016).
Unsatisfactory levels of recycling	Lack of cooperation from NMBM with recycling industry, informal	The lack of recycling and recycling facilities in the NMB

Key issue	Details	Extent to which Need has been addressed since 2005
	recyclers and public. Need to support community recycling projects	area remains a challenge.
Need to secure land for future landfill sites	Operations at non-licensed sites must cease. Landfill sites must fulfil legislative and permit requirements to prevent closures. Land for future sites must be located and acquired	The two operational landfills in NMBM are licensed but there continue to be challenges regarding meeting all permit conditions. The planning for future sites through a master planning exercise has yet to be undertaken.
Need to involve public and private industry	Public-private partnerships are limited and need to be extended to include other areas. Overall improvement of waste management can be increased through NMBM cooperating with the private sector	While partnerships have been undertaken for awareness raising projects, public-private partnerships have yet to be embraced for significant infrastructure projects.
Broad need of capacity building within Metro	Investment in staff required through training, gender awareness, managerial skills, computer skills and project management , environmental management and sustainable development	While training is undertaken, there remains a shortage of staff and skills in the waste management section.

5.2 Issues Identified in this IWMP

This section is essentially a list of all waste management related issues and shortfalls which have been identified during the IWMP process. It includes issues identified through:

- Staff interviews;
- Contractor interviews;
- Public perception surveys;
- Facility inspections; and
- Legislation review.

The tables below present the identified needs in the following order:

- Table 30: All needs that were identified, grouped by topic
- Table 31: Needs in terms of complying with legislative or policy requirements.
- Table 32: Summary of key needs

The table below holds all issues that were raised or identified through this IWMP process. Many of the issues listed below emerged from public surveys, and hence may in some cases, be perceived issues or may be relevant for only a certain localised community.

Table 32: Waste management issues identified through interviews, the public perception survey and facility inspections. All issues raised have been captured in the table below.

TOPIC	FINDING
INSTITUTIONAL ISSUES	
Waste planning	<ul style="list-style-type: none"> • Wheelie bin system needs to be evaluated due to low bin retrieval rates. • Standard waste management infrastructure requirements for future housing developments needs to be defined, as well as associate costs, so as to allow housing developers to plan appropriately. • The waste management department needs a planner who can integrate data on housing projects and budget projections. • A waste Masterplan needs to be developed to present a vision and plan especially for future waste management facilities such as Drop-off Centres and Landfill sites in the NMB area.
Staff management	<ul style="list-style-type: none"> • There are approximately 44 vacancies across the waste management department spanning all levels and depots. • There is a shortage of manpower which places an extra burden on existing employees. • Only one town ranger operates across the NMB area, and hence by-law enforcement is insufficient. • Succession planning and skills transfer must be planned to accommodate skills loss due to retirements in the management. • Waste management staff are disgruntled which results in strikes which affect service delivery.
Financial management	<ul style="list-style-type: none"> • A shortage of finances is currently prohibiting many improvements such as increased staff compliment, updating vehicle fleet etc.
Communication (with waste industry)	<ul style="list-style-type: none"> • Some industry members have indicated that it is difficult to contact the waste management section via phone. Appears the roles of the NMBM waste staff are not clearly defined, and hence callers get shunted from one person to another. • NMBM waste needs to be given more exposure in the industry. Could consider a circular profiling what is currently being undertaken.
Contractors	<ul style="list-style-type: none"> • There is a perception amongst the industry that waste management tenders are being awarded to contractors who do not have the appropriate capacity/skills. • Contract requirements are not being enforced on contractors who do not perform appropriately. For example, those contractors who service drop-off centres are not fulfilling their requirements.
Information management	<ul style="list-style-type: none"> • Need to consider a new waybill system at landfill sites; the present numbering system at landfill sites will run out of numbers and will need to be replaced within the next two years. • Landfill sites do not have email access and hence weighbridge data has to be physically collected.
Capacity building and staff training	<ul style="list-style-type: none"> • Technical capacity in the waste management section is lacking. • In-house training with NMBM staff is needed to highlight the importance of recycling. • Information sessions are required to raise awareness of the data available on the central server, so as to encourage the sharing of information in the department. • Lack of budget allocated for the training of employees. • New employees need to receive induction training.

TOPIC	FINDING
	<ul style="list-style-type: none"> • Employees lack a basic understanding of waste management. This needs to be developed before training can be successfully completed. • Training programmes must take into consideration the literacy levels of employees. • Employees need to be encouraged to actively participate in training programmes.
SERVICES ISSUES	
Recycling	<ul style="list-style-type: none"> • The community needs to be informed and shown the value of recycling through information session, awareness campaigns and school programs. • There are a lack of facilities for recycling, drop-off centres for recyclables need to be established at schools, community facilities and public locations. • MRFs are required to facilitate waste separation at the landfill sites. • An incentive is required to encourage communities to participate in recycling such as a reduction in rates, equipment for schools or vouchers. • There is a lack of systems facilitating recycling in businesses, especially small business.
Drop off centres	<ul style="list-style-type: none"> • A municipal supervisor is required for drop-off centres, so as to ensure the facilities are run correctly. • Drop-off centre contractors need to be monitored to ensure they comply with the conditions of the contract. Future contacts need to be allocated to experienced contractors. • Security at many busy drop-off centres is poor. Fences, CCTV and security personnel are required to prevent crime and illegal dumping at the centres. • Recycling facilities at drop-off centres are insufficient or non-existent. Appropriate recycling facilities need to be made available. Organic waste should be composted and a drop off facility for builder's rubble is needed. • Access and internal roads at drop-off centres are often in a poor condition. • Staff management at the drop-off centres to be improved. They should wear uniforms to make them identifiable, as well as the appropriate PPE e.g. gloves. • There are insufficient drop off centres. These need to be provided closer to communities. • The location and function of drop-off centres needs to be advertised and communicated so that there is greater community awareness. • Signage directing public to drop-off centres needs to be improved to raise their profile. • Drop-off centres should include facilities for receiving certain domestic hazardous waste e.g. batteries, fluorescent light bulbs, e-waste, used oil etc.).
Street cleaning	<ul style="list-style-type: none"> • More frequent street cleaning services are required to reduce litter in the streets which affects other services such as sewers. • There is an insufficient number of street sweepers to keep the metro clean. • The cleaning that is undertaken during collection is insufficient, and some areas are left in a mess.
Public ablutions	<ul style="list-style-type: none"> • Public toilets in poor condition. • The Waste Management Directorate is not responsible for all

TOPIC	FINDING
	public toilets, and hence is not in a position to address this issue throughout the Metro.
Waste collection	<ul style="list-style-type: none"> • Some collection times are inconsistent, and some collections are done before the expected time, before residents have been able to put out their waste. • There are insufficient options for disposal of garden waste, bulky waste and rubble. • Certain areas are given preferential treatment with regards to waste collection and street sweeping. • Refuse bags are not always supplied. • There is no official wheelie bin policy. NMBM repeatedly is issuing bins to people who claim their bins have been stolen.
Hazardous waste	<ul style="list-style-type: none"> • There is a lack of information on hazardous waste available to the public (52% of people are unaware of what constitutes domestic hazardous waste). Awareness programs are needed. • There is a significant lack of facilities where the public can dispose of household hazardous waste (e.g. old batteries, CFLs etc)
Treatment	<ul style="list-style-type: none"> • There is no local treatment facility (incinerator or autoclave) for medical waste in the NMBM area. The closest facility is in East London. • Clarity is required regarding the old municipal incinerator and the long terms plans for this site.
Transportation	<ul style="list-style-type: none"> • The municipal vehicle fleet need upgrading and the waste department needs to invest in new and more reliable vehicles. There are no back-up wheelie bin compactors so if one breaks down a replacement has to be hired at an expense. • Vehicle fleet is currently run by the NMBM vehicle department who have allowed fuel tenders to lapse, causing disruption. The NMBM should consider managing the waste fleet within the waste department, or facilitating better service from the vehicle department. • Contractors buy and run old vehicles which have been decommissioned by the NMBM which are unreliable and breakdown. Enforcement is needed to stop the transport of waste illegally e.g. no signage, bakkies with no canopies.
Garden Waste Skips and Communal Collection Points	<ul style="list-style-type: none"> • Skips are not covered and not always easily accessible. • Containers at disposal facilities are in poor condition, there is a lack of funding to replace them.
Landfill sites	<ul style="list-style-type: none"> • There is a lack of qualified staff to supervise the landfill sites. • Safety and security on the landfill sites needs to be improved using 24 hour CCTV monitoring, access control and security personnel to monitor the number of informal collectors. • There is a lack of control over the waste being taken to the landfill sites. • Recycling bins and a MRF are needed at landfill sites. • Additional staff is required for recycling, security and to clean the landfill sites. • A landfill site for inert material and builder's rubble is needed. • There is a lack of weighbridge staff and the administrative process is time consuming, leading to long queues of vehicles. A pre-paid card system to be considered. • Speed bumps and poor roads cause trucks to slow down and informal collectors jump onto the back of them. People have been severely injured through this.

TOPIC	FINDING
Enforcement of by-laws, litter and illegal dumping	<ul style="list-style-type: none"> • More town rangers are required to patrol the metro, monitor CCTV cameras and issue fines. • Waste department requires mobile CCTV cameras that can be placed at hotspots. • CCTV fines are currently issued through the traffic department but they lack the capacity to do this effectively. • Need to issue heavier fines and follow up on fines for illegal dumping. • Metro police do not view illegal dumping as a priority. NMBM staff lack training and motivation to address illegal dumping. • The public need to be informed of who to contact regarding illegal dumping and the metro needs to be seen to be responding to reports of illegal dumping. • Awareness campaigns on the consequences of illegal dumping and the waste by laws are needed. • Drop-off centres need to be established close to communities. Awareness of the location of drop-off centres needs to be raised in communities. • Incentives should be introduced for communities that keep their areas clean. • Some people are using wheelie bins to transport and dump waste illegally. A solution needs to be investigated. • More frequent collections or transfer stations which accept domestic household waste are needed in areas where illegal dumping is a problem. • Litter and illegal dumping needs to be removed promptly as it can affect other services such as drains and sewer lines. • Builders need to comply with illegal dumping by-laws. Consider making developers/builders register for a skip when planning permission is granted. • More bins are needed in public locations with lids to prevent litter blowing out and the bins need to be emptied regularly
PUBLIC AWARENESS ISSUES	
Public awareness	<ul style="list-style-type: none"> • There is a lack of waste management information available to the public such as what materials can be disposed of at landfill sites, where drop-off centres are and who to contact regarding illegal dumping. • Public to be educated that littering is not job creation. • Consider continuing the All Hands on Waste campaign, or equivalent. • Signage at waste facilities could be increased and improved to raise awareness.
Communication (with public)	<ul style="list-style-type: none"> • There is a lack of communication between NMBM and the public regarding changes to the refuse collection service. Alerts e.g. sms, should be considered. • Community meetings should be held to increase information sharing. • NMBM must improve their response rate to customer complaints. Responses to complaints should be in line with the National Domestic Waste Collection Standards (GN 21, Jan 2011) i.e. within 24hrs.

The table below holds key requirements imposed on the NMBM by current policy, legislation and guidelines. All key requirements are listed, irrespective of whether the NMBM complies or not. Activities which are recommended by policy/legislation, but not necessarily required, have not been included. Draft regulations have been

considered as an indication of likely imminent requirements. Bracketed text indicates the NMBM's current status. Where the NMBM is already complying, this has been indicated.

Table 33: Key legal/policy requirements. This table presents key legal requirements irrespective of whether the NMBM currently complies or not.

TOPIC	FINDING
INSTITUTIONAL ISSUES	
Waste planning	<p>National Environmental Management: Waste Act (59 of 2008):</p> <ul style="list-style-type: none"> • NMBM must submit an IWMP to the MEC for approval. • NMBM must integrate the IWMP into the IDP. Must follow the consultative process in Section 29 of the MSA (separately or as part of the IDP). • Each municipality must formally designate a waste management officer (complete). • NMBM 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"> • NMBM to integrate the national BRR policy into the NMBM's Indigent Policy, if present. • NMBM to consider formally identifying deserving households/areas for BRR services • NMBM to implement and maintain indigent register system in line with policy, and implement management programmes to minimise fraudulent activities. • 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 (complete).
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.
Waste Information management	<p>National Waste Information Regulations (GNR 625, 13 August 2012) (takes effect 1 Jan 2013)</p> <ul style="list-style-type: none"> • All those conducting activities listed in Annex 1 must register on SAWIS (complete) • Activities at different facilities must be registered individually. Includes landfills. Excludes transfer stations. • Quarterly information to be submitted to the SAWIS (complete / ongoing) • 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 (complete)
SERVICES ISSUES	
Waste	<p>National Environmental Management: Waste Act (59 of 2008):</p>

TOPIC	FINDING
reduction	<ul style="list-style-type: none"> Municipality 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.
Waste recycling and drop-off centres	<p>National Domestic Waste Collection Standards (GN21 of 2011)</p> <ul style="list-style-type: none"> The service provider/municipality must provide guidelines to households on how to separate waste. All domestic waste must be sorted at source (i.e. households) in Metropolitan areas. The municipality must encourage community involvement in recycling. The municipality 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 “non-mainstream 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 24 hours of being reported full. <p>Eastern Cape Provincial IWMP (DEDEAT, 2010, draft)</p> <ul style="list-style-type: none"> Local authorities 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. Local authorities to develop a waste minimisation / recycling plan by 2013.
Waste collection	<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 853 households receiving no collection service, and 15,765 households use communal collection points. 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"> NMBM 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 (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>

TOPIC	FINDING
	<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, NMBM 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 NMBM Fire Department.
Landfill sites	<p>National Standards for the Disposal of Waste to Landfill (GN636 of 2013)</p> <ul style="list-style-type: none"> NMBM 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 facilities (general waste)	<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 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 ISSUES	
Public awareness and communication	<p>National Domestic Waste Collection Standards (GN21 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. NMBM must create awareness around key waste issues as defined in the standards including illegal dumping, recycling and composting NMBM 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 (GN413 of 2011)</p> <ul style="list-style-type: none"> NMBM must implement education and awareness training regarding the BRR services in relevant areas.

5.3 Key Issues Identified in this IWMP

The preceding section lists numerous areas where the present waste management system could be improved. Key issues have been selected from these lists and summarised in the table below.

Table 34: Key issues distilled from this section

TOPIC	FINDING
INSTITUTIONAL ISSUES	
Internal capacity	<p><i>NMBM Waste Management has a general shortage of staff.</i></p> <p>Manpower: A significant number of posts are vacant, including senior positions. A director has yet to be appointed.</p> <p>Skills: There is a lack of technical waste management and engineering skills at senior levels.</p> <p>A full review of the present organogram is required. It was last reviewed in 2002.</p>
Waste Planning	<p><i>There is a lack of long term infrastructure and operation planning.</i></p> <p>The NMBM is in the process of developing a Waste Drop-Off Centre Masterplan, however no plan exists which presents the long term infrastructure vision for waste management in the NMBM (including waste disposal facilities). As the NMB expands, new sites need to be identified and purchased for future landfill sites and transfer stations. A Waste Masterplan is needed to cover Infrastructure and Operations. The Masterplan needs to include the actual cost per household to provide waste management services. There is an immediate need to develop more transfer stations and drop-off points.</p>
Waste Information and Data Management	<p><i>Data management is lacking in some areas</i></p> <p>Waste information management has improved significantly since the previous IWMP but the following can be improved:</p> <ul style="list-style-type: none"> • A number of the waste categories recorded at the landfills are not descriptive in terms of the nature of the waste. Categories such as “mayoral projects”, or “mixed waste” are not sufficiently descriptive. A review of the manner in which waste records are categorised is recommended. • There is room for raising awareness of employees regarding waste related data available to employees on the waste management department central server. • The programme used at landfill sites for recording waste tonnages needs to be updated. The NMBM will shortly be advertising for tenders to provide a new landfill information system. <p>There is a need to improve information feed down through the department to all levels, e.g. IWMP project implementation</p>
SERVICE DELIVERY ISSUES	
Recycling	<p><i>Only limited recycling of domestic waste at source is occurring and NMBM needs to put systems in place to achieve its legal recycling mandate.</i></p> <p>Much has been done to raise the profile of recycling since the 2005 IWMP through school recycling programs and public awareness campaigns however there remains significant scope for improvement.</p> <p>Feedback suggests that there is significant public support for recycling but not the facilities to facilitate this. The latest collection standards mandate the municipality to facilitate recycling at source and there is much which the NMBM can implement to fulfil its mandate of “providing an enabling environment for household recycling”. Presently there are insufficient facilities for dropping off recyclables in the NMB area and existing drop-off</p>

	<p>facilities</p> <p>do not have appropriate recycling facilities (with the exception of Kragga Kamma and Blue Horizon Bay) and are not managed well. Kerb-side collection services for recyclables are limited to the pay schemes offered by private operators. There is also insufficient awareness amongst the public as to where they can drop-off recyclables in addition to a lack of recycling infrastructure. The poor state of recycling on the landfills needs to be addressed.</p>
Collection services	<p>Collection services in some areas do not conform to the National Domestic Waste Collection Standards (GN 21, Jan 2011)</p> <p>A weekly collection service is presented in the National Domestic Waste Collection Standards (GN 21, Jan 2011) as being the minimum requirement. Currently 853 households in the NMB area receive no refuse collection service. These houses are located in informal areas without a formal road network or on private land. The figure for unserved households fluctuates according to the migration of people between informal settlements and new housing developments. Often people are relocated to new housing developments before a waste collection service is put in place. Approximately 15,765 households use a communal collection point and the remaining households (302,410) have a weekly kerbside collection service.</p>
Waste management fleet	<p>Much of the waste management fleet is old and requires replacement.</p> <p>The success of waste collection services is largely dependent on the fleet of refuse collection vehicles. Due to the nature of the work, poor roads, overloading and the age of the vehicles, they frequently suffer from mechanical problems and breakdown. Vehicles with specialized lifting gear are required for wheelie bin collection rounds and the NMBM does not have backup wheelie bin compactors. Many of the vehicles require replacing. Furthermore, the fleet needs to be increased in order to phase out fortnightly collections. The cleansing fleet also requires upgrade as many of these vehicles also suffer from mechanical problems and breakdowns. There are also challenges with the fact that the allocation and mechanical maintenance of the fleet is undertaken by a different directorate, Infrastructure and Engineering which may lead to inefficient utilisation of the fleet. The NMBM has recently acquired eight new refuse compactors. A policy designating funding for replacements of the waste management fleet is in place however it is not being applied and no funding has been provided for it.</p>
Landfills	<p>The landfill sites are not meeting permit requirements</p> <p>A major challenge facing the two municipal landfill sites is security and access control. The sites are not considered safe and practices by the informal recyclers (jumping onto moving vehicles) are dangerous and have resulted in fatalities. Up to 300 informal recyclers have been recorded operating on Arlington alone. The number of informal recyclers operating on the landfill sites varies depending of the economic status, during periods of economic downturn more informal recyclers operate on the landfill sites. The safety on landfill sites needs to be improved by improving access control and acquiring more security personnel to patrol the sites. The recycling operations at the landfill sites need to be formalised in terms of infrastructure e.g. MRFs. Operations at the landfills must meet all permit requirements.</p>

By-laws and Enforcement	<p><i>Affective enforcement of the waste management by-laws is not being achieved</i></p> <p>There is a lack of capacity to enforce the waste by-laws (presently only one of the six posts for waste rangers are filled) and hence illegal dumping remains a significant problem. More rangers are needed. NMBM has also provided peace officer training to 21 volunteers. These volunteers receive stipends and perform various waste management activities including monitoring illegal dumping and manning the drop-off centres. The Safety and Security Directorate need to be engaged to raise the profile of addressing illegal dumping and system of issuing fines (presently done through traffic department) should be reviewed to ensure it is affective. The Waste Management Department makes use of camera owned by Safety and Security, Disaster Management and Traffic to monitor illegal dumping. The cameras available to monitor illegal dumping are not necessarily positioned in hotspot areas. Mobile CCTV cameras at hotspots should be considered to supplement the current CCTV programme, Safety and Security do own mobile cameras and the waste department is currently in discussion with them regarding to use of the camera at illegal dumping hot spots.</p> <p>The NMBM recently launched a CCTV program to monitor illegal dumping and issue fines to offenders. This project needs the support of the traffic department to issue fines and bring repeat offenders to municipal courts. The NMBM does not as yet have any mobile cameras for use at dumping hotspots.</p> <p>A significant portion of illegally dumped builders rubble in the NMBM area results from infrastructure development projects such as road construction and RDP housing. Contractors are illegally dumping material to avoid paying disposal fees at the landfill sites. The NMBM's Housing department does not require contractors to produce safe disposal slips for waste before projects are signed off. The NMBM's Housing department should include a requirement for contractors to provide safe disposal slips for all waste before the project can be signed off.</p> <p>Public awareness on the issue of illegal dumping needs to be improved and the public need to be informed of who to contact should they witness illegal dumping and what details should be recorded. According to the public participation survey 74% of the public are unaware of who to contact should they witness illegal dumping.</p>
PUBLIC AWARENESS AND COMMUNICATION ISSUES	
Waste Management Awareness	<p><i>Waste Management is not “mainstreamed” in the NMB area</i></p> <p>The public perception survey indicated that there is a lack of awareness regarding key waste management issues such as what can be recycled, where to drop off recyclables, the by-laws and their enforcement and how to report illegal dumping cases. Communication between NMBM Waste management and the public as well as industry can be improved especially regarding changes in collection programmes. CLOs need to be capacitated and equipped with the right tools to enable them to effectively communicate with the public.</p>

Complaints management	<p><i>Complaints management is not meeting the requirements of the National Domestic Waste Collection Standards (GN21 of 2011)</i></p> <p>Clear standards have been defined for managing incoming complaints (must be responded to with 24hrs and a register maintained) which are currently not being achieved.</p>
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6 Waste Management Objectives

This section defines the key waste management objectives for the NMBM which represent the broad key focus areas for waste management in the municipality. These are then unpacked in the form of specific actions or “projects” in the following section. The section commences with a review of the objectives and projects defined in the 2005 IWMP and the extent to which these were successfully implemented.

6.1 Review of Waste Management Objectives as per 2005 IWMP

The 2005 IWMP identified six objectives to be achieved in the near future. These are presented in the table below, together with comments on how these have been addressed since 2005.

Table 35: Waste management objectives as defined in the 2005 IWMP.

No.	OBJECTIVE	IMPLEMENTATION SUCCESS
1	By Laws Uniform and updated by-laws that conform to the other direction of the IWMP and that were developed through a participatory process that fulfils legal requirements will be in force by end 2006	The NMBM successfully revised and adopted their waste management by-laws in 2010.
2	Increased Public Awareness NMMMM will run at least 200 waste related public awareness activities per year by 2006 and at least 300 per year by 2008	NMBM continues to run awareness campaigns and in 2014 – 2015 , NMBM undertook 462 awareness events (20 houses visited classified as one campaign).
3	Improved Co-Ops By 2007, waste co-ops will be running successfully and growing independently	Up until March 2013 there were 10 waste management co-ops operating in the NMBM. In March 2013 the co-ops contracts expired. The NMBM ran a tender process for new co-ops but administration requirements have halted the process. At present there are no co-ops operating in the NMBM
4	Establish Waste Information System A waste information system (WIS) that provides reliable information on amounts, type, generators and transporters of waste, as well as the private waste collection service provision, will be in place by 2008	In 2006 the NMBM was part of a national WIS roll out project in which saw the NMBM commence reporting waste tonnages on the national system. With the development of the national system, the duplication of a local system is not needed, however there remains a need to mainstream the WIS and ensure that organisations report regularly on it.
5	Reduce Illegal Dumping Illegal dumping will be reduced by 50% by 2010	Audits of dumping areas have been undertaken for a number of years but in the absence of appropriate baseline data, measuring change has not been possible. Since the undertaking of the Elimination of Illegal Dumping Strategy (2010) the NMBM has

No.	OBJECTIVE	IMPLEMENTATION SUCCESS
		developed baseline data and improved auditing systems for tracking progress. Indications are however that illegal dumping continues to be a growing problem. The NMBM released a business plan for elimination of illegal dumping in October 2014. The report titled 'Elimination of Illegal Dumping Short Term Action Plan, Business Plan' identifies short, medium and long term actions to address illegal dumping. The business plan also presents budget required for these actions. The project was planned to run from December 2014 – March 2015.
6	Improved Public Perception 60% of Metro citizens will view the Metro's waste management service delivery as good or very good by 2010.	According to the 2011 Public Perception survey 55% of the respondents view the waste management service as 'good', 'very good', or 'excellent.'

Of the above objectives, the revision of the by-laws, the improvement of Co-ops and the reporting on WIS are considered to have been reasonably well achieved. The other objectives have yet to be achieved and hence have been carried through for future objectives.

6.2 Waste Management Objectives for 2015

A total of seven objectives, presented below, have been defined through a process informed by:

- the Situation Analysis;
- the Needs Analysis;
- input from the IWMP working group; and
- the success of the implementation of the objectives defined in the 2005 IWMP.

These objectives represent key areas which, if addressed, will contribute significantly to NMBM fulfilling its broader waste management mandate over the next five years and they typically address the most pressing waste management issues in the NMBM. The current financial limitations of the NMBM have however been considered, and the objectives developed with this in mind. Nonetheless, the recent waste policy and legislation changes do necessitate the inclusion of certain objectives so as to ensure legal compliance. The objectives will not necessarily address all waste management challenges facing the NMBM and not all projects or interventions planned under Section 7 will necessarily have a "home" under the objectives below. The objectives do however present the most significant, strategic "wins" for waste management. Finally, the objectives have, as far as possible, been structured so as to make them measurable. The objectives are all considered important and implementation thereof should run concurrently.

6.2.1 Objective 1: Improved Waste Infrastructure and Operational Future Planning

While residential development within the NMBM area continues to expand, so too does the need for waste management infrastructure including landfill sites, transfer stations, and drop-off centres. Currently no long term infrastructure plan exists for the NMBM waste management sub-directorate. These facilities have extremely long planning lead times and hence the process of determining the needs and identifying possible sites for development must commence. The NMBM will develop a waste Infrastructure and Operational Masterplan by end of 2017.

6.2.2 Objective 2: Provide an Enabling Environment for Recycling

The National Domestic Waste Collection Standards (GN 21 of 2011) mandate the NMBM to provide an enabling environment for household recycling. Key need areas in this regard are a lack of recycling infrastructure and lack of awareness. At present, only 21% of NMB residents claim to recycle (NMBM, 2012, Waste Public Perception Survey).

NMBM will create an enabling environment aim to facilitate recycling such that in excess of 30% of residents will claim to be recycling by 2021 (to be measured during next review of Public Perception survey).

The NMBM will enable recycling by facilitating the inclusion of recycling facilities at all of the transfer stations and drop-off centres, determine the geographic needs for and create specific recycling drop-off facilities, and undertake awareness campaigns around these initiatives.

6.2.3 Objective 3: Improve Infrastructure Management

The poor condition and management of waste management infrastructure, including drop-off centres, transfer stations and landfill sites has drawn significant public criticism. Key areas of concern have been failing infrastructure, safety and access control. Some facilities do not meet permit requirements.

The NMBM will implement management and operation systems and improve infrastructure including public toilets, and waste containers to ensure facilities meet permit requirements by 2021. This will likely require significant financial and human resource commitment.

6.2.4 Objective 4: Reduce Illegal Dumping

Illegal dumping is the result of various weaknesses in a waste management system, including infrastructure and service provision, public awareness, and enforcement. The objective was set in 2005 to reduce illegal dumping by 50% by 2010, however due to a lack of baseline data this could not be measured. The NMBM now holds sufficient baseline data and has audit procedures to monitor this.

The NMBM will reduce illegal dumping by 50% by 2021 by continuing regular audits, public awareness campaigns and operating a functional, and capacitated waste law enforcement unit. The unit will investigate and implement the best methods for detecting illegal dumping (e.g. CCTV monitoring of hotspots) and administering fines. The 2010 'Elimination of Illegal Dumping Strategy' sets immediate, short term and medium to long term actions. This strategy will be incorporated into the IWMP Implementation Plan.

6.2.5 Objective 5: Improve Public Awareness

The Public Perception survey undertaken as part of this IWMP review revealed that despite significant efforts by the NMBM to improve awareness around waste management (e.g. All Hands on Waste Campaign), there remains much opportunity to raise the profile of waste management in the metro. Change in waste management practice is being driven by rapidly changing legislation and there will be a growing need to communicate with the residents of the NMB area as the NMBM responds to these changes.

The NMBM has indicated that approximately 40,220 households approximately 12.4% of the 289,000 households in the NMBM area (2,011 initiatives x 20 households/initiative) were reached over a 12 month period (2012 – 2013), through either door to door visits or distribution of pamphlets. The NMBM will reach 25% of households annually through door to door, advertising, account fliers, community radio stations, constituency meetings, school visits and radio shows

6.2.6 Objective 6: Improve Public Perception

In both the 2006 and 2011 Public Perception Surveys approximately 55% of the respondents viewed the NMBM's waste management service positively (good, very good or excellent).

The 2006 NMBM IWMP set a target for 60% of residents to view the NMBM's waste management service as good or very good by 2010. The NMBM will work towards increasing this to 70% by 2021 through improved service delivery, and generating awareness amongst its residents.

6.3 National Waste Management Strategy Objectives

The National Waste Management Strategy (NWMS) is structured around a framework of eight goals. The goals along with their respective targets must be met by 2016.

Table 36: National Waste Management Strategy Objectives

Goal	Targets for 2016
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 municipalities and large towns have initiated separation at source programmes. • Achievement of waste reduction and recycling targets as set in industry waste management plans for paper and packaging, pesticides, lighting (CFLs) and tyre industries
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.
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
4. Ensure 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 campaigns
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
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
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.
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 (EMIs) appointed in the three spheres of government to enforce the Waste Act

7 Implementation Plan

This section presents a plan by which the NMBM aims to meet the objectives defined in the previous section. The plan consists of a number of projects and initiatives which, if appropriately executed, should move the NMBM towards realising these objectives. An implementation programme is presented in the table below. It is however acknowledged that the NMBM faces numerous challenges in the implementation of these projects including financial and human resource limitations. It is therefore expected that the implementation programme will be modified during the next 5 year period as resource allocation changes.

7.1 Review of 2005 Implement Plan

The 2005 IWMP proposed a number of projects to be conducted over the period 2005 – 2010. In order to formulate relevant, realistic and viable projects moving forward, it is important that the success of these previously planned projects be reviewed. The table below considers the extent to which these projects were successful. The information has been sourced from 2010 IWMP closedown report (supplied by NMBM, unpublished).

Table 37: Status report of 2005 IWMP projects. Colours have been assigned to indicate project success: Green: successful implementation. Orange: Project deferred or partial success. Red: project failed or abandoned. White: no longer relevant.

Category	Proj No.	Proj. Title	Status	Comment
Waste Management Planning	1	Inventory of Waste Streams 1 & 2	Deferred to 2012 IWMP	A thorough Waste Characterisation of household domestic was undertaken as part of this IWMP review. Regular future characterisations are however required to evaluate seasonal trends.
	2	Development of Waste Information System (WIS)	Complete. Not to be take further.	The national WIS has been adopted and there appears little value in developing a WIS specifically for the NMB area. A number of NMB based industries have commenced reporting on the WIS on a voluntary basis.
	3	Pilot project: Collection/treatment system for household hazardous waste	Deferred to 2012 IWMP	Feasibility study was not undertaken and strategy no developed. This project was not considered urgent as the primary role in municipalities is the management of general waste.
	4	Development of a medical waste strategy	Cancelled	This project was cancelled, as management of medical waste is considered a provincial Health competency.
Public awareness	5	Public Awareness and Strategy Campaign	Ongoing.	WESSA was appointed to prepare an Environmental and Educational material which was used in 2008.

Category	Proj No.	Proj. Title	Status	Comment
				NMBM produces quarterly reports on the numbers of people reached by awareness campaigns. A formal strategy to be compiled.
	6	Baseline Public Awareness Study and Continued Monitoring	Ongoing	Awareness evaluations have been done but at lower frequency than recommended (once every 5 years rather than bi-annual).
	7	Development of mobile waste exhibition	Complete	MEU was launched as part of the 'All Hands on Waste' project in 2010.
	8	Waste Education at schools	On-going	MEU launched in 2010 used for waste education at schools.
Recycling	9	MRF Feasibility Study, Stage II	On hold	The installation of a MRF is being considered as part of a waste to energy feasibility study.
	10	Recycling in Municipal buildings	Failed. Address in 2012 IWMP	Paper recycling project in Lillian Diedericks Building started in 2010. The programme failed as NMBM required payment for paper, which likely proved unsustainable for the recycler. The recycler was inexperienced.
	11	Kwa-Magxaki Recycling Centre	Failed	The site is only operational as a refuse transfer facility. Recycling aspect has failed. The education, awareness and waste minimization aspects have not been implemented due to a lack of funds and internal capacity. The site is likely too far removed from the community, and volumes too small to make recycling viable.
	12	Motherwell Buy-Back Centre	Complete but no longer functional	Motherwell Buy-Back Centre was operational but has since ceased operating a buy-back centre.
	13	International inventory of recycling projects	Cancelled	Not considered urgent. Inventory of local projects may be more beneficial and to be considered in 2012 IWMP. The project has been cancelled.
	14	Forum for Recyclers	Cancelled	Revival of Eastern Cape branch of the Institute of Waste Management of South Africa (EC IWMSA) in the NMB had replaced the need for this project. However, the IWMSA is no longer active in the NMB area.
	15	Pilot Project: Coloured bag system	Failed	A pilot two bag project was launched in Blue Horizon Bay in 2008. The project stopped in May 2013 when the co-op's contract expired and was not

Category	Proj No.	Proj. Title	Status	Comment
				renewed.
	16	Strategy for Waste Management for 2010 Cup	Complete	Five additional contracts issued and an additional 180 people employed over the World Cup period in 2010.
	17	Development of Digital Waste Exchange	Complete / ongoing	Online Waste Exchange active since April 2008. Continues to operate.
Composting	18	Pilot backyard/community composting in low income areas	Cancelled.	A pilot backyard community composting programme has been initiated at a transfer station in Blue Horizon Bay.
	19	Pilot community composting in Colchester	Cancelled	Cancelled due to challenges securing land. Lack of Municipality land in Colchester, the project requires the purchase of private land.
	20	Pilot backyard composting in Blue Horizon Bay	Deferred to 2012 IWMP	Refer to project 18.
Waste Disposal	21	Closure and Rehabilitation of Waste Sites	Ongoing	Blue Horizon Bay: Site was pre permit requirements and has been closed Seaview: The site is no longer in use. Grootkloof: Site was pre permit requirements and have been closed Kwa-Nobuhle: site has been closed Closure permit in hand Ibhayi: Have applied for closure permit but people are living on the site The majority of residents on the site have been relocated however some residents are refusing to move. Closure to be finalised once people are relocated
	22	ISO 14001 compliance at Waste sites	Cancelled	Pre-entry audits were completed and a corrective plan produced and implemented. The project was however abandoned due to lack of internal capacity and financial constraints.
	23	Additional transfer stations/recycling stations	Ongoing	Formal recycling facilities have been added to the Kragga Kamma drop-off centre. The NMBM is in the process of developing a waste drop-off centre masterplan to identify sites to develop new drop-off centres.
Legislative	24	Development of new Metro By-laws	Complete	Waste by-laws were promulgated in December 2009.
	25	Disposal Certificate for Builder's Rubble	Cancelled	Project cancelled because Housing and Land indicated that introducing a Disposal

Category	Proj No.	Proj. Title	Status	Comment
				Certificate linked to the Certificate of Occupancy would not be legally enforceable. It is recommended that NMBM introduces a requirement for safe disposal slips to be provided as part of the site hand over documentation for all infrastructure projects.
	26	Legislative review	Cancelled	Legislation continuously reviewed by Environmental Management on the behalf of the Directorate, however this is not meeting the needs of the Waste Management sub-directorate. The role of legislative review must be incorporated into a role/organogram or job description for an NMBM employee.
Financial	27	Review of Cost recovery/ equalization of Tariffs	Completed	Single waste tariff was resolved and effected from July 2008
	28	Feasibility Study: Green Procurement	In progress	Project transferred to Environmental Management
	29	Feasibility Study: Differentiated Tariff System	Deferred to 2021 IWMP	DEAT terminated cooperation with Norway. Was planned to use tariffs to encourage residents to participate in source separation
Staff Development	30	IWMP Awareness Campaign	Complete	This once-off campaign was complete at the time of the IWMP and consisted of: <ul style="list-style-type: none"> • HIV & AIDs awareness campaign conducted by ATTIC at each depot; • Baseline study of gender awareness conducted by GETNET; • Environmental awareness training for all waste management employees and casuals conducted by WESSA; • NMMU was appointed as a service provider to conduct customer care training for all frontline employees.
	31	Induction Course	Ongoing	An induction program for all new staff was introduced in August 2005. The training was tailored for each designation. This continues to be done with each new appointment.
	32	Networking with other Municipalities	Ongoing	NMBM is involved with projects with other municipalities

Category	Proj No.	Proj. Title	Status	Comment
				nationally and internationally. NMBM plans to engage with other Municipalities on best practice for waste avoidance and recycling. The NMBM hosts other municipalities; however funds are not made available for the NMBM to undertake study tours.
	33	Best practice manual	Cancelled	Sufficient Best Practice references already in existence e.g. CSIR Municipality Good Practices document published in March 2011, and the EPWP Best Practice document.
Job Creation	34	Waste Cooperatives	Failed	There are currently no co-operative operating the NMBM. Co-ops contracts lapsed in March 2013 and no new co-ops have been appointed.

7.2 Project Details

This section presents detailed descriptions of the projects proposed for the next 5 year period.

No.	Project	2016		2017				2018				2019				2020				2021	
		3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4		
IWMP PLANNING PROJECTS																					
1	Waste Infrastructure and Operational Demand Masterplan																				
2	Waste beneficiation and waste to energy (planning phase)																				
3	Waste Guidelines and Development Standards																				
4	Waste Characterisation and Sampling standards																				
5	Feasibility Study: Recycling of Domestic Hazardous Waste																				
6	Revision of Waste Management Organogram and Resources																				
7	To pursue the utilisation of Community Based Co-																				

No.	Project Quarter	2016		2017				2018				2019				2020				2021		
		3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	
	operatives in execution of Waste Management Functions																					
8	Wheely bin replacement policy																					
WASTE MINIMISATION																						
9	Develop a Waste Minimisation Strategy																					
10	"Where and How to Recycle" Information Document.																					
11	To facilitate Recycling at all Transfer Stations and Drop-off Centres																					
12	To Facilitate In-House Municipal Recycling																					
13	Formal Review of Blue Horizon Bay Recycling Project																					
14	Expansion of the Two Bag Source Separation Recycling project																					
15	Pilot Centralised Composting at Blue Horizon Bay																					
16	Review and upgrade of online Waste Exchange																					
WASTE COLLECTION																						
17	To investigate the most appropriate and cost-effective utilisation of Municipal Fleet in waste management																					
WASTE TRANSFER & DISPOSAL																						
18	Increasing the nr of Transfer stations / Drop-off Centres in line with WM Strategy																					
19	Ensure compliance with all permit conditions and applicable legislation at Landfill Sites																					
ILLEGAL DUMPING																						
20																						

No.	Project Quarter	2016		2017				2018				2019				2020				2021	
		3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2
PUBLIC AWARENESS & COMMUNICATION																					
21	Public Awareness Strategy and Plan																				
22	Review Public Awareness & Education programme																				
23	Preparing a Public Perception Protocol document																				
24	Review of the Complaints Management System																				
25	Develop an information leaflet on "How to handle your waste"																				
26	Waste Information Calendar																				
INFORMATION MANAGEMENT																					
27	In-house Waste Info Portal																				
28	Review of the weighbridge software and the current categorisation system																				
LEGISLATION AND ENFORCEMENT																					
29	Review By-laws																				
30	Enforcement strategy																				
STAFF DEVELOPMENT																					
31	Review of induction material																				
32	Review of Skills Plan and Identify Relevant Waste Training																				
33	IWMP Awareness Campaign. Repeat in-house awareness campaign																				
FINANCIAL																					
34	Investigate possible alternative funding sources																				

7.2.1 Integrated Waste Management Planning Projects

Project no.:	1
Project title:	Waste Infrastructure and Operational Demand Masterplan
Project details:	<p>The NMBM's waste infrastructure requires expansion, especially transfer stations, drop-off facilities and landfill sites. Currently no long term infrastructure plan exists. Considering that budgeting for these facilities, planning and developing have long planning lead times, the complexities regarding land procurement, it is important that the process of identifying possible sites for development and budgeting must commence soon. It is essential that this plan be integrated with other development programs in the NMBM.</p> <p>The project should include an evaluation of current infrastructure shortfalls, and future needs linked to future developments.</p> <ul style="list-style-type: none"> • Landfill sites • Transfer Stations • Drop-off centres and drop-off points • Future service areas • Waste strategy <p>Potential land parcels should be identified together with the town planning division and this should be work shopped with the various directorates</p>
Relevant Objectives:	Improved waste infrastructure planning.
Project Team	In-house: Waste Management , Various Directorates, i.e. I & E, Human Settlements (Strategic Planning, Housing Delivery), B&T Outsourced: Consultant
Interest & Affected Parties:	Various NMBM Directorates / Provincial Stakeholders / Councillors / Politicians / Department of Environmental Affairs, Economic and Tourism
Project Duration:	Urgent: Start 2016. 18 months.
Budget:	Capital: R300k.
Financing source:	Operating
Deliverables:	Waste Infrastructure and Operational Demand Masterplan
Project no.:	2
Project title:	Waste Beneficiation and Waste to Energy (Planning Phase)
Project details:	<p>The NMBM commenced with a feasibility study in 2011 to investigate waste to energy options in the NMBM. This culminated in a feasibility study which considered various options for waste beneficiation, including waste diversion, processing and treatment. The project is currently at a final technical feasibility stage. The current recommendation is that a single Waste Park be developed at a single location in NMBM. Waste diversion and beneficiation at the waste park is intended to significantly reduce waste to landfill and reduce transportation and operating costs. There will also be opportunities for revenue generation through recycling and energy production.</p>
Relevant Objectives:	Job creation, energy generation. Increased recycling, decrease is volumes of waste disposed of at the landfill sites.
Project Team	In-house: Waste Management , Various Directorates, i.e. I & E, Human Settlements (Strategic Planning, Housing Delivery), B&T

	Outsourced: Consultant External: Eskom
Interest & Affected Parties:	Various NMBM Directorates / Eskom/ Provincial Stakeholders / Councillors / Politicians Department of Environmental Affairs, Economic and Tourism
Project Duration:	Currently underway
Budget:	TBC
Financing source:	TBC
Deliverables:	Waste Beneficiation and Waste to Energy feasibility report

Project no.:	3
Project title:	Waste Guidelines and Development Requirements for Developers
Project details:	<p>As urban areas expand, it is essential that developers understand their responsibilities for provision of waste management infrastructure. These may range from financial contributions for development of public infrastructure such as transfer stations or drop-off facilities, or design requirements to ensure individual buildings include the correct waste storage facilities and appropriate access.</p> <p>The NMBM will draft guidelines which will serve to advise developers of their waste management responsibilities including:</p> <ul style="list-style-type: none"> • Spatial Reservations • Capital contributions • Type of development in accordance with differential standard
Relevant Objectives:	Improved waste infrastructure planning.
Project Team	In-house: Waste , Infrastructure & Engineering, Human Settlements Outsourced: Engineering / Waste consultant
Interest & Affected Parties:	Town planners, Developers, Investors, Waste contractors
Project Duration:	6 months. Develop guidelines by mid 2017. This project will run together with project 1 Waste Infrastructure and Operations Masterplan
Budget:	R150k.
Financing source:	Operating
Deliverables:	Waste Guidelines and Standards for Developments

Project no.:	4
Project title:	Waste Characterisation
Project details:	<p>A number of waste characterisation initiatives have been undertaken over the years. There has however been a lack of consistency in the methodologies used meaning that comparison of results is done with low confidence.</p> <p>The NMBM will use the approach, undertaken during the 2011 waste characterisations and sampling exercise for the review of this IWMP, and compile a standard to be used for future waste characterisations and sampling which ensures statistical reliability. Protocol used and sample plan to be included.</p>

	<p>Waste characterisations will be undertaken annually in different parts of the NMB area. Each characterisation exercise will be properly documented in a report which presents a full description of the methodology used, the generated raw data, graphical presentation of the data and conclusions.</p> <p>Waste characterisations need to form part of the new organogram and form part of an employee's job description to ensure they are completed..</p>
Relevant Objectives:	Improved waste infrastructure planning and an enabling environment for recycling
Project Team	In-house: Waste Planning & Operations / Provincial department /IWMSA Outsourced: n/a
Interest & Affected Parties:	Waste Management
Project Duration:	Waste characterisation standard completed by December 2016. Annual characterisations
Budget:	Nil. In house.
Financing source:	N/A
Deliverables:	Waste Characterisation and Sampling

Project no.:	5
Project title:	Feasibility Study: Recycling of Domestic Hazardous Waste
Project details:	<p>The National Domestic Waste Collection Standards (GN21 of 2011) now clearly state that municipalities are to create an enabling environment for the recycling of "mainstream recyclables" (paper, cardboard, plastic, glass etc.) and "non-mainstream" recyclables (e-waste, scrap metal, batteries, fluorescent lights, used oil etc.). The NDWCS requires municipalities to facilitate the recycling of "non-mainstream" recyclables (domestic hazardous waste). NMBM does not currently have the facilities to accept domestic hazardous waste and the majority of this waste ends up being disposed of at landfill sites.</p> <p>There are environmental and health & safety challenges with handling this type of waste and the NMBM needs to carefully investigate the viability and costs of available options before committing to them.</p> <p>A feasibility investigation should consider an appropriate level of involvement (e.g. should the NMBM simply assist in publicising the current activities of private service providers or should they provide collection facilities), and possible practical issues (e.g. where and how to locate collection facilities, if deemed appropriate). It will be important that industry plans are in place and this should also form part of the study. Private contractors should be engaged during such a study.</p>
Relevant Objectives:	Provide an enabling environment for recycling.
Project Team	In-house: Waste Management
Interest & Affected Parties:	Waste contractors; General Public, Industries
Project Duration:	12 months June 2020 – June 2021
Budget:	Nil. In house.
Financing	N/A

source:	
Deliverables:	A completed feasibility study

Project no.:	6
Project title:	Revision of Waste Management Organogram
Project details:	<p>The organogram for the Waste Management Sub-directorate was last revised in 2002. Waste management legislation have changed significantly since then and the NMBM requires more human resources in a number of areas including waste planning and enforcement.</p> <p>The need for a review of the organogram was also highlighted in the Illegal Dumping Strategy completed in 2010. A full review of the organogram is to be undertaken. The finalisation of the organogram should be preceded by a full analysis of the core functions and associated logistics i.e. Buildings & Plant etc.</p>
Relevant Objectives:	Improved Waste Infrastructure Planning & Improved Public Perception
Project Team	In-house: Director, Assistant Directors, HR department
Interest & Affected Parties:	Waste Management Sub-directorate staff
Project Duration:	6 months December 2016
Budget:	Nil. In-house
Financing source:	Nil- in house
Deliverables:	Revised organogram

Project no.:	7
Project title:	To pursue the utilisation of Community Based Co-operatives in execution of Waste Management Functions
Project details:	<p>Community Co-operatives are currently performing Waste Management functions in 10 areas of the Metro. A further 30 areas have been identified as an expansion to the current programme.</p> <p>Based on past experiences, the actual scope of work to be performed have been amended, and contracts will vary from a cleaning contract only (earl whilst Ward Based Litter picking project) to a full scale Waste Management Community Co-operatives which will include refuse collection, litter picking and cleansing, manning of drop-off centres and as and when required introducing recycling initiatives.</p> <p>This programme will comply with EPWP principles and will be registered on the EPWP database to report on the number of full time job opportunities created, which will contribute to the job creation initiatives.</p> <p>Training of contractors and supervisory staff in contract administration and contract management aspects will form part of the programme.</p> <p>The NMBM is currently experiencing difficulties in the appointment of co-operatives. The co-ops tenders lapsed in March 2013. The tender requirements (BBBEE certificates, tax clearance certificated etc.) were too onerous for small co-ops and so a number of co-operatives tenders were not accepted.</p>

Relevant Objectives:	To ensure community involvement in Waste Management functions through job creation and skills development.
Project Team	In-house and appointment of temporary project managers/supervisors.
Interest & Affected Parties:	Economic Development EPWP Budget and Treasury Councillors Community
Project Duration:	3 years (Start July 2017)
Budget:	±R15mil per annum
Financing source:	Operating
Deliverables:	A clear and neat environment complying with acceptable norms and standards of Waste Management Functions.

Project no.:	8
Project title:	Wheelie bin replacement policy
Project details:	The NMBM provides each house in a wheelie bin collection area with one wheelie bin. At present there is no policy which governs issuing additional bins. During the period August 2012 – December 2014 the NMBM issued an additional 2,167 wheelie bins. At a unit cost of R 400 this amounts to a total of R 866,800. Residents are requesting new wheelie bins if their bins are stolen or damaged. The waste management depots have exhausted their supply of wheelie bins and there are no wheelie bins currently in stock. A policy is needed to detail the process for replacing wheelie bins which have been stolen or damaged. Residents should be liable for the cost to replace bins which have been stolen or damaged by incorrect use.
Relevant Objectives:	To reduce expenditure on wheelie bin replacements.
Project Team	In-house and appointment of temporary project managers/supervisors.
Interest & Affected Parties:	Community
Project Duration:	6 months . July – December 2017
Budget:	Internal project
Financing source:	TBC
Deliverables:	A clear policy of wheelie bins which can be communicated to residents.

7.2.2 Waste Minimisation Projects

Project no.:	9
Project title:	Develop a Waste Minimisation Strategy
Project details:	<p>The NMBM is currently undertaking and planning for a number of recycling initiatives. There is however no strategy in place which provides the waste minimisation and recycling vision and priority for the city. The strategy should also look at the value chain of recyclables.</p> <p>The NMBM will draft a Waste Minimisation Strategy which answers the questions:</p> <ul style="list-style-type: none"> • What do we want to achieve in the next 10 years on waste minimisation in NMBM? • What are the geographical focus areas? • What are the quick wins? • Where is investment required <p>The strategy will also include an implementation plan.</p>
Relevant Objectives:	Provide an enabling environment for recycling.
Project Team	In-house: Waste Management / Province / National Government / Recycling Industry / Other Municipalities / IWMSA
Interest & Affected Parties:	General public, Politicians, Recycling contractors
Project Duration:	To start after completion of projects 1 and 2. 12 months.
Budget:	R30 000
Financing source:	Operating
Deliverables:	Waste Minimisation Strategy

Project no.:	10
Project title:	“Where and How to Recycle” Information Document.
Project details:	<p>There is a dire need to facilitate recycling in the NMBM area. The National Domestic Waste Collection Standards (GN21 of 2011) now clearly state that municipalities are to create an enabling environment for the recycling of “mainstream recyclables” (paper, cardboard, plastic, glass etc.) and “non-mainstream” recyclables (e-waste, scrap metal, batteries, fluorescent lights, used oil etc.).</p> <p>This could range from provision of appropriate drop-off points or simply the advertising of privately run drop-off points. The 2005 IWMP included a project to investigate options for handling hazardous waste in the domestic waste stream. The project did not materialise as it was not considered a priority at that stage but with new legislation in place the local authority also have a responsibility to facilitate in the recycling of “non-mainstream waste”, which included domestic hazardous waste.</p> <p>In this regard the NMBM will promote the recycling of mainstream and non-mainstream recyclables by determining the location of all municipal and privately operated recycling drop-off points and facilities, confirming their willingness to engage in the project, and then promoting public awareness regarding the location and the type of waste these facilities receive.</p> <p>This information will be mainstream through:</p>

	<ul style="list-style-type: none"> • A published information document with maps • The NMBM website, Waste Exchange • Notices at all municipal landfills, transfer stations and drop-off centres. • Information available at councillors office, Libraries, Customer Care offices, Beach office • Groupwise, Rise-online, Ubuntu magazine and press releases <p>The information document will need to be reviewed every 2 years</p>
Relevant Objectives:	<p>Provide an enabling environment for recycling. Reduce Illegal Dumping Improve Public Awareness Improve Public Perception.</p>
Project Team	<p>In-house: Waste Planner / Development Officer Outsourced: Engage IWMSA contract out the publishing of the information document.</p>
Interest & Affected Parties:	<p>General public / Politicians / Recyclers / Recycling companies / Industries</p>
Project Duration:	<p>6 months. Complete by June 2017. Review every 2 years</p>
Budget:	<p>R100,000</p>
Financing source:	<p>Operating</p>
Deliverables:	<p>Information document on where and how to recycle</p>

Project no.:	11
Project title:	To Facilitate Recycling at Transfer Stations and Drop-off Centres
Project details:	<p>For recycling to be successful, it must be easily accessible to the public. There are presently an insufficient number of municipal and private facilities in NMB where the public can drop recyclables and the existing facilities are mostly privately owned and not spread uniformly throughout the NMBM area.</p> <p>The existing municipal transfer stations and drop-off centres are obvious places to introduce recycling. The collection of recyclables would most likely be undertaken by private recycling companies.</p> <p>NMBM will incorporate recycling facilities into all of its formal transfer stations and drop-off centres (presently 16). Key steps in this initiative to include inter alia, the following:</p> <ul style="list-style-type: none"> • Each transfer station/drop-off centre will have to be assessed to determine infrastructure requirements (if any). May require new surfaced receiving/storage areas. • Permits will have to be reviewed and possibly amended to include recycling. • Engage private recycling companies to understand which materials could be collected and the collection requirements. • Tenders for operating the sites should include recycling (Uitenhage sites) and recycling and managing of the sites (PE sites). • A trained worker will be required at each facility to monitor, educate and assist the public with recyclables, either by NMBM or by the appointed contractor. • Relevant information boards and signage will be required. • An awareness campaign to promote recycling, will be done in each neighbourhood

	<ul style="list-style-type: none"> The requirements of the National Domestic Waste Collection Standards to be considered. The standards for the recycling containers should form part of the specifications of future tenders. <p>The following issues, which caused the failure of previous initiatives like this, must be avoided:</p> <ul style="list-style-type: none"> The wrong contractors were appointed. Recycling was not their core business. The recycling aspect was not made sufficiently lucrative. The recycling area and facilities at the sites were of poor standard. There was insufficient control and inexperienced staff at the sites. Contractor performance was not correctly monitored.
Relevant Objectives :	Provide an enabling environment for recycling.
Project Team	<p>In-house: Prioritisation of transfer stations, review of permit conditions, contract administration,</p> <p>Outsourced: Consultants: oversee upgrading construction contract (if needed)</p> <p>Recycling contractors: collection</p>
Interest & Affected Parties:	General public. Recycling contractors.
Project Duration:	2016: Kragga Kamma 2017 onwards: Two per year thereafter
Budget:	Operational: R50 000 per annum per site
Financing source:	Operating
Deliverables:	To facilitate Recycling at all Transfer Stations and Drop-off Centres. The volume of waste recycled at each site

Project no.:	12
Project title:	To Facilitate In-House Municipal Recycling
Project details:	<p>The NMBM need to lead by example in all areas of waste management including recycling. A paper recycling system was operational on certain floors of Lilian Diedericks Building and has since been terminated. Challenges identified as being part of the failure of this pilot projects included the following: the system proved non-viable to the contractor who was required to pay for the collection of the paper, an inexperienced contractor was used, cleaning staff was reluctant to empty the recycling containers in offices, as it was deemed as extra work, it was difficult for Waste Management as a sub-directorate to enforce this on to other directorates.</p> <p>It is important that a recycling program be reinstated in the larger municipal offices/buildings. The previous challenges should determine the process to be followed when pursuing this project i.e. the financial model need to be reconsidered and an experienced contractor appointed to ensure the system is sustainable. Contractor tasks should include:</p> <ul style="list-style-type: none"> Provision of recycling bins/containers Provision of education and awareness to NMBM staff Collection of recyclables. Expand to other waste streams to ensure that costs are recoverable <p>Appropriate monitoring of volume of paper recycled is to be undertaken.</p>

	The Waste Management Sub-directorate should engage Supply Chain Management on drafting a municipal tender for recycling in municipal buildings.
Relevant Objectives:	Provide an enabling environment for recycling.
Project Team	In-house: Waste Management, Env Management, Supply Chain Management, Corporate Service, Communications, Waste Recyclers & Contractors
Interest & Affected Parties:	All Directorates and NMBM staff.
Project Duration:	Operational by June 2016 and continue indefinitely
Budget:	Collection to be undertaken at no cost to NMBM.
Financing source:	N/A
Deliverables	Amount of paper recycled at each municipal office per month.

Project no.:	13
Project title:	Formal Review of Blue Horizon Bay Recycling Project
Project details:	A Source separation (two bag recycling system) has been operational Blue Horizon Bay since 2008. NMBM has learn lessons through this project, as this was the first recycling project to be undertaken by the municipality and it is important to ensure these are not lost. The NMBM will therefore document all lessons learnt in a formal project review report.
Relevant Objectives:	Provide an enabling environment for recycling.
Project Team	In-house: Waste Management, The Waste Trade Company, Co-operative, Community representative, CLO
Interest & Affected Parties:	NMBM, PIC
Project Duration:	3 months Complete by December 2016
Budget:	Nil. In-house
Financing source:	N/A
Deliverables	Review report compiled

Project no.:	14
Project title:	Expansion of the Two Bag Source Separation Recycling project
Project details:	<p>The National Domestic Waste Collection Standards emphasis the responsibility of all local authorities to facilitate collection of recyclables at source. A two bag collection system for recyclables and general waste is an effective “at source” collection system. It has challenges and cost implications however NMBM has piloted a two bag collection system at Blue Horizon Bay, but need to test this system in other areas to fully understand its feasibility.</p> <p>The NMBM will therefore role out a two-bag collection system in at least one new area. Soweto-on-Sea and Beachview/Seaview area currently being considered.</p>

	<p>The project could involve:</p> <ul style="list-style-type: none"> • Upfront education and awareness campaign in the relevant neighbourhoods (distribution of flyers, the use of the Mobile Exhibition Unit etc.) • Provision of extra bags for recyclables (preferably clear bag) • Collect recyclables (in-house or outsource to contractor) • Secure contract with private contractor to receive and process recyclables. <p>The project should operate for at least 1 year and full reports on the lessons learnt should be documented after a year, to ensure the experience developed is not lost. The success of the initiative will depend to a large extent on the appointed contractor and hence an established, experienced contractor should be appointed.</p>
Relevant Objectives:	Provide an enabling environment for recycling.
Project Team	In-house: Waste Management Outsourced: Recycling contractor
Interest & Affected Parties:	Residents of relevant neighbourhoods
Project Duration:	Implementation by June 2017. To continue indefinitely
Budget:	±R10 000 (annually for clear bags, depending on size of area and participation rate) ±R50 000 (once off per project for equipment i.e. container tables etc.)
Financing source:	Operating - R10 000 per annum per project Capital – R50 000 once off per project
Deliverables	Volume of recyclables collected monthly

Project no.:	15
Project title:	Pilot Centralised Composting at Blue Horizon Bay
Project details:	The Blue Horizon Bay Co-op has been operating a two-bag recycling system in the area since 2008. It was found that there are a significant amount of greens are being collected for households. NMBNM will undertake a feasibility study to investigate options for a centralised composting facility at the transfer site. This study should include various types of viable composting (purchasing of a chipper) and what is saved on transport cost, if containers are emptied less due to the fact that greens are removed. If the project is deemed to be feasible NMBM should assist the Co-op with implementation of a pilot project. This function should be added to future tender specifications of Co-operatives should the project be found to be viable.
Relevant objectives:	Provide an enabling environment for recycling.
Project Team	In-house: Waste Management / Parks / Environmental Management Co-op: Implementation
Interest & Affected Parties:	NMBM, Co-ops, local community
Project Duration:	Feasibility: 6 months to be completed by December 2018 Operational: at least 1 year
Budget:	Feasibility: nil. In-house Start-up costs for equipment: Chipper – R7 800

	Operations: R50 000 (establishment and awareness material)
Financing source:	Operating Budget – R15 000 Equipment – Capital Budget
Key Performance Indicator:	Amount of compost generated. Review report compiled.

Project no.:	16
Project title:	Review and upgrade of online Waste Exchange
Project details:	<p>The NMBM has developed and continues to operate a web-based Waste Exchange aimed at encouraging waste minimisation through the exchange of waste material in the NMBM area and thereby reducing the disposal of waste to landfill.</p> <p>The NMBM will document lessons learnt from this process in a formal review report which could be published as an article/paper. Following the review of the Waste Exchange the system will be upgraded as appropriate.</p>
Relevant Objectives:	Provide an enabling environment for recycling.
Project Team	In-house: Waste Management, Communications Outsourced: Website host
Interest Affected Parties:	NMBM, Users of WX, General public, Local business, industry and recycling companies
Project Duration:	6 months , January – June 2018
Budget:	Report: nil. In-house Upgrading of Waste Exchange: R30 000 Marketing: R50 000
Financing source:	Operating
Key Performance Indicator:	Review report compiled.

7.2.3 Waste Collection

Project no.:	17
Project title:	Increasing the frequency of refuse collection in low to medium income areas to once a week.
Project details:	<p>According to requirements in the National Domestic Waste Collection Standards, households should receive a weekly refuse collection service. The provision of weekly collection service to all households in the NMBM is addressed in the Illegal Dumping Strategy and it has been defined that a period of three years is required to increase the frequency to all affected areas. A public awareness campaign will be required as part of the process to inform residents of the new collection dates. The NMBM has piloted a weekly collection service in areas historically serviced on a fortnightly basis. This programme must be expanded to other areas.</p>
Relevant Objectives:	Reduce illegal dumping. Compliance with the National Domestic Waste Collection Standards.
Project Team	In-house: Waste Operations / Workstudy / Politicians (Ward Councillor) /Communications

Interest Affected Parties: &	General public in affected areas, politicians
Project Duration:	2 years July 2016 – June 2017
Budget:	R40 000 000 Capital: R18,000 000
Financing source:	Operating Capital
Deliverables:	Increasing the frequency of refuse collection in low to medium income areas to once a week.

Project no.:	18
Project title:	To investigate the most appropriate and cost-effective utilisation of Municipal Fleet in Waste Management
Project details:	<p>Currently the Waste Management Directorate is rendering services by making use of the vehicles allocated to it by Fleet Management Sub-Directorate located under Infrastructure and Engineering Directorate. During times when there are shortages of fleet i.e. breakdowns, clean-up campaigns additional and replacement fleet/plant will be hired from external service providers (again via a Fleet Management tender from external suppliers as and when required).</p> <p>This situation may lead to underutilisation, or in-effective utilisation, as the urgency and dedication to make vehicles available may be lacking when having to procure via another Sub-directorate.</p> <p>An investigation will be undertaken with regards to, into alia, the following aspects in order to arrive at the most cost effective utilisation of plant.</p> <ul style="list-style-type: none"> • Overall condition of allocated vehicles. • Budgeted cost at which vehicles are made available by Fleet Management. • Actual utilisation versus downtime of vehicles. • Communication channels with Fleet Management regarding allocations and hiring of vehicles. • Communication channels regarding servicing and mechanical repairs to vehicles with Automotive division • Confirmation as to whether Waste Management should be in full control of its fleet or not. • Improved processes and procedures for the replacement of redundant vehicles, and/or the purchasing of new vehicles. • Interaction with other Metro's in understanding how they deal with the Waste fleet.
Relevant Objectives:	To ensure an improved and more cost effective management of fleet utilised by Waste Management.
Project Team	In-house
Interest Affected Parties: &	Fleet Management Sub-directorate Budget and Treasure Directorate
Project Duration:	12 Months, July 2016 – June 2017
Budget:	R50 000
Financing source:	Operating
Deliverables:	Establishment of effective procedures and controls to ensure cost-effective utilisation of fleet in Waste Management Functions.

7.2.4 Waste Transfer & Disposal

Project no.:	19
Project title:	Increasing the number of Transfer stations / Drop-off Centres in line with Waste Management Strategy
Project details:	Additional waste drop-off centres and transfer stations are required throughout the NMBM area but especially in low income areas where most residents do not have transport to travel long distances. The drop-off centres and transfer stations can be equipped with recycling facilities to fulfil the requirement in the Eastern Cape Provincial IWMP. Application for appropriate licences with DEDEAT. This project will follow the Waste Master Plan.
Relevant Objectives:	A total of thirty new transfer stations (3 per year)
Project Team	In-house: Waste Management (AD Disposal), Various Directorates, i.e. I & E, Human Settlements (Strategic Planning, Housing Delivery), B&T, Province Outsource: Consultants, contractors
Interest & Affected Parties:	General public, politicians, DEDEAT
Project Duration:	10 years commencing in 2016.
Budget:	Operating: R1,200,000 / site / annum Capital: R60,720,000
Financing source:	Operating: Capital:
Deliverables:	Three new transfer stations with recycling facilities per annum – a total of 30 over a ten year period

Project no.:	20
Project title:	Ensure compliance with all permit conditions and applicable legislation at Landfill Sites.
Project details:	Arlington and Koedoeskloof are being expanded on continuous basis, and in order to ensure compliance with permit conditions, 5-year implementation programmes are currently being prepared. From audits conducted, certain operational management procedures need to be attended to, e.g. Presence of litter pickers, and some upgrading of access control measures.
Relevant Objectives:	Improve infrastructure management
Project Team	In-house: Waste Management / Safety and Security / DEDEAT / SAPS Outsourced: Consultants
Interest & Affected Parties:	General Public / Contractors / Waste Transporters / Industry & Commerce
Project Duration:	5 years. Commencing in 2016.
Budget:	Nil
Financing source:	Capital
Deliverables:	Compliance and creation of additional capacity

7.2.5 Illegal Dumping

Project no.:	21
Project title:	Implementation of the Illegal Dumping Strategy
Project details:	<p>The NMBM drafted an Illegal Dumping Strategy in 2010 which has since been adopted by council. The strategy maps out steps to be taken in the short, medium and long term in order to curb the high levels of dumping currently experienced in the NMB area.</p> <p>These include:</p> <ul style="list-style-type: none"> • Immediate actions: appoint additional town rangers, awareness projects, revise by-law schedule and identify redundant municipal land • Short term actions: addressing hot spots, and undertaking community projects • Medium to long term expenses: clearing illegally dumped waste, increasing frequency of collections, and improving capital infrastructure. <p>NMBM will implement this strategy in a phased manner to accommodate budget restrictions.</p>
Relevant Objectives:	Reduce illegal dumping
Project Team	In-house: Waste Management, other directorates, B & T Outsourced: Consultants
Interest & Affected Parties:	General public, Politicians
Project Duration:	To be implemented as funds allow: Immediate actions: by 2017 Short term actions: by 2019 Medium to long term: by 2021+
Budget:	Immediate actions: R540k Short term actions: R5.6million Medium to long term: R110million
Financing source:	Capital Operating
Deliverables:	Successful implementation of each of the tasks defined in the strategy

7.2.6 Public Awareness & Communication

Project no.:	22
Project title:	Public Awareness Strategy & Plan
Project details:	<p>The Waste Management undertakes education and awareness activities continuously, however these are not guided by a specific strategy and plan. Waste Management will therefore develop a Public Awareness Strategy and Plan which will provide:</p> <ul style="list-style-type: none"> • Background to what has been undertaken to date, and what the current expected awareness initiatives are. • A review of what works and what does not. • A vision, objectives and targets for awareness raising activities. • Aligning awareness programs to address problems highlighted in audits of illegal dumping hotspots • A plan for implementation thereof.

Relevant Objectives:	Improve Public Awareness
Project Team	In-house: Development Officers and CLOs. Outsourced: nil
Interest & Affected Parties:	NMBM Community Liaison Officers, general public, politicians
Project Duration:	12 months, July 2016 – June 2017
Budget:	Nil. In-house
Financing source:	N/A
Deliverables:	Strategy & plan

Project no.:	23
Project title:	Public Awareness & Education programme - review
Project details:	<p>The NMBM's on-going awareness and education activities include distribution of flyers and awareness with the Mobile Exhibition unit at community events, door to door visits, schools, businesses etc.</p> <p>To enhance this on-going programme NMBM will:</p> <ul style="list-style-type: none"> • Undertake an annual review of the success of activities for the year. The cost versus effectiveness of the programmes needs to be analysed to identify the best use of funds. • Undertake a formal review of awareness material and update as needed • Consider expanding the programme to include "give aways" e.g. pens and caps as means of raising more public interest. • Assess the current problems experienced and develop appropriate education and awareness material for each
Relevant Objectives:	Improve Public Awareness
Project Team	In-house: Waste Management Planning & Operations Outsourced: Design and printing of material. Sponsorship of "give aways"
Interest & Affected Parties:	NMBM Community Liaison Officers, general public, politicians
Project Duration:	6 months, July – December 2016. Annual review. Programme on-going
Budget:	Updated material: R50,000 Give aways: R50,000
Financing source:	Operating budget and sponsorship
Deliverables:	Programme formally reviewed annually

Project no.:	24
Project title:	Preparing a Public Perception Protocol document
Project details:	It is important that residents of the NMB area are satisfied with the waste service for which they are paying. In order to determine the perception that residents have of waste management in NMBM, a perception survey will be carried out on a 5-yearly basis together with the revision of the IWMP. A

	standard assessment system should be adopted by the NMBM so as to facilitate comparison of results. .
Relevant Objectives:	Improve Public Perception of Waste Management
Project Team	In-house: Waste Management Planning Outsourced: Survey outsourced to consultants.
Interest & Affected Parties:	General public, politicians, Waste Management Sub-directorate
Project Duration:	Duration: 6 months. Frequency: 5 yearly review Next review 2020 - 2021
Budget:	R100,000
Financing source:	Operating
Deliverables:	Public Perception Survey Report

Project no.:	25
Project title:	Review of the Complaints Management System
Project details:	<p>The National Domestic Waste Collection Standards (GN21 of 2011) set clear standards for managing incoming complaints. Complaints must be responded to with 24hrs and a register of complaints received and actions taken must be maintained. At present complaints have many entry points into the Public Health Directorate and the Waste sub-directorate. This include the central NMBM complaints line situated at the JOC, the individual waste depots, the management offices in Lillian Diedericks House and 14th floor Public Health Help Desk.</p> <p>The Public Health Directorate had previously established a directorate-specific complaints line but this has since stopped operating. The Waste Management Sub-directorate will investigate options for meeting the requirements of the above standards and implement a system that is deemed appropriate and that are in line with the current systems used in NMBM.</p>
Relevant Objectives:	Improve Public Perception
Project Team	In-house: Waste Management / Corporate Service / Admin /IT Outsourced: Consultants
Interest & Affected Parties:	General public, politicians, WM employees
Project Duration:	24 months, Investigation to be completed by December 2016.. Implementation by June 2019.
Budget:	R50 000
Financing source:	Operating
Deliverables:	Investigation in to current systems and implementation of a system

Project no.:	26
Project title:	Develop an information leaflet on "How to handle your waste"
Project details:	<p>The National Domestic Waste Collection Standards (GN21 of 2011) stipulate that local authorities have a responsibility to produce guidelines for domestic waste management. A leaflet has been developed for the rural areas (farms, small holdings) with information on "how to handle your waste". A similar leaflet should be developed for the urban areas.</p> <p>There is presently a shortage of accessible information for residents on key waste management issues i.e. what services are rendered, information on what is not allowed according to the by-laws etc.</p> <p>When compiling a guideline document for public consumption which will address:</p> <ul style="list-style-type: none"> • Kerb-side collections: What is acceptable, what is not and how to tell the difference. • Recycling: What is recyclable, separating at source, and where to drop-off. • Hazardous waste: What to do with your hazardous domestic waste. • Illegal dumping, by-laws and the applicable fines. <p>The information should be available on the NMBM website. The information should be revised at least every second year.</p>
Relevant Objectives:	Provide and Enabling Environment for Recycling Reduce Illegal Dumping Improve Public Awareness Improve Public Perception
Project Team	In-house: Waste Management, Communications Outsourced: Marketing Company
Interest & Affected Parties:	All NMBM residents
Project Duration:	Publish 2016. Revisions in 2017 and 2019
Budget:	Development and Printing: R100 000
Financing source:	Operational
Deliverables:	Information leaflet

Project no.:	27
Project title:	Waste Information Calendar
Project details:	<p>NMBM will produce a Waste Information Calendar for public distribution. The purpose of the calendar will be to mainstream responsible waste management practices in the metro. The following could be considered:</p> <ul style="list-style-type: none"> • Investigate the appropriate way (i.e. tender route, appointment of marketing company etc.) • To be collection area (depot) specific. • Display information to include local recycling facilities, waste complaints numbers, emergency numbers. • Funded through advertisements from local businesses.
Relevant Objectives:	Provide and Enabling Environment for Recycling Reduce Illegal Dumping

	Improve Public Awareness Improve Public Perception
Project Team	In-house: Waste Management, Communications, Supply Chain Outsourced: Marketing and advertisements company (developing and printing)
Interest & Affected Parties:	All NMBM residents
Project Duration:	Publish by September 2016. Review bi-ennially.
Budget:	R50 000
Financing source:	Funded through advertisements on calendar
Deliverables:	Distribute calendar to all households in NMBM

7.2.7 Information Management

Project no.:	28
Project title:	In-house Waste Information Portal
Project details:	NMBM holds a significant amount of waste related information (legislation, waste related data, past reports, maps etc.) electronically. In order to ensure that staff has access to this information, the location thereof will be formalised on a system located on the intranet. Training will be provided regarding what is available and where it can be found. Information will be loaded and updated as appropriate.
Relevant Objectives:	n/a
Project Team	In-house: Waste Management, IT Outsourced
Interest & Affected Parties:	Waste Management Sub-directorate staff
Project Duration:	July - December 2017. Ongoing.
Budget:	R25 000
Financing source:	Operating
Deliverables:	Accessibility of data. Training of staff.

Project no.:	29
Project title:	Review of the weighbridge software and the current categorisation of waste at landfill sites.
Project details:	The current weighbridge software is becoming outdated and it is difficult to upgrade. Reporting functions is not included and the system is getting slower as more data is added. Some of the categories used for the classification of waste at weighbridges at landfill sites are non-descriptive and not in line with the National WIS reporting requirements. The standardised classification of waste is critical as well as the reporting on the waste disposal statistics.

	<p>The NMBM will therefore undertake a review of its current weighbridge software and update waste classification including:</p> <ul style="list-style-type: none"> • Alignment of waste categories and codes with National norms and standards. • Upgrading of existing software to be capable of generating statistical reports as this is now a legal requirement. • Upgrading of overall measurement and recording system at Landfill Sites. • Assess the effect of new waste categorization on current tariffs.
Relevant Objectives:	Improved waste disposal recording and reporting system.
Project Team	In-house: Waste Management, IT Outsourced: Consultants
Interest & Affected Parties:	Waste Management Sub-directorate staff
Project Duration:	2017. On-going.
Budget:	R50 000
Financing source:	Capital
Deliverables:	Revision of systems. Training of staff.

7.2.8 Legislation & Enforcement

Project no.:	30
Project title:	Review By-laws
Project details:	The NMBM Waste Management by-laws were adopted in 2010. The process of drafting these however began a number of years prior to the National Environmental Management: Waste Act (59 of 2008). The by-laws need to be revised as to include gaps identified between the current by-laws and the Waste Act. By-laws should be reviewed and updated on a 5 yearly basis as needed.
Relevant Objectives:	Reduce illegal dumping Improved public perception
Project Team	In-house: Waste Management / Legal / B&T / Traffic Outsource: Consultant
Interest & Affected Parties:	All NMBM residents, politicians, Waste Management Sub-directorate
Project duration:	The waste management by-laws will be reviewed together with the by-laws for the Public Health Directorate.
Budget:	R50 000
Financing source:	Operating
Deliverables:	Revised waste management by-laws

Project no.:	31
Project title:	Enforcement strategy
Project details:	<p>The NMBM is in the process of developing an enforcement unit who will be responsible for by-law enforcement focusing largely on illegal dumping. A strategy or plan will be required to guide this process. NMBM will therefore draft a strategy which will consider:</p> <ul style="list-style-type: none"> • Fining protocols • How to apply penalties • Recovery systems • How waste will work with other departments e.g. DEDEAT etc. • Identify staff that can act as Town Rangers or trained as Town Rangers • Identify training for staff • Include CCTV Control rooms functions
Relevant Objectives:	Reduce illegal dumping Improved public perception
Project Team	In-house: Waste Management / Town rangers Outsourced: N/A
Interest & Affected Parties:	All NMBM residents, Waste Management Sub-directorate
Project Duration:	6 months January – June 2017.
Budget:	nil
Financing source:	N/A
Deliverables:	Enforcement strategy

7.2.9 Staff Development

Project no.:	32
Project title:	Review of Induction Material
Project details:	All newly appointed waste management staff to undergo induction training conducted and facilitated by the Waste Management Sub-directorate. The material used for induction training will be subjected to formal review every two years to ensure the content is current.
Relevant Objectives:	N/A
Project Team	HR Corporate Services / Admin / IT / Waste Management Developmental Officer / Health and Safety
Interest & Affected Parties:	Other relevant directorates, Waste Management / new staff
Project Duration:	Review by December 2016. Thereafter every 2 years
Budget:	N/A

Financing source:	N/A
Deliverables:	Induction material up to date

Project no.:	33
Project title:	Review of Skills Plan and Identify Relevant Waste Training
Project details:	<p>There is a need to capacitate the Waste Management Sub-directorate staff, particularly with regards to technical aspects of waste management. Guidelines should be drafted of the skills requirements per job description. The existing skills development plan should be altered according to these guidelines. This plan will be reviewed and updated annually, together with a review of available waste management courses and will be approved by the Skills Development Focus Group.</p> <p>Waste Management courses need to be approved by NMBM and the Local Government SETA And placed on the approved list of service providers.</p>
Relevant Objectives:	N/A
Project Team	<p>In-house: Waste Management Planning & Operations, Corporate Services, IWMSA, NMMU, other service providers</p> <p>Outsourced: Service providers</p>
Interest & Affected Parties:	Waste Management Sub-directorate staff
Project Duration:	Approval of WM courses by March 2017. Review annually.
Budget:	N/A
Financing source:	N/A
Deliverables:	Revised skills plan

Project no.:	34
Project title:	IWMP Awareness Campaign. Repeat in-house awareness campaign
Project details:	<p>The objectives and planned projects as documented in this IWMP should be communicated to the Waste Management Sub-directorate staff through an internal awareness campaign. This should include issuing all staff with a cap that can form part of the protective clothing issued to staff.</p> <p>Update sessions should thereafter be held in order to inform staff of progress made on key projects and where general awareness for waste management issues can be raised using, for example, campaign materials developed previously by WESSA.</p>
Relevant Objectives:	<p>Provide and Enabling Environment for Recycling</p> <p>Improve Public Awareness</p>
Project Team	In-house: Dev Officer/CLO's
Interest & Affected Parties:	Waste Management Sub-directorate staff
Project	December 2016, follow up annually.

Duration:	
Budget:	±R50 per cap with wording. Depending on quantity order price will be less.
Financing source:	Operating
Deliverables:	Internal Awareness campaign

7.2.10 Financial

Project no.:	35
Project title:	Investigate possible alternative funding sources
Project details:	There is an ever increasing demand to provide adequate Infrastructure in order to reward acceptable levels of waste removal. With current limits set for provision on capital budgets, it has become critical that possible alternative sources of funding be identified, together with the requirements for accessing such funds. The possibility of forming PPP's will be included. This project will entail the investigation of alternative sources of funding, and preparing a manual for use as and when suitable projects are identified. Identified projects can also be linked with sources upfront.
Relevant Objectives:	Receive financial demand on internal funding of capital projects.
Project Team	In House : Waste Management
Interest & Affected Parties:	Semi-Government departments, selected private enterprises
Project Duration:	6 months, January – June 2017
Budget:	R20 000
Financing source:	Operating
Deliverables:	Database on alternative funding sources

8 Conclusion and Way Forward

8.1 Approvals

This IWMP was approved by council on 01 December 2016 and has been adopted for implemented by the Waste Management Sub-directory. The plan was also submitted, as required by the National Environmental Management: Waste Act (59 of 2008), for endorsement by the DEDEAT Member of Executive Council, Mcebisi Jonas. The IWMP was endorsed on 28 March 2017.

8.2 Monitoring and Progress of the IWMP

Regular and on-going monitoring of the IWMP is required to ensure the objectives of the IWMP are accomplished. Monitoring of the success of projects during the IWMP implementation phase will ensure that corrective action is taken when necessary.

There is a legal requirement under section 13(2) of NEMWA for reports on IWMP implementation to be compiled. The reports must present:

- a) the extent to which the plan has been implemented during the period;
- b) the waste management initiatives that have been undertaken during the reporting period;
- c) the delivery of waste management services and measures to be taken to secure the efficient delivery of waste management services, if applicable
- d) the level of compliance with the plan and any applicable waste management standards;
- e) the measures taken to secure compliance with waste management standards;
- f) the waste management monitoring activities;
- g) the actual budget expended on implementation of the plan;
- h) the measures that have been taken to make any necessary amendments to the plan;
- i) in case of a province, the extent to which municipalities comply with the plan and in the event of a non-compliance with the plan, the reasons for such a non-compliance

NMBM currently uses a set of key performance indicators (KPIs) to assess the waste management service and set targets on a quarterly basis. The table below outlines the KPIs for the period September 2011 – June 2012.

Table 38: NMBM Waste Management KPIs 2015/16.

Key performance indicator (KPI)	Quarter ending 30 Sept 2015 target	Quarter ending 31 Dec 2015 target	Mid-term accumulative target (1 July 2015 - 31 Dec 2015)	Quarter ending 31 March 2015 target	Quarter ending 30 June 2016 target	Annual accumulative target (1 Jul 2015 - 30 Jun 2016)
% households within the urban edge receiving a domestic waste collection service (excluding informal areas on privately owned erven and erven not earmarked for human settlements development)	99%	99%	99%	99%	99%	99%
Number of households within the urban edge receiving a weekly waste collection service (converted from a bi-weekly to weekly service)	30 000	5 000	35 000	Consultation with relevant role-players completed	22 000	57 000

The above KPIs do however not fulfil the IWMP monitoring and reporting requirements, as defined in NEMWA. They do not indicate the success of the individual IWMP projects. It is suggested that NMBM continues to set targets and review the KPIs on a quarterly basis but in addition to the KPIs develop a review process which evaluates the success of IWMP implementation, and considers each project separately.

8.2.1 IWMP Close-down Report

The IWMP close down report is produced at the end of the IWMP 5 year implantation period and is used to review the success of projects. An IWMP closedown report was completed in 2010 to inform the Public Health Standing Committee on the progress of the IWMP for the period July 2005 to July 2010. The closedown report was used to evaluate the achievement and failures of the projects proposed in the 2010 IWMP and list projects to be differed to the 2012 IWMP. A closedown report will be completed at the end of 2020 to summarise the implementation of projects for the period 2016 - 2021.

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APPENDIX A

Policy and Legislation

10 Policy and Legislation

South Africa has a host of legislated acts, policies and guidelines relating to waste management, the most significant of these being the newly promulgated National Environmental Management: Waste Act (58 of 2008) which is now the country's central piece of legislation dealing with waste management. There are also certain relevant international conventions to which South Africa subscribes. This section discusses these acts, policies, guidelines and conventions thereby providing a context to waste policy and legislation. Where applicable it highlights aspects of these acts and policies which apply specifically to the local government authorities.

This section is not exhaustive but presents the broader legislative framework and highlights the more important aspects thereof.

10.1 International Conventions

10.1.1 Basal Convention

The Basel Convention on the control of trans-boundary movement of hazardous wastes and their disposal was drafted in 1989.

The Basel Convention is a global agreement which seeks to address the trans-boundary movement of hazardous waste. The convention is centred on the reduction of the production of hazardous waste and the restriction of trans-boundary movement and disposal of such waste. It also aims to ensure that strict controls are in place when any trans-boundary movement and disposal of hazardous waste does occur, and ensures that it is undertaken in an environmentally sound and responsible manner.

The Basel Convention, held on 22 March 1989, came into effect during May 1992 after ratification by the prerequisite number of countries. South Africa ratified the Convention in 1994, with DEA being the focal point for the convention. Whilst South Africa subsequently acceded to this Convention, no legislation was passed at the time to give effect to it. The second Basel convention, held on 8 October 2005, set standards for the control of trans-boundary movements of hazardous wastes and their disposal, setting out the categorization of hazardous wastes and the policies for their disposal between member countries. South Africa accedes to this convention and implements its provisions.

The key objectives of the Basel Convention are:

- To minimise the generation of hazardous wastes in terms of quantity and hazardousness;
- To dispose of hazardous waste as close to the source of generation as possible;
- To reduce the movement of hazardous wastes.

Locally, draft regulations are being prepared in an effort to control the movement of such waste.

The most significant provisions of the Convention relate to the ban on certain importations and exportations; illegal traffic, bilateral, multilateral and regional agreements and the control system of the Convention.

The Basel Convention contains specific provisions for the monitoring of implementation and compliance. A number of articles in the Convention oblige parties (national governments which have acceded to the Convention) to take appropriate measures to implement and enforce its provisions, including measures to prevent and punish conduct in contravention of the Convention.

10.1.2 Rotterdam Convention

The Rotterdam Convention was held in September 1998 to promote shared responsibilities in relation to importation of hazardous chemicals. One of the key provisions is the Prior Informed Consent (PIC) procedure, which lists information on hazardous chemicals in Annex III. It became legally binding for its parties in 2004. The convention promotes open exchange of information and calls on exporters of hazardous chemicals to use proper labelling, include directions on safe handling, and inform purchasers of any known restrictions or bans. Parties can decide whether to allow or ban the importation of chemicals listed in the treaty, and exporting countries are obliged to make sure that producers within their jurisdiction comply. From this convention a PIC circular is distributed every six months giving updated information on the listed chemicals, member compliance and sources of supporting information.

10.1.3 Stockholm Convention

In 1995 the United Nations Environment Programme called for global action to be taken on persistent organic pollutants (POPs), which pose a threat to both health and the environment. As a result, the negotiations for the Stockholm Convention on POPs were initiated and culminated in May 2001, with the convention enforced in May 2004. South Africa accedes to this convention, whereby member countries have agreed to phase out POPs, and prevent their import or export. It imposes restrictions on the handling of all intentionally produced POPs, i.e. identified highly toxic, persistent chemicals.

The 12 POPs that have been identified under the convention are aldrin, chlordane, dieldrin, dichloro-diphenyl-trichloroethane (DDT), endrin, Hexachlorobenzene (HCB), heptachlor, mirex, polychlorinated biphenyls (PCBs), toxaphene, dioxins, and furans. Of the aforementioned substances, two are still used in South Africa today (DDT and PCBs), although their use is restricted under the 'Fertiliser Act' as administered by the Department of Agriculture. The above list of chemicals is relevant, especially where there is any management of obsolete and banned pesticides.

South Africa negotiated the continued use of DDT, as it has proved critical in the fight against malaria, and PCBs will be phased out as the electrical appliances that contain them become obsolete.

In 2005 South Africa, at the Reduce, Reuse and Recycle Ministerial Conference, became one of 7 countries to sign an agreement for the African Stockpile Programme, a project aimed at recovering and the appropriate disposal of obsolete pesticides. With funding (\$1,7million) from the World Bank, government began implementing the programme.

The country is also developing guidelines for the implementation of the Globally Harmonised System of Classification and Labelling of Chemicals. The funding was

for the disposal of obsolete pesticides as part of the African Stockpile Programme. The department has begun implementing this programme throughout the country. Further work on training workers to handle chemicals was rolled out.

By mid-2007, a pilot project for the collection of all obsolete pesticides possessed by farmers in the Limpopo Province had begun, and this involved, amongst others, identification of collection points and collection of obsolete pesticides within the province. These stocks were further consolidated from various collection points to a central collection point and ultimately safeguarded and shipped to Holfontein Waste Disposal Site for temporary storage. The inventory of pilot project stocks has been undertaken. About 100 tons of labelled and unlabelled stocks of obsolete pesticides have been collected through this pilot project. The pilot project is expected to serve as a benchmark for the roll-out of projects in other provinces.

However, as the amount of obsolete pesticide stocks collected from the Limpopo pilot project is significantly higher than what was anticipated, it has become apparent that the remaining funds in the World Bank African Stockpile Programme budget will not be sufficient for national rollout of the programme. The African Stockpile Programme Project Management Unit has had numerous deliberations in an effort to come up with a sustainable solution for management of pesticides in the country¹.

10.1.4 London Convention on the Prevention of Marine Pollution by Dumping of Waste and Other Matters, 1972

The London Convention on the Prevention of Marine Pollution by Dumping of Waste and Other Matter, 1972, aims to prevent marine pollution by preventing the dumping of wastes such as industrial waste, sewage sludge, dredged material and radioactive waste at sea, as well as incineration at sea. South Africa is a signatory to the convention and the associated 1996 Protocol.

This convention and its various protocols were incorporated into the following South African legislation:

- Prevention of Pollution from Ships Act (Act 2 of 1986), and the regulations concerning the Prevention of Pollution by Garbage from Ships Regulations (GN R1490, published in Government Gazette No. 14000, dated 29 May 1992).
- The Dumping at Sea Control Act (Act 73 of 1980).

The primary responsible agency is the DEA Sub Directorate of Marine and Coastal Pollution Management who issue permits for dredge spoils and sinking of old vessels. It occasionally issues permits for ships in trouble, typically grounded, to release their cargo into the sea.

10.1.5 Local Agenda 21

AGENDA 21 is a comprehensive document for global action on the environment and sustainable development, to take the world into a more sustainable 21st century. It is likely the most important document to be adopted by the UN Conference on the Environment and Development (UNCED) at the Rio de Janeiro Summit in June 1992. The 40 chapters covered a wide range of issues including the atmosphere, oceans, land resources, poverty, etc.

¹ For more information contact Ms. Nomphele Daniel, Tel: 012 310 3904, email: ndaniel@deat.gov.za

It was important for each nation to develop its own local Agenda 21, in order to translate and interpret the principles of sustainable development to local areas. Local Agenda 21 focuses on developing partnerships involving the public, private and community sectors that together can resolve urban environmental management problems and strategically plan for long term sustainable environmental management. One of the key features of sustainable development is the requirement to integrate economic and environmental factors into all decision making processes. Applications of these criteria to waste management require a new emphasis on resource and energy conservation, ensuring that supplies of raw materials, sources of energy and the quality of the physical environment can be maintained. Agenda 21 initiatives are considered to be an essential vehicle for the implementation of various aspects of the IWMP. The key goals of Agenda 21 are:

- Sustainable development
- Eradication of poverty
- Elimination of threats to the environment
- To ensure a sustainable environment
- Creation of sustainable job opportunities

The focus of the IWMP is to strive to attain the above goals in all facets thereof. The following seven key activities require attention in order to satisfy Local Agenda 21.

- Garnering local political support.
- Managing and improving local authorities own environmental performance.
- Integrating sustainable development aims within local authorities' policies and activities.
- Awareness raising and education.
- Consulting and involving general public.
- Forging partnerships with other interest groups and activities.
- Measuring, monitoring and reporting on progress toward sustainability.

10.2 South African Legislation (Acts)

10.2.1 Constitution of the Republic South Africa (1996)

The South African Constitution (Act 108 of 1996) is the supreme law of South Africa. Any law or conduct that is inconsistent with it, is invalid, and the obligations imposed by it must be fulfilled. Therefore, as such, all law, including environmental and waste management planning must consider compliance with the Constitution of South Africa.

The Constitution contains a Bill of Rights, set out in Sections 7 to 39. The Bill of Rights applies to all law and binds the legislature, the executive, the judiciary and all organs of state. A provision of the Bill of Rights binds a natural or a juristic person if, and to the extent that it is applicable, taking into account the nature of the right and the nature of the duty imposed by the right.

Section 24 of the Constitution guarantees everyone the right to:

- An environment that is not harmful to their health or well-being; and
- to have an environment protected for the benefit of present and future generations, through reasonable legislative and other measures that:
- prevent pollution and ecological degradation;
- promote conservation; and

- secure ecologically sustainable development and use of natural resources while promoting justifiable economic or social development.

The environmental rights (Section 24), is strengthened by other relevant fundamental rights, such as the rights of access to information and administrative justice.

(a) National and Provincial authority competence

General obligations imposed by the constitution on national and provincial government institutions are adjudicated, as the Constitution establishes an administrative framework for all organs of state. The national and provincial governments are concurrently entitled to legislate on matters stipulated in Schedule 4 of the Constitution. Both spheres of government have legislative competence over areas that will impact on management in the natural/urban interface, like environment, disaster management, nature conservation and pollution control, and would therefore also frame related matters such as waste management. It should also be noted that the Constitution contemplates the assignment, from national Government to the provinces, of functions that would normally be the exclusive preserve of the former.

Subsection 24(b) of the Constitution relates to the constitutional imperative requiring government to enact appropriate environmental law reform legislation. This led to the promulgation of the National Environmental Management Act (Act 107 of 1998, NEMA)² and the National Water Act (Act 36 of 1998)³ amongst others. More specifically to the objective of this framework is the National Environmental Management: Waste Act, which was recently enacted⁴.

Important to the development of a local integrated waste management strategy and plan is that in accordance with Section 155(6) of the Constitution each provincial government must establish municipalities in its province and, by legislative or other measures, must –

- (a) provide for the monitoring and support of local government in the province; and
- (b) promote the development of local government capacity to enable municipalities to perform their functions and manage their own affairs.

Furthermore in according to Section 155(7) the national government and the provincial governments have the legislative and executive authority to see to the effective performance by municipalities of their functions in respect of matters listed in Schedules 4 and 5, by regulating the exercise by municipalities of their executive authority referred to in section 156 (1).

(b) Local authority competence

National and provincial government are both obliged, by legislative and other measures, to support and strengthen the capacity of municipalities to manage their affairs, to exercise their powers and perform their functions within the individual municipal jurisdiction. This responsibility is covered in Chapter 7:

In terms of section 152 of the Constitution the objects of local government are to:

² Refer to **Section 3.3.2**

³ Refer to **Section 3.3.7**

⁴ Refer to Section 3.3.9

- Provide democratic and accountable government for the local community;
- Ensure the provision of services to communities in a sustainable manner
- Promote social and economic development
- Promote a safe and healthy environment; and
- Encourage the involvement of communities and community organisations in the matters of local government.

A municipality must in terms of section 153 structure and manage its administration and budgeting and planning processes to give priority to the basic needs of the community and participate in national provincial development programmes.

National and provincial government are also obliged to assign to a municipality, by agreement and subject to any conditions, the administration of matters listed in the relevant parts of Schedules 4 and 5 and any other matter which would be most effectively administered locally, provided that the municipality has the capacity to administer it. A municipality has the right to exercise any power concerning a matter reasonably necessary for, or incidental to, the effective performance of its functions.

Those areas of the urban/natural interface zone that fall within the legislative and jurisdictional competence of provincial or local authorities (for example a road reserve or urban areas that border a park) fall to be regulated by those authorities. The Constitution aims to co-ordinate the different levels of government and the management of the issues which the public institutions constituted or confirmed by them are charged with governing. This requires co-operation on the part of different organs of state. The above statements become pertinent to waste management as it sets the context of the administrative activities convened at the Local government level. In addition, related to local government in terms of section 152(1)(d) of the constitution, one of the objectives of local government is “to promote a safe and healthy environment”.

Municipalities are further charged with making, administering and enforcing by-laws for the effective administration of the matters of which they have the right to administer. Any bylaw that conflicts with national or provincial legislation is deemed invalid. In accordance with Section 160(4) no bylaw may be passed by a Municipal Council unless all the members of the Council have been given reasonable notice; and the proposed by-law has been published for public comment. Furthermore, in accordance with Section 162 no bylaw may be enforced unless it has been published in the relevant official provincial gazette and the bylaw must be accessible to the public.

10.2.2 National Environmental Management Act (Act 107 of 1998)

The National Environmental Management Act (Act 107 of 1998) commonly known as “NEMA” gives effect to the “Environmental Right” of the Constitution and is South Africa’s overarching framework for environmental legislation. The objective of NEMA is to provide for operative environmental governance by establishing principles for decision-making on matters affecting the environment, institutions that will promote co-operative governance, and procedures for co-ordinating environmental functions exercised by organs of state. An important function of the Act is to serve as an enabling Act for the promulgation of legislation to effectively address integrated environmental management.

NEMA sets out a number of principles that aim to implement the environmental policy of South Africa. These principles are designed to serve as a framework for

environmental planning, as guidelines by which organs of state must exercise their functions and to guide other laws concerned with the protection or management of the environment.

The principles include a number of internationally recognized environmental law norms and some principles specific to South Africa. These core principles include:

- Accountability
- Affordability
- Cradle to Grave Management
- Equity
- Integration
- Open Information
- Polluter Pays
- Subsidiary
- Waste Avoidance and Minimisation
- Co-operative Governance
- Sustainable Development
- Environmental Protection and Justice

Chapter 2: Sections 3 to 6 of NEMA, make provision for the establishment of the Committee for Environmental Co-ordination. The objective of the committee is to promote the integration and co-ordination of environmental functions by the relevant organs of state and in particular to promote the achievement of the purpose and objectives of environmental implementation plans and environmental management plans.

Chapter 5: Sections 23 to 24 of NEMA is designed to promote integrated environmental management and provide tools for integrating environmental activities. Environmental management must place people and their needs at the forefront of its concerns, and serve their physical, psychological, developmental, cultural and social interests equitably. This chapter of NEMA requires any activity that can potentially impact on the environment, socio-economic conditions and cultural heritage require authorisation or permission by law and which may significantly affect the environment, must be considered, investigated and assessed prior to their implementation and reported to the organ of state charged by the law with authorising, permitting or otherwise allowing the implementation of an activity. Development must be socially, environmentally and economically sustainable. Sustainable development therefore requires the consideration of all relevant factors, some of which include the following:

- The disturbance of ecosystems and loss of biological diversity is to be avoided, or, minimised and remedied;
- The pollution and degradation of the environment are to be avoided, or, minimised and remedied;
- Waste is to be avoided, or, minimised and re-used or recycled where possible and otherwise disposed of in a responsible manner;
- A risk-averse and cautious approach is to be applied; and
- Negative impacts on the environment and on the people's environmental rights must be anticipated and prevented, and where they cannot be altogether prevented, must be minimised and remedied.

Section 24(5) of NEMA was enacted through the promulgation of the Environmental Impact Assessment (EIA) Regulations published in 2006 under Government Notices No. R385; R386 and R387. These were subsequently revised in 2010 under

Government Notices R543, 544, 545, and 546. The construction of facilities or infrastructure including associated structures or infrastructure for the recycling, re-use, handling, temporary storage or treatment of general waste and hazardous waste, were originally listed in these regulations and therefore required either a Basic Assessment or a Scoping and EIA Process to be followed depending on specific listed criteria. However, the above mentioned waste activities have now been repealed and instead require a license application under the Waste Act.

Chapter 7: Sections 28 to 30, imposes a duty of care in respect of pollution and environmental degradation. Any person who has caused significant pollution or degradation of the environment must take steps to stop or minimise the pollution. Where an incident occurs that is potentially detrimental to the environment, the person who is responsible for the incident or the employer must, within 14 days of the incident, report to the Director-General, provincial head of department and municipality. The relevant authority may specify measures to address the problem and remediate the area within 7 days. The Acts also attach consequences for breaching the duty of care, namely that government authorities are empowered to issue directions and to remediate the situation and recover costs where the directions are not complied with.

Chapter 8: Sections 35, provides that the Minister and every MEC and municipality may enter into an environmental management co-operation agreement with any person or community for the purpose of promoting compliance with the principals laid down in NEMA. Environmental Co-operation Agreements may contain an undertaking by the person or community concerned to improve the standards laid down by law for the protection of the environment and a set of measurable targets and a timeframe for fulfilling the undertaking.

Chapter 9 allows the Minister to make model By-Laws aimed at establishing measures for the management of environmental impacts of any development within the jurisdiction of the municipality, which may be adopted by the municipality as By-Laws. Any municipality may request the Director-General to assist it with its preparation of By-Laws on matters affecting the environment and the Director-General may not unreasonably refuse such a request. The Director-General may institute programmes to assist municipalities with the preparation of By-Laws for the purposes of implementing this Act.

10.2.3 Environment Conservation Act (73 of 1989)

The Environment Conservation Act (73 of 1989) (ECA) predates the Constitution and, although many sections have already been repealed, certain sections are still in place. The objectives of the ECA are to provide for the effective protection and controlled utilisation of the environment. Several sections of the ECA were repealed through the enactment of NEMA and certain responsibilities were assigned to the provinces.

The NEMWA has repealed sections of the ECA dealing with waste management. More specifically these repealed sections are:

- Section 19: Prohibition of littering. This is now dealt with under Section 27 of the NEMWA;
- Section 19A: Removal of litter; and
- Section 20: Waste Management. This section dealt with permitting of waste facilities, but is now replaced by Chapter 5 (Sections 43 – 59) of the NEMWA.

Waste management, more specifically with regard to landfill disposal site permitting and related matters, was until its recent repeal through the Waste Act, coordinated and controlled under Section 20 of the ECA. In order to implement section 20 of the ECA, DWAF previously issued the above mentioned permits subject to specified conditions stipulated in the DWAF Minimum Requirements: Waste Management Series⁵.

- Section 24: This section provided the framework for waste regulations to be formulated. This issue is now covered by Chapter 8, Part 1 (Regulations) (Sections 69 – 71) of the NEMWA;
- Section 24A, 24B and 24C: Similarly these sections which dealt with regulations regarding littering, products, and procedures for making regulations respectively are now addressed by Chapter 8, Part 1 of the NEMWA;
- Section 29: Sections (3) and (4), which deal with Offences and Penalties have been substituted by the NEMWA

Despite the fact that the NEMWA repeals section 19,19A, 20, 24, 24A 24B, and 24C of the ECA, it should be noted that in accordance with Section 80(2) of the Waste Act, any regulations or directions made in terms of these repealed sections of the ECA, remain in force and are considered to have been made under the Waste Act.

10.2.4 National Environmental Management: Waste Act (59 of 2008)

(a) Overview

The National Environmental Management: Waste Act (59 of 2008) (NEMWA) was promulgated on 01 July 2009, marking a new era in waste management in South Africa (with the exception of a number of sections which will be brought into effect at dates still to be gazetted). The act covers a wide spectrum of issues including requirements for a National Waste Management Strategy, IWMPs, definition of priority wastes, waste minimisation, treatment and disposal of waste, Industry Waste Management Plans, licensing of activities, waste information management, as well as addressing contaminated land.

However, South African waste management legislation is still fragmented. Mining; radio-active waste; disposal of explosives; and disposal of animal carcasses, which are covered by specific other regulations is not addressed by the act. NEMWA does however constitute South Africa's overarching primary waste legislation.

(b) Objectives of NEMWA

The National Environmental Management: Waste Act's objectives are:

- To protect health, well-being and the environment by providing reasonable measures to -
 - minimising the consumption of natural resources;
 - avoiding and minimising the generation of waste;
 - reducing, re-using, recycling and recovering waste;
 - treating and safely disposing of waste as a last resort;
 - preventing pollution and ecological degradation;
 - securing ecologically sustainable development while promoting justifiable economic and social development;

⁵ Refer to **Section 3.4.5**.

- promoting and ensuring the effective delivery of waste services;
- remediating land where contamination presents, or may present a significant risk of harm to health or the environment; and
- achieving integrated waste management reporting and planning
- to ensure that people are aware of the impact of waste on their health well-being and the environment;
- to provide for compliance with the measures set out in paragraph (a) and
- generally, to give effect to section 24 of the Constitution in order to secure an environment that is not harmful to health and well-being.

(c) Roles and Responsibility

The Act establishes a national framework for waste planning, regulation and management with roles for all spheres of government, specifically:

- National government is tasked with establishing a national waste management strategy, including norms, standards and targets. National norms and standards may cover all aspects of the waste value chain, from planning to service delivery. Of particular importance from an intergovernmental perspective are the powers of national government with respect to norms and standards for:
 - The regionalization of waste management services;
 - Tariffs for waste services provided by municipalities, including providing for tariffs to be imposed to provide for waste management infrastructure or facilities and ensuring that funds obtained from the provision of waste services are used for the delivery of these services.
- Provincial governments are tasked with the implementation of the national waste management strategy and national norms and standards, and may set additional, complementary provincial norms and standards. The Waste Act notes that these norms and standards must amongst other things facilitate and advance regionalization of waste management services.
- Local governments are required to ensure the universal and sustainable delivery of services, subject to national and provincial regulation. In particular, they are required to maintain separate financial statements, including a balance sheet of the services provided.

The table below lists sections of the act which make specific demands on Local (municipal) government:

Table A1: Tasks required of the Municipality in terms of NEMWA. Tasks falling under sections of the act which have yet to be enacted have not been listed. Interpretation has been added.

Topic	Section	Requirement
General duty	3	The state must put in place measures that seek to reduce the amount of waste generated, and where waste is generated, ensure that it is re-used, recycled and recovered in an environmentally sound manner.
Waste service standards	9 (1) & (2)	The municipality must deliver waste management services, including waste removal, storage and disposal services in adherence to the national and provincial norms and standards (section 7 and 8 of the Act); whilst: <ul style="list-style-type: none"> • Integrating the IWMP and IDP • Ensuring access to services • Ensuring affordable service delivery

Topic	Section	Requirement
		<ul style="list-style-type: none"> • Ensure effective and efficient Sustainable and Financial management
	9 (3)	<p>The Municipality may furthermore set local standards:</p> <ul style="list-style-type: none"> • For separating, compacting and storing waste • Management of solid waste, i.e.: Avoidance, Minimisation, Recycling • Coordination of waste to relevant treatment or disposal facilities • Litter control
Designation of Waste Management Officers	10(3)	The Municipality must designate in writing a waste management officer from its administration to be responsible for coordinating matters pertaining to waste management in that municipality
Integrated Waste Management Plans	11 (4) & (7)	<p>The Municipality must:</p> <ul style="list-style-type: none"> • submit an IWMP to the MEC for approval (response from the MEC must be given within 30 days). • Include the approved IWMP into its IDP. • Follow the consultative process in section 29 of the Municipal Systems Act (separately or as part of IDP).
	12	<p>Contents for IWMP's is to include:</p> <ul style="list-style-type: none"> • A situational analysis • a plan of how to give effect to the Waste Act • municipal waste management and services obligations • prioritisation of objectives • setting of targets • planning approach to any new disposal facilities; and • Financial resourcing.
	13	An annual performance report prepared in terms of section 46 of the Municipal Systems Act must contain information on the implementation of the municipal IWMP.

(d) Industry Waste Management Plans

For industries, the Waste Act states that either the Minister or the relevant provincial MEC may under certain conditions and by written notice or by notice in the Gazette require a person or industry to prepare and submit an Industry Waste Management Plan.

(e) Waste Licensing for listed Activities

The Minister has subsequently gazetted (on 03 July 2009) GN No. 718 (Gazette No. 32368) and 719 (Gazette No. 32369) which presents a Waste Management Activity Lists describing those waste activities, and thresholds, which require authorisation before they are undertaken. NEMWA Schedule 1 (Section 19) identifies activities which require a waste management license. Activities include:

- Storage and transfer of waste;
- Recycling and recovery;
- Treatment of waste;
- Disposal of waste on land;
- Storage, treatment and processing of animal waste; and

- Expansion or decommissioning of facilities and associated structures and infrastructure.

This amendment to NEMWA identifies waste activities which are likely to have a detrimental effect on the environment and places the listed activities into one of two categories according to the nature and threshold of the activity.

Category A listed activities require a basic assessment to be conducted as stated in the Environmental Impact Assessment Regulation section 24(5) of the National Environmental Management Act, 1998

Category B listed activities require scoping and an environmental impact reporting process to be conducted as stated in the Environmental Impact Assessment Regulation section 24(5) of the National Environmental Management Act, 1998

Activities which require a category A waste license include:

- The storage of waste
- Recycling or recovery of waste
- Treatment of waste
- Disposal of waste
- Reuse, treatment, processing or disposal of animal waste or sludge
- Construction or decommissioning of facilities and associated structures and infrastructure

Activities which require a category B waste license include

- Storage of hazardous waste
- Reuse, recycling or recovery of waste
- Treatment of waste
- Disposal of waste on land
- Construction of facilities and associated structures and infrastructure

(f) Integrated Waste Management Planning

The Waste Act also places considerable emphasis on the development of an integrated waste planning system, through the development of interlocking Integrated Waste Management Plans (IWMPs) by all spheres of government and specified waste generators. This planning system is the primary tool for cooperative governance within the sector. While the requirement for these plans is new for national and provincial governments, and for waste generators, this is not the case for local governments who had been able to voluntarily prepare such plans within their Integrated Development Plans (IDPs).

(g) Norms, standards, tariffs and financial Management Systems

Other focal areas of the NEMWA include provisions for the development of norms and standards, tariffs and financial management systems. These powers all largely repeat existing national or provincial powers that are provided for in other legislation. The key change is that the Minister of Environmental Affairs now assumes these powers in terms of the Act, although concurrently with other authorised Ministers notably in Local Government and Finance portfolios.

Certain sections of the act have yet to be enacted, including the following:

- Section 28 (7), which makes allowance for of a person, category of person or industry to compile and submit an industry waste management plan for approval to the MEC, without being required to do so by the MEC.
- Part 8 (Section 35-41), which deals with contaminated land.
- Section 46, which allows the licensing authority to require an applicant seeking a waste management licence to appoint an independent and qualified person to manage the application.

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

Consideration must be given to the emissions arising from waste management practices, processes and procedures. Many facets of waste management are associated with atmospheric emissions, for example, waste transportation is associated with carbon dioxide released from vehicles, and methane and carbon dioxide which are released from landfill sites.

The National Environmental Management: Air Quality Act (39 of 2004) (NEMAQA) was published in the Government Gazette on 24 February 2005 and came into effect in September 2005. This Act, amongst others, provides for the implementation of a National Framework, of national, provincial and local ambient air quality and emission standards and air quality management plans. These implementations are currently in progress.

10.2.6 Atmospheric Pollution Prevention Act (45 of 1965)

Prior to the Air Quality Act coming into full effect, the control of atmospheric emissions of noxious, hazardous and nuisance causing materials was controlled by the Atmospheric Pollution Prevention Act (APPA) and its amendments. The administration of the APPA has been assigned to the Air Pollution Control Department under the Department of Environmental Affairs.

Those sections addressing the management of dust are of importance for landfill site management. Sections 27 – 35 state that industries should adopt the “best practicable means” for preventing dust from becoming dispersed or causing a nuisance. The act also empowers owners or occupiers present in the vicinity of the source of dust/nuisance to take or adopt necessary steps or precautions against the nuisance. Where steps have not been prescribed, owners must adopt the “best practicable means” for the abatement of the nuisance. Should any person/s such as for example, waste management service providers, not comply with the necessary steps to prevent owners/occupiers from the effects of dust, the person/s may be liable to pay a dust control levy to the minister.

10.2.7 National Water Act (36 of 1998)

The National Water Act is South Africa’s overarching piece of legislation dealing with water resource management. It contains a number of provisions that impact on waste management, including:

- Ensuring the disposal of waste in a manner, which does not detrimentally impact on water resources; and
- Managing the discharge of waste into water resources.

The Act allows the Minister to make regulations for:

- Prescribing waste standards, which specify the quantity, quality and temperature of waste that may be discharged or deposited into or allowed to enter a water resource;

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

10.2.8 Occupational Health and Safety Act (85 of 1993)

The purpose of the Occupational Health and Safety Act (OHSA) and associated regulations is to provide for the health and safety of persons at work and for the health and safety of persons in connection with the use of plant and machinery; the protection of persons other than persons at work against hazards to health and safety arising out of or in connection with the activities of persons at work; to establish an advisory council for occupational health and safety; and to provide for matters connected therewith.

A sound waste management strategy and planning must take into account the safety of persons involved in the practical implementation thereof, with reference in particular to any waste services carried out by municipal officials; and waste service providers and their employees.

Core to OHSA are the principles and core duties of employers and employees as legislated in Sections 8, 9 and 14 thereof.

Section 8(1) stipulates that “Every employer shall provide and maintain, as far as is reasonable practicable, a working environment that is safe and without risk to the health of his employees”.

Section 9(1) stipulates that “Every employer shall conduct his undertaking in such a manner as to ensure, as far as is reasonably practicable, that persons other than those in his employment who may be directly affected by his activities are not thereby exposed to hazards to their health or safety.” Subsection (2) imposes a similar duty on every self-employed person.

Section 14(a) imposes a duty on every employee at work to take reasonable care for the health and safety of himself and of other person who may be affected by his acts or omissions. An employee is also required to co-operate with his employer concerning his duties in terms of the Act and to obey health and safety rules and procedures laid down by his employer.

In addition the OHSA further protects workers with regard to Hazardous Chemical Substances through specific regulations. Asbestos regulations deal with specific asbestos containing waste management.

It is likely that the OSHA also places an obligation on the Municipality, to ensure that service providers maintain compliant Health and Safety procedures. This would be relevant in the case of outsourced, waste management functions.

10.2.9 Health Act (63 of 1977)

The Health Act focuses on the promotion of the health of the people and the provision of processes to enable this objective to be achieved. Sections 20, 34 and 38 of the Act are relevant to waste management.

Section 20, requires authorities to take lawful and reasonable practical measures to maintain their areas in a hygienic and clean condition to prevent an unhealthy environment for people.

Sections 34 and 38 of the act authorise the National Minister of Health to make regulations, which may directly impact on waste management.

10.2.10 Hazardous Substances Act (15 of 1973)

The Hazardous Substances Act (15 of 1973) governs the control of substances that may cause ill health or death in humans by reason of their toxic, corrosive, irritant, flammability or pressure effects. The Act provides for the regulation of the storage, handling, labelling and sale of Group I, II, and III hazardous substances. A license is required for an operation that stores, handles and sells Group I substances. Section 29(1) of the Act regulates the disposal of the empty containers, which previously held Group I substances.

No national, local provincial or local municipal regulations have been promulgated under the Act for the on-site management of Group II hazardous substances.

The relevance of the Act with regard to waste management is captured as certain waste types may be categorised into the various groupings under the Act as noted above.

10.2.11 National Road Traffic Act (93 of 1996)

The United Nations (UN) recommendations on the transport of dangerous goods have been used to produce sections of the National Road Traffic Act. In addition, and in terms of other regulations published under the Act, certain South African Bureau of Standards (SABS) Codes of Practice have been incorporated as standard specifications into the National Road Traffic Regulations (GNR 1249 of 13 November 2001). These codes have been based on the UN recommendations, also known as "The Orange Book" and the associated European Agreement concerning the International Carriage of Dangerous Goods by Road Regulations.

The codes of practice so incorporated include e.g. the following:

- SANS 10228:2006 Edition 4.00: The identification and classification of dangerous goods for transport;
- SANS 10229-1:2005 Edition 1.00: Transport of dangerous goods - Packaging and large packaging for road and rail transport Part 1: Packaging;
- SANS 10229-2:2007 Edition 1.00: Transport of dangerous goods - Packaging and large packaging for road and rail transport Part 2: Large packaging;
- SANS 10232-1:2007 Edition 3.00: Transport of dangerous goods - Emergency information systems Part 1: Emergency information system for road transport;
- SANS 10232-2:1997 Edition 1.00: Transportation of dangerous goods - Emergency information systems Part 2: Emergency information system for rail transportation;
- SANS 10232-3:2007 Edition 3.00: Transport of dangerous goods - Emergency information systems Part 3: Emergency response guides;
- SANS 10232-4:2007 Edition 1.01: Transport of dangerous goods - Emergency information systems Part 4: Transport emergency card;
- SANS 10233:2001 Edition 2.00: Transportation of dangerous goods - Intermediate bulk containers.

The transportation of all waste products should adhere to the above where applicable, noting that certain waste/ refuse may be categorised as dangerous goods.

10.2.12 Advertising on Roads and Ribbon Development Act (21 of 1940)

This act regulates, amongst other things, the depositing or discarding of waste near certain public roads, and the access to certain land from such roads. To the extent as outlined in Proclamation 23 in Government Gazette 16340 of 31 March 1995, the administration of this Act has been assigned to the provinces. In terms of section 8 of the Act, no person shall within a distance of 200 metres of the centre line of a public road deposit or leave outside an urban area, so as to be visible from that road, a disused vehicle or machine or a disused part of a vehicle or machine or any rubbish or any other refuse, except in accordance with the permission in writing granted by the controlling authority concerned. The controlling authority may remove any object or substance referred to found on a public road and may recover the cost of the removal from the person who deposited or left such object or substance there.

When any person has deposited or has left any object or substance in contravention of the above, but not on a public road, the controlling authority concerned may direct the person in writing to remove or destroy that object or substance within such period as may be specified in the direction. If the person fails to comply with that direction, the controlling authority may cause the object or substance to be removed or destroyed any may recover from the said person the cost of the removal or destruction. The preceding provision do not apply to any object or material which has been or is being used for or in connection with farming, or to soil excavated in the course of alluvial digging: provided that this sub-section shall not permit the deposit or leaving of any article or material on a road.

10.2.13 Municipal Structures Act (Act 117 of 1998)

The main objective of Local Government: Municipal structures Act 117 of 1998 is to provide for the establishment of municipalities in accordance with the requirements relating to categories and types of municipality, to provide for an appropriate division of functions and powers between categories of municipality, to provide appropriate electoral systems and to provide for matters connected therewith.

The functions and powers of municipalities are set out in Chapter 5 of the Act, with a municipality having the functions and power assigned to it in terms of sections 156 and 229 (dealing with fiscal powers and functions) of the constitution.

10.2.14 Municipal Systems Act (Act 32 of 2000)

As intended by the Constitution, waste management services such as refuse collection, removal, transportation and disposal is the responsibility of local municipalities. Municipal Service with respect to the Local Government Municipal Systems Act (MSA) defines a municipal service as follows:

“A serviced that a municipality in terms of it’s powers and functions provides or may provide for the benefit of the local community irrespective of whether –

- (a) Such a service is provided, or to be provided, by the municipality through an internal mechanism contemplated in section 76 or by engaging an external mechanism contemplate in section 76; and
- (b) fees, charges or tariffs are levied in respect of such a service or not.”

Chapter 8 Section 73 - 82 outlines certain general duties on municipalities in relation to the municipal service as highlighted below.

In terms of section 75(1), a municipality must give effect to the provisions of the Constitution and must:

- Give priority to the basic needs of the local community
- Promote the development of the local community
- Ensure that all members of the local community have access to at least the minimum level of available resources and the improvement of standards of quality over time.

In terms of section 75(2), municipal services must: be equitable and accessible; be provided in a way, which promotes the prudent, efficient and effective use of available resources and the improvement of standards of quality over time; be financially sustainable; be environmentally sustainable, and be regularly reviewed with a view to upgrading, extension and improvement.

Section 74 regulates tariff policy in respect of municipal services. A municipality is obliged to adopt and implement a tariff policy on levying fees for municipal services. A municipality's tariff policy must reflect at least the following principles:

People who use municipal services must be treated equitably in the application of tariffs. In general terms, what individual users pay for services should be in proportion to their use of the services. Poor households must have access to at least basic services. Different ways of providing for this are suggested, for example lifeline tariffs and subsidisation. Tariffs must reflect the costs reasonable associated with providing the service for example capital, operating, maintenance, administration and replacement costs and interest charges. Tariffs must be set at levels which allow the service to be financially sustainable. In appropriate circumstances, surcharges on tariffs may be allowed. Special tariffs may be set for categories of commercial and industrial users in order to promote local economic development. The economical, efficient and effective use of resources must be promoted, as well as the recycling of waste and other appropriate environmental objectives. Any subsidisation of tariffs should be fully disclosed.

Section 78 prescribes the process which municipalities must follow when they decide through which mechanism to provide a municipal service in their areas. There are particular provisions, which a municipality must comply with when it provides a municipal service through a service delivery agreement with what the MSA terms "external mechanisms".

The MSA contains extensive provisions pertaining to public participation. In particular, the community has the right to contribute to decision-making processes by its municipality. A municipal council must establish appropriate mechanisms, processes and procedures to enable residents, communities and stakeholders in the municipality to participate in the local affairs. It is pertinent to reiterate that waste management services as provide by the municipality is an integral part of local affairs.

As such municipalities' mechanisms must provide for:

- The receipt, processing and consideration of petitions and complaints lodged by residents, communities and stakeholders in the municipality;

- The receipt, processing and consideration of written objections and representations with regard to any matter to which it is required to invite public comment;
- Public meetings of residents, on a ward or any other basis;
- Public hearings by the council and its committees when appropriate; and
- Surveys among residents when appropriate and the processing and publication of the results.

10.2.15 Development Facilitation Act (Act 67 of 1995)

The Development Facilitation Act provides specific principles for:

- Land development and conflict resolution.
- Controls on land occupation.
- Recognition of informal land-development practices.

These principles are set out in sections 3 and 4 of the DFA and form the basis for most of the integrated development plan.

Chapter one of the Act sets out principles which affect all decisions relating to the development of land. This means that whenever a municipality, a development tribunal, a Member of the Executive Council (MEC) or any other authority is considering an application for the development of land, they must make sure that their decision is consistent with these principles. Any integrated development plan must, in terms of the Local Government Transition Act, be based on these principles too.

The Act's principles form the basis of integrated development planning - in particular the land-development objectives. In terms of section 2 of the Act, the general principles which are set out in section 3 of the Act include:

- Policy, administrative practice and the law should promote efficient and integrated land development in that they:
- Promote the integration of the social, economic, institutional and physical aspects of land development;
- Promote integrated land development in rural and urban areas in support of each other;
- Encourage environmental sustainable land development practices and processes;
- Members of communities affected by land development should actively participate in the process of land development;
- Policy, administrative practice and laws should encourage and optimize the contributions of all sectors of the economy (government and non-government) to land development so as to maximize the Republic's capacity to undertake land development;
- Laws, procedures and administrative practice relating to land development should:
 - Be clear and generally available to those likely to be affected thereby;
 - In addition to serving as regulatory measures, also provide guidance and information to those affected thereby ;
 - Be calculated to promote trust and acceptance on the part of those likely to be affected thereby; and
 - Give further content to the fundamental right set out in the constitution;
- Policy, administrative practice and laws should promote sustainable land development at the required scale, in that they should, inter alia, promote sustained protection of the environment;

- Policy, administrative practice and law should promote speedy land development;
- Each proposed land development area should be judged on its own merits and no particular use of land, such as residential, commercial, conservation, industrial, community facility, mining, agricultural or public use, should in advance or in general, be regarded as being less important or desirable than any other use of land;
- A competent authority at national, provincial and local government level should co-ordinate the interests of the various sectors involved in or affected by land development so as to minimize conflicting demands on scarce resources.

10.2.16 Promotion of Administrative Justice, (Act 3 of 2000)

The purpose of the Promotion of Administrative Justice Act (“PAJA”) is principally to give effect to the right to administrative action that is lawful, reasonable and procedurally fair; and to the right to written reasons for administrative action as contemplated in Section 33 of the Constitution; and to provide for matters incidental thereto.

Administrative law governs the relationships between public bodies, and between public and private bodies and/or individuals. Many activities which affect the environment, including certain waste management activities, require authorisation from a public body. Because environmental conflicts may arise during the authorisation process from the exercise of administrative decision-making powers, administrative law principles are of particular relevance to environmental law generally, and specifically in the context of the environmental authorisation requirements stipulated by the provisions of section 24 of the NEMA read with its subordinate legislation regulating environmental impact assessment (or “EIA”).

10.2.17 Promotion of Access to information, (Act 2 of 2000)

Closely linked to the notion of administrative justice is the right of access to information. Without access to information, a person may be unable to determine whether or not his or her right to just administrative action (or to an environment not harmful to human health or well-being or, for that matter, any other Constitutional right) has been infringed. The purpose of the Promotion of Access to Information Act (“PAIA”) is to give effect to the Constitutional right of access to any information held by the State and any information that is held by another person and that is required for the exercise or protection of any rights, and to provide for matters connected therewith.

10.3 South African Legislation (Regulations)

10.3.1 Plastic Bag Regulations (R543 of 2002)

The production of plastic bags made of thin plastic film has significantly increased in South Africa. A large number of these non-reusable bags are being dumped leading to environmental degradation so they are non-reusable and are not recycled because the materials they are made of are of low commercial value as a raw material to recyclers.

The regulations prohibit the manufacture, trade and commercial distribution of plastic bags for use in the RSA with a wall thickness of less than 80 micrometres.

Plastic bags with a film thickness of 30-80 micrometres and bread bags with a wall thickness of 25-80 micrometres can be manufactured, traded and commercially distributed within RSA provided they do not have designs or printing on them unless required by law.

10.3.2 Tyre Regulations (R149 of 2009)

The Waste Tyre Regulations were published as Government Notice R.149 on 13 February 2009 and came into effect on 30 June 2009. The purpose of the legislation is to regulate the management of waste tyres by providing for the regulatory mechanisms. The regulations apply uniformly in all provinces in South Africa and affect waste tyre producers, waste tyre dealers, waste tyre stockpile owners, landfill site owners and tyre recyclers.

In summary, the regulation:

- Defines a waste tyre as a new, used, retreaded, or un-roadworthy tyre, not suitable to be retreaded, repaired or sold as a part worn tyre and not fit for the original intended use.
- Prohibits recycle, recover or dispose of a waste tyre at any facility or on any site, unless such an activity is authorised by law.
- Prohibits recovery or disposal of a waste tyre in a manner that may or may potentially cause pollution or harm to health.
- Prohibits disposal of a waste tyre at a waste disposal facility, two years from the gazetted date, unless such a waste tyre has been cut into quarters; and prohibits disposal of tyres in five years ; unless these are shredded.
- Provides regulations in terms of tyre producers, tyre dealers and tyre stockpile owners.

10.3.3 Asbestos Regulations (R.341 of 2008)

On 28 March 2008, the Minister of Environmental Affairs and Tourism published as Government Notice R.341 "*Regulations for the prohibition of the use, manufacturing, import and export of asbestos and asbestos containing materials*" under Section 24B of ECA (thus now the Waste Act). This would have implication for phasing out of asbestos containing material, which may therefore result in higher quantities of asbestos waste.

10.3.4 Draft Waste Classification and Management Regulations (R435 of 2011)

These draft regulations, if adopted, will introduce and regulate a new waste classification system for South Africa. The regulations dictate the following:

- Regulate classification and management of waste in line with NEMWA requirements. The regulations dictate that all waste will be classified in terms of SANS 10234 (Globally Harmonized System of Classification and Labelling of Chemicals (GHS)).
- Establish a method of listing waste management activities that do not require a waste management license.
- Define requirements to assess the environmental risk of waste disposal at landfill sites.
- Prescribe requirements for record keeping and waste manifest management.
- Prescribe general duties of waste generators, transporters and managers.

10.3.5 Globally Harmonized System of Classification and Labelling of Chemicals (GHS) SANS 10234:2007

The South African National Standards (2007) Globally Harmonized System of Classification and labelling of chemicals (GHS) from here on referred to as SANS 10234 is a global approach to classification and labelling of chemicals. The SANS 10234 classifies chemicals into three broad categories

1. Physical hazards

The category of physical hazards includes but is not limited to chemicals which are explosive, flammable, oxidizing and pyrophoric.

2. Health hazards

The category of health hazards includes which is not limited to chemicals which cause skin corrosion and skin irritation, germ cell mutagenicity respiratory sensitization and skin sensitization as well as carcinogenic chemicals.

3. Hazards to the aquatic environment

Chemicals defined as being hazardous to the aquatic environment can also affect other ecosystems.

The category of hazards to the aquatic environment covers acute aquatic toxicity, bioaccumulation, degradation for organic chemicals and chronic aquatic toxicity.

10.4 National Policies, Guidelines, Norms and Standards

10.4.1 White Paper on Environmental Waste Management (749 of 1998)

The White Paper on Environmental Management was published in 1998. This policy set out government's objectives in relation to environmental management, how it intended to achieve its objectives, and to guide government agencies and organs of state in developing strategies to meet their objectives.

The policy document is an overarching policy framework that refers to all government institutions and to all activities that impact on the environment. The policy states that government will allocate functions to the institutions and spheres of government that can most effectively achieve the objectives of sustainable development and integrated environmental management. This would include the allocation of certain functions to the municipal sphere of government. Where appropriate, provincial and local governments are to develop their own legislation and implementation strategies in order to address their specific needs and conditions within the framework of the policy.

10.4.2 White Paper on Integrated Pollution and Waste Management (DEAT, 2000)

The White Paper on Integrated Pollution and Waste Management is a subsidiary policy of the overarching environmental management and constitutes South Africa's

first policy document focused on integrated waste management. This national policy set out Government's vision for integrated pollution and waste management in the country and applies to all government institutions and to society at large and to all activities that impact on pollution and waste management.

Integrated pollution and waste management is defined as a holistic and integrated system and process of management aimed at pollution prevention and minimisation at source, managing the impact of pollution and waste on the receiving environment and remediating damaged environments. Waste management is to be implemented in a holistic and integrated manner and extend over the entire waste cycle from cradle-to-grave and will include the generation, storage, collection, transportation, treatment and the final disposal of waste.

The overarching goal reflected in the policy, is integrated pollution and waste management. The intention is to move away from fragmented and uncoordinated pollution control and waste management, towards an approach that incorporates pollution and waste management as well as waste minimisation.

Within this framework, the following strategic goals apply:

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

The strategic mechanisms include the following:

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

10.4.3 National Waste Management Strategy (DEA 2011)

The first NWMS was published in 1999 by the then DEAT and the then DWAF. It was the first strategy for addressing South Africa's waste management challenges. The strategy effectively defined South Africa's vision for waste management highlighting themes such as "cradle to grave" management of waste products and the waste management hierarchy which encourages waste disposal only as a last resort.

The NWMS has recently (2011) been revised in line with Chapter 2, Part 1, of the Act which requires the establishment of a NWMS within two years of the Act coming into effect. Significant changes include the addition of “remediation” to the waste management hierarchy, and the consolidation of what was previously many different action plans into a single action plan.

The new strategy defines eight strategic goals with a number of targets, as presented in the table below.

Table 39: Goals and targets of the NWMS (2011)

Goal	Description	Targets 2016
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 IndWMPs 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 the 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	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 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 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	Establish effective compliance with and enforcement	<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

Goal	Description	Targets 2016
	of the Waste Act.	government to enforce the Waste Act.

The overall objective of this strategy is to reduce the generation of waste and the environmental impact of all forms of waste and thereby ensure that the socioeconomic development of South Africa, the health of the people and the quality of its environmental resources are no longer adversely affected by uncontrolled and uncoordinated waste management.

The internationally accepted waste hierarchical approach was adopted of waste prevention/minimization, recycle/reuse, treatment and finally disposal. The strategy outlines the functions and responsibilities of the three levels of government and where possible, firm plans and targets are specified.

Action plans have been developed for reaching all of the eight goals.

10.4.4 Polokwane Waste Summit Declaration (2001)

During September 2001 a national waste summit was held at Polokwane, in the Northern Province. It was attended by key stakeholder groupings in the waste field in order to jointly chart a way forward in terms of national waste management. The resultant Polokwane Declaration includes a vision and goal for the management of all waste, i.e. domestic, commercial and industrial.

Vision – To implement a waste management system that contributes to sustainable development and a measurable improvement in the quality of life, by harnessing the energy and commitment of all South Africans for the effective reduction of waste.

Goals - To reduce waste generation and disposal by 50% and 25% respectively by 2012 and develop a plan for zero waste by 2022.

Key actions in the Polokwane Declaration include the following:

- Implement the National Waste Management Strategy;
- Develop and implement legislative and regulatory framework;
- Waste reduction and recycling; and
- Develop waste information and monitoring systems.

While the vision of the declaration remains intact, the timeframes set for the goals for waste reduction have not been met and are, in hindsight, generally considered unrealistic.

10.4.5 Local Government Turnaround Strategy (2009)

Cabinet approved the Local Government Turnaround Strategy (LGTAS) on the 3 December 2009 in Pretoria. The LGTAS recognised that each municipality faces different social and economic conditions and has different performance levels and support needs. Thus a more segmented and differentiated approach was required to address the various challenges of municipalities. In addition cabinet recognised that the problems in Local Government are both a result of internal factors within the direct control of municipalities as well as external factors over which municipalities do not

have much control. (Department of Cooperative Governance and Traditional Affairs, Dec 2009.)

The LGTAS identifies the internal factors related to for example the following:

- Quality of decision-making by Councillors;
- Quality of appointments;
- Transparency of tender and procurement systems and levels of financial management and accountability; and
- Levels of financial management and accountability.

The external factors relate to:

- Revenue base and income generation potential;
- Inappropriate legislation and regulation;
- Demographic patterns and trends;
- Macro and micro-economic conditions;
- Undue interference by political parties and weaknesses in national policy; and
- Oversight and Inter-Governmental Relations.

Ultimately the aim of the LGTAS is to *“Restore the confidence of the majority of our people in our municipalities, as the primary delivery machine of the developmental state at a local level. Re-build and improve the basic requirements for a functional, responsive, accountable, effective, and efficient developmental local government.”*

The LGTAS sets out five strategic objectives with associated key interventions. Probably most relevant in the context of waste management is the first objective, i.e. to *“Ensure that municipalities meet basic needs of communities. This implies that an environment is created, support provided and systems built to accelerate quality service delivery within the context of each municipality’s conditions and needs”*.

Interventions to achieve the various objectives include better organisation by National Government and improved support and oversight from provinces in relation to Local Government. Furthermore municipalities are to reflect on their own performance and tailor-made turnaround strategies, while all three spheres of governments should improve inter-governmental relations. Also, political parties are to promote and enhance institutional integrity of municipalities and a social compact on Local Government where all citizens are guided in their actions and involvement by a common set of governance values.

In terms of the LGTAS an immediate task is for agreements to be reached with each province on the roll-out programme to establish different provincial needs and capacities, which will guide how municipalities are to be supported to prepare and implement their own tailor-made turnaround strategies that must be incorporated into their IDPs and budgets (by March 2010). Key stakeholders and ward committees were to be mobilised early in 2010. By July 2010, all municipalities were to be in full implementation mode of the national and their own Turn Around Strategies. (Department of Cooperative Governance and Traditional Affairs, Dec 2009.)

The Nelson Mandela Bay Municipality Published a Turn Around Strategy in May 2010. This Turnaround Strategy is a major policy pronouncement by the Nelson Mandela Bay Metropolitan Municipality and set a new inclusive development path for the Metro. The Strategy finds further expression in the institution’s IDP and Budget. A central feature of the Strategy is that it is home grown and customised to address local challenges.

The objectives of the Strategy include the following:

- The restoration of confidence in the NMBM as a primary service delivery arm of government that is effectively addressing community concerns.
- The universalisation of service delivery to all communities of Nelson Mandela Bay.
- Addressing the key socio-economic challenges in Nelson Mandela Bay, especially unemployment and poverty.
- Developing a shared agenda for the growth and development of Nelson Mandela Bay.
- Understanding and managing institutional risks.
- Ensuring a fraud- and corruption-free Municipality.
- Ensuring good corporate governance and an accountable and performance driven institution, which is focused on service delivery.
- Ensuring that all municipal planning, budgeting and decision-making processes are embedded in public participation and community involvement.
- Restoring the human dignity of the residents of Nelson Mandela Bay, especially in the disadvantaged areas/wards. Ensuring sound financial management and sustainability.
- Ensuring a joint intergovernmental approach to implementing this Turnaround Strategy.

10.4.6 Draft Municipal Sector Plan (2011)

The first Draft Municipal Sector plan was published for public comment on 6 April 2011 by the Minister of Environmental Affairs (notice 182 of Government Gazette 34167 dated 30 March 2011).

The draft plan is based on the findings of a study commissioned in 2007 and is informed by the local government turnaround strategy of 2009, which seeks to address the root causes of poor performance and dysfunctionality at municipal level. The draft plan forms an appendix to a report on the municipal waste sector and seeks to “effectively” address the management of “backlogs” in municipal solid waste service delivery and infrastructure.

An introduction to the report states that, in an attempt to fast track service delivery, cabinet directed all sector departments to account for service backlogs and develop service plans to address them. The draft plan identifies short, medium, and longer-term objectives over a period of fifteen years and includes strategies for:

- Collecting recyclable waste (both by way of kerb-side collection and at drop-off facilities);
- Composting;
- Energy recovery;
- Reducing waste-to-landfill;
- Cleaner production principles for industry;
- Alternative technologies for “different waste streams”; and
- Establishing cooperatives to formalise picking at landfills as a livelihood.

According to the report and related draft plan, it is envisaged that municipal waste management should be closely aligned with National Environmental Management: Waste Act 59 of 2008. With regard to municipalities this act affects:

- standards for removing, storing and disposing of waste (including separation, compacting and treatment);
- litter control; and

- related institutional and planning arrangements as informed by Municipal Structures Act 117 of 1998; and the Municipal Systems Act 32 of 2000.

10.4.7 Minimum Requirements Series

The DWAF Minimum Requirements: Waste Management Series (1998 and 2005) were formulated in the form of guideline documents as a joint venture between DWAF and the Department of Environmental Affairs and Tourism (DEAT). The objective of the Minimum Requirements was to establish a framework for standards for waste management in South Africa. The former DWAF published the second edition of the Minimum Requirements series in 1998, consisting of the following three documents:

- Document 1: Minimum Requirements for the Handling, Classification and Disposal of Hazardous Waste.
- Document 2: Minimum Requirements for Waste Disposal by Landfill.
- Document 3: Minimum Requirements for Monitoring at Waste Management Facilities.

The third edition was released in draft form in 2005, but only Document 1 (DEAT, 2005) has been finalised.

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

- Prevent water pollution and to ensure sustained fitness for use of South Africa's water resources;
- Attain and maintain minimum waste management standards in order to protect human health and the environment from the possible harmful effects caused by the handling, treatment, storage and disposal of waste;
- Effectively administer and provide a systematic and nationally uniform approach to the waste disposal process;
- Endeavour to make South African waste management practices internationally acceptable;
- Ensure adherence to the Minimum Requirement conditions from the permit applicant, before a waste disposal site permit is issued; and
- Promote the hierarchical approach to waste management, as well as a holistic approach to the environment.

The series formed the basis for the permitting process that had been required in terms of Section 20 of the ECA. The requirements, standards and procedures covered in the series had generally been included as permit conditions, thereby becoming legally binding on the permit holder. In addition to requirements for the establishment and operation of a landfill site, the permit holder was generally required to operate, maintain and attend to the closure of a waste disposal site in compliance with the permit conditions, as well as in accordance with the guidelines set out in the Minimum Requirements. The licensing processes for waste activities have now been repealed and instead require a license application under the Waste Act.

10.4.8 National Policy for Basic Refuse Removal Services to Indigent Households

The National Policy for the Provision of Basic Refuse Removal Services to Indigent Households (GN No. 34385) was published in the Government Gazette in June 2011. The purpose of this policy is to ensure that indigent households have access to at least a basic refuse removal (BRR) service.

This Policy aligns to existing relevant legislation, as in accordance to 74 (2)(c) of the Municipal Systems Act, 2000 (Act No. 32 of 2000) poor households must have access to at least basic services and section 9 (2) of NEMWA (Act 59 of 2008) which stipulates that each municipality must exercise its executive authority and perform its duty in relation to waste services, including waste collection, waste storage and waste disposal, by (c) ensuring access for all to such services.

The objectives of the policy are to identify households that can be enrolled for the BRR service, establish bylaws to enforce tariff policies that will support the BRR service and to raise awareness within the municipality with regard to correct handling of domestic waste for BRR and the need to minimize waste and recycle.

Implementation plans include each municipality:

- declaring specific localities as the recipients of basic refuse removal services;
- maintaining “accurate and updated” registers of indigent people;
- taking action in the event of malpractice;
- integrating basic refuse removal into “basic indigent policies”;
- designating the administration of the policy to the “most appropriate department”; and
- raising awareness.

The policy includes a “grid of responsibilities” for each sphere of government and a policy monitoring and evaluation plan. According to the grid of responsibilities, national government will take responsibility for building capacity at provincial and municipal level, with provincial government determining municipal capacity and assisting district municipalities in “drawing up guidelines”.

10.4.9 National Policy in Thermal Treatment of General and Hazardous Waste

The Thermal Waste Treatment of General and Hazardous Waste Policy was gazetted (GN No. 32439) for public comment on 30 January 2009 and published under the NEMWA on 24 July 2009. The policy presents the Government’s position on thermal waste treatment as an acceptable waste management option in South Africa. It also provides the framework within which incineration and co-processing treatment technologies of general and hazardous waste should be implemented in the country.

All Government Departments across the different spheres of government must consider this policy in their decision making on matters pertaining to thermal treatment of waste. The policy presents objectives which vary thematically. These consider the integration of thermal waste treatment into the integrated waste management system. Schedules one to four provide guidelines on the following:

1. Air Emission Standards – Waste Incineration

Listed air emission standards for general and hazardous waste incinerators, brought into operation subsequent to the final gazetting of this policy, are to be complied with until the formalisation of The Minimum Emission Standards in terms of Section 21 of the National Environmental Management: Air Quality Act of 2004.

2. Air Emission Standards – AFR Co-Processing

The Minimum Emission Standards for Alternative Fuels and Raw Materials (AFR) co-processing is currently in the process of being formalised in terms of Section 21 of the

National Environmental Management: Air Quality Act of 2004. In the interim this policy constitutes the air emission standards for all cement kilns co-processing AFR.

3. Waste Excluded from Co-Processing

Listed types of waste that are not allowed to be received, stored, handled or co-processed in cement kilns.

4. Conditions of Environmental Authorisation

Any cement plant co-processing general or hazardous waste as alternative fuels and/or raw materials, and any dedicated general and/or hazardous waste incinerator must have the relevant approvals from the competent authority. This schedule includes notes on operational management, air quality management, waste management and monitoring and reporting.

10.4.10 National Waste Information Regulations (GR 625 of 2012)

The National Waste Information Regulations came into effect on 01 January 2013. These cover registration of persons who conduct certain waste management activities and their duty to keep records.

10.4.11 National Domestic Waste Collection Standards

The National Domestic Waste Collection Standards (notice 21 of Government Gazette 33935, 21 January 2011) published under the National Environmental Management: Waste Act (Act No. 59 of 2008) came into effect on Tuesday, 1 February 2011.

This standard aims to provide a uniform framework within which domestic waste should be collected in South Africa. This comes after a consultative process with provinces, municipalities and the general public in order to redresses the past imbalances in the provision of waste collection services. The standards aim to guide municipalities on how to provide acceptable, affordable and sustainable waste collection service to the human health and the environment.

The standards cover the levels of service, separation at source (between recyclable and non-recyclable materials), collection vehicles, receptacles, collection of waste in communal collection points, and most importantly the frequency of collection.

Key requirements for municipalities include the following:

- Non-recyclable material such as perishable food waste must be collected at least **once a week** and recyclable material such as paper, plastic, glass etc.; must be collected **once every two weeks**.
- Municipalities have a choice to provide different types of bins taking into consideration the type of vehicles they use; however, they must be rigid and durable to prevent spillage and leakage.

10.4.12 National Norms and Standards for Assessment of Waste for Landfill Disposal (GR635, 23 Aug 2013)

These norms and standards require the assessment of waste prior to disposal at landfill. The assessment of waste before disposal must include identification of the total and leachable concentrations of different chemicals. The concentration of

chemicals determines the classification of the waste which in turn dictates the type of disposal site where the waste can be disposed of.

10.4.13 Waste Classification and Management Regulations (GR635, 23 Aug 2013)

The Waste Classification and Management Regulation aims to address the management of different waste categories. The regulations stipulate the requirements for the transport storage and treatment of different waste types. A list of requirements for record keeping by waste generators is also included in the regulations with the aim of improving and standardising record keeping. The regulations also detail the process to be followed when motivating why a listed waste management activity does not require a waste management license.

10.4.14 National Norms and Standards for Disposal of Waste to Landfill (GR636, 23 Aug 2013)

These norms and standards specify minimum engineering design requirements for landfill sites. The design requirements vary depending on the type of waste to be disposed of at the site.

Landfill sites are designed to comply with one of four designs (Class A – Class D). The landfill design classes vary in the types of liner used. Class A landfill sites require multiple linings and leachate collection systems whereas a Class D landfill site is much simpler in design requiring only a 150 mm base preparation layer. Different classes of landfill are required for different types of waste.

10.4.15 National Norms and Standards for the Storage of Waste (GN 926, Nov 2013)

These standards specify the minimum requirements for waste storage facilities in the interest of protection of public health and the environment. The standards aim to ensure that waste storage facilities are managed according to best practise and to provide a minimum standard for the design and operation of new and existing waste storage facilities.

Hazardous waste storage facilities should be located in areas zoned as industrial, where waste storage facilities are located in residential areas a buffer of at least 100 m must be assigned to the site. General waste storage facilities must be located in an area that is easily accessible by the public.

The standards also specify design requirements for waste storage facilities, these include:

- Access roads
- Signage at the entrance of the facility in at least three official languages applicable to the areas the facility is located in. The sign must indicate:
 - The risk associated with entering the site.
 - Hour of operation.
 - Name, address and telephone number of the person responsible for the operation of the facility.

The standards also require that waste is separated at source into recyclables and non-recyclables.

A new condition for the management of waste storage facilities is the requirement for bi-annual internal audits and biennial external audits

10.4.16 Guidelines for the Designation of Waste Management Officers

The Guidelines for the Designation of Waste Management Officers (WMOs) are undated. These address the provision of WMOs as provided for in section 10 of the National Environmental Management: Waste Act (Act No. 59 of 2008).

The NEMWA requires the designation of a Waste Management Officer at National, Provincial and Municipal levels. At the municipal level, the WMO takes ultimate responsibility for waste management and hence is a significant role.

The municipal WMO responsibilities include:

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

10.4.17 Draft Waste Information Regulations (GN 430 of 2009)

On 8 May 2009 the Minister of Environmental Affairs and Tourism also published Draft Waste Information Regulations in terms of the NEMWA. These cover registration of persons who conduct certain waste management activities and their duty to keep records.

10.4.18 Draft Generic Guideline Document for Preparing Industry Waste Management Plan (March, 2010)

The NEMWA requires industry to prepare and implement Industry Waste Management Plans (Industry WMP) where appropriate. Guidelines guide industries in preparing Industry WMP. The guidelines comply with Industry WMP requirements listed in section 7 of NEMWA.

10.4.19 National Standards for the Extraction, Flaring or Recovery of Landfill Gas in South Africa (GN 924 of 2011)

The purpose of these standards is to ensure there is sufficient control over the extraction, flaring or recovery of landfill site in order to prevent or minimise potential negative effects.

10.5 Local Strategy and Policies

10.5.1 Eastern Cape Provincial IWMP

The Department of Economic Development and Environmental Affairs (DEDEA) produced a provincial IWMP in 2010 in compliance with Section 11(1) of NEMWA. The plan has however yet to be published or approved by the MEC. While the majority of the provisions in the PIWMP relate to DEDEA and its functions, this IWMP, if adopted, will be of significance to the NMBM in that it makes a number of demands on local authorities.

The PIWMP was structured in two sections, a general waste management plan (GWMP) and a hazardous waste management plan (HWMP) and covered the 6 six district municipalities and the NMBM, the only metropolitan council in the Province.

10.5.2 General Waste Management Plan

The general waste management plan identified six priorities for the management of general waste. For each priority, a number of objectives were defined.

Table A2: Priorities, Objectives and Tasks as defined in the draft Provincial IWMP (General waste). Those of direct relevance to NMBM are highlighted.

Strategic priority	Objective	Tasks
Improved strategic waste planning	Legally compliant IWMP process	<ul style="list-style-type: none"> • DEDEA to develop standardised IWMP reporting framework • DEDEA to develop an LA IWMP reviewing and approval system by 2012-03-12 • All LAs to have current IWMPs to meet requirements by end 2011.
	Provide landfill facilities throughout the Province	<ul style="list-style-type: none"> • All residential areas within urban settlements to receive appropriate weekly collection service by 2013 • Develop regional waste facilities in high priority areas as identified in this IWMP
Improve waste services and facilities	Provide at least an acceptable minimum waste collection service in all areas	<ul style="list-style-type: none"> • All residential areas within urban settlements to receive appropriate weekly collection services. • Define a waste collection target and strategy for rural settlements • An acceptable basic level of service in priority areas by 2014
	Achieve legal compliance with national legal requirements for waste facilities	<ul style="list-style-type: none"> • Compliance with national legal requirements for waste facilities • DEDEA to undertake annual, Province-wide landfill compliance monitoring
Improved recovery and recycling	Legal/policy compliance in terms of recycling	<ul style="list-style-type: none"> • LAs 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.
	Maximise recycling opportunities in the Province	<ul style="list-style-type: none"> • Provincial recycling strategy to be developed by 2012. • DEDEA to develop and implement an annual recycling awareness programme. • LAs to develop a waste minimisation/recycling plan by 2013.
Improve institutional functioning	Develop appropriate capacity within DEDEA to implement PIWMP	<ul style="list-style-type: none"> • DEDEA to acquire resources for implementation of this PIWMP by 2011
	Designate Waste Management Officers (WMO)	<ul style="list-style-type: none"> • Provincial WMO to be designated by 2011. • WMOs to be designated in all applicable LAs by 2012.
	Institutional capacity building for WMOs	<ul style="list-style-type: none"> • Waste management forum for WMOs to be established by 2012.
	Develop/revise by-laws in line with NEMWA	<ul style="list-style-type: none"> • All local authorities to adopt and enforce waste management by-laws by 2012 which include NEMWA requirements • LAs to revise by-laws or adopt new ones where they do not exist.
Improved financial management of waste services	Institutional capacity building for waste management financing	<ul style="list-style-type: none"> • Prepare guidelines by 2012.
	Improve waste budgeting process	<ul style="list-style-type: none"> • All LAs to consider requirements of PIWMP in IDP budgeting processes.
Improved management and monitoring	Establish a Municipal waste reporting system	<ul style="list-style-type: none"> • Develop operation Municipal Waste Reporting system. • All LAs to report using Municipal waste report by 2013.
	Improve the use of the National WIS	<ul style="list-style-type: none"> • All government organisations to report using National WIS by 2013. • DEDEA to undertake annual audits of industry's waste registration and reporting performance
	Improve records management	<ul style="list-style-type: none"> • DEDEA to develop an appropriate in-house e-filing and document management system by 2012
	PIWMP monitoring to meet legal requirements	<ul style="list-style-type: none"> • PIWMP Annual Performance Report to be submitted to MEC and Minister for approval

10.5.3 Hazardous waste management plan

Similarly, the Hazardous waste management plan identified five priorities for the management of hazardous waste.

Table A3: Priorities, Objectives and Tasks as defined in the draft Provincial IWMP (Hazardous Waste). Those of direct relevance to NMBM are highlighted.

Strategic priority	Objective	Tasks
Improve HW management capacity and awareness	Develop appropriate capacity within DEDEA and implement provincial HWMP	<ul style="list-style-type: none"> DEDEA to acquire resources for implementation of this plan by 2013. Equip WMOs to deal with hazardous waste. Promote this plan to Provincial departments, district and local authorities.
	Promote awareness of HW management	<ul style="list-style-type: none"> Develop HW management awareness e.g. HW handbook aimed at small business and general public. DEDEA to identify existing waste forum/institutions and ensure representation on those most relevant.
HW prevention, minimisation and recycling	Encourage HW prevention, minimisation and recycling	<ul style="list-style-type: none"> Ensure HW is considered in Provincial recycling strategy. Train WMOs in Cleaner Production Technologies. DEDEA to investigate feasibility of developing a provincial Hazardous Waste Exchange. Raise awareness of recycling.
HW storage, collection and transportation	Promote appropriate management of household HW	<ul style="list-style-type: none"> Investigate options for improving management of household HW by 2012.
	Promote appropriate transportation of hazardous waste	<ul style="list-style-type: none"> DEDEA to investigate feasibility of developing a registration and approval system for hazardous waste contractors.
HW treatment and disposal	Develop appropriate treatment and disposal capacity in the Province	<ul style="list-style-type: none"> Need for hazardous waste transfer and disposal facilities in the Border Region to be included into provincial and local authority plan.
	Compliant hazardous waste treatment and disposal systems for Province	<ul style="list-style-type: none"> DEDEA to inform DEA where facilities are unlicensed or non-compliant to conditions.
Improved hazardous waste monitoring and waste information management	Clarify DEDEA's roles and responsibilities	<ul style="list-style-type: none"> DEDEA to clarify their role by end of 2010
	Planning effective monitoring of hazardous waste management facilities	<ul style="list-style-type: none"> DEDEA to clarify their involvement in Monitoring Committees for hazardous waste facilities in the Province. DEDEA to be represented on such committees where appropriate Develop by (2012) and implement plan for monitoring government authorities and industries with hazardous waste management activities
	PWIMP monitoring to meet legal requirements	<ul style="list-style-type: none"> PWIMP annual performance report to be submitted to MEC and Minister for approval
	Improve the use of the National WIS	<ul style="list-style-type: none"> DEDEA staff to have appropriate access to WIS by 2011 All government organisation producing or handling HW to report this data using National WIS by 2013 All key industries producing/handling hazardous waste to report this data using National WIS by 2013 DEDEA to undertake annual review of WIS reporting performance of all key HW producers/handlers (industry and government)

10.5.4 NMBM Integrated Development Plan (IDP 2011 – 2016, Edition 13)

The Nelson Mandela Bay Municipality's IDP is the principal strategic planning instrument and informs all other key institutional policy documents, implementation plans and planning processes, such as its budgets, business plans and Service Delivery and Budget Implementation Plans. It ensures horizontal and vertical co-ordination and integration across the three spheres of government.

The IDP provides the basis for the managed development of NMBM and will be used by the political, business and community leadership to determine activities and operational plans and guide the allocation of resources until and beyond 2016. The IDP is the foremost plan in pursuance of the current vision:

“To be a globally competitive and preferred Metropole, that works together with the people”

The mission statement of the municipality is as follows:

“Nelson Mandela Metropolitan Municipality is a global city that is governed by an inclusive and innovative municipality focused on sustainable service delivery, socio-economic, infrastructure development and local regional integration”.

The municipality subscribes to the following Five Year Local Government Strategic Agenda. Its developmental priorities, projects and programmes of various Directorates should reflect same in their five year key performance areas, strategic objectives, five year programme outcomes and annual targets:

- Basic Service Delivery and Infrastructure Development
- Local Economic Development
- Municipal Transformation and Organisational Development
- Good Governance and Public Participation
- Municipal Financial Management and Viability

The NMBM IDP 2011 (13th edition) integrates the IWMP and includes the following targets with regard to waste management:

- 100% of households within the urban edge to receive a domestic waste collection service (this excludes informal areas on privately owned erven and erven not earmarked for human settlements development).
- Conversion of 30,000 households within the urban edge from a bi-weekly to weekly collection service.
- Sustain 20 waste management community-based contractors.

10.5.5 NMBM Integrated Environmental Policy

The NMBM's present environmental policy was adopted in 2012 and confirmed the commitment of the NMBM to a number of the “Chapter 1” principles of the National Environmental Management Act (107 of 1998) (NEMA) such as sustainable use of resources, and the polluter pays principle. While it did not contain a section specifically talking to waste management, it did talk to waste-relevant commitments such as “the control of waste”, and continual improvement. The NMBM is currently revising its Environmental Policy. The current draft includes sector specific commitments, including waste. It states that in order to manage waste effectively in line with the national waste management hierarchy, the *Municipality* endeavours to:

- Maintain and review an IWMP as required by the Waste Act.
- Implement the waste objectives as highlighted in the IWMP.
- Prevent and minimise waste through initiatives such as the NMBM waste exchange.
- Promote public awareness campaigns with NMB civil society on the dangers of illegal dumping.

The policy defines NMBM's vision for key aspects of the environment, namely:

1. A society well aware of its environment and the importance thereof.
2. A healthy environment which is managed in a manner which balances both its biophysical needs as well as the human development needs of present and future generations.
3. Basic services provided for all.
4. A growing economy and reduced unemployment.
5. Sustainable water resources and a sustainable potable water supply for all.
6. An area with clean air for all.
7. A society acknowledging the challenges of climate change and accordingly prioritises renewable energy generation and efficient consumption thereof.
8. A society which recognises the services provided by the many facets of the natural environment and the value thereof.
9. Safe, secure and tourist-friendly environment for all, including coast and beaches.
10. Comprehensive waste management which encourages and facilitates waste minimisation and recycling.

10.5.6 Municipal By-laws

Chapter 7 of the South African Constitution: Section 156 provides that a municipality may make and administer by-laws for the effective administration of matters which it has the right to administer and that (section 151) it shall not be in conflict with national or provincial legislation.

This is further supported in the municipal systems act (Act 32 of 2000), Chapter 3: section 11 for a municipality to exercise executive authority within its boundaries to implement applicable by-laws. Section 75 of the MSA provides for the municipal council to adopt by-laws to give affect and enforce its tariff policy.

The Draft Municipal Sector Plan (Notice 182 of Government Gazette 34167) was published by the Minister for public comment on the 30 March 2011. Section 3.3.9.5 motivates that the enforcement of municipal waste by-laws is required to address ineffective collection systems through the enforcement of available resource-based controls which will improve the situation at community level. Enforcement should further be placed with a dedicated section with trained Environmental Management Inspectors in line with Chapter 7 of the National Environmental Management Act, 1998 (Act107 of 1998).

The Nelson Mandela Bay Municipality: Waste Management by-laws were recently revised and were published in Local Authority notice 40 of Provincial Gazette No. 2322 on the 24 March 2010, under the provision of section 156 of the Constitution of the Republic of South Africa, 1996.

(a) Application principles and objectives

The By-law applies to all areas under the control of the Nelson Mandela Bay Metropolitan Municipality and is limited to regulate the generation, storage and collection of solid, non-hazardous waste.

The municipality adopts this by-law with the aim of protecting and promoting the health and well-being of all people in the NMB area by providing in conjunction with applicable laws, a legal and administrative framework within which the municipality can develop and manage its obligations.

In the implementation and enforcement of this by-law, the municipality may take into consideration the realities of the NMB area, the different customs, cultures, circumstances, geographical areas, kinds of property levels of development and conventions and the municipality may use the devices provided for in this by-law, including the application of different norms, standards and guidelines, the granting of exemption and the utilisation of liaison forums as contemplated in section 37 of the by-law.

(b) Content

The Municipal by-laws address the following:

Charges and fees for the removal of waste;

Part 1: Categories of waste

- Distinguish between waste categories;

Part 2: General provisions relating to non-hazardous waste

- Property owner's responsibility for provision of, storage conditions of temporary storage location of, and maintenance waste receptacles within their property;
- Municipality's provision of waste receptacles;
- Acceptable contents for waste receptacles;
- Property owner's responsibility for allowing municipal access onto property; and
- Acceptable conditions for transportation of waste

Part 3: Specific provisions relating to domestic waste

- Property owners/occupiers responsibility for storage conditions, location of (pavement), and maintenance of waste receptacles whilst on their property;.

Part 4: Specific conditions relating to industrial and commercial waste:

- Conditions of waste storage – including compaction where waste is more than 8x 240L waste receptacles;
- Tariffs and Levies pertaining to waste removal and treatment or disposal upon application by the municipality; and
- Use of a registered waste collector within reasonable time.

Part 5: Specific provisions relating to other types of waste

- Garden Waste: Permissible quantities for collection by municipality; permissible quantities and conditions for composting and; collection by alternative waste collector;
- Building waste: Acceptable storage conditions and collection within reasonable time; registration of alternative waste collector; and
- Bulky waste: Collection and disposal within reasonable time.

Part 6: Littering and dumping

- Prohibition of littering, sweeping of waste into gutters or public place;
- Prohibition of dumping; and
- Written notice issued by the municipality for persons responsible in conflict of the above.

Part 7: Prohibited conduct at dumping sites

- Access to disposal site permitted only to persons authorised by municipality and at own risk;
- Conditions for offloading of waste at the disposal site; and
- Prohibition of removal of waste from the disposal site.

Part 8: Burning of waste

- Waste may only be burned at a licensed incinerator, or in a place designated by the municipality for such purpose;
- Commercial waste transporters must be registered with the municipality as a waste collector;
- Registration process for Waste transporters (effective as of 24 March 2011);
- Persons who make use of services of Waste transporters must ensure they are registered with the municipality (effective as of 24 March 2012);
- Further duties for waste transporters;
- Supervision of waste transporters;
- Notice and compliance representation: notice will be given to persons who are in contravention to this by-law;
- Liability for costs to rectify the above contravention;
- Appeals procedure;
- Exemption; and
- Penalties – fines are defined within waste by-laws: Schedule of Offences

The Nelson Mandela Bay Municipality published municipal by laws: Schedule of Offences and crimes in the Provincial Government Gazette 2322, 24 March 2010 which came into effect in December 2010. In support of the afore mentioned by-laws, the Nelson Mandela Bay Municipality has allocated offence codes to contraventions of sections within the by-laws. Where persons fail to comply with relevant section within the By-laws, they will be liable to the fines as per the Schedule of Offences.

(c) Gaps within the Waste Management by-laws

Although the NMBM Waste by-laws addresses issues such as responsibilities for storage, collection, transportation of waste, it does not address the following important issues regarding waste:

- No reference is made to Health Care Risk Waste and Hazardous Waste - the province is the regulatory body when it comes to hazardous waste including HCRW from hospitals but the municipality has the responsibility to make sure that all businesses including hospitals and doctors report on how they dispose their waste.

- The by-law categorises waste but does not include the concept of the Waste Hierarchy: Avoidance, Reduction, Re-use, Recycling opportunities must be sort out prior to treatment and disposal.
- Part 5: should include Waste Exchange legislation or should encourage the use there of.
- There should be consistency in the terminology used. For example Waste transporter and Waste Collector are used interchangeably
- The by-laws do not address trans-boundary waste, risks involved in inheriting hazardous waste and to prepare for risks that can be incurred.
- Generators and transporters of waste should be registered with the municipality for all categories of waste.
- Crèches and old age homes need to specify types of waste generated in their institutions and how it is disposed.
- Ensure that each business has got a waste removal service whether with the municipality or private contractors. Private companies must be registered to enforce the Waste Act.
- Chapter 4- review fines in accordance with the Waste Act taking into consideration section 68.
- Section 37 to be reviewed.
- For development projects, a system of linking building plan approval and correct waste management should be investigated. For example, Saldanha municipality requires for all building sites to register for a skip before building plans are approved. Records are then kept at landfill sites of which skips are being emptied, and contractors not taking their skips to landfill sites for emptying are identified as potential illegal dumpers (CSIR, 2011).

APPENDIX B

Household Waste Collection Service Data

The figures used for the following table are correct as of 24 May 2016

Table B1: Breakdown of waste serviced provided to households in the NMBM

MUNICIPAL SERVICE	DESCRIPTION OF AREAS	NO. HOUSEHOLDS	TYPE OF SERVICE	SERVICE METHODOLOGY
Refuse removed at least once a week	Matthew Goniwe, Missionvale/Kleinskool, Shukushukuma (Motherwell), Seaview/Beachview Gqebera (Walmer), Joe Slovo	24756	Kerb side black bag	NMBM Community Based Co-operatives
	Colchester Kuyga Bluehorizon Bay Soweto-on -Sea, Ibhayi Areas, Northern Areas, Chatty Ext (RDP in progress) Joe Slovo West Site & Service relocations (+282) Motherwell Depot Areas (Kwa-Magxaki, Redhouse, Bluewater Bay, Wells Estate, NU 29) Uitenhage, Despatch Kwanobuhle (Area 10, Peace Village, Joe Modise, Hani Ramaphosa) City Areas (PE)	138572		NMBM Waste Management Subdirectorate
	Motherwell, Wells Estate & Kamvelihle (increase in frequency from bi-weekly to weekly collection service)	28335	Kerb side wheely bin	NMBM Waste Management Subdirectorate
	KwaNobuhle Area 4, 6 & 7 (increase in frequency from bi-weekly to weekly collection service)	7317		
	Ibhayi Areas (New Brighton, kwaZakhele, Zwide) (increase in frequency from bi-weekly to weekly collection service)	31592		
	Schauderville (increase in frequency from bi-weekly to weekly collection service)	2155		
	Helenvale (increase in frequency from bi-weekly to weekly collection service)	3619		
	Northern Areas (remainder) (increase in frequency from bi-weekly to weekly collection service)	27121		
	Uitenhage, Kwanobuhle, Despatch	38943		
	Using communal refuse collection point	Khayamnandi Ext Site & service - shacks relocated Rocklands RDP NMBM Informal Areas (-34)	15765	Communal black bag or skip
Total nr of households within the Urban edge receiving a waste collection service		318175		

No refuse disposal	Damascus Farm (20) Motherwell North (Coega/Uth Rd) (130) Old Lapland (143) McCarthy School (200) Next to Rosedale Ext (360) Moeggesukkel (Uth) (20)	853	Informal areas not serviced due to the lack of a formal layout and road infrastructure (areas not earmarked for HS development) or area located on private land
Total Nr of households within the Urban Area		319028	

APPENDIX C

Landfill and Drop-off Facility Fact Files

APPENDIX D

Waste Disposal Facility Locations

Table D1. Summary of waste facilities in the NMB area

NAME	ALLOT/SUBURB	WARD	NMBM CLASSIFICATION
BRAMLIN STREET	MALABAR EXT 6	12	COMMUNAL COLLECTION
ROCKLANDS RDP	ROCKLANDS	40	COMMUNAL COLLECTION
TAMBO (LAMBATA STR)	UITENHAGE/MCNAUGHTO	50	DROP-OFF SITE
GILLESPIE	UITENHAGE/VALLEISIG	51	DROP-OFF SITE
JOLOBE	KWANOBUHLE	47	DROP-OFF SITE
ZOLILE	KWANOBUHLE	45	DROP-OFF SITE
SARILI	KWANOBUHLE	42	DROP-OFF SITE
VERWOERD	UITENHAGE/VANES	51	DROP-OFF SITE
NGEYAKHE	KWANOBUHLE	42	DROP-OFF SITE
NTAMBANANI	KWANOBUHLE	47	DROP-OFF SITE
LAKSMAN	ROSEDALE/UIT	49	DROP-OFF SITE
RALO STR	KWAMAGXAKI	30	DROP-OFF SITE
DITCHLING ST	YOUNG PARK	11	DROP-OFF SITE
HUNTERS RETREAT	HUNTERS RETREAT	12	DROP-OFF SITE
KRAGGAKAMMA RD	FRAMESBY	09	DROP-OFF SITE
5TH AVENUE	WALMER	04	DROP-OFF SITE
STRANDFONTEIN RD	SUMMERSTRAND	02	DROP-OFF SITE
STANFORD ROAD	HELENVALE	13	DROP-OFF SITE
TIPPERS CREEK	BLUEWATER BAY	60	DROP-OFF SITE
UMNULU 1	MOTHERWELL	58	DROP-OFF SITE
OLD UITENHAGE ROAD -	GOVAN MBEKI	32	TEMP SKIP SITE
DE KOCK STR (REFER CARDEN	REDHOUSE	60	TEMP SKIP SITE
BHOBOYOI STR	MOTHERWELL	58	TEMP SKIP SITE
NGQOKWENI ST (NGOMA)	MOTHERWELL	57	TEMP SKIP SITE
MZWAZA ST (REFER MPENGO)	MOTHERWELL	57	TEMP SKIP SITE
MGWALANA ST	MOTHERWELL	59	TEMP SKIP SITE
ECHOLA (DABADABA)	MOTHERWELL	59	TEMP SKIP SITE
MBOKWANE	MOTHERWELL	55	TEMP SKIP SITE
MALINGA ST	WELLS ESTATE	60	TEMP SKIP SITE
SAKWATSHA ST	MOTHERWELL	58	TEMP SKIP SITE
NGOMA ST	MOTHERWELL	57	TEMP SKIP SITE
UMNULU 2	MOTHERWELL	57	TEMP SKIP SITE
VAYOLETHI STR	MOTHERWELL	54	TEMP SKIP SITE
MPEHLA ST	MOTHERWELL	54	TEMP SKIP SITE
NKOBONGO ST	MOTHERWELL	58	TEMP SKIP SITE
BERENG RD	KWANOBUHLE	46	TEMP SKIP SITE
STERERA STREET	KWANOXOLO	38	TEMP SKIP SITE
ARGENTINIA STREET	BLOCK 23	38	TEMP SKIP SITE
UITENHAGE RD	GOVAN MBEKI	33	TEMP SKIP SITE
BLACKBURN STREET	GOVAN MBEKI	33	TEMP SKIP SITE
ANGOLA STREET	JACKSONVILLE	41	TEMP SKIP SITE
MPUKO STREET	JACKSONVILLE	41	TEMP SKIP SITE
KOOPMAN STREET	BOOYSESPARK	41	TEMP SKIP SITE
BARAYI STR	KWADWESI EXT	36	TEMP SKIP SITE
BUTHELEZI STREET	KAMVELIHLE	53	TEMP SKIP SITE
BUTISE STREET	KHAYAMNANDI	52	TEMP SKIP SITE
WILLIAM SLAMMERT DR	CHATTY PHASE 1	41	TEMP SKIP SITE
HIGH STREET	UITENHAGE	48	TEMP SKIP SITE
BUNYULUZA STREET	MOTHERWELL	57	TEMP SKIP SITE
BLUE HORIZON BAY	BLUE HORIZON BAY	40	TRANSFER SITE
SEAVIEW	SEAVIEW	40	TRANSFER SITE
COLCHESTER	COLCHESTER	53	TRANSFER SITE

APPENDIX E

Annual Disposal Tonnages for Arlington and Koedoeskloof
Landfill Sites

Table E1: Annual disposal tonnages for Arlington landfill site

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1996	13815	14172	15084	15606	17219	13251	15921	14585	12987	16698	13882	16521	179741
1997	14850	14221	15581	17345	14693	15408	19274	16638	18793	21660	17134	14802	200399
1998	15841	17742	18363	14542	14464	16002	17923	16067	14835	20628	17891	14349	198647
1999	13408	14070	14726	13169	13818	12446	14960	14986	13899	15618	17692	13327	172119
2000	13864	14466	15735	15421	14520	12955	15971	18139	16592	20879	20552	18395	197489
2001	17196	15399	17360	15980	17067	15781	16584	16638	14307	17816	17905	15735	197768
2002	15852	17244	16789	15716	16332	17920	17642	17972	16659	18210	16969	14445	201750
2003	17177	18660	23458	23749	21286	18520	19579	21352	19495	22270	21862	18493	245901
2004	17867	19460	20810	19520	19962	18798	19409	20217	18077	20117	20093	21095	235425
2005	20644	21395	22497	20527	16185	17466	17473	17399	19965	19747	23392	18182	234872
2006	26837	18072	199986	20337	22693	22706	28357	22185	22185	30868	28569	21756	464551
2007	26540	25421	33260	24887	26967	32138	28666	36496	35703	40198	39834	25806	375916
2008	27661	32116	30797	32680	35246	27459	30314	26190	28552	30008	30008	22053	353084
2009	<u>21196</u>	<u>24422</u>	<u>27237</u>	<u>19555</u>	21048	25004	28399	45088	52381	46093	40530	21175	372128
2010	27093	29946	45648	30199	31961	24417	24985	31078	24434	25961	26639	24001	346362
2011	22597	22996	24248	18876	21167	23424	22751	25045	33386	28107	25537	23620	291754
2012	24148	26464	26778	20907	22324	25029	23249	26650	25159	30863	27525	21818	300914
2013	31413	31615	22696	24462	22752	22802	23316	20113	20192	28217	25019	24208	296805
2014	28546	27007	31034	24746	23834	22393	26728	25300	29918	31902	36320	29342	337070
2015	26007	29918	49742	26168	30590	23936	24366	24546	37921	31718	32331	22091	359334
Mean	<u>16829</u>	<u>17313</u>	<u>28418</u>	<u>16951</u>	<u>17348</u>	<u>16936</u>	<u>18073</u>	<u>19336</u>	<u>19370</u>	<u>21287</u>	<u>20301</u>	<u>16279</u>	228441

Estimate as weighbridge not functioning

Table E2: Annual disposal tonnages for Koedoeskloof landfill site

YEAR	JAN	FEB	MARCH	APRIL	MAY	JUNE	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
2005							11801	11682	14757	13356	12994	14458	79048
2006	14331	16629	16565	15074	14667	20268	18509	20269	20904	21408	18962	18053	215639
2007	19836	18946	19330	15062	18379	18540	21151	19907	19955	20282	20047	16936	228371
2008	20511	17679	15445	19823	20007	19397	20765	24163	20596	21812	18050	17464	235712
2009	16692	16865	19467	16770	17068	15907	14510	18232	18246	17669	16879	17749	206054
2010	17517	18380	20109	15481	27506	22047	21079	19737	18477	16082	17798	17023	231236
2011	18692	17984	22535	18155	18190	15719	13943	14852	18263	16090	13948	15424	203795
2012	15956	12323	14387	13574	17738	11162	12539	14683	18247	10811	15758	15407	172585
2013	20249	18119	17888	29294	17370	16546	10995	11939	13182	18532	15973	13383	203470
2014	20315	19897	18306	15579	16495	18940	22683	22270	19396	23147	19164	18220	234412
2015	31403	28358	22455	19594	29781	19192	18324	22639	18427	26047	21833	17792	275845
Mean	<u>12354</u>	<u>11881</u>	<u>12784</u>	<u>11394</u>	<u>13356</u>	<u>12304</u>	<u>12209</u>	<u>13048</u>	<u>13586</u>	<u>12501</u>	<u>12221</u>	<u>12047</u>	149683

APPENDIX E

Waste Management Staff Survey Form and Contractor
Survey Form

NELSON MANDELA BAY MUNICIPALITY INTEGRATED WASTE MANAGEMENT PLAN (IWMP) REVISION 2011

STAFF INTERVIEW

INTRODUCTION

OVERVIEW

The Nelson Mandela Bay Municipality (NMBM) is in the process of revising their Integrated Waste Management Plan (IWMP), which is a planning tool that will guide the municipality's waste management activities for the next 5 years. Arcus GIBB has been appointed to facilitate this project. As part of this GIBB is undertaking interviews with certain staff within the waste management unit to determine what they perceive the challenges to be within the organisation, and how they would like to see these issues addressed. The interviews will be conducted face-to-face by a Gibb employee.

WHAT WILL HAPPEN TO THE RESULTS?

The results will be summarized in the revised IWMP report which will be a public document. No individuals will be identified in the survey results and all results will remain anonymous.

FURTHER INFORMATION

Should you have any queries regarding this survey or the IWMP in general, feel free to contact NMBM Waste Management or the NMBM's appointed consultants.

Mrs Melinda Labuscagne Nelson Mandela Bay Municipality 041 506 5466 MLabuscagne@mandelametro.gov.za	Mr Walter Fyvie Arcus GIBB 041 392 7500 wfyvie@gibb.co.za
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QUESTIONNAIRE

RESPONDENT'S DETAILS

1. What is your designation

2. Describe your main duties / responsibilities.

3. How long have you worked at the municipality?

STAFF

4. Has the municipality designated a Waste Management Officer in terms of the NEMWA? Who is it?

5. Are there unfilled posts in the waste management section? If so, why?

6. How many unfilled posts are there and how do these affect the running of the section?

COOPERATIVE GOVERNANCE

7. What internal forums is the waste section a part of that allow exchange of information between municipal directorates?

8. To what extent do you interact with the provincial waste management office?

9. What external forums is the municipality a part of that allow exchange of information between other LMs or Provincial and National Government?

INFORMATION MANAGEMENT

10. What key waste management data does the municipality collect on a regular basis?

11. How is waste management data saved / stored?

12. How does the municipality interact with the national WIS? What data is uploaded and how?

--

13. Do you have any criticisms of the national WIS?

--

14. How can information management be improved in the waste section?

--

LEGISLATION

15. Are you aware of the municipality's waste by-laws?

Yes	No	
-----	----	--

16. How successfully are these enforced? Why?

--

17. Are there any designated enforcement staff? How many?

--

18. Do you have any criticisms of the by-laws?

--

WASTE MINIMISATION / RECYCLING

19. Do you feel that the municipality has a responsibility to facilitate waste minimisation / recycling?

Yes	No	
-----	----	--

20. What waste minimisation / recycling initiatives is / has the municipality undertaken in the last five years.

--

21. What have been their successes and failures and why?

--

22. Rate your opinion of the municipal recycling facilities/services presently available in the metro area.

Very good		Good		Fair		Poor		Very poor	
-----------	--	------	--	------	--	------	--	-----------	--

23. What could or should the municipality be doing to improve recycling in the metro?

--

24. Describe any internal recycling programmes run by the municipality e.g. office paper, if any. What are the challenges and how could these be expanded?

--

WASTE COLLECTION

25. Do you feel that the municipality is providing an adequate collection service to all areas? Explain.

--

26. What needs to be improved, and how should this be achieved?

--

27. Are you aware of the current “National Policy for the Provision of Basic Refuse removal Services to Indigent Households” and the “National Domestic Waste Collection Standards, Jan 2011”? If yes, how is the municipality responding to these?

LITTER AND ILLEGAL DUMPING

28. How big a problem is litter and illegal dumping in the municipality?

29. What is the municipality doing to address it?

30. What could the municipality do to better address litter or illegal dumping problems?

WASTE TRANSFER STATIONS

31. Rate your opinion of the municipal garden refuse transfer stations.

Very good		Good		Fair		Poor		Very poor	
-----------	--	------	--	------	--	------	--	-----------	--

32. What are the key challenges regarding the municipal garden refuse transfer stations?

33. What is the municipality doing / planning to do to address these challenges?

34. What should the municipality being doing to address these challenges?

--

WASTE DISPOSAL

35. Rate your opinion of the municipal landfill sites.

Very good	Good	Fair	Poor	Very poor
-----------	------	------	------	-----------

36. What are the key challenges facing the municipal landfill sites?

--

37. What is the municipality doing / planning to do to address these challenges?

--

38. What should the municipality be doing to address these challenges?

--

HAZARDOUS DOMESTIC WASTE

39. Rate your opinion of the degree to which the municipality is currently facilitating collection of domestic hazardous waste.

Very good	Good	Fair	Poor	Very poor
-----------	------	------	------	-----------

40. Are you aware of the responsibilities that the National Domestic Waste Collection Standards (Jan, 2011) place on municipalities regarding management of domestic hazardous waste?

Yes	No
-----	----

41. What should the municipality be doing to ensure correct collection and disposal is facilitated?

--

42. Does the municipality have any plans to achieve the above? If yes, explain.

GENERAL

43. As a municipal employee, what are the top three biggest “waste management challenges” facing the municipality? How could these be addressed?

44. As a municipal employee, what are the top three biggest challenges preventing the waste management section achieving its goals? How could these be addressed?

45. Any other comments?

THE END

Thank you for the time taken to complete this questionnaire.

**NMBM IWMP REVIEW (2011)
CONTRACTOR INTERVIEW QUESTIONNAIRE**

INTRODUCTION

Arcus GIBB has been appointed by the Nelson Mandela Bay Municipality to revise there Integrated Waste Management Plan (IWMP). As part of getting to understand the waste management industry in NMBM we are undertaking interviews with many industry role players and would appreciate it if you could take a few minutes to answer these questions.

CONTACT DETAILS

COMPANY		TEL NUMBER	
INTERVIEW DATE		CELL NUMBER	
CONTACT NAME		EMAIL	
DESIGNATION		ADDRESS	

NATURE OF ACTIVITIES

Describe your business?

Waste type

Volumes

Collection (clients or areas serviced)

Transportation

Recycling?

Treatment

Disposal of waste?

Number of facilities in NMBM

OTHER OPERATORS

Other operators in NMBM (in order of size).

NMBM and IWMP

Are you aware of NMBM waste bylaws, and are they enforced?

Are you aware of the NMBM IWMP?

Communication with NMBM waste? Is it sufficient? Are appropriate structures in place?

GENERAL

What could NMBM do to assist your industry?

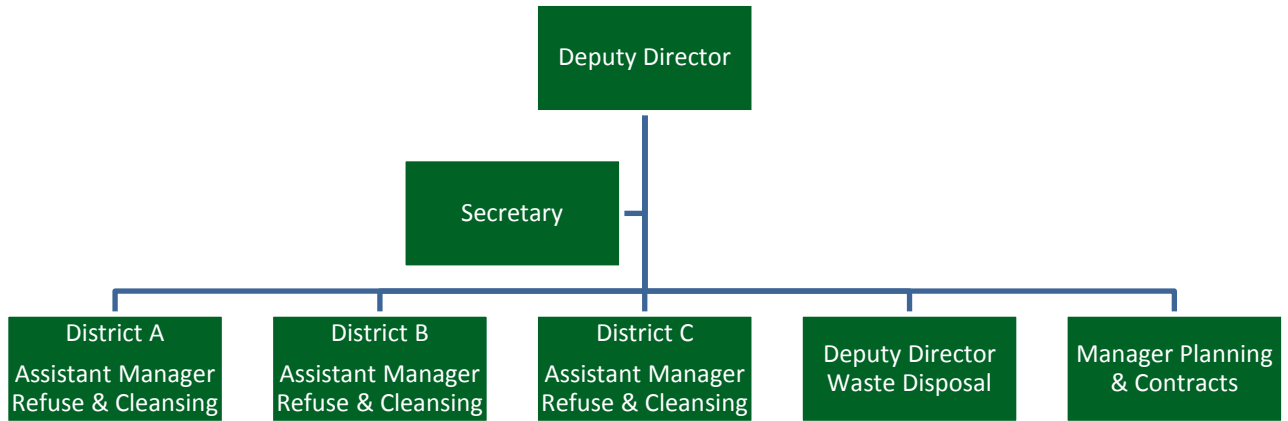
What are the biggest waste challenges facing the metro?

Where does NMBM need to improve its waste management?

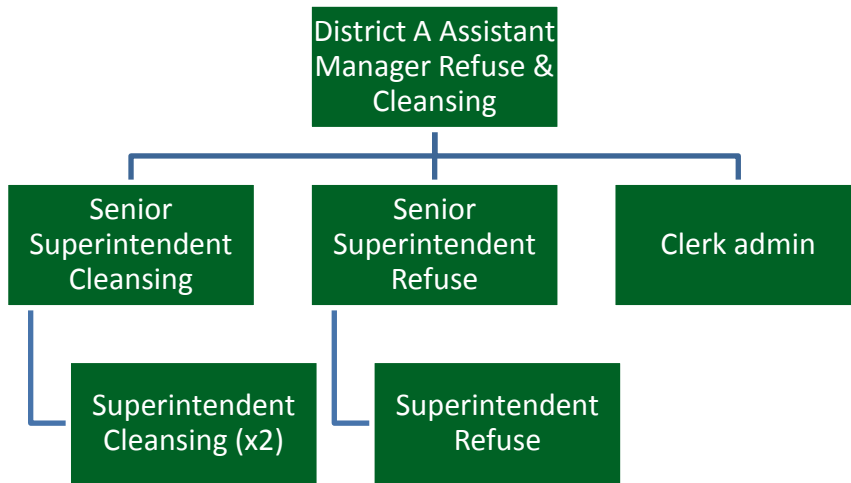
APPENDIX F

Waste Management Organogram

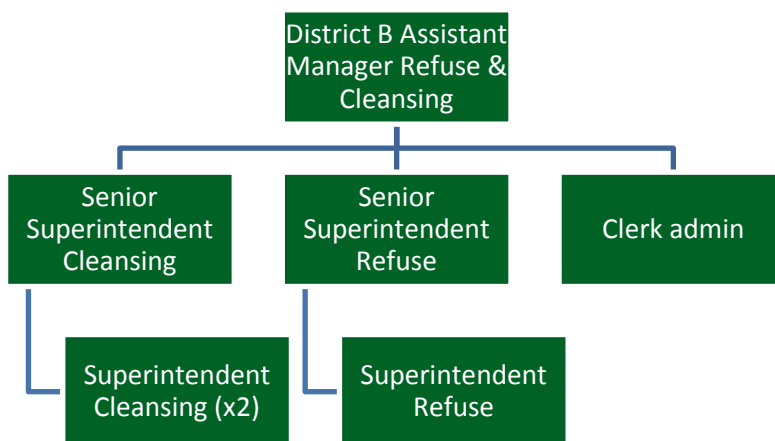
Nelson Mandela Bay Waste Management Staff Organogram (top structure only)



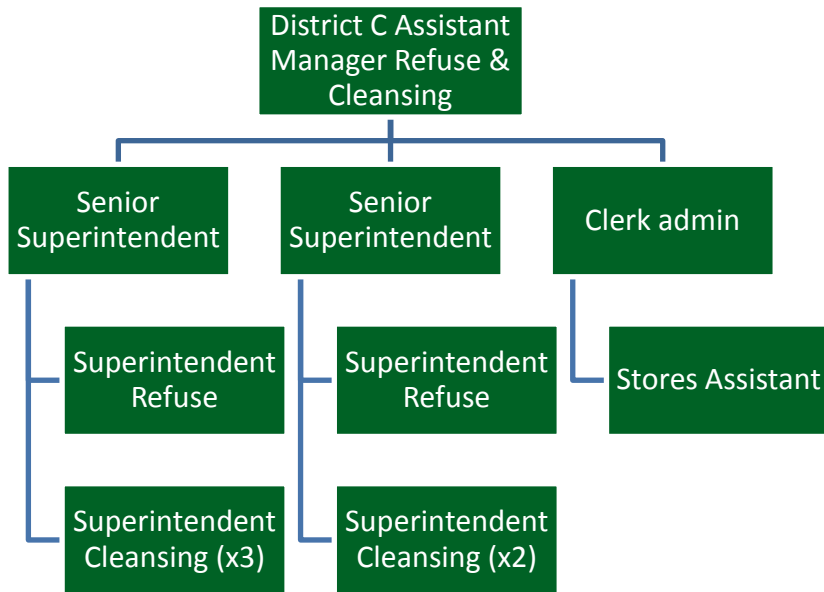
District A Organogram



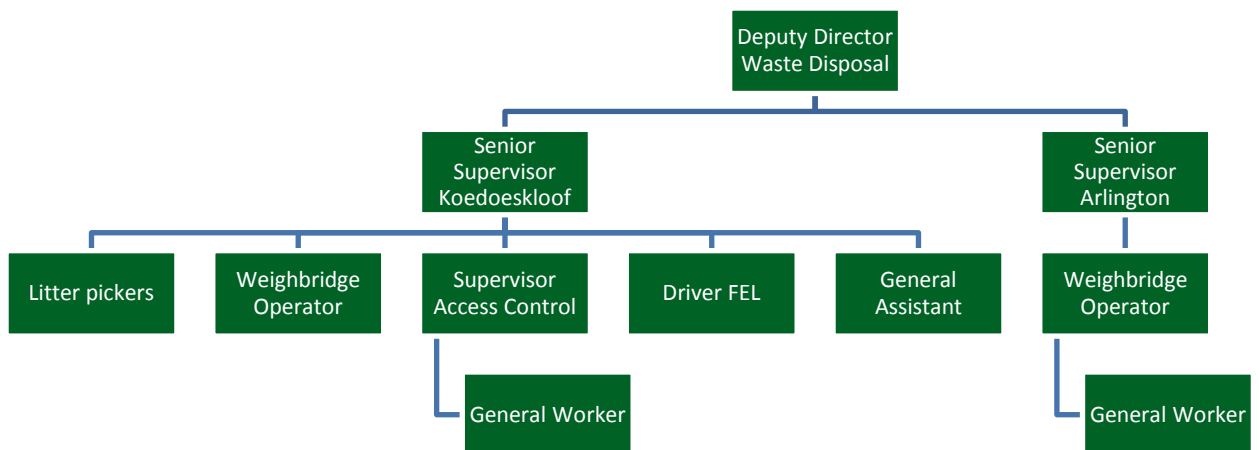
District B Organogram



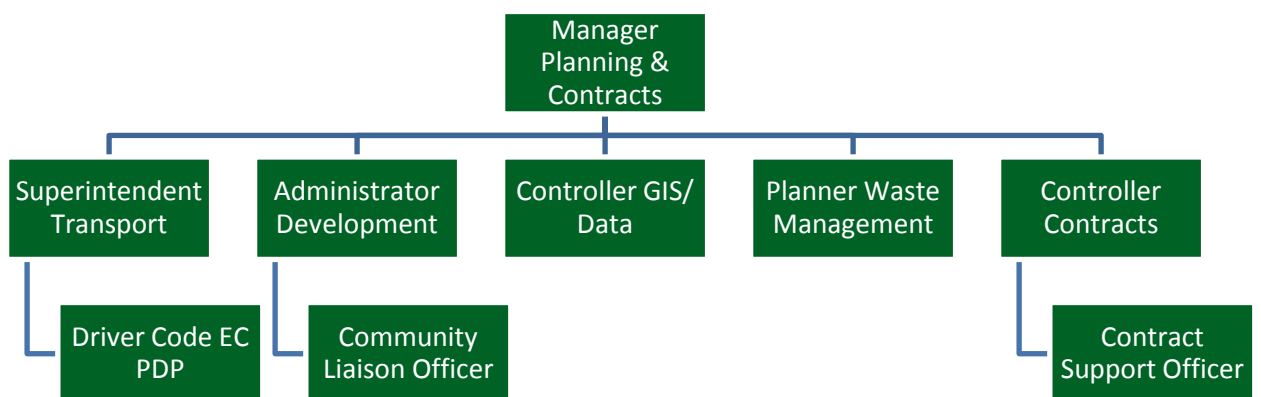
District C Organogram



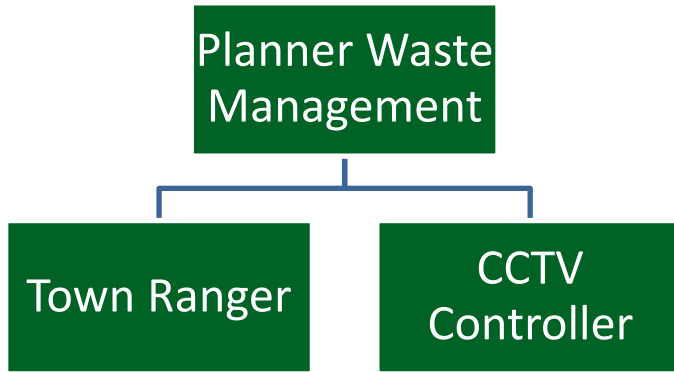
Waste Disposal Organogram



Planning and Contracts Organogram



Waste Planning Organogram



APPENDIX G

Public Participation Report

APPENDIX H

Letter of Endorsement by DEDEAT



Ref: [NMBM/IWMP/001-2017]

Contact Person: *Lulama Daniels*

Tel: 043 605 7048 | Fax: 043 605 7300 | Cell: 0825754429 | Email:
lulama.daniels@dedea.gov.za

www.dedea.gov.za

The City Manager
Nelson Mandela Bay Metropolitan Municipality
PO Box 116
Port Elizabeth
6000

Attention: Mr J. Metler

ENDORSEMENT OF INTEGRATED WASTE MANAGEMENT PLAN (IWMP 2017-2021) IN TERMS OF NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE AMENDMENT ACT, 2014 (ACT NO. 26 OF 2014).

I hereby wish to notify you that the Integrated Waste Management Plan (IWMP) as prepared by GIBB Engineering & Architecture Consulting for Nelson Mandela Bay Municipality and adopted by the Nelson Mandela Bay Metropolitan Municipality Executive Council on 01 December 2016 is herewith endorsed.

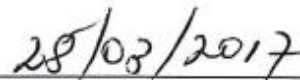
The above-mentioned IWMP was developed in terms of section 11(4) of the National Environmental Management: Waste Amendment Act, 2014 (Act No. 26 of 2014). After careful consideration I am satisfied that it complies with the requirements stipulated in the Waste Act as well as aligned with the National Waste Management Strategy; and that it will form part of the Nelson Mandela Bay Metropolitan Municipality's Integrated Development Plan (IDP). The Municipality has an obligation to exercise its responsibilities in accordance with these plans and to report annually by the end of each financial year on implementation of the IWMP to DEDEAT.

Yours faithfully


Honourable S. Somyo

MEMBER OF THE EXECUTIVE COUNCIL:

ECONOMIC DEVELOPMENT, ENVIRONMENTAL AFFAIRS AND TOURISM



DATE

"Innovation for Sustainable Development"