



PROJECT TITLE: ILEMBE DISTRICT MUNICIPALITY INTEGRATED WASTE MANAGEMENT PLAN FINAL DRAFT

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Acronyms and Abbreviations

APPA	Atmospheric Pollution Prevention Act.
ASP	Africa Stockpiles Programme.
CBD	Central Business District
DEA	Department of Environmental Affairs.
DM	District Municipality.
DO	Department of Health.
DoE	Department of Education.
DWA	Department of Water Affairs
DWS	Department of Water and Sanitation (formerly Department of Water Affairs (DWA)).
DPW	Department of Public Works.
ECA	Environment Conservation Act (73 of 1989).
EIA	Environmental Impact Assessment.
EPWP	Expanded Public Works Programme
eWASA	e-Waste Association of South Africa.
FBRR	Free Basic Refuse Removal.
GDPR	Gross Domestic Product per Region.
HCRW	Health Care Risk Waste.
HCW	Health Care Waste.
HWMP	Hazardous Waste Management Plan.
iDM	iLembe District Municipality
IDP	Integrated Development Plan.
IDZ	Industrial Development Zone.
IEM	Integrated Environmental Management.
IPWM	Integrated Pollution and Waste Management.
IRD	Initial Rate of Deposition
IT	Information Technology.
IWM	Integrated Waste Management.
IWMP	Integrated Waste Management Plan.
IWMSA	Institute of Waste Management South Africa.
KLM	KwaDukuza Local Municipality
KZN	KwaZulu-Natal
LA	Local Authorities (Local and District level authorities).
LM	Local Municipality.
MLM	Mandeni Local Municipality
MPLM	Maphumulo 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).
NGL	Natural ground level
NHA	National Health Act (61 of 2003).
NWMS	National Waste Management Strategy.
NLM	Ndwedwe Local Municipality
OHSA	Occupational Health and Safety Act (85 of 1993).
PCBs	Polychlorinated Biphenyls.
PE-HD	Polyethylene high density.
PE-LD-	Polyethylene low density.
PET	Polyethylene Terephthalate.
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.
Building and demolition wastes	Waste, excluding hazardous waste, produced during the construction, alteration, repair or demolition of any structure, and includes rubble, earth, rock and wood displaced during that construction, alteration, repair or demolition, which include: discarded concrete, bricks, tiles and ceramics; discarded wood, glass and plastic; discarded metals; discarded soil, stones and dredging spoil; other discarded building and demolition wastes (NEMWA Amendment Act, 2014).
Business waste	Waste that emanates from premises that are used wholly or mainly for commercial, retail, wholesale, entertainment or government administration purposes (includes general and hazardous wastes) (NEMWA Amendment Act, 2014).
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).
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 ant 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 which include: garden and park wastes, municipal waste, food waste (NEMWA Amendment Act, 2014).
Drop-off centre	A facility where the public is able to drop off garden refuse, recyclables and bulky waste.
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)
iLembe District Municipality (iLM)	The district authority administrating the study area.
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)
KwaDukuza Local Municipality (KLM)	A local municipality forming part of the iLembe District Municipality and the study area.
Landfill	Site for the controlled disposal of waste materials.
Mandeni Local Municipality (MLM)	A local municipality forming part of the iLembe District Municipality and the study area.
Maphumulo Local Municipality (MPLM)	A local municipality forming part of the iLembe District Municipality and the study area.
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, first published by DWAF in 1998. These have largely been replaced by various waste-related Norms and Standards.
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)
Ndwedwe Local Municipality (NLM)	A local municipality forming part of the iLembe District Municipality and the study area.
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 <u>international environmental law</u> where the <u>polluting party</u> pays for the damage done to the <u>natural environment</u> .

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 or retrieval of any substance, material or object from waste (NEMWA Amendment Act, 2014).
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 recyclables, no money is paid for the recyclables. Recycling points are usually found at schools, libraries and vehicle service stations. These facilities are owned by the private sector.
Re-use	To utilise the whole, a portion of or a specific part of any substance, material or object from the waste stream for a similar or different purpose without changing the form or properties of such substance, material or object (NEMWA Amendment Act, 2014).
Sharps	Items such as needles, syringes, and blades of clinical glass that is 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).
Transfer stations	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).
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, rejected, discarded, or disposed of, or that is intended or required to be discarded or disposed of, by the holder of that substance, material or object, whether or not such substance, material or object can be re-used, recycled or recovered and includes all wastes as defined in Schedule 3 to this Act; or (b) any 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 not required, once a waste is, or has been re-used, recycled or recovered. (iii) where the Minister has, in terms of section 74, exempted any waste or 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.
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.
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 on the Municipality's Waste Transporter System.
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

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 (2012) Municipal Waste Sector Plan GN 270 of 2012
- National Environmental Management: Waste Act 59 of 2008: National Norms and Standards for the Storage of Waste (GN 926 of 2013).
- National Environmental Management: Waste Amendment Act (Act No, 26 of 2014).

1 INTRODUCTION

1.1 Background

The iLembe District Municipality (iDM) is one of eleven district municipalities in the Kwa-Zulu Natal (KZN) Province. The iDM is comprised of four local municipalities namely: KwaDukuza Local Municipality (KLM), Mandeni Local Municipality (MLM), Maphumulo Local Municipality (MPLM) and Ndwedwe Local Municipality (NLM). Waste services such as waste collection, transportation and disposal are carried out by the local municipalities within the iDM. Management of waste infrastructure such as transfer stations and landfill sites is the responsibility of the iDM (iLembe District Municipality, 2017).

The iDM is required to develop an integrated waste management plan (IWMP) as per the requirements of the National Environmental Management Waste Act (59 of 2008) as amended (hereafter referred to as the Waste Act) to sustain and improve waste management in the iDM. The iDM has one previous IWMP that was developed in 2004 by Lombard and Associates. This IWMP will therefore serve as the second IWMP for the District.

The responsibility of waste management for the iDM forms part of the environmental department of the iDM (iLembe District Municipality, 2019). This department's main responsibilities are:

- Waste management
- Coastal management
- Biodiversity
- Climate change
- Strategic planning (e.g. development of IWMPs)
- Education and awareness.

With regards to waste management, the main focus for the iDM is:

- assisting with the IWMP process for the iDM and respective LMs,
- assisting with policy development for the District and LMs,
- monitoring and assistance with illegal dumping,
- guiding and implementing the development of the proposed regional landfill site for the District.

1.2 A Definition of Waste

The National Environmental Management: Waste Amendment Act (Act No, 26 of 2014) defines waste as follows:

“waste” means –

- (a) any substance, material or object, that is unwanted, rejected, abandoned, rejected, discarded, or disposed of, or that is intended or required to be discarded or disposed of, by the holder of that substance, material or object, whether or not such substance, material or object can be re-used, recycled or recovered and includes all wastes as defined in Schedule 3 to this Act; or
- (b) any 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 not required, once a waste is, or has been re-used, recycled or recovered.
 - iii. where the Minister has, in terms of section 74, exempted any waste or 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.

1.3 Contents of an IWMP

The Waste Act outlines the requirements for an IWMP. These requirements have been included in the table below along with a description of how this requirement has been met and details of where in this report that relevant information is located.

Table 1: The Waste Act Requirements for an Integrated Waste Management Plan

Waste Act section no.	Requirement	Comments	Section in the IWMP
12(1)(a)	Contain a situation analysis that includes-		
12(1)(a)(i)	A description of the population and development profiles of the area to which the plan related	None	Section 1.5.2
12(1)(a)(ii)	An assessment of the quantities and types of waste that are generated in the area	None	Section 6.1 - 6.4
12(1)(a)(iii)	A description of the services that are provided , or that are available for the collection, minimisation,	None	Section 6.4 – 6.12

Waste Act section no.	Requirement	Comments	Section in the IWMP
	re-use, recycling and recovery, treatment and disposal of waste		
12(1)(a)(iv)	The number of persons in the area who are not receiving waste collection services	None	Section 6.6.1
12(1)(b)	Within the domain of the municipality, set out how that municipality intends to:		
12(1)(b)(i)	To give effect, in respect of waste management, to chapter 3 of the National Environmental Management Act	None	
12(1)(b)(ii)	To give effect to the objectives of this Act	None	
12(1)(b)(iii)	To identify and address the negative impacts of poor waste management practise on health and the environment	None	Section 8
12(1)(b)(iv)	To provide for the implementation of waste minimisation, re-use, recycling and recovery targets and initiatives	None	Section 8.4.2 – 8.4.6
12(1)(b)(v)	in the case of a municipal IWMP, to address the delivery of waste management services to residential premises	None	Section 8.4
12(1)(b)(vi)	To implement the Republic's obligations in respect of relevant international agreements	None	Section 7 – 9
12(1)(b)(vii)	To give effect to best environmental practice in respect of waste management	None	Section 8 – 9
12(1)(e)	Establish targets for the collection, minimisation, re-use and recycling of waste	None	Section 8.4.3 – 8.4.6 and 9
12(1)(f)	Set out the approach of the municipality for the planning of any new facilities for disposal and decommissioning of existing waste disposal facilities	None	Section 8.4.6
12(1)(g)	Indicate the financial resources required to give effect to the plan	None	Section 8.4.1 and 9
12(1)(h)	Describe how the municipality intends to give effect to its IWMP	None	Section 9
12(1)(i)	Comply with requirements prescribed by the Minister	The IWMP has been developed in compliance with the Waste Act.	

1.4 IWMP History in iLembe District Municipality

The iDM consists of four local municipalities, namely; KwaDukuza Local Municipality (KLM), Mandeni Local Municipality (MLM), Maphumulo Local Municipality (MPLM) and Ndwedwe Local Municipality (NLM). The iDM has no previous IWMP in place and this will serve as the first IWMP for the District. The history and status of IWMPs for the iDM and the four local municipalities is shown in the table below.

Table 2: History and Status of IWMPs of the local municipalities within the IDM

Municipality	IWMP status
iLembe District Municipality	First IWMP was developed in 2004. The second IWMP is being updated and reviewed within 2019.
KwaDukuza Local Municipality (KDLM)	First IWMP currently being developed. To be completed within 2019.
Mandeni Local Municipality (MLM)	First IWMP developed in 2009. Second IWMP developed in 2015. Third IWMP being updated and reviewed within 2019.
Maphumulo Local Municipality (MPLM)	First IWMP was drafted in 2016.
Ndwedwe Local Municipality (NLM)	First IWMP drafted in 2010. Second IWMP reviewed and updated in 2017.

1.5 Integrated Waste Management Planning

The “integrated” aspect of Integrated Waste Management Planning means that all aspects of waste management are considered, from waste generation to reduction, recycling, treatment and finally disposal. This approach is illustrated in **Figure 1** which shows the “waste hierarchy” as defined in the National Waste Management Strategy (DEA, 2011) (NWMS). This diagram illustrates that the majority of waste should be addressed via the lower tier activities (waste avoidance and reduction, re-use, recycling and recovery), 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 NWMS states that the primary objective of integrated waste management planning is to: “integrate and optimize waste management so that the efficiency of the waste management system is maximised and the impacts and financial costs associated with waste management are minimised, thereby improving the quality of life of all South Africans” (Department of Environmental Affairs, November 2011).

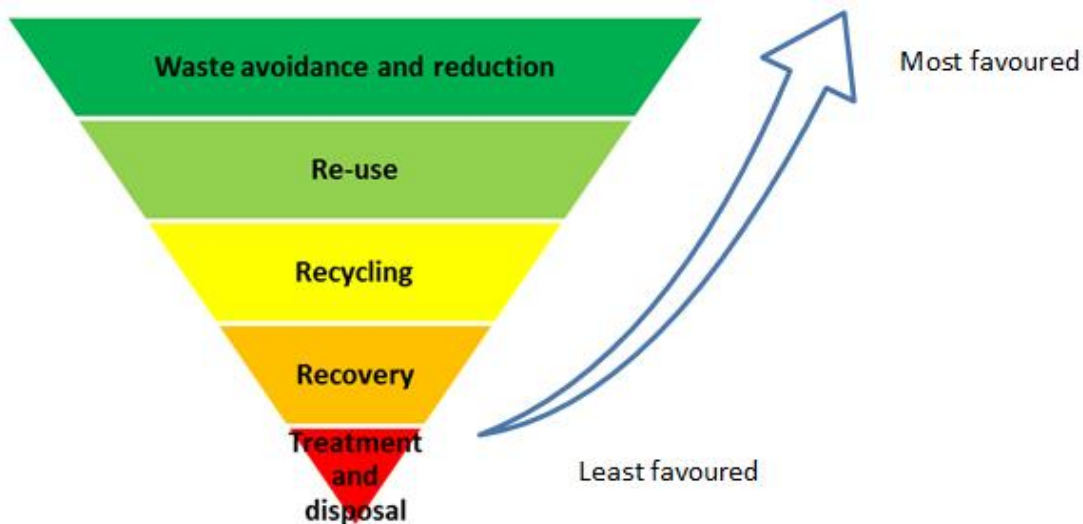


Figure 1: The waste hierarchy as per the National Waste Management Strategy (source NWMS, 2011)

An 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 typically revised on a five yearly cycle aligned to the review of the Integrated Development Plan (IDP) 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.

The 2011 NWMS is currently under review. The goals of both the 2011 and draft 2018 NWMS will be reviewed and incorporated into this IWMP.

1.6 Integrated Waste Management Plan Development Process

In addition to the Waste Act, the Department of Environmental Affairs (DEA) Guideline for the Development of Integrated Waste Management Plans was considered when developing this IWMP. This guideline outlines the planning process presented in the figure below.

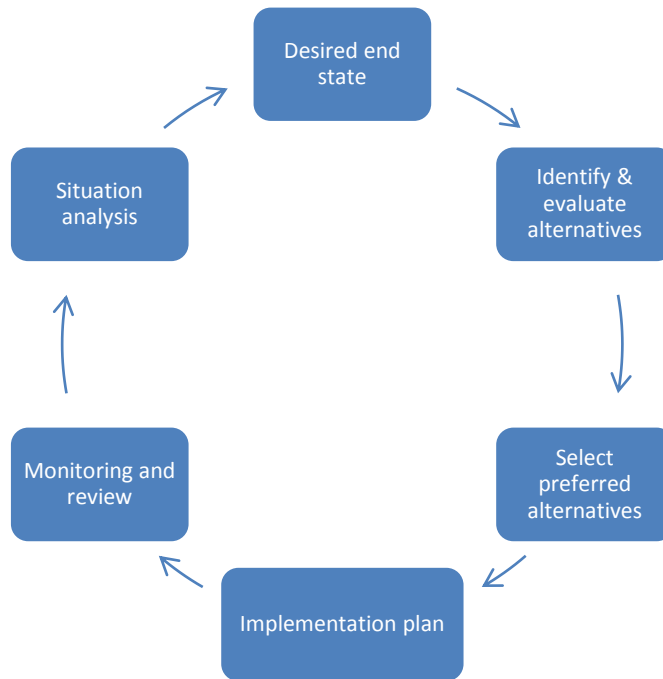


Figure 2: IWMP planning phases as per the Guidelines for the Development of Integrated Waste Management Plans (DEA).

1.7 Scope

This IWMP has been produced for iDM and is applicable geographically to all areas falling within the jurisdiction of iDM. As a municipal plan, it is applicable to all directorates of iDM.

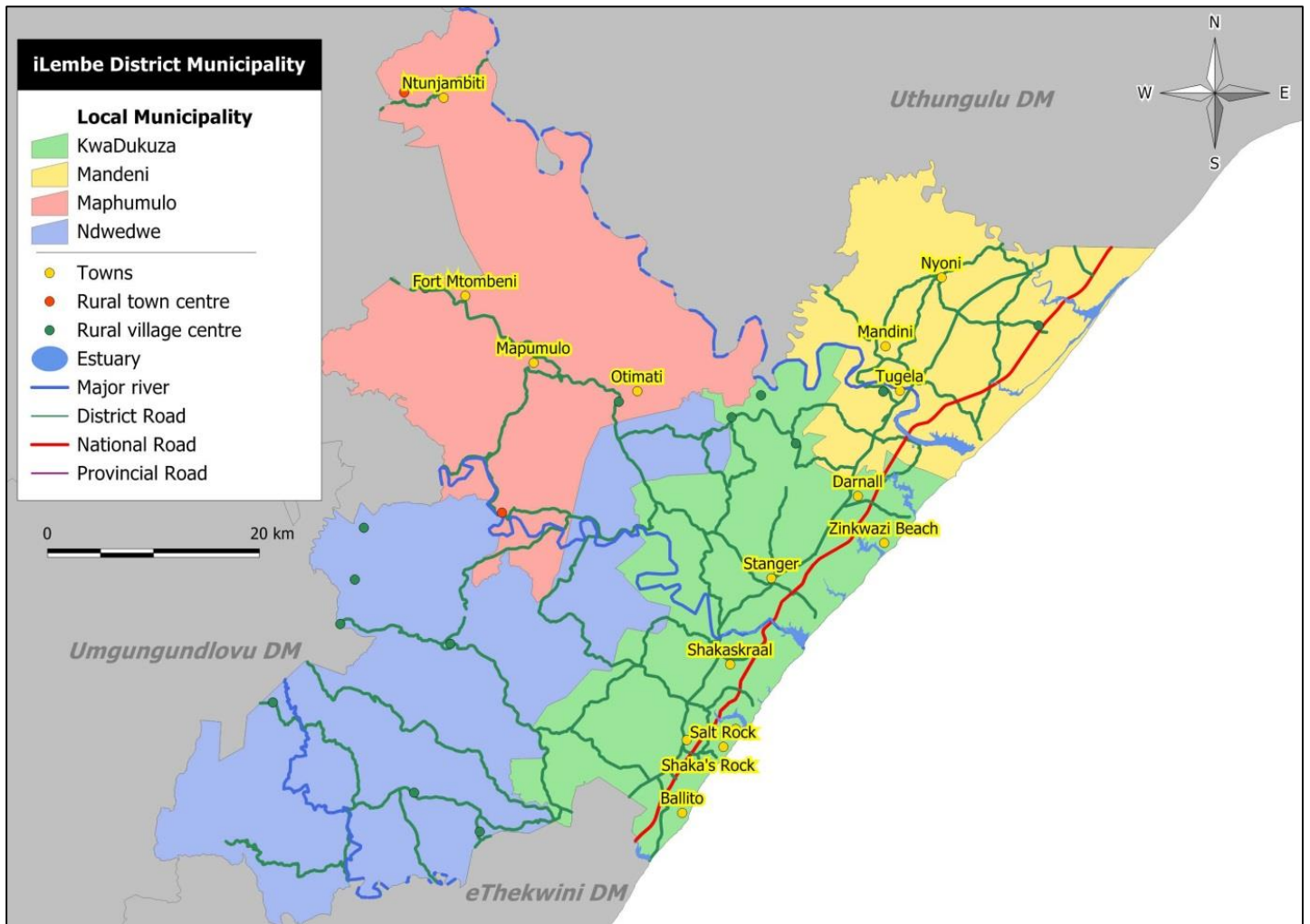


Figure 3: The jurisdictional area of the iLembe District Municipality, including local municipalities and main towns

1.8 Context of Roles and Responsibilities

National waste legislation, policy and guidelines place specific responsibilities onto local authorities. The Waste Act requires local authorities to implement mechanisms for the provision of waste collection services including collection, storage and disposal. Local authorities are also required to facilitate recycling and waste diversion from landfill and manage waste information appropriately.

1.8.1 National Government

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.

1.8.2 Provincial Government

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. The Constitution requires Provincial Government to monitor and provide support to municipalities in the province and to promote the development of local government capacity.

1.8.3 Local Government

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 Constitution of South Africa and other legislation mandate refuse removal by municipalities in their areas of jurisdiction. The function includes refuse removal, solid waste disposal, street cleaning and recycling. The National Domestic Waste Collection Standards require municipalities to provide a weekly collection service to households.

Within the IDM, local municipalities are responsible for waste collecting, transportation and disposal. The management of disposal facilities is the function (responsibility) of the District as per the Municipal Systems Act. These facilities include landfill sites and transfer stations.

1.8.4 Waste Management Officer

The Waste Act requires that all LMs appoint a waste management officer (WMO) from its administration who is responsible for co-ordinating waste management in the municipality.

The responsibilities of the WMO of a local municipality are defined in the National Waste Management Strategy (Department of Environmental Affairs, November 2011) as:

- Manage stakeholders in Waste Act implementation.
- Liaise with EMI compliance monitoring activities in the municipality.
- Municipal IWMP: planning and reporting cycles.
- Build capacity in relation to Waste Act implementation.
- Monitor adherence to norms and standards in the delivery of waste services.

The DEA's Guideline for designation of WMOs (2008) further expands on the role of the WMO for District and Local Municipalities.

1.9 Alignment with other Strategic Plans

There are a number of strategic plans on a national, provincial and local level which have been taken into consideration during the developing this IWMP. A summary of these is provided in this section below.

1.9.1 Alignment with National Strategic Plans

1.9.1.1 National Environmental Management: Waste Act 59 of 2008 (hereafter referred to as the Waste Act), as amended

The Waste Act 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. A number of regulations have been promulgated under the Waste Act. The waste act was amended in 2014. The implications of applicable waste management legislation have been considered in the 'Needs Analysis' section of this report.

1.9.1.2 National Waste Management Strategy (2011)

The National Waste Management Strategy (NWMS) is structured around a framework of eight goals. The goals along with their respective targets were supposed to have been met by 2016. The second generation NWMS is currently under review, however it is anticipated that this IWMP will be finalised before the third generation NWMS is finalised.

Table 3: National Waste Management Strategy Objectives

Goal	Targets for 2016
Promote waste minimisation, re-use, recycling and recovery of waste.	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

Goal	Targets for 2016
	industries
Ensure the effective and efficient delivery of waste services.	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
Grow the contribution of the waste sector to the green economy.	69,000 new jobs created in the waste sector 2,600 additional SMEs and cooperatives participating in waste service delivery and recycling
Ensure people are aware of the impact of waste on their health, well-being and the environment.	80% of municipalities running local awareness campaigns 80% of schools implementing waste awareness campaigns
Achieve integrated waste management planning.	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
Ensure sound budgeting and financial management for waste services	All municipalities that provide waste services have conducted full-cost accounting for waste services and have implemented cost reflective tariffs
Provide measures to remediate contaminated land.	Assessment complete for 80% of sites reported to the contaminated land register Remediation plans approved for 50% of confirmed contaminated sites
Establish effective compliance with and enforcement of the Waste Act	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

1.9.1.3 Draft National Waste Management Strategy (2018)

As previously mentioned, the DEA is currently revising the 2011 NWMS. The 2018 NWMS has three strategic goals to drive an improvement in waste management in South Africa:

1. Waste minimisation;
2. Effective and sustainable waste services; and
3. Awareness and compliance

These are further unpacked in **Table 4** below.

Table 4: Summary of 2018 NWMS Goals

Goal	Implementation mechanism
<p>1. Prevent waste, and where waste cannot be prevented, divert 50% of waste from landfill within 5 years; 80% within 10 years; and at least 95% of waste within 15 years through reuse, recycling, and recovery and alternative waste treatment.</p>	<p>Waste Prevention:</p> <ul style="list-style-type: none"> • Reduce the generation of waste in the manufacturing sector through cleaner production and industrial symbiosis • Prevent food waste by working with agricultural producers, retailers, the hospitality sector and consumers. <p>Waste as a Resource:</p> <ul style="list-style-type: none"> • Divert organic waste from landfill through composting and the recovery of energy • Divert construction and demolition waste from landfill through beneficiation • Increase recycling and recovery rates • Increase technical capacity and innovation for the beneficiation of waste
<p>2. All South Africans live in clean communities with waste services that are well managed and financially sustainable.</p>	<p>Waste Collection:</p> <ul style="list-style-type: none"> • Implementation of the DEA separation at source policy to promote reuse, recycling and recovery of waste • Safe and environmentally sustainable disposal of hazardous household wastes. <p>Integrated Waste Management Planning:</p> <ul style="list-style-type: none"> • Provinces provide effective regional guidance and oversight in the development and implementation of metro, district and local municipality IWMPs within the context of overarching Provincial Integrated Waste Management Plans • All local authorities to include provisions for recycling drop-off/buy-back/storage centres in their IWMPs by 2020
<p>3. South Africans are aware of waste and a culture of compliance with waste management norms and standards exists, resulting in zero tolerance of pollution, litter and illegal dumping.</p>	<ul style="list-style-type: none"> • Reduction of littering and illegal dumping due to attitudinal shifts and greater public awareness of the environmental damage caused by waste • Enhanced capacity to enforce the Waste Act and International Agreements on waste and pollution • Municipal landfill sites and waste management facilities comply with licensing standards • All local authorities to include provisions for recycling drop-off/buy-back/storage centres in their IWMPs by 2020

1.9.1.4 Operation Phakisa: Chemicals and Waste Phakisa

Operation Phakisa, an initiative which looks to unlock South Africa’s economic potential, sets a number of waste-related national targets. These targets include:

- Reduce industrial waste to landfill by 75%;
- Reduce municipal waste to landfill site by 50%;
- Move towards zero sewage sludge to landfill by 2023;

- Move toward zero meat production waste to landfill by 2023;
- Increase e-waste recycling from 7% to 30%;
- Create 1,000 jobs through recycling and re-use of government computer;
- 50% of households in metropolitan municipalities separating at source by 2023;
- 8,000 direct and indirect jobs through plastic recycling; and
- Produce building aggregates and construction inputs from rubble and glass

1.9.2 National Development Plan

South Africa National Development Plan (NDP) was published in 2012 and outlined the required steps to eliminate poverty and reduce inequality by 2030.

The NDP sets the following objectives related to waste management:

- An absolute reduction in the total volume of waste disposed to landfill site each year through a national recycling strategy;
- Carbon price, building standards, vehicle emission standards and municipal regulations to achieve scale in stimulating renewable energy, waste recycling and retrofitting buildings;
- Consumer awareness initiatives and sufficient recycling infrastructure should result in South Africa becoming a zero waste society; and
- Implement a waste management system through rapid expansion of recycling infrastructure and encouraging composting of organic domestic waste to bolster economic activity in poor urban communities

The NDP also recognises the opportunity for the manufacturing sector to reuse waste.

1.9.3 Back to Basics

The National Department of Cooperative Governance and Traditional Affairs (COGTA) showcased a new strategy at the Presidential Local Government Summit in 2014. The strategy was titled Back to Basics: Serving our Communities Better.

The strategy identified that although progress had been made with regard to service delivery since 1994, more actions were needed to support, educate and, where required, enforce the government mandate for service delivery.

The Back to Basics programme is centred on five pillars:

1. **Put people and their concerns first** and ensure constant contact with communities through effective public participation platforms;
2. **Create conditions for decent living** by consistently delivering municipal services to the right quality and standard. This includes planning for and delivery of infrastructure and amenities, maintenance and upkeep, including the budgeting to do this. Ensure no failures in services and where there are, restore services with urgency;
3. **Be well governed** and demonstrate good governance and administration – cut wastage, spend public funds prudently, hire competent staff and ensure transparency and accountability;
4. **Ensure sound financial management and accounting**, and prudently manage resources so as to sustainably deliver services and bring development to communities; and
5. **Build and maintain sound institutional and administrative capabilities**, administered and managed by dedicated skilled personnel at all levels.

The Back to Basics pillars are all applicable to waste management within the municipality.

1.9.4 Alignment with Provincial Strategic Plans

1.9.4.1 Provincial IWMP (2012 - 2017), KwaZulu – Natal

The Department of Economic Development, Tourism and Environmental Affairs (EDTEA), the Kwa-Zulu Natal Provincial authority responsible for waste management, drafted an IWMP in 2012, but the plan has yet to be gazetted. While the key focus of the plans within the IWMP addressed provincial performance, they do have implications for local authorities in Kwa-Zulu Natal. The following key waste management challenges with objectives were highlighted:

- A high backlog in domestic waste collection service is experienced in several municipalities. Nearly 60% of municipalities in the KZN Province are not providing a waste collection service to 75% or more of households in the municipalities.

The KZN province developed specific targets for the reduction of waste collection service backlogs for different categories of KZN municipalities and to workshop these targets with respective municipalities.

Due to the large percentage of the KZN population residing in rural areas, waste collection services to these areas that are remote to towns and cities is a challenge. In addition to the long haul distances, the challenge is compounded by poor access, poor road infrastructure and hilly terrain within these rural areas.

- Ensure that all waste collection and transportation services comply with all the legal requirements.
- Embark on a programme of guidance and training assistance on rural waste management to rural communities.
- Ensure that all waste transfer and storage facilities meet all the legal requirements, including where necessary a Waste Management License.
- Many general waste landfill sites within the province are operating without a license and are poorly managed.
 - The province, district and local municipalities were to ensure that all waste treatment, processing and disposal facilities were licensed.
 - The EDTEA was to monitor all licensed facilities to ensure that they are operated correctly.
 - All landfill sites were to be registered on the SAWIS system and waste information was to be recorded and updated regularly.
- Recyclable wastes still end up at landfill sites and are not recycled.
 - The Province was tasked with developing, publishing and implementing norms and standards by which all major waste recyclers and waste recycling service providers need to comply with. These waste recyclers and service providers were to register with the EDTEA and submit information on waste collected or treated for recycling.
 - Another initiative was to ensure that District and Local municipality IWMPs report on the measured or estimated quantities of recyclable waste collected and disposed; and set clear, measurable and sufficiently challenging targets for recycling.
- The presence of small quantities of hazardous waste such as batteries, medication, poisons (insecticides, herbicides, rodents control), paints, solvents, electronic waste (equipment, cartridges) that end up at the landfill sites.
- Several contaminated sites where general waste has been historically disposed or used as infill material, and produces hazardous leachate and/or landfill gas.
- Guide, support and challenge District and Local Municipalities to implement integrated waste management effectively.
- Promote, encourage and support public involvement and forums in all KZN Provincial government related waste strategies and activities.

1.9.5 Alignment with Regional Strategic Plans

1.9.5.1 iLembe District Municipality Integrated Development Plan (2017 – 2022)

The current iLembe District Municipality (iDM) IDP covers the period 2017 – 2022 (iLembe District Municipality, 2017). The IDP indicated that there is a dire situation in terms of waste management within the iDM and that this issue should be taken very seriously by the iDM and the local municipalities (LMs). This has resulted in the efforts to draft or review IWMPs for the iDM and LMs. The IDP notes that waste management officers (WMOs) have been appointed for all LMs (which is not true at the development of the IWMP), the importance of recycling for the environment and the local economic development, and the status of waste collection in each local municipality in the District. The issues noted in the iDM IDP with regards to waste management are that refuse removal is limited to urban areas and dumping of illegal waste has become a major problem especially in rural areas. It also highlights the standards of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) and the importance of complying with the Act. The following actions to improve waste management are proposed in the IDP and incorporated into the IWMP implementation plan where the projects are aligned and feasible:

- The development of the District's IWMP
- Pilot a recycling programme
- Increase people's awareness of the advantages of good waste management practices
- Develop a public landfill for the district, since the operation of landfill sites is the mandate of the District.
- Extension of waste management services to areas which are not currently serviced by Municipalities, notably in rural areas.

The IDP notes that the current waste management initiatives include the EPWP "food for waste" programme and recycling; however, no details about the budget or programme are given. The only waste management objective set in the IDP is the adoption of the IWMP by 2019/20.

2 Approach and Methodology

2.1 Legislated Requirements for Integrated Waste Management Plans

The requirements of the National Environmental Management Waste Act (Act 59 of 2008, as amended) (refer to table 1) and the Department of Environmental Affairs (DEA) Guideline for the Development of Integrated Waste Management Plans were used to guide the development of this IWMP.

2.2 Methodology

A phased approach was used to develop the IWMP, as detailed below.

2.2.1 Integrated Waste Management Plan Review

A list of reviewed IWMPs for content are provided below in the section below. Information gathered during the review of these IWMPs was used to inform the iDM IWMP.

2.2.2 Literature Review

An extensive literature review pertaining to waste management in the area was undertaken as part of the situation analysis. This included a review of the following documents. A full reference of documents and literature reviewed is represented in the list of references at the end of the report.

- Provincial Profile KwaZulu-Natal: Community Survey (Statistics South Africa, 2016)
- 2035 Provincial Growth and Development Strategy, (The Department of Provincial Planning Commission, 2016)
- KwaZulu-Natal Integrated Waste Management Plan 2012 - 2017 (GIBB, 2012)
- iLembe District Municipality IDP review (2018/2019) (iLembe District Municipality, 2019)
- iLembe District Municipality IDP (2017 - 2022) (iLembe District Municipality, 2017)
- iLembe District Municipality Draft IWMP (2004)
- iLembe District Municipality Growth and Development Plan (iLembe District Municipality, March 2015)
- iLembe District Municipality Census Data, 2011
- KZN remains province with highest number of people living with HIV, Thabile Mbhele, 2018.
- KwaDukuza Local Municipality IWMP Situational Analysis and Gap and Needs Analysis Draft, 2019
- Ndwedwe Local Municipality Integrated Waste Management Plan (Nemai Consulting, February 2017).

- Maphumulo Local Municipality Integrated Waste Management Plan, (Smangaliso Consulting Firm, June 2015).
- Mandeni Local Municipality IWMP, 2015 – 2019 (GIBB, May 2015).
- Mandeni Local Municipality IWMP Situational Analysis and Gap and Needs Analysis Draft, 2019
- South African Waste Information Centre, 2018
- Statistics South Africa, 2011 (Statistics South Africa, 2011)
- Dolphin Coast Landfill Management Services, 2016

2.2.3 Site Visits and Facility Inspections

As part of the appointment for the development of the iDM IWMP, GIBB was also appointed to conduct the review of the Mandeni LM IWMP and the development of the first KwaDukuza LM IWMP. Therefore a large percentage of the facility inspections undertaken of the landfill sites and waste facilities were undertaken within the KLM and MLM areas. Proposed sites for transfer stations were undertaken for the MLM and the NLM. Information regarding other waste facilities in the MPLM and the NLM were taken from their respective IWMPs. The table below shows details of the facility inspections that were undertaken:

Table 5: Summary of municipal facility site inspections

Facility	Date
KwaDukuza Local Municipality	
Dolphin Coast Transfer Station	23 August 2018
KwaDukuza Transfer Station	21 August 2018
Illegal dumpsites	21 August 2018
KwaDukuza Local Municipality Fleet	22 August 2018
Mandeni Local Municipality	
Mandeni Local Municipality Fleet	22 August 2018
Ithala Isithebe Industrial transfer station	23 August 2018
Maphumulo Local Municipality	
Maphumulo Transfer Station	2 July 2019
Proposed sites for transfer stations	2 July 2019
Ndwedwe Local Municipality	
Proposed sites for transfer stations	Not visited

Table 6: Summary of privately owned facility site inspections

Facility	Date
SAPPI Tugela Mill Offices and Landfill	22 August 2018
Vinodh's Recycling	23 August 2018
DemaTrans	23 August 2018
Dash Car Wash & Sebenza Sonke Recycling	23 August 2018
Environmental Waste Recyclers	23 August 2018
Ozone Friendly Recyclers	23 August 2018
Premier Waste Recyclers	23 August 2018
Skyton Recycling Pty (Ltd)	23 August 2018
Reclam Group	23 August 2018

2.2.4 Staff and Business/ Industry Services Interviews

Interviews were conducted with municipal staff and staff of businesses to gain an understanding of the issues they face regarding waste management and areas they feel require improvement. The table below presents the details of these interviews.

Table 7: List of municipal and business/Industry staff interviewed during the fieldwork

Name	Position/Designation
Ilembe District Municipality Staff	
Masupha Mathenjwa	Senior Environmental Officer
Rajan Munien	GIS Manager
Navendran Govender	GIS Technician
KwaDukuza Local Municipality Staff	
Siyabonga Khanyile	Executive Director for Community Services
Wilson Mhlongo	Manager of Waste Management
Thembi Mthembu	Superintendent for Waste
Business and business representatives that were interviewed	
Dermatrans	
Environmental Waste Recyclers	
Heston (Stanger)	
Skip-go (Ballito)	
Dolphin Coast Landfill Management (KwaDukuza)	

Name	Position/Designation
Waste representative for Stanger Hospital (Nomusa Ndlovu)	
Mandeni Local Municipality Staff	
Mr Zamani Mcineka	Director for Community Services (August 2018) (no longer with MLM at completion of the IWMP)
Mr Sikhumbuzo Ndlovu	Superintendent for Waste
Mr Vasigaran Devan	GIS and Town Planning Specialist
Mr Senzo Makoba	Revenue manager
Mrs Divashni Rhana	Waste representative for Sudumbile Hospital
Business and business representatives that were interviewed	
Sappi Technical Manager	Mr Allen van Zyl
ISisthebe industrial estate tenants manager	Mr Russell Khumalo
Ozone Friendly Recycling	Mr Brandon
Premier Waste	
Reclam Mandeni	
Skyton Recycling Pty Ltd	
Superspar Mandini: Store Manager - Mr Raja Padayachee	Mr Raja Padayachee
Maphumulo Local Municipality Staff	
Chris Mhlongo	Manager Community and Social Services
Thandeka Thusi	Environmental Officer and responsible for waste activities
Ndwedwe Local Municipality	
Nkanyiso Mhkwanzazi	Manager Community and Social Services
Buhle Sishi	Waste Management Officer

2.2.5 Key Role Players

Key role players involved in the development of the iDM IWMP are listed in the table below. These role players also formed the project steering committee for the development of the iDM IWMP.

Table 8: Details of project steering committee

Organisation / Company	Name of Representative Members	PSC representative
Vuthela iLembe LED Programme	Monja Esterhuizen, Munya Mutyora, Richard Clacey, Megan Iyer	Monja Esterhuizen and Munya Mutyora
UWP Consulting	Monja Esterhuizen, Richard Clacey	Monja Esterhuizen

Organisation / Company	Name of Representative Members	PSC representative
Kwa-Zulu Natal Department of Economic Development, Tourism and Environmental Affairs	Nomusa Xaba and Heather Sheard	Nomusa Xaba
iLembe District Municipality	Linda Mncube, Masupha Mathenjwa, Mzuwandile Khuzwayo, Thandeka Thusi, Langalakhe Msomi	Masupha Mathenjwa and Linda Mncube
KwaDukuza Local Municipality	Sikhumbuzo Hlongwane, Wilson Mhlongo, Thembeka Mthuli, Mbali Mpanza, Nokubonga Duma	Wilson Mhlongo
Mandeni Local Municipality	Mbongeleni Dlamini, Sikhumbuzo Ndlovu; Dumisani Mbongwa	Mbongeleni Dlamini
Maphumulo Local Municipality	Chris Mhlongo, Thandeka Thusi	Chris Mhlongo
Ndwedwe Local Municipality	Nkanyiso Mkhwanazi, Nobuhle Sishi	Nkanyiso Mkhwanazi
GIBB (Pty) Ltd - Waste Consultant	Walter Fyvie, Ian Malloy, Chad Dustan, Charl Kruger, Kate Flood, Geoff Purnell (Independent specialist consultant to GIBB)	Ian Malloy and Walter Fyvie

2.2.6 Presentations and Workshops

The presentations and workshops undertaken to date are indicated in the table below.

Table 9: List of presentations and workshops undertaken as part of the IWMP review

Workshop/Presentation	Date
Progress Meeting	12 September 2018
Progress Meeting	27 February 2019
Progress Meeting	22 May 2019
Situational Analysis and Gap and Needs Analysis workshops for the iDM, KLM and MLM	1 – 2 July 2019
Draft IWMP with Objectives and Implementation Plan	13 September 2019

2.2.7 Assumptions and Limitations

This situation analysis has drawn information from a number of sources from the iDM, KLM, MLM, MPLM and NLM records, information from numerous iDM and municipal staff interviews and business staff interviews. It is assumed that the information given verbally in interviews and documented

information is accurate. Information was also sourced from national and public documents and websites. The information provided in these documents and websites are also assumed to be correct.

3 Legal Requirements Overview

A summary of key South Africa legislation governing waste management is presented in the table below. A more comprehensive summary of South African and international waste legislation will be added to the report as **Appendix A**.

Table 10: Key South African waste legislation

Legislation/ guidelines	Summary
Constitution of South Africa (Act 108 of 1996)	Section 24 of the Constitution states that everyone has the right to an environment that is not harmful to their health or wellbeing; and to have an environment protected for the benefit of present and future generations, through reasonable legislative and other measures.
White Paper on Integrated Pollution and Waste Management for South Africa (1999)	<p>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.</p> <p>The overarching goal of 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.</p>
National Environmental Management Act (Act 107 of 1998, as amended)	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.
National Environmental Management: Waste Act (Act 59 of 2008, as amended)	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.
National Pricing Strategy (GN 904 of 2016)	The strategy aims to fund re-use, recovery and recycling of waste through the extended producer responsibility principal.
National Waste Information Regulations (GN 625 of 2013)	These regulations give effect to the South African Waste Information System and specify registration and reporting requirements.
National Domestic Waste Collection Standards (GN 21 of	These specify methods for how domestic waste should be collected. Consideration is given to an appropriate level of service based on the nature (e.g. rural vs urban) of

Legislation/ guidelines	Summary
2011)	municipalities.
Municipal Structures Act (Act 117 of 1998)	<p>The Act indicates the division of functions and powers between a District Municipality and a Local Municipality. Specifically to waste management and the provision of solid waste disposal sites, the District municipality has the following functions and powers:</p> <ul style="list-style-type: none"> • The determination of a waste disposal strategy, • The regulation of waste disposal, • The establishment, operation and control of waste disposal sites, bulk waste transfer facilities and waste disposal facilities for more than one local municipality in the district.

3.1 Key Changes to Legislation Since 2014

The following table presents key changes and updates to waste legislation in the past five years as this normally covers the five year IWMP review period.

Table 11: Key Changes to Legislation

Legislation	Key changes
National Environmental Management: Waste Amendment Act (Act 26 of 2014)	<ol style="list-style-type: none"> 1. Substitution and deletion of some definitions 2. Establish a waste pricing strategy 3. Establish a waste management bureau 4. Transitional arrangement for existing industry waste management plans.
National Norms and Standards for the Sorting, Shredding, Grinding, Crushing, Screening or Baling of General Waste (GN 1093 of 2017).	These norms and standards were developed to reduce the licensing requirements for low impact waste management activities. The norms and standards are applicable to all facilities where general waste is sorted, crushed, ground, crushed, screened or baled. All facilities where such activities are undertaken need to be registered with the provincial authority. Facilities with an operational area in excess of 1,000m ² need to be registered and comply with all the requirements of the norms and standards.
National Environmental Management Waste Act (GN 1094 of 2017) Amendment to the list of waste management activities that have, or are likely to have, a detrimental effect on the environment.	The list of waste management activities that have, or are likely to have, a detrimental effect on the environment were updated in 2015 to remove low impact activities related to waste management including the sorting, shredding, grinding, crushing, screening and baling of general waste.
National Pricing Strategy for Waste Management	<p>The key aims of the strategy is to increase the diversion of waste from landfill, reduce the generation of waste and encourage reduction, reuse and recycling of waste. The strategy provides a methodology for setting waste management charges. The strategy identifies three economic instruments for waste management:</p> <ol style="list-style-type: none"> 1. Downstream instruments – volumetric tariffs (pay-as-you-throw) and waste

Legislation	Key changes
	<p>disposal taxes which would be applied to landfilling or incineration of waste.</p> <p>2. Upstream instruments – material and input taxes which would apply to virgin materials and hazardous materials, product taxes, advance recycling fees or advance disposal fees, deposit-refund scheme and extended producer responsibility fees.</p> <p>3. Subsidy-based instruments – recycling subsidies, tax rebates and benefits, capital financing.</p>
3 rd National Waste Management Strategy	As previously discussed, the 2 nd generation NWMS is currently under review.

4 Waste Management Performance Review

A review of the progress in the iDM with regards to the implementation of the 2011 NWMS goals and targets was undertaken as part of the IWMP. Where information was available, an assessment of the compliance with each of the targets was undertaken and documented. The information relevant to the LMs was taken from the LM IWMPs.

Table 12: Progress with reaching compliance of goals and targets of the National Waste Management Strategy, 2011

Goal	Targets for 2011	Progress to compliance with targets
<p>1. Promote waste minimisation, re-use, recycling and recovery of waste.</p>	<p>25% of recyclables diverted from landfill sites for re-use, recycling or recovery.</p>	<p>SAWIS data for recycled waste is recorded for the KLM and MLM, but no SAWIS data for recycled waste is being recorded for the NLM and MPLM. It is difficult to quantify whether the totals recorded on SAWIS are accurate as these are not verified by the LMs or the iDM. It is also difficult to determine whether the mass of recycled waste represents 25% recyclable waste that is collected with the domestic waste stream to be landfilled (collected domestically and within industry). More information regarding waste tonnages and types recycled within the iDM are presented in section 6.4 below.</p>
	<p>All metropolitan municipalities, secondary municipalities, and large towns have initiated separation at source programmes</p>	<p>Only the KLM has initiated a separation at source programme for recyclable waste and garden waste within the southern parts of the KLM. None of the other municipalities within iDM are currently running separation at source programmes.</p>
	<p>Achievement of waste reduction and recycling targets as set in industry waste management plans for paper and packaging, pesticides, lighting (CFLs) and tyre industries</p>	<p>A call for an IndWMP for the lighting industry and paper and packaging industry was made in December 2017. These plans are not yet finalised. The REDISA tyre IndWMP has been withdrawn, therefore the targets are no longer applicable.</p>
<p>2. Ensure the effective and efficient delivery of waste services.</p>	<p>95% of urban households and 75% of rural households have access to adequate levels of waste collection services.</p>	<p>Only 23.1% of the population within iDM receive weekly refuse collection services.</p>
	<p>80% of waste disposal sites have permits.</p>	<p>All landfill sites within the iDM are permitted.</p>
<p>3. Grow the contribution of the waste sector to the green economy</p>	<p>69,000 new jobs created in the waste sector. 2,600 additional SMEs and cooperatives participating in waste service delivery and recycling</p>	<p>This is a national target for the employment of people within the waste sector. Currently there are 4 people employed within the waste sector in the iDM.</p>
<p>4. Ensure people are aware of the impact of waste on their health, well-being and the environment.</p>	<p>80% of municipalities running local awareness campaigns. 80% of schools implementing waste awareness campaigns.</p>	<p>Food for Waste and the Youth in Waste Management programmes were implemented within the LMs within IDM. Waste management staff in the iDM indicated that awareness campaigns were a key activity implemented with these two waste management programmes. Awareness campaigns were running in all municipalities for a five year period from 2015 – 2019; however these were not documented. The awareness campaigns were undertaken within schools and communities.</p>

Goal	Targets for 2011	Progress to compliance with targets
		<p>Waste management staff in the iDM indicated that a Youth Community Outreach Programme in association with the DEA that focuses on awareness campaigns within schools and communities would commence before the end 2019. The programme should be undertaken over a two-year period and will appoint 88 youth to conduct awareness campaigns and one co-ordinator to manage the awareness campaign programme. A total of 22 youths will be based in each LM. Topics to be included in the awareness campaigns are waste management, recycling, littering/dumping and caring for the environment.</p>
<p>5. Achieve integrated waste management planning.</p>	<p>All municipalities have integrated their IWMPs with their IDPs, and have met the targets set in IWMPs.</p> <p>All waste management facilities required to report to SAWIS have waste quantification systems that report information to WIS.</p>	<p>The iDM and all local municipalities have included their waste management and waste collection initiatives and purchases within their IDPs to ensure budget would be made available to implement waste collection and waste management initiatives. However these are mainly for operational expenditure (waste collection costs) and not capital expenditure for the development of waste infrastructure such as transfer stations, drop-off centres and recycling facilities. Only the KLM has budgeted capital costs for the 2018/2019 and 2019/2020 financial years. These budgets were for the development of a waste drop facility, MRF and composting facility at the Yellowwoods Drive transfer station. Construction works have commenced at the Yellowwoods Drive Transfer Station. The KLM has budgeted for the purchase of a weighbridge for the Yellowwoods Drive transfer station as well.</p> <p>The MLM, MPLM and the NLM had developed an IWMP by the time this report was developed and the targets for their IWMPs were included in their IDPs. The MLM has completed 26% of their targets set in their 2015 IWMP and are in the process of completing another 13% of these targets. The details on the achievement of targets of the MPLM and the NLM IWMPs were not known at the time of this district IWMP.</p> <p>Municipalities are not preparing annual performance reports to determine progress with IWMP targets or waste management projects within their LMs. The development of these reports would allow the iDM to better monitor and assist LMs to achieve respective IWMP targets.</p> <p>The iDM and the LMs within the iDM are not reporting waste disposal data on SAWIS. The LM waste management facilities do not possess the infrastructure and facilities to record waste tonnages. Waste tonnages provided on the SAWIS are uploaded by the</p>

Goal	Targets for 2011	Progress to compliance with targets
		privately owned Dolphin Coast Landfill Management that receives waste from the KLM, MPLM and NLM, and from the King Cetshwayo District Municipality that receives waste from the MLM. The LMs and the iDM need to develop a waste information system that verifies the waste disposal tonnages recorded on SAWIS by the waste accepting landfill sites.
6. Ensure sound budgeting and financial management for waste services	All municipalities that provide waste services have conducted full-cost accounting for waste services and have implemented cost reflective tariffs.	<p>The iDM is responsible for landfilling and provision of waste disposal infrastructure and the management thereof within the iDM. Each LM in the iDM is responsible for waste collection and waste to landfill transportation services for their respective LM. Neither the iDM nor any of the LMs within the iDM have undertaken a full cost accounting exercise for the provision of their respective waste services.</p> <p>The local municipalities within the iDM increase waste tariffs each year by approximately 6%. A higher tariff increase is discouraged by people within each LM.</p>
7. Provide measures to remediate contaminated land.	<p>Assessment complete for 80% of sites reported to the contaminated land register</p> <p>Remediation plans approved for 50% of confirmed contaminated sites.</p>	<p>The KLM and MLM have undertaken assessments to determine contaminated and polluted land within their municipal area. These are mainly areas where illegal dumping continues to occur. Only clearing of the dumped waste was undertaken by the LMs when possible. Remediation and rehabilitation of these areas were not determined for each LM. None of the LMs have remediated contaminated or polluted land within their LMs.</p> <p>Both the iSithebe industrial area privately-owned landfill site in the MLM and the Shakaville landfill site within the KLM have been closed, capped and rehabilitated.</p>
8. Establish effective compliance with and enforcement of the Waste Act	<p>50% increase in the number of successful enforcement actions against non-compliant activities.</p> <p>800 environmental management inspectors (EMIs) appointed in the three spheres of government to enforce the Waste Act</p>	<p>Waste management by-laws have been developed and are approved for the MLM. Waste by-laws have been drafted by the KLM and are yet to be approved. Waste by-laws are currently being drafted for the MPLM and NLM. There are no waste by-laws for the iDM.</p> <p>Neither the iDM nor the LMs have peace officers that are specifically designated to implement the waste by-laws. There are no staff that act as waste rangers within the iDM or the LMs.</p>

5 Situation Analysis

5.1 Scope and Purpose of the Situation Analysis

The situation analysis is the first step of any IWMP. It is important to note that the situation analysis is a snap shot of the current status of waste management. Due to changes in legislation and on-going operational changes, the situation analysis is constantly evolving. A detailed review of the situation analysis is therefore required at least in line with the five year review of the IWMP.

The situation analysis addresses all aspects of waste management from waste infrastructure to institutional capacity and funding of waste management services.

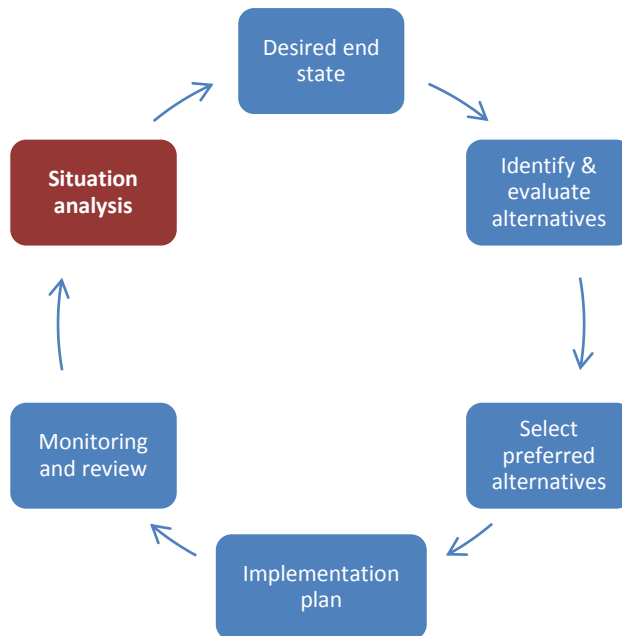


Figure 4: IWMP planning phases – situation analysis

5.2 Overview Description of iLembe Municipal Jurisdiction

5.2.1 Demographics

5.2.1.1 Population Profile

According to the Stats SA KZN Community Survey in 2016 (Statistics South Africa, 2016), the iDM population totalled 657,612 in 2016 with a growth rate of 1.83% annually over the five year period from the 2011 to 2016. The iDM population constitutes 5.94% of the total KwaZulu-Natal (KZN) population.

In 2016, the iDM comprised of 191,369 households which increased from 157,690 in 2011. The trend in average household size in the iDM is decreasing with an average household size of 3.4 people per household in 2016 compared to 3.8 people per household in 2011 (Statistics South Africa, 2016).

Table 13: Population overview of iLembe District Municipality (Statistics South Africa, 2016)

Municipality	2011			2016		
	Population	No. of households	Household size	Population	No. of households	Household size
KwaDukuza	231,187	70,284	3.3	276,719	91,284	3.0
Mandeni	138,078	38,235	3.6	147,808	45,678	3.2
Maphumulo	96,724	19,973	4.8	89,969	20,524	4.4
Ndwedwe	140,820	29,198	4.8	143,117	33,882	4.2
iLembe	606,809	157,690	3.8	657,612	191,369	3.4

According to the 2015 Growth and Development Plan for iLembe, the population of iLembe will be just under 2 million people by the year 2050 based on the 3% population increase between 2007 and 2011. This is the “high road scenario” projected population growth (iLembe District Municipality, 2017).

5.2.1.2 Ethnic Profile

The Black African ethnic group forms the majority of the population within the iDM at 89.2 % and the Indian ethnic group forms the second highest percentage of the population of iDM at 6.9%. The White ethnic group makes up 3.4%, with the Coloured ethnic group making up of 0.5% of the ethnic groups in the iDM (Statistics South Africa, 2016).

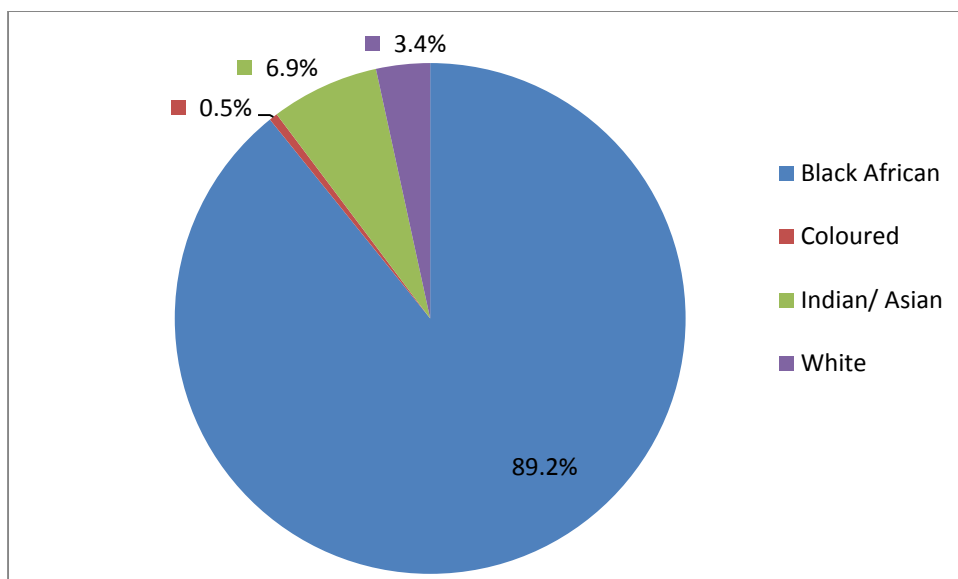


Figure 5: iLembe District Municipality Ethnic Profile (%) (Statistics South Africa, 2016).

5.2.1.3 Gender Profile

The iDM has a female to male ratio of approximately 52:48, which is a similar trend to the South African gender ratio (Local Government Handbook:South Africa , n.d.).

5.2.1.4 Language

In the iDM, isiZulu is the first language of the majority of its population at 82%, while English is the second most spoken first language in the iDM at 9.6% of its population. iSiXhosa is third at 3.3% of its population (Statistics South Africa, 2011)

Table 14: iLembe District Municipality language profile (Frith, 2012)

Language	No. persons	% of population
isiZulu	496,834	82.18
English	58,227	9.63
isiXhosa	20,005	3.31
isiNdebele	7,145	1.18
Afrikaans	5,210	0.86
Other	4,465	0.74
Sign language	4,340	0.72

Language	No. persons	% of population
Setswana	3,156	0.52
Xitsonga	1,916	0.32
Sepedi	1,316	0.22
Sesotho	1,062	0.18
SiSwati	624	0.10
Tshivenda	261	0.04
Not applicable	2,248	0.37
Total	606,809	100

5.2.1.5 Impact of HIV / AIDS

According to a study conducted by the Human Science Research Council and published in 2018 (SABC, 2018), the KZN Province remained the province with the highest number of people living with HIV in South Africa. Results of the survey indicated that over 19% (2.1 million) of the 11,065,240 people in KZN are living with HIV. A total of 27% (7.9 million) of people in South Africa are living with HIV (Statistics South Africa, 2016).

The demographic group with the highest percentage of HIV/AIDS infections are females in the age group 15-24 with a 27.5% infection rate. According to the 2015 iLembe District Growth and Development Plan, it was found that 16.6% of the total number of deaths in the iDM was due to HIV/AIDS. However, on further classification, it was noted that HIV/AIDS is related to the four leading diseases in terms of the highest death rates, which suggests that HIV/AIDS is the leading cause of death in the iDM. The iDM Growth and Development Plan has also set targets to reduce HIV/AIDS deaths to 13% by 2020, to 10% by 2025 and to 8% by 2030 (iLembe District Municipality, March 2015).

5.2.2 Access to Services within the iDM

5.2.2.1 Access to Piped Drinking Water

According to the KZN Community Survey of 2016, 37.4% of the KZN population has piped drinking water inside of their dwellings. The 2018/19 IDP showed that in 2011, 81% of people in the iDM had access to piped drinking water (inside and outside of their dwellings), and in 2016 the number dropped to 70%. This is related to droughts experienced in the years between the 2011 census and the 2016 community survey (Statistics South Africa, 2016).

Table 15: Distribution of households by access to safe drinking water (Statistics South Africa, 2016)

Municipality	Access to safe drinking water		No access to safe drinking water		Total
	Number of households	Percentage	Number of households	Percentage	
Mandeni	37,291	81.9	8,259	18.1	45,550
KwaDukuza	70,175	77.2	20,765	22.8	90,940
Ndwedwe	17,278	52.1	15,890	47.9	33,168
Maphumulo	10,238	50.2	10,198	49.8	20,436
iLembe	135,027	71	55,112	29	190,139

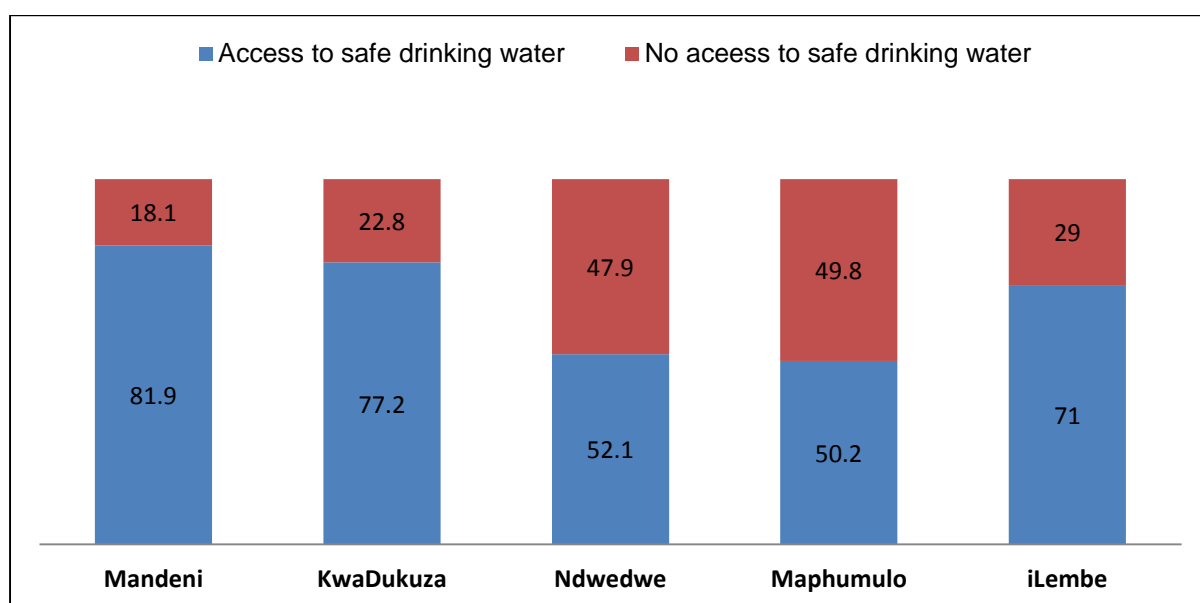


Figure 6: Percentage household's distribution with access to safe drinking water in the iLembe District Municipality (Statistics South Africa, 2016)

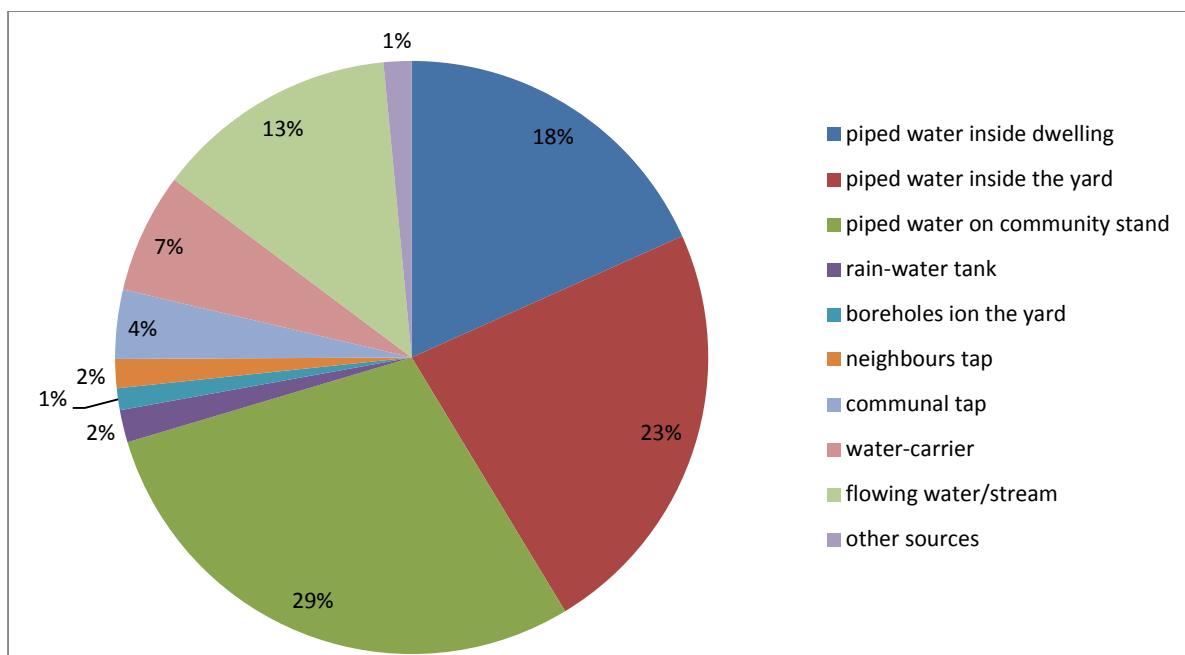


Figure 7: Distribution of households in the iLembe DM by main source of water for drinking (Statistics South Africa, 2016)

5.2.2.2 Access to Electricity

According to the KZN Community Survey of 2016, 86.6% of households have access to electricity within the iDM. It must be noted that many households that have electricity obtain it illegally or via solar panels, batteries and generators. The table and figure below indicate the distribution of households with access to electricity and the source of electricity.

Table 16: Distribution of households with access to electricity in the iLembe District Municipality (Statistics South Africa, 2016)

Municipality	Access to electricity (No. of Households)	Access to electricity (% of households within the municipality)
KwaDukuza	87,618	96.0%
Mandeni	41,652	91.2%
Ndwedwe	23,811	70.3%
Maphumulo	12,555	61.0%
iLembe	165,638	86.6%

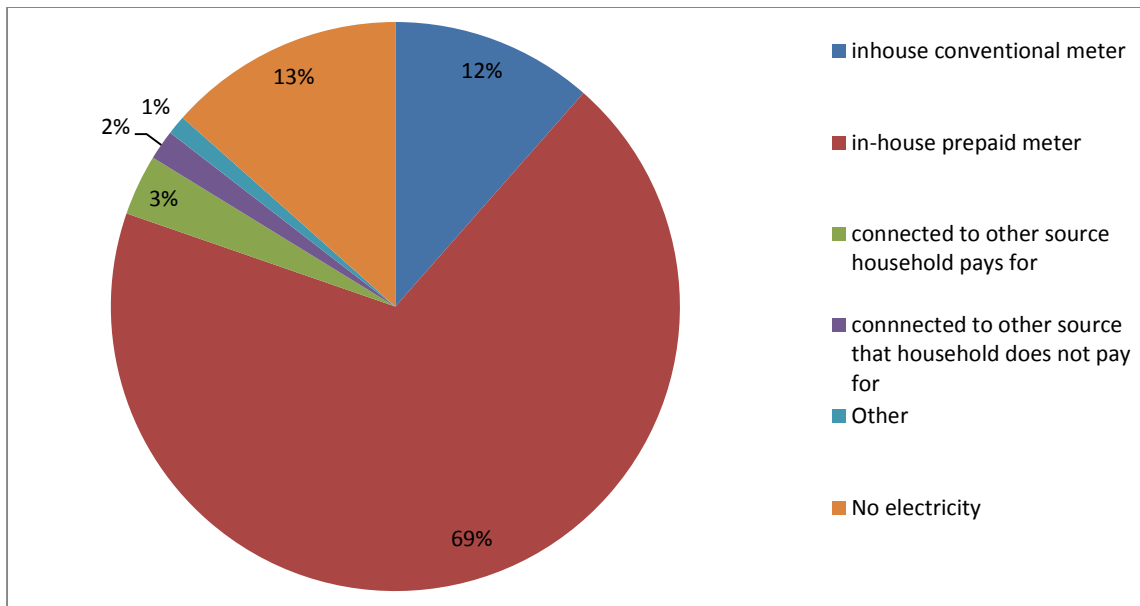


Figure 8: Access to electricity within the iLembe District Municipality (Statistics South Africa, 2016)

5.2.2.3 Access to Toilet Facilities

According to the KZN Community Survey of 2016, only 20.4% of households have access to a flush toilet that is connected to a sewer system and 3.9% have access to a flush toilet that is connected to a septic tank. (Statistics South Africa, 2016). It must be noted that 23.9% of the population in the iDM use a chemical toilet, 20.8% of the population use a pit latrine with ventilation, and 24.1% use a pit latrine without ventilation.

Table 17: Distribution of households by type of toilet facility (Statistics South Africa, 2016)

Municipality	Flush toilet - municipal sewer system	Flush toilet - septic tank	chemical toilet	Pit latrine - ventilation pipe	Pit latrine- no ventilation pipe	Ecological toilet (urine diversion, enviroloo)	Bucket toilet	Other	None
KwaDukuza	27,755	6,088	14,843	8,828	28,523	260	88	3,041	1,860
	30.4%	6.7%	16.3%	9.7%	31.2%	0.3%	0.1%	3.3%	2.0%
Mandeni	9,999	878	12,704	13,912	5 719	23	16	584	1,843
	21.9%	1.9%	27.8%	30.5%	12.5%	0.1%	0.0%	1.3%	4.0%
Ndwedwe	1,144	359	9,662	14,097	4,584	608	1,722	461	1,244
	3.4%	1.1%	28.5%	41.6%	13.5%	1.8%	5.1%	1.4%	3.7%
Maphumulo	165	104	8,588	3,030	7,233	-	829	321	254
	0.8%	0.5%	41.8%	14.8%	35.2%	0.0%	4.0%	1.6%	1.2%
iLembe	39,064	7,429	45,798	39,868	46,059	891	2,654	4,406	5,201
	20.4%	3.9%	23.9%	20.8%	24.1%	0.5%	1.4%	2.3%	2.7%

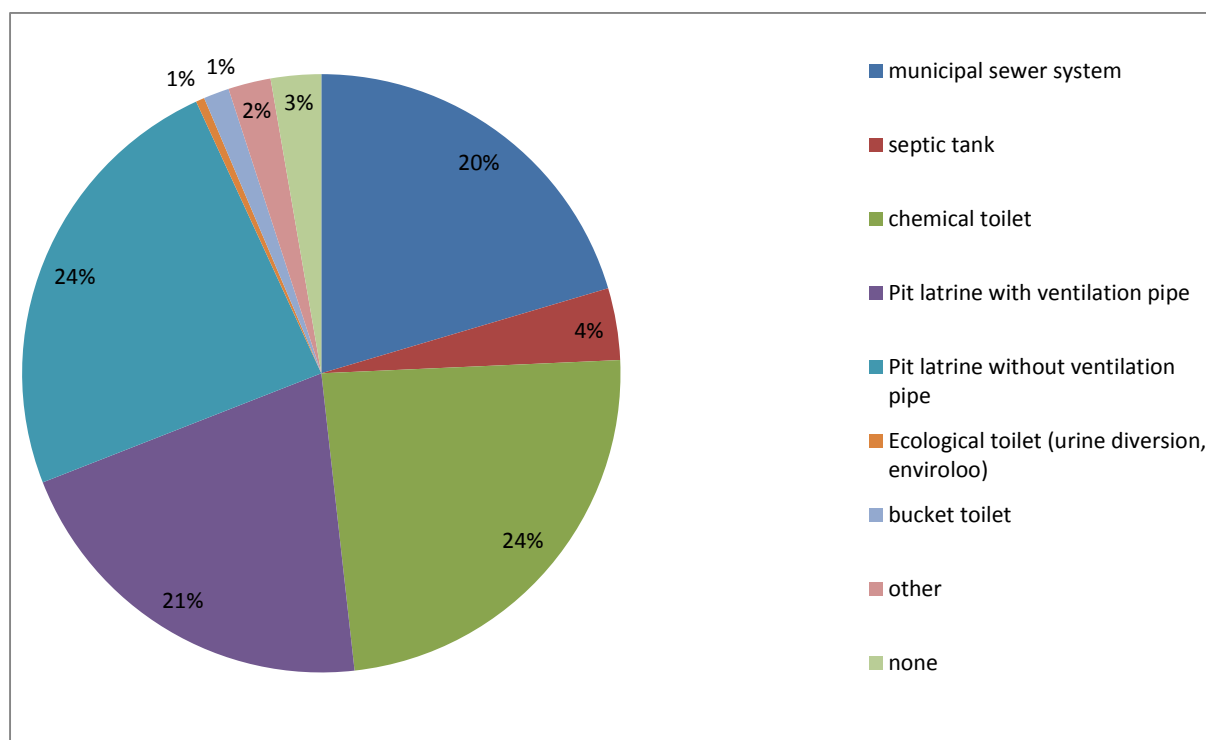


Figure 9: Distribution of households in the iLembe DM by main type of toilet service (Statistics South Africa, 2016)

5.2.3 Local Economy

Manufacturing, retail, trade and accommodation, finance and business services are the main contributors to the local economy of the iDM. Tourism, commercial and property development are thriving in the coastal and inland corridor regions of the iDM. The highest employment in the iDM is in the trade, catering and accommodation industries. Manufacturing and agriculture were previously the largest employment sectors, but both industries have experienced a decline in the District and Nationally. This has led to the decrease in employment in the iDM. The skills levels in the iDM are similar to that of the Province with just less than 50% of the employed people in the iDM being semi-skilled or unskilled workers (iLembe District Municipality, 2019).

With regards to employment in the LMs within the District:

- The KLM has a diversification of employment across all industries,
- Majority of people employed in the MLM are in the manufacturing and trade industries which is as a result of the iSithebe Industrial Estate,
- Majority of employed people in the MPLM are employed in the government services sector, and
- The majority of employed people in the NLM are employed in the agriculture and trade industry.

The iDM has highlighted the following industries and interventions as key areas for economic growth, development and sustainability in the iDM. These industries would also act as agents for employment generation and job creation (iLembe District Municipality, 2019).

- Agriculture
 - Significant investment into infrastructure
 - Attracting new markets (local and international)
 - Capacitating rural farmers to become commercial farmers
 - Encourage knowledge sharing and knowledge development in agriculture
- Manufacturing
 - Increase the light service industry (mini-factories and workshops)
 - Promote medium and large scale industrial development
 - Improved planning of infrastructure and the development thereof (e.g. the zoning and development of industrial land)
 - Creating and expansion of agri-processing plants and markets
- Tourism
 - Encourage sustainable coastal resort development

- Develop tourism in the hinterland and along the hinterland routes
- Provision of support services (including training colleges and in-house training programmes)
- The Green Economy
 - Increase business connectivity
 - Establish the North Coast as an Information and Communication Technology (ICT) Research and Development hub
 - Plan and develop rural ICT hubs throughout the hinterland

iLembe District Municipality produced a Gross Domestic Product (GDP) of R2.7 billion in 2017, of which R1.7 billion consisted of direct spend by visitors to the iDM. Due to the high 2017 spend by visitors in the iDM, 5,731 job opportunities were sustained/created in the iDM (iLembe District Municipality, 2019). However, based on the 2011 census the majority of the population within iDM remains economically inactive at 47.47% of the population. Only 30.88% of the population is employed and 13.61% of the population is unemployed.

In 2011 the iDM's gross geographic produce (GGP) was R16 billion. This accounted for about 3.8% of KZN's GGP making iLembe the 7th highest contributor to KZN's GDP out of the 11 District Municipalities and one metro. iDM GDP grew by 2.9% in 2011, which was up from the 2.7% that was recorded in 2010. The highest contributor to the iDM GGP was the finance, insurance, real estate and business services sector, which contribute 18.4% to the total GGP. This sector accounts for 30% of the KLM economy, 19% of the MLM economy, 18% of the NLM economy, and only 9% being contributed to the MPLM economy. Manufacturing was the next highest contributor to the iDM GGP, which contributed 18.2% to the total GGP in the iDM. Manufacturing accounts for 30% of the KLM economy, 23% of MLM economy, 23% of NLM economy and 15% of MLM economy. Wholesale and retail trade, catering and accommodation contributed the third highest to the GGP with 16%, with agriculture, forestry and fishing only contributing 4.5% to iLembe's GGP, although it is the most significant sector in MPLM (Enterprise iLembe, 2012).

5.2.3.1 Poverty Levels and Intensity

5.2.3.1.1 Food Poverty Lines

The Food Poverty Line (FPL), Lower-Bound Poverty Line (LBPL) and Upper-Bound Poverty Line (UPBL) for South Africa since 2009 to 2018 are indicated in the table below. The FPL is defined as the amount of money that an individual needs to afford the minimum required daily energy intake. The FPL is commonly referred to as the “extreme” poverty line.

Table 18: Inflation adjusted national poverty lines, 2009 to 2018 (per person per month in Rand)

Year	Food Poverty Line (FPL)	Lower-Bound Poverty Line (LBPL)	Upper-Bound Poverty Line (UBPL)
2009	R318	R456	R709
2010	R320	R466	R733
2011	R335	R501	R779
2012	R366	R541	R834
2013	R386	R572	R883
2014	R417	R613	R942
2015	R441	R647	R992
2016	R498	R714	R1,077
2017	R531	R758	R1,138
2018	R547	R785	R1,183

It was reported in 2010 that 25% of people within the KZN Province were living below the food poverty line of R320.00 per month and in 2015, 28% of people in the KZN were living below the food poverty line of R441.00 per month (Mail and Guardian, 2015).

In 2016, 34.9% of the KZN population were living below the FPL and in 2017 this percentage increased to 36%. The figure below indicates the percentage of people living below the national poverty lines within the KZN in 2016 and 2017. To note is that the percentage of people living below the 3 Poverty Lines (Food Poverty Line, Lower-Bound Poverty and Upper-Bound Poverty Line) has increased from 2016 to 2017. The percentage of people living below the Food Poverty Line has increased from 25% in 2010 to 36% in 2017 (KwaZulu-Natal Provincial Government , 2019).

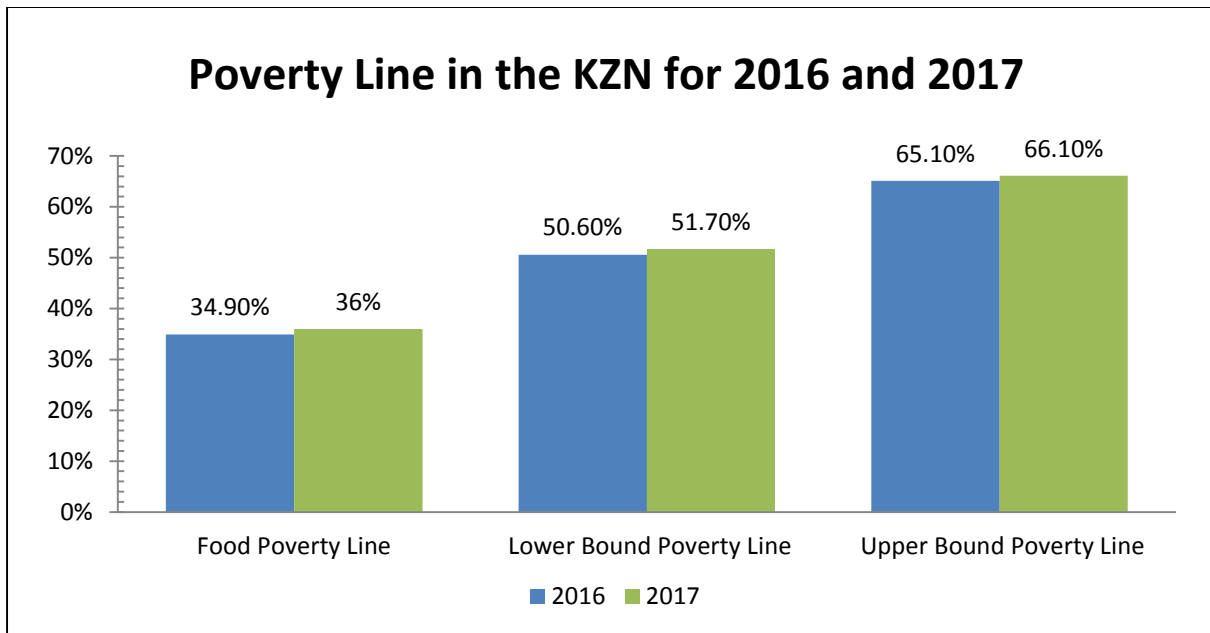


Figure 10: Poverty Lines in the KwaZulu-Natal Province in 2016 and 2017 (KwaZulu-Natal Provincial Government , 2019)

6 Waste Profile

6.1 Domestic Waste Generation Quantities

In order for municipalities to be able to plan for future waste management activities the types and volumes of waste generated in the area needs to be identified. The iDM is not responsible for the provision of a waste collection services for the local municipalities, but is responsible for planning and establishing waste disposal facilities in the iDM. The calculation of domestic waste generation data is important for this reason and to determine the waste tonnages to be disposed of.

The four local municipalities are required by law to determine quantities and types of waste generated within their municipal boundary. This involves establishing the current quantities of waste generated, recycled, treated and disposed of. This information can be obtained from the following sources:

- Private waste transporters and waste managers: Waste transporters, as well as waste managers of treatment or disposal facilities keep records of waste handled for billing purposes.
- Municipal records: The municipality should keep a record of waste collected as well as waste disposed to landfill.
- Waste Information System: The Department of Environmental Affairs (DEA) and some Provinces have developed waste information systems (WIS) which can provide waste data.

Determining the actual quantities of waste generated in a region is extremely difficult to achieve through the use of actual waste records, especially in a largely rural district municipality such as this which has a large rural component and many households burn or bury their waste. In addition, numerous households within the iDM do not receive a waste collection service and LMs do not consistently collate tonnage information for areas which receive a waste collection service.

The amount of waste generated for the iDM has therefore been estimated through a theoretical calculation which considers the number of people in the municipal area and the waste typically generated per capita. The waste generated domestically was estimated based on statistical data, mathematical models and waste generated tonnages for a population per income bracket. These domestic waste generation tonnages were extrapolated for the period 2019 – 2024 for which the IWMP was developed. Waste generated within industry in the iDM was determined from private waste companies that conduct waste collection and disposal services as many of the private companies within the iDM utilise the services of private waste companies.

For the calculation of the domestic waste generated in the iDM, the waste generated per income group was used based on the waste generated guidelines determined within the South Africa State of Environmental Report.

The South Africa State of Environmental Report, 2006 (SOER) calculated waste generation volumes per income level as follows:

- Low income 0.41 kg/ person/ day = 149.65 kg/ person/ year.
- Middle income 0.74 kg/ person/ day = 270.1 kg/ person/ year.
- High income 1.29 kg/ person/ day = 470.85 kg/ person/ year.

The SOER figures for waste generation are also used in the Department of Environmental Affairs Guideline for the Development of Integrated Waste Management Plans (IWMPs).

The DEA IWMP guideline also defines the following income brackets:

- Low income R 0 – R 74,999 per year.
- Middle income R 75,000 – R 999,000 per year.
- High income R 1 million + per year.

The KZN Community Survey (Statistics South Africa, 2016) recorded that the KLM has the largest population at 42.08 % of the iDM overall population. MLM has the second largest population at 22.48 % of the iDM population, while the Ndwedwe LM population falls just below this at 21.76%. The smallest municipality in terms of population size is MPLM at 13.68%.

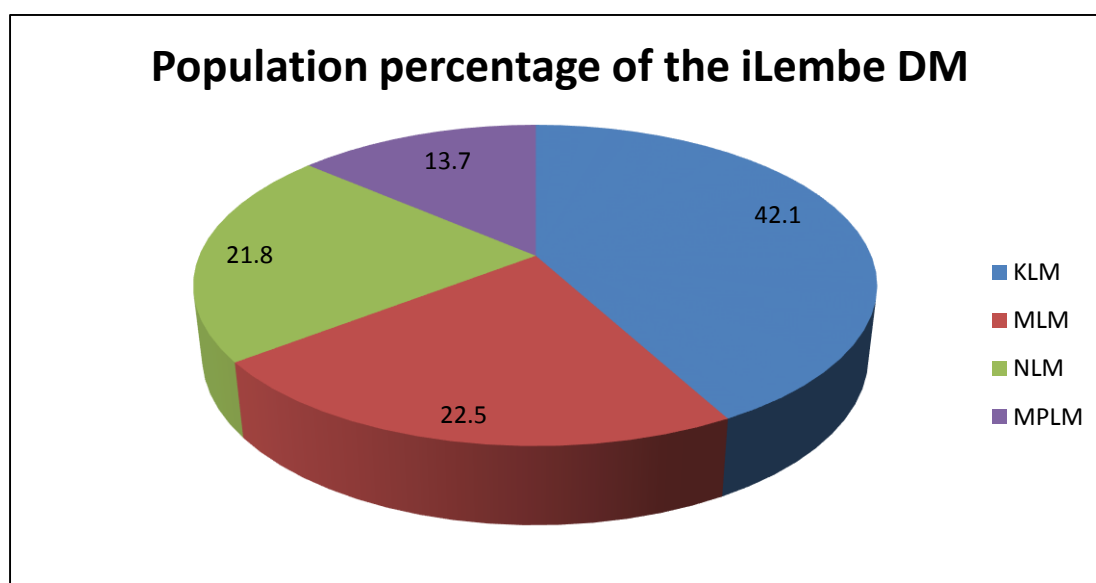


Figure 11: Population as percentage of iLembe District Municipality

The population figures of 2016 as per the KZN Community Survey for each LM were used to determine the population figures of 2019 with the annual growth rate provided in the KZN Community Survey for each LM. The mass of waste generated for 2019 was then calculated with the waste generation volumes per income bracket provided by the South Africa State of Environmental Report. This was then used to calculate the mass of waste generated in 2024 with the growth rate provided in the 2016 KZN Community Survey for the iDM for each LM. The Community Survey however did not specify the population per income groups; therefore this information was taken from the 2011 Census data. The growth rates for the iDM and LMs as detailed in the 2016 KZN Community Survey were used to project waste generation rates in the iDM and LMs in the tables below.

The tables below indicate the domestic waste generated per LM within the iDM. The mass per LM was calculated separately as each municipality had their own annual growth rate. Once the mass was calculated per LM, it was added together to estimate the domestic waste generated within the iDM.

Table 19: Summary of income groups and waste generation in the KLM (annual growth rate of 4.08%)

Income Group	Income Brackets	% 2011	No. of persons (2016)	No. of persons (2019)	Waste generated per day, 2019 (tonnes)	Waste generated per year, 2019 (tonnes)
Low	R0	12.8%	35,420	39,935	16.37	5,976.23
	<R4,800	3.9%	10,792	12,168	4.99	1,820.88
	R 4,800 - R 9,600	7.0%	19,370	21,839	8.95	3,268.25
	R 9,601 - R 19,600	21.3%	58,941	66,454	27.25	9,944.83
	R 19,601 - R 38,200	23.0%	63,645	71,758	29.42	10,738.54
	R 38,201 - R 76,400	13.4%	37,080	41,807	17.14	6,256.37
	Total	81.4%	225,249	253,960	104.12	38,005.11
Middle	R 76,401 - R 153,800	7.1%	19,647	22,151	16.39	5,983.07
	R 153,801 - R 307,600	5.3%	14,666	16,535	12.24	4,466.23
	R 307,600 - R 614,400	3.9%	10,792	12,168	9.00	3,286.47
	R 614,001 - R 1,228,800	1.6%	4,428	4,992	3.69	1,348.30
	Total	17.9%	49,533	55,846	41.33	8,357.39
High	R 1,228,801 - R 2,457,600	0.4%	1,107	1,248	1.61	587.60
	R 2,457,601 +	0.3%	830	936	1.21	440.70
	Total	0.7%	1,937	2,184	2.82	1,028.30
Total for KLM		100.0	276,719	311,990	148.27	47,390.80

Table 20: Summary of income groups and waste generation in the MLM (annual growth rate of 1.55%)

Income Group	Income	% 2011	No. of persons, 2016	No of persons, 2019	Waste generated per day, 2019 (tonnes)	Waste generated per year 2019 (tonnes)
Low	R0	13.4%	19,806	20,742	8.50	3,103.98
	<R4,800	5.4%	7,982	8,359	3.43	1,250.86
	R 4,800 - R 9,600	10.4%	15,372	16,098	6.60	2,409.06
	R 9,601 - R 19,600	25.7%	37,987	39,781	16.31	5,953.16
	R 19,601 - R 38,200	22.8%	33,700	35,292	14.47	5,281.40
	R 38,201 - R 76,400	11.5%	16,998	17,801	7.30	2,663.87
	Total	89.2%	131,845	138,071	56.61	20,662.33
Middle	R 76,401 - R 153,800	5.6%	8,277	8,668	6.41	2,341.26
	R 153,801 - R 307,600	3.2%	4,730	4,953	3.67	1,337.86
	R 307,600 - R 614,400	1.6%	2,365	2,477	1.83	668.93
	R 614,001 - R 1,228,800	0.2%	296	310	0.23	83.62
	Total	10.6%	15,668	16,408	12.14	4,431.68
High	R 1,228,801 - R 2,457,600	0.1%	148	155	0.20	72.88
	R 2,457,601 +	0.1%	148	155	0.20	72.88
	Total	0.2%	296	310	0.40	145.76
Total for MLM		100.0	147,808	154,788	69.15	25,239.77

Table 21: Summary of income groups and waste generation in the MPLM (annual growth rate of -1.64%)

Income Group	Income	% 2011	No. of persons, 2016	No of persons, 2019	Waste generated per day, 2019 (tonnes)	Waste generated per year, 2019 (tonnes)
Low	R0	13.2%	11,876	11,301	4.63	1,691.22
	<R4,800	7.2%	6,478	6,164	2.53	922.48
	R 4,800 - R 9,600	12.5%	11,246	10,702	4.39	1,601.53
	R 9,601 - R 19,600	26.8%	24,112	22,945	9.41	3,433.68
	R 19,601 - R 38,200	24.3%	21,862	20,804	8.53	3,113.38
	R 38,201 - R 76,400	8.4%	7,557	7,192	2.95	1,076.23
	Total	92.4%	83,131	79,108	32.43	11,838.51
Middle	R 76,401 - R 153,800	3.9%	3,509	3,339	2.47	901.86
	R 153,801 - R 307,600	2.1%	1,889	1,798	1.33	485.62
	R 307,600 - R 614,400	1.2%	1,080	1,027	0.76	277.49
	R 614,001 - R 1,228,800	0.2%	180	171	0.13	46.25

	Total	7.4%	6,658	6,335	4.69	1,711.22
High	R 1,228,801 - R 2,457,600	0.1%	90	86	0.11	40.31
	R 2,457,601 +	0.1%	90	86	0.11	40.31
	Total	0.2%	180	171	0.22	80.62
Total for MPLM		100.0	89,969	85,615	37.34	13,630.35

Table 22: Summary of income groups and waste generation in the NLM (annual growth rate of 0.37%)

Income Group	Income	% 2011	No. of persons, 2016	No. of persons, 2019	Waste generated per day, 2019 (tonnes)	Waste generated per year 2019 (tonnes)
Low	R0	13.1%	18,748	18957	7.77	2,836.95
	<R4,800	5.8%	8,301	8393	3.44	1,256.05
	R 4,800 - R 9,600	10.7%	15,314	15484	6.35	2,317.20
	R 9,601 - R 19,600	27.7%	39,643	40085	16.43	5,998.73
	R 19,601 - R 38,200	25.4%	36,352	36757	15.07	5,500.64
	R 38,201 - R 76,400	10.3%	14,741	14905	6.11	2,230.58
	Total	93.0%	133,099	134582	55.18	20,140.15
Middle	R 76,401 - R 153,800	3.5%	5,009	5065	3.75	1,368.03
	R 153,801 - R 307,600	1.9%	2,719	2750	2.03	742.64
	R 307,600 - R 614,400	1.2%	1,717	1737	1.29	469.04
	R 614,001 - R 1,228,800	0.2%	286	289	0.21	78.17
	Total	6.8%	9,732	9840	7.28	2,657.89
High	R 1,228,801 - R 2,457,600	0.1%	143	145	0.19	68.14
	R 2,457,601 +	0.1%	143	145	0.19	68.14
	Total	0.2%	286	289	0.37	136.27
Total for NLM		100.0	143,117	144711	62.83	22,934.31

The totals for the LMs are shown in the tables above and these aggregate to the totals of income groups in the iDM as detailed below:

- Low income: 87.2 %
- Middle income: 12.4 %
- High income: 0.4 %

The predicted annual waste generation figures for the iDM provided in the table below have been calculated based on the waste generated per municipality. It is estimated that **109,195 tonnes** of domestic waste would be produced in the iDM 2019.

Table 23: Summary of size of income groups and waste generation per income group in the iDM

Municipality	Number of people, 2019	Waste generated per day, 2019 (tonnes)	Waste generated per year, 2019 (tonnes)
KwaDukuza	311,990	148.27	47,390.80
Mandeni	154,788	69.15	25,239.77
Maphumulo	85,615	37.34	13,630.35
Ndwedwe	144,711	62.83	22,934.31
Total for the iDM	697,104	317.59	109,195.23

6.2 Estimated future domestic waste generation by municipality

The table below details the future domestic waste generation per municipality in the iDM for 2019 and 2024. The mass of waste generated was calculated using the annual population growth rate for each LM. It is estimated that **121,048 tonnes** of domestic waste would be produced in 2024. Predictions of future waste generation quantities are dependent on population growth and changes in economic landscape of the iDM. The population growth is a good indicator of how domestic waste generation increases, but it is noted that changes in consumer patterns may also influence waste generation quantities.

Table 24: Past, current and projected domestic waste generation per municipality in the iDM

Area and annual growth rate	Estimated Waste Generation Quantities per Municipality in the iDM (tonnes)			
	2019		2024	
	Per day	Per year	Per day	Per year
KwaDukuza (4.08%)	148.27	47,390.80	181.08	57,880.26
Mandeni (1.55%)	69.15	25,239.77	74.68	27,257.44
Mamphumulo (-1.64%)	37.34	13,630.35	34.38	12,548.73
Ndwedwe (0.37%)	62.83	22,934.31	64.00	23,361.75
Ilembe	317.59	109,195.23	354.14	121,048.18

6.3 Waste Stream Composition

The requirement for a waste characterisation as part of an IWMP is outlined in section 12(1) of the National Environmental Management: Waste Act 59 of 2008 (hereafter referred to as NEMWA). Section 12 (1) requires IWMP to contain: *'an assessment of the quantities and types of waste that are generated in an area'*.

Information of waste characterisations previously undertaken for the KLM, MLM and the NLM were used to explain the waste stream composition for domestic waste generated in the iDM. Waste characterisation exercises were undertaken as part of the IWMP reviews for the KLM and MLM by GIBB in August 2018 to determine the composition of domestic waste generated in these municipalities. The results of the waste characterisations from the 2017 NLM IWMP were included in this section of the waste stream analysis composition (Nemai Consulting, February 2017). For all three municipalities, domestic waste was taken from high and low income areas. A waste characterisation was not undertaken for the Maphumulo Municipality during the review of their IWMP.

6.3.1 Survey Areas

As the domestic waste profile varies between different income levels, waste was collected from both high and low income areas in both municipalities, as shown in the table below.

Table 25: Waste characterisation fieldwork details for the KLM, MLM and NLM

Area	Income status	Survey date	No. Houses surveyed	No. black bags collected	Total waste separated (kg)
KwaDukuza Local Municipality					
Gledhow	High	22 August 2018	15	40	116.4 kg
Thembeni	Low	22 August 2018	15	27	220.4 kg
Mandeni Local Municipality					
Mandini suburb	Medium - High	22 August 2018	8	15	73.3 kg
Isithebe	Low	22 August 2018	Waste collected from 5 skips	15	78.9 kg
Ndwedwe Local Municipality					
Glendale	Low	November 2016	6 houses and 2 skips	7 black bags as well as 2 skips of	202.13

Area	Income status	Survey date	No. Houses surveyed	No. black bags collected	Total waste separated (kg)
				±100 kg waste	
Ndwedwe suburb	Low	November 2016	9 and 2 skips	13 black bags and 2 skips of ±100 kg waste	207.03 kg

6.3.2 Characterisation Methodology

6.3.2.1 Execution

1. In urban areas in the KLM, MLM and NLM where a waste collection service is conducted, waste was collected using a municipal team on the morning of normal collection days. The collection was done using a light utility vehicle, early on collection day, before the normal collection round was undertaken.
2. All waste from specific houses in suburbs from respective municipalities were collected; there was no selective collection of waste. All the waste put out for collection at each of these houses was collected to ensure the results were not skewed due to any type of separation of waste types into different bags or containers. Where it was evident that more than one household had placed waste together outside one house, this waste was not collected. Where areas had not received a kerbside collection service, waste was collected from communal skips.
3. Waste was randomly collected from 5 skips in the MLM area until 15 waste bags were collected.
4. For the waste characterisation that was conducted on four skips in the NLM, the contents of the skip was collected with a compactor truck and emptied on a large concrete floor. The waste was then mixed with a wheeled loader and randomly halved until a waste sample of approximately 100 kg remained. This sample was then separated into the broad recyclable components and weighed.
5. Waste was transferred onto sorting tables or a sorting area. Black bags were sorted to completion, one at a time. This was to prevent the accumulation of unsorted, smaller items on the tables.
6. For the waste characterisations undertaken in the KLM and MLM, waste was sorted according to type, as indicated in **Table 26** below.
7. For the waste characterisation undertaken for the NLM, waste was sorted according to paper, plastic, metal, aluminium, glass, nappies, garden, other waste and residual.
8. Sorted waste was placed into empty wheelie bins or containers labelled for different waste types and then weighed before and after to determine the mass of waste received. An electronic scale was used to weigh the wheelie bins or containers. Results were recorded on field sheets.
9. Once weighed, the contents of all wheelie bins were returned to the light utility vehicle and the waste was taken to landfill.



Figure 12: Collection of waste from a high income suburb (left) and from a communal skip in Isithebe (right) undertaken in the MLM

Table 26: Waste characterisation categories used

Category	Examples
Paper (general)	High quality paper, 'office paper'
Paper (other)	Magazines 'plasticized paper'
Cardboard (corrugated)	Corrugated boxes
Cardboard (non-corrugated)	Cereal boxes
Metal	Drinks cans, foil
e-waste	Electrical components – computers, calculators, cell phones
Organics (garden waste)	Grass cuttings, leaves
Organics (food waste)	Vegetable peelings, fruit
Organics (wood waste)	Tree stumps and branches
Plastics 1. PET	Soft drink bottles, carbonated drink bottles
Plastics 2. PE-HD	Milk bottles, shampoo bottles
Plastics 3. PVC	Water piping
Plastics 4. PE-LD	Bread bags
Plastics 5. PP	Microwaveable containers
Plastics 6. PS Polystyrene	Take away cartons, hot drink cups
Plastics 7. Other	CD's
Glass (all colours)	Glass bottles, glass jars

Category	Examples
Construction waste	Builder rubble, bricks
Hazardous waste	Batteries, fluorescent bulbs, paints
Health care risk waste	Sharps, medication
Nappies	Nappies
Other	Fabrics – old clothes, furniture
Fines	Mixed material too small to be sorted



Figure 13: Waste characterisation underway for the KLM and the MLM undertaken by GIBB.



Figure 14: Sorting tables and bins set up (left), weighing of bins (right) for the waste separation for the KLM and the MLM undertaken by GIBB.

The DEA IWMP toolkit references the Stats SA guideline for sampling which indicates that sample size should comprise 30% of the total number of households. Thus ideally the sample should have included

waste from over 27,385 households in KLM, 13,703 households in MLM and 10,165 households for the NLM. This was not possible within the scope of the respective studies. The scope of the waste characterisation as set out in the service level agreements for the respective municipal IWMPs limited the study to a one-day characterisation.

It is recommended that an annual waste characterisation is undertaken in each municipality within the iDM. The characterisation should be rotated between different suburbs, and undertaken at different times in the year to account for seasonal variation in waste and variations between different suburbs and income levels.

6.3.3 KwaDukuza Local Municipality Waste Characterisation Results

The table below provides a breakdown of the waste characterisation results for the areas sampled in KLM. The results have also been combined to give an average for the municipality.

Table 27: Waste characterisation results for KwaDukuza Municipality

Waste category	Quantity (kg) low income	% Composition low income	Quantity (kg) high income	% Composition high income	Combined Quantity (kg)	Combined % Composition
High quality office paper	4.7	4.0	4.3	1.9	9.0	2.7
Paper other	4.1	3.5	24.6	11.1	28.7	8.5
Corrugated cardboard	4.9	4.2	2.8	1.3	7.7	2.3
Non-corrugated cardboard	2.9	2.5	13.9	6.3	16.8	5.0
Paper & cardboard subtotal	16.6	14.2	45.6	20.7	62.2	18.5
Organics - garden waste	18.1	15.6	1.5	0.7	19.6	5.8
Organics - food waste	40.3	34.7	64.4	29.2	104.8	31.1
Organics - wood waste	0.0	0.0	0.3	0.1	0.3	0.1
Organics subtotal	58.4	50.2	66.2	30.0	124.7	37.0
PET Plastic	2.4	2.1	5.8	2.6	8.2	2.4
PE-HD Plastic	6.2	5.3	6.0	2.7	12.2	3.6
PVC Plastic	0.4	0.4	1.6	0.7	2.0	0.6
PE-LD Plastic	3.0	2.6	7.0	3.2	10.0	3.0
PP Plastic	2.5	2.1	4.1	1.9	6.6	2.0
Polystyrene Plastic	4.1	3.6	1.9	0.9	6.1	1.8
Plastics Other	1.9	1.7	2.5	1.1	4.4	1.3
Plastics subtotal	20.6	17.7	28.8	13.1	49.5	14.7
Hazardous waste	1.1	1.0	1.6	0.7	2.8	0.8
Health care risk waste	0.4	0.4	0.8	0.3	1.2	0.4
Hazardous and HCRW subtotal	1.5	1.4	2.4	1.0	4.0	1.2
Nappies	3.3	2.8	14.8	6.7	18.1	5.4
Metal	3.3	2.9	5.1	2.3	8.4	2.5

E- waste	0.5	0.4	0.6	0.3	1.1	0.3
Glass	4.6	4.0	49.1	22.3	53.7	15.9
Construction waste	0.0	0.0	1.6	0.7	1.6	0.5
Other	1.6	1.3	3.6	1.6	5.2	1.5
Fines	5.9	5.0	2.6	1.2	8.5	2.5
TOTAL	116.4	100.0	220.4	100.0	336.8	100.0

Table 28: Waste characterisation results in broad categories for KwaDukuza Municipality

Waste category	% Composition - Low Income Households	% Composition - High Income Households	% Composition – Combined Households
Paper and cardboard	14.2	20.7	18.5
Organics	50.2	30.0	37.0
Plastic	17.7	13.1	14.7
Hazardous	1.4	1.0	1.2
Nappies	2.8	6.7	5.4
Metals	2.9	2.3	2.5
e-waste	0.4	0.3	0.3
Glass	4.0	22.3	15.9
Construction waste	0.0	0.7	0.5
Other	1.3	1.6	1.5
Fines	5.0	1.2	2.5
Total	100.0	100.0	100.0

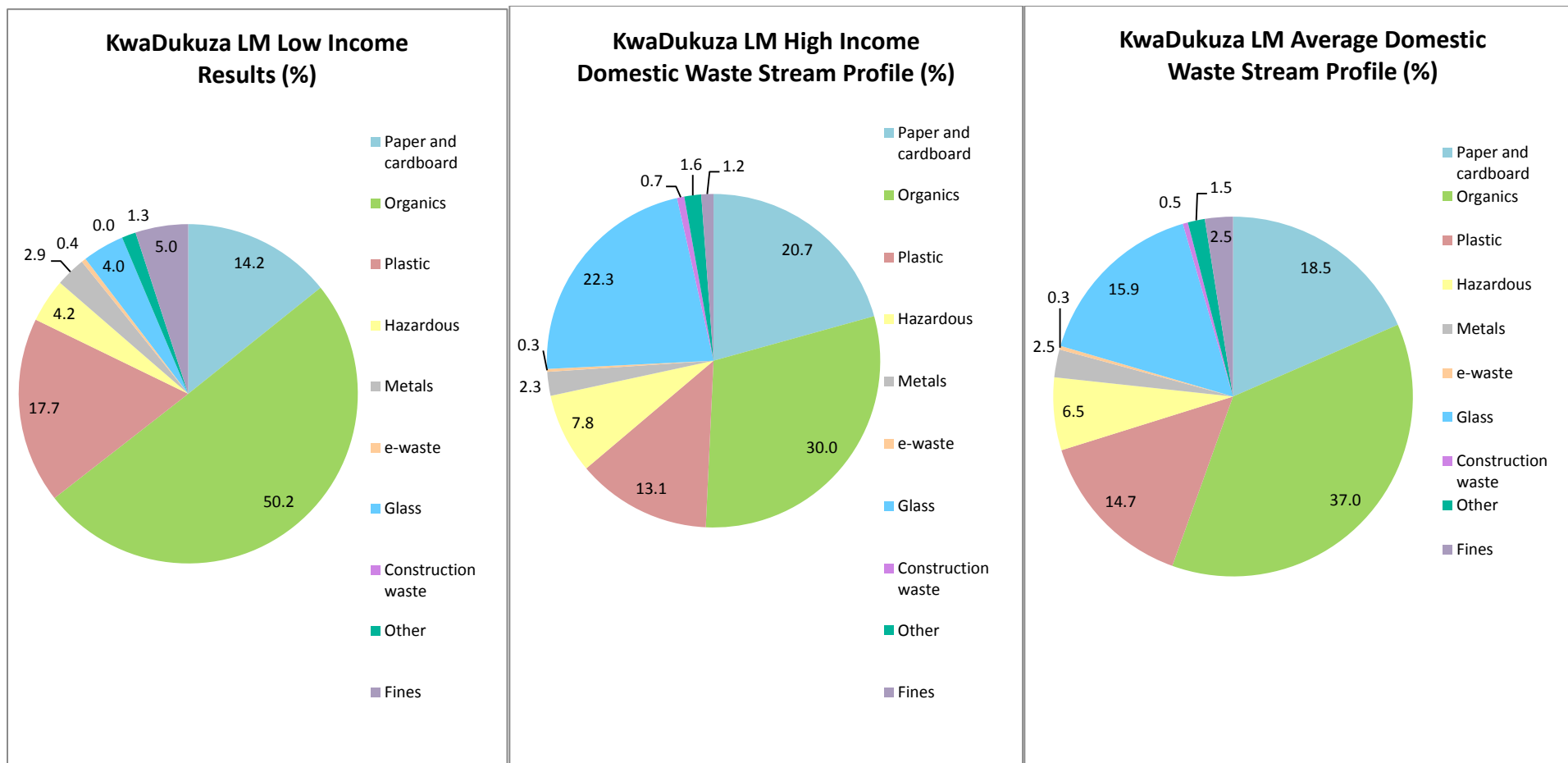


Figure 15: Waste characterisation results summary for KwaDukuza

6.3.3.1 Analysis of Results for KwaDukuza Waste Characterisation

On average the largest category of the KLM domestic waste stream was organic waste comprising a total of 37.0% of the waste stream. Organic waste was comprised of food waste (31.1%), wood waste (0.1%) and garden waste (5.8%). This finding highlights the opportunity for composting of organic waste to significantly reduce the volume of waste disposed to landfill. A high proportion of food waste also means that separation of recyclables at source would be required to take full advantage of the recyclable portion of the waste stream because food waste contamination can reduce the quality of recyclables material. Perishable recyclables such as paper and cardboard and some plastics are the worst affected by food contamination. The high proportion of organic waste also highlights the requirements for regular removal of domestic waste, especially in summer. Also noted from the average KLM domestic waste stream was that a high percentage (51.6%) of the domestic waste stream sample was composed of recyclable materials (paper, cardboard, metal, glass and plastics).

6.3.3.1.1 Plastics Waste Stream Characterisation

The plastics fraction of the sample was further separated to better understand the recycling potential for plastics. These were separated into six fractions as shown in the table below.

Table 29: Description of different categories of plastics*.

SPI Code	Type	Acronym	Examples
1	Polyethylene Terephthalate	PET	Fizzy drink and still water bottles.
2	High density Polyethylene	PE-HD	Milk bottles, juice bottles and some detergent bottles, plastic bags.
3	Polyvinyl Chloride	PVC	Plastic pipes
4	Low density Polyethylene	PE-LD	Bread bags, soft plastic bags, cling wrap
5	Polypropylene	PP	Butter and yoghurt containers, crinkly food wrappers
6	Polystyrene	PS	Take away containers and utensils

* Plastic containers are often labelled with a Society of Plastic Industry code (SPI). These codes were devised in 1988 to aid identification of plastics for recycling purposes. Use of the codes on plastic packaging is voluntary.

The following table presents the plastic characterisation results for the KLM domestic waste stream.

Table 30: Plastic characterisation results for the KwaDukuza Local Municipality

Plastic category	Combined quantity (kg)	% of the total plastics	% of total waste stream
1 - PET	8.2	16.5	2.4
2 - PE-HD	12.2	24.6	3.6
3 - PVC	2.0	4.1	0.6
4 - PE-LD	10.0	20.2	3.0
5 - PP	6.6	13.3	2.0
6 - Polystyrene	6.1	12.3	1.8
7 – Other plastics	4.4	9.0	1.3
Sub-total	49.5	100.0	14.7

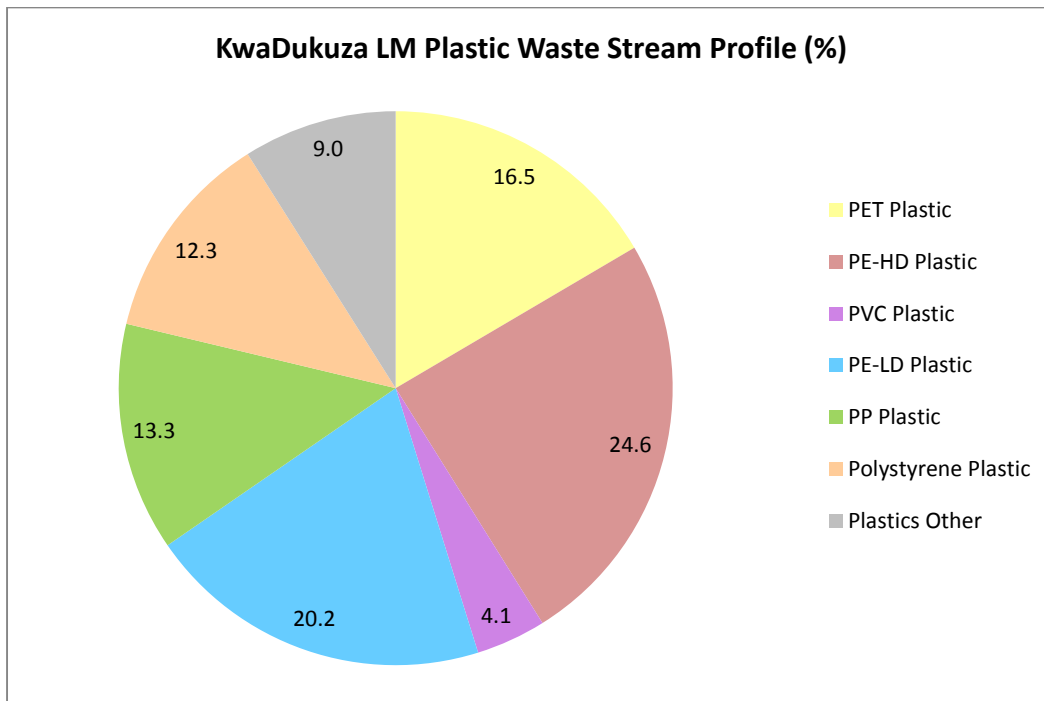


Figure 16: Plastic characterisation results for KwaDukuza Local Municipality

From the above results, it is evident that PE-HD, PELD and PET, which have the highest potential for recycling, constitute 24.6%, 20.2% and 16.5% of the total plastic waste stream sample respectively.

6.3.3.1.2 Paper and Cardboard Waste Stream Characterisation

The paper and cardboard fraction of the sample was further separated to better understand the recycling potential for paper and cardboard. These were separated into four fractions as shown in the table below which presents the paper and cardboard characterisation results.

Table 31: Paper and Cardboard characterisation results

Paper and Cardboard category	Combined quantity (kg)	% of the total plastics	% of total waste stream
High quality paper	0.4	2.8	0.3
Paper other	5.6	38.8	3.6
Corrugated cardboard	2.0	14.0	1.3
Non-corrugated cardboard	6.5	44.5	4.1
Paper & cardboard subtotal	14.5	100.0	9.2

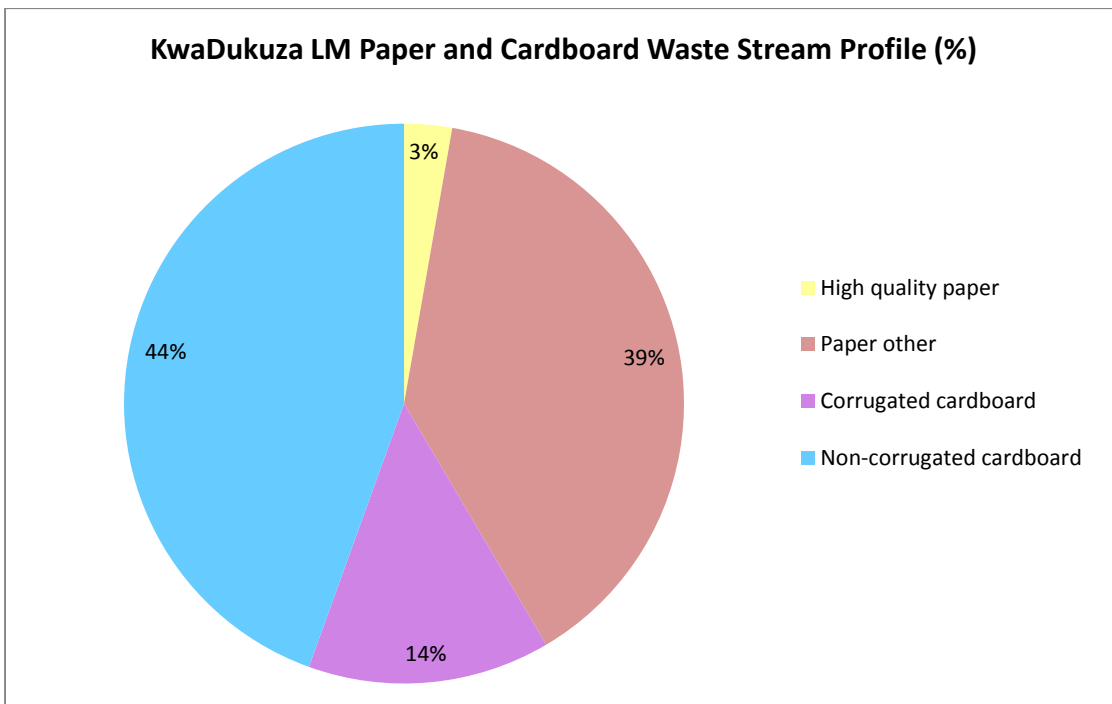


Figure 17: Paper and cardboard characterisation results for KwaDukuza Local Municipality

The majority of the paper and cardboard waste stream was 'non-corrugated cardboard' which made up of 44.5% of this waste stream. The non-corrugated cardboard consisted mainly of food and product packaging. 'Other paper' made up 38.8% of the total paper and cardboard waste stream, which includes paper food wrappings, tissue paper, newspaper and magazine paper. Corrugated cardboard,

consisting mainly of cardboard boxes, made up 14.0% of the paper and cardboard waste stream and very little high quality 'office' paper was found in the waste stream (2.8%).

6.3.4 Mandeni Local Municipality Waste Characterisation Results

The table below indicates the waste characterisation results for the areas sampled in the MLM.

The results have also been combined to give an average for the municipality.

Table 32: Waste characterisation results for Mandeni Local Municipality

Waste category	Quantity (kg) low income	% Composition low income	Quantity (kg) high income	% Composition high income	Combined Quantity (kg)	Combined % Composition
High quality office paper	0.30	0.41	0.10	0.13	0.40	0.26
Paper other	1.00	1.37	4.62	5.85	5.62	3.69
Corrugated cardboard	1.06	1.45	1.28	1.62	2.34	1.54
Non-corrugated cardboard	1.50	2.05	4.64	5.88	6.14	4.03
Paper & cardboard subtotal	3.86	5.27	10.64	13.48	14.50	9.53
Organics - garden waste	4.94	6.74	4.86	6.16	9.80	6.44
Organics - food waste	23.76	32.43	22.34	28.31	46.10	30.29
Organics - wood waste	0.00	0.00	0.00	0.00	0.00	0.00
Organics subtotal	28.70	39.18	27.20	34.47	55.90	36.73
PET Plastic	1.02	1.39	3.88	4.92	4.90	3.22
PE-HD Plastic	2.24	3.06	3.24	4.11	5.48	3.60
PVC Plastic	0.32	0.44	0.18	0.23	0.50	0.33
PE-LD Plastic	2.40	3.28	1.80	2.28	4.20	2.76
PP Plastic	2.18	2.98	2.20	2.79	4.38	2.88
Polystyrene Plastic	0.34	0.46	0.42	0.53	0.76	0.50
Plastics Other	0.68	0.93	0.26	0.33	0.94	0.62
Plastics subtotal	9.18	12.53	11.98	15.18	21.16	13.90
Hazardous waste	0.50	0.68	0.02	0.03	0.52	0.34
Health care risk waste	1.34	1.83	0.26	0.33	1.60	1.05
Hazardous and HCRW subtotal	1.84	2.51	0.28	0.36	2.12	1.39
Nappies	22.58	30.82	4.96	6.28	27.54	18.10
Metal	1.66	2.27	1.12	1.42	2.78	1.83

E- waste	0.52	0.71	0.00	0.00	0.52	0.34
Glass	1.52	2.07	19.62	24.86	21.14	13.89
Construction waste	0.00	0.00	0.00	0.00	0.00	0.00
Other	2.64	3.60	2.54	3.22	5.18	3.40
Fines	0.76	1.04	0.58	0.73	1.34	0.88
TOTAL	73.26	100.00	78.92	100.00	152.18	100.00

Table 33: Waste characterisation results in broad categories for the Mandeni Local Municipality

Waste category	% Composition - Low Income Households	% Composition - High Income Households	% Composition – Combined Households
Paper and cardboard	5.27	13.48	9.53
Organics	39.18	34.47	36.73
Plastic	12.53	15.18	13.90
Hazardous	2.51	0.36	1.39
Nappies	30.82	6.28	18.10
Metals	2.27	1.42	1.83
e-waste	0.71	0.00	0.34
Glass	2.07	24.86	13.89
Other	3.60	3.22	3.40
Fines	1.04	0.73	0.88
Total	100.0	100.0	100.0

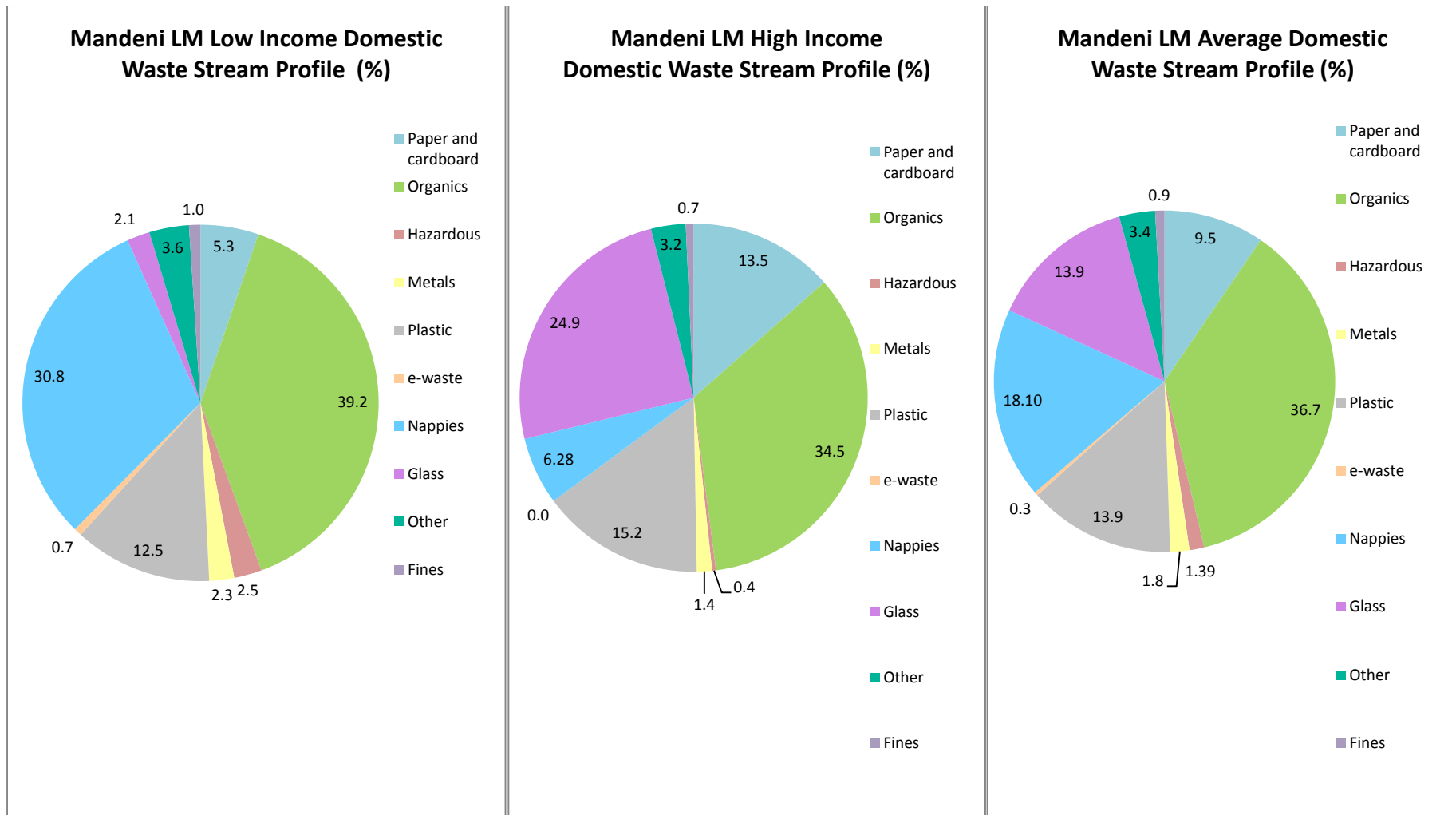


Figure 18: Waste characterisation results for the Mandeni Local Municipality

6.3.4.1 Analysis of Mandeni Local Municipality Waste Characterisation Results

On average the largest category of the domestic waste stream was organic waste comprising a total of 36.73% of the waste stream. Organic waste was composed of food waste (30.29%) and garden waste (6.44%). A high proportion of food waste also means that separation at source of recyclables would be required to take full advantage of the recyclable portion of the waste stream because food waste contamination can reduce the quality and quantity of recyclable material. Perishable recyclables such as paper and cardboard and some plastics are the worst affected by food contamination. A total of 39.0% of the domestic waste stream sample was composed of recyclable materials (paper, cardboard, metal, glass and plastics). The main difference in the waste type profiles of the high and low income waste samples was the portion of nappies, which was much higher in the low income household sample. The other notable difference between the low and high income waste stream samples was the percentage of glass, which was a high 24.9% of the high income sample, and only 2.1% of the low income sample. Many glass drinks bottles were found in several black bags collected from one of the high income households.

6.3.4.1.1 Plastics Waste Stream Characterisation

The plastics fraction of the sample from the MLM was further separated to better understand the recycling potential for plastics. These were separated into six fractions as shown in the table 28 above. The following table and figure presents the plastic characterisation results for the MLM.

Table 34: Plastic characterisation results

Plastic category	Combined quantity (kg)	% of the total plastics	% of total waste stream
1 - PET	4.9	23.2	3.2
2 - PE-HD	5.5	25.9	3.6
3 - PVC	0.5	2.4	0.3
4 - PE-LD	4.2	19.8	2.8
5 - PP	4.4	20.7	2.9
6 - Polystyrene	0.8	3.6	0.5
7 – Other plastics	0.9	4.4	0.6
Sub-total	21.2	100.0	13.9

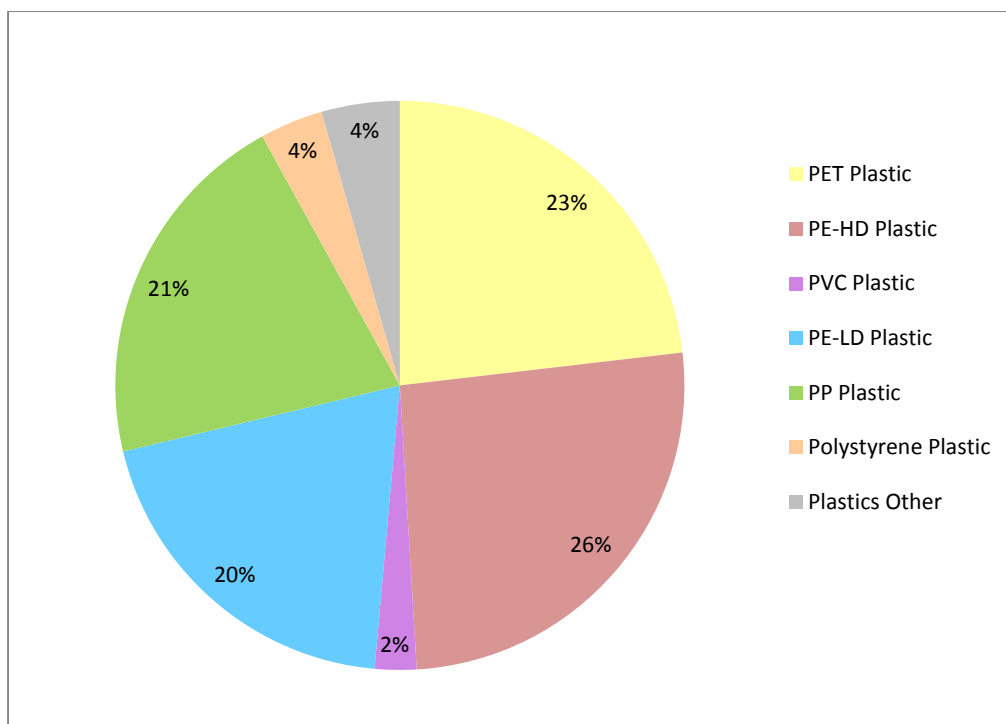


Figure 19: Plastic characterisation results (waste stream profile) for the Mandeni Local Municipality

From the above results, one can see that PE-HD, PET and PP, which have the highest potential for recycling, constitute 25.9%, 23.2% and 20.7% of the total waste stream sample respectively.

6.3.4.1.2 Paper and Cardboard Waste Stream Characterisation

The paper and cardboard fraction of the sample was further separated to better understand the recycling potential for paper and cardboard. These were separated into four fractions as shown in the table below.

Table 35: Paper and cardboard characterisation results

Paper and cardboard category	Combined quantity (kg)	% of the total plastics	% of total waste stream
High quality paper	0.4	2.8	0.3
Paper other	5.6	38.8	3.6
Corrugated cardboard	2.3	16.1	1.5
Non-corrugated cardboard	6.1	42.3	3.9
Paper & cardboard subtotal	14.5	100.0	9.2

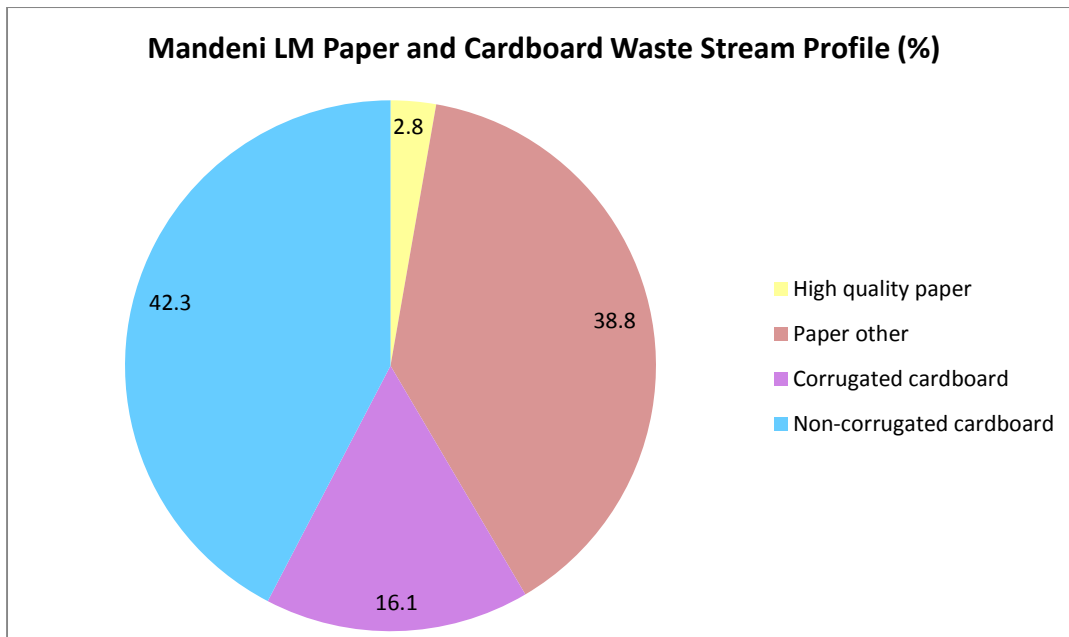


Figure 20: Paper and cardboard characterisation results for Mandeni LM (%)

The majority of paper and cardboard waste stream was ‘non-corrugated cardboard’ made up of 42.3% which consists mainly of food and product packaging. ‘Other paper’ made up 38.8% of the total paper and cardboard stream, which includes paper food wrappings, tissue paper, newspaper and magazine paper. Corrugated cardboard, consisting mainly of cardboard boxes, made up 16.1% of the paper and cardboard waste stream. Very little high quality ‘office’ paper was found in the waste stream (2.8%).

6.3.5 Ndwedwe Local Municipality Waste Characterisation results

The tables below show the results of the waste characterisation analysis that was conducted for the households that receive a kerbside waste collection service and the waste skips placed within the towns. A third table shows the summed waste characterisation for the kerbside waste collection waste characterisation and skip waste characterisation.

Table 36: Waste characterisation results in broad categories from waste skips for the Ndwedwe Local Municipality (mass in kg)

Skip Nr.	Date	Location	Total mass of Sample	Waste Type and Mass								
				Paper	Plastic	Polystyrene	Metal	Aluminium Cans	Glass	Nappies	Garden	Other
1	21 November 2016	Ndwedwe Central	103.64	20.40	49.62	2.84	1.08	1.02	14.22	12.98	1.24	0.26
2	23 November 2016	Montabello Skip	101.3	28.10	39.46	3.1	1.31	1.40	2.05	14.56	8.84	2.45
3	23 November 2016	Bamshella	100.27	37.14	35.76	1.51	1.51	0.85	2.54	9.88	11.08	-
4	24 November 2016	Glendale	100.66	25.90	20.20	0.7	0.68	0.34	0.80	43.50	6.62	1.86
Total waste sampled			405.9	111.5	145.0	8.15	4.6	3.6	19.6	80.9	27.8	4.57
Percentage of total waste sampled			100%	27.5%	35.7%	1.1%	0.9%	4.8%	19.9%	6.8%	1.1%	2.0%

Table 37: Waste characterisation results in broad categories for waste from 2 urban areas in the Ndwedwe Local Municipality (mass in kg)

Nr	Location	Nr of waste bags	Total mass of sample (kg)	Paper	Plastic	Metal	Aluminium Cans	Glass	Nappies	Garden	Residual (fines)	Other waste
Ndwedwe												
1	House 1 Ndwedwe	1	0.12	0.03	0.05	0.02	0.00	0.00	0.00	0.01	0.03	0.04
2	House 2 Ndwedwe	1	0.28	0.00	0.26	0.01	0.00	0.00	0.00	0.00	0.00	0.01

Nr	Location	Nr of waste bags	Total mass of sample (kg)	Paper	Plastic	Metal	Aluminium Cans	Glass	Nappies	Garden	Residual (fines)	Other waste
3	House 3 Ndwedwe	2	0.58	0.11	0.18	0.12	0.00	0.00	0.00	0.16	0.00	0.01
4	House 4 Ndwedwe	1	0.35	0.05	0.16	0.01	0.00	0.00	0.00	0.12	0.00	0.00
5	House 5 Ndwedwe	1	0.37	0.00	0.24	0.01	0.00	0.00	0.00	0.11	0.01	0.01
6	House 6 Ndwedwe	1	0.39	0.03	0.21	0.00	0.00	0.00	0.00	0.15	0.00	0.01
Total		7	1.7	0.19	0.89	0.17	0	0	0	0.4	0.04	0.07
Waste Stream%				11.2%	52.4%	10.0%	0.0%	0.0%	0.0%	23.5%	2.4%	4.1%
Glendale												
7	House 1 Glendale	1	0.05	0.01	0.01	0.02	0.00	0.00	0.00	0.01	0.00	0.00
8	House 2 Glendale	1	0.05	0.02	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	House 3 Glendale	1	0.06	0.01	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.02
10	House 4 Glendale	2	0.27	0.09	0.02	0.00	0.00	0.00	0.00	0.03	0.00	0.13
11	House 5 Glendale	1	0.03	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00
12	House 6 Glendale	2	0.27	0.02	0.03	0.00	0.02	0.03	0.10	0.06	0.00	0.00
13	House 7	2	0.06	0.04	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Nr	Location	Nr of waste bags	Total mass of sample (kg)	Paper	Plastic	Metal	Aluminium Cans	Glass	Nappies	Garden	Residual (fines)	Other waste
	Glendale											
14	House 8 Glendale	1	0.11	0.02	0.05	0.00	0.00	0.00	0.00	0.04	0.00	0.00
15	House 9 Glendale	2	0.30	0.01	0.03	0.02	0.01	0.01	0.16	0.06	0.00	0.00
Glendale Total		13	0.9	0.21	0.18	0.02	0.02	0.03	0.11	0.15	0	0.15
Waste Stream %				23.3%	20.0%	2.2%	2.2%	3.3%	12.2%	16.7%	0.0%	16.7%
NLM Urban Areas Total		20	2.6	0.4	1.07	0.19	0.02	0.03	0.11	0.55	0.04	0.22
NLM Urban Areas Percentage				15.4%	41.2%	7.3%	0.8%	1.2%	4.2%	21.2%	1.5%	8.5%

Combined waste characterisation analysis for the urban areas that receive a kerbside waste collection and waste characterisation conducted for areas that are serviced with a waste skip collection service.

Table 38: Waste characterisation results in broad categories for the Ndwedwe Local Municipality

Skip Nr.	Total mass of Sample	Waste Type and Mass								
		Paper	Plastic	Polystyrene	Metal	Aluminium Cans	Glass	Nappies	Garden	Other
Kerbside collection	1.7	0.4	1.07	0.19	0.02	0.03	0.11	0.55	0.04	0.22
Waste Skip	405.9	111.54	145.04	4.58	3.61	19.61	80.92	27.78	4.57	8.15

Total mass	407.6	111.73	145.93	4.75	3.61	19.61	80.92	28.18	4.61	8.22
Waste Stream % for the NLM		27.4%	35.8%	1.2%	0.9%	4.8%	19.9%	6.9%	1.1%	2.0%

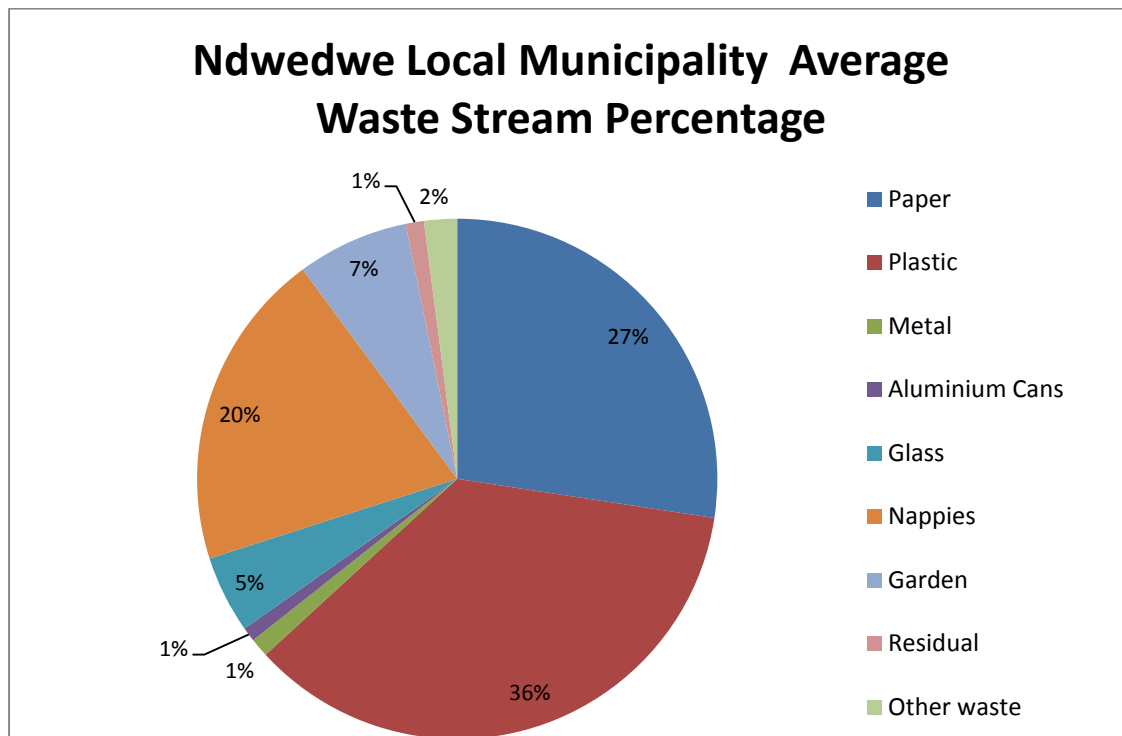


Figure 21: Waste characterisation results for the Ndwedwe Local Municipality

6.3.5.1 Waste characterisation results for the Ndwedwe Local Municipality

From the waste characterisation undertaken in urban areas receiving a kerbside waste collection service, the largest component of the domestic waste stream was plastic followed by garden waste and paper.

On average, the largest component of the domestic waste stream for waste contained within the waste skips was plastic (36%), followed by paper (27%) and nappies (20%). The data from the waste characterisation compares well with the waste characterisation conducted for the KLM and the MLM. A large portion of the waste collected within the NLM is recyclable and could reduce waste management costs within the NLM as less waste would have to be transported and disposed of at landfills, and money can be generated for waste reclaimers and private recyclers within the NLM, thus increasing the green economy within the NLM.

6.3.6 Summary of Waste Stream Composition between Municipalities within the iDM

The domestic waste streams of the KLM, MLM and NLM are provided below to determine similarities and differences in composition.

Table 39: Waste characterisation results for KwaDukuza and Mandeni Local Municipalities

Waste category	KwaDukuza (%)	Mandeni (%)	Ndwedwe (%)
Paper and cardboard	18.5	9.5	27.5%
Organics	37.0	36.7	7.0%
Plastic	14.7	13.9	35.8%
Hazardous	1.1	1.4	-
Nappies	5.4	18.1	19.9%
Metals	2.5	1.8	2.1%
e-waste	0.3	0.3	-
Glass	15.9	13.9	4.8%
Construction waste	0.5	0.0	-
Other	1.5	3.4	2.1%
Fines	2.5	0.9	1.1%
Total	100.0	100.0	100.00

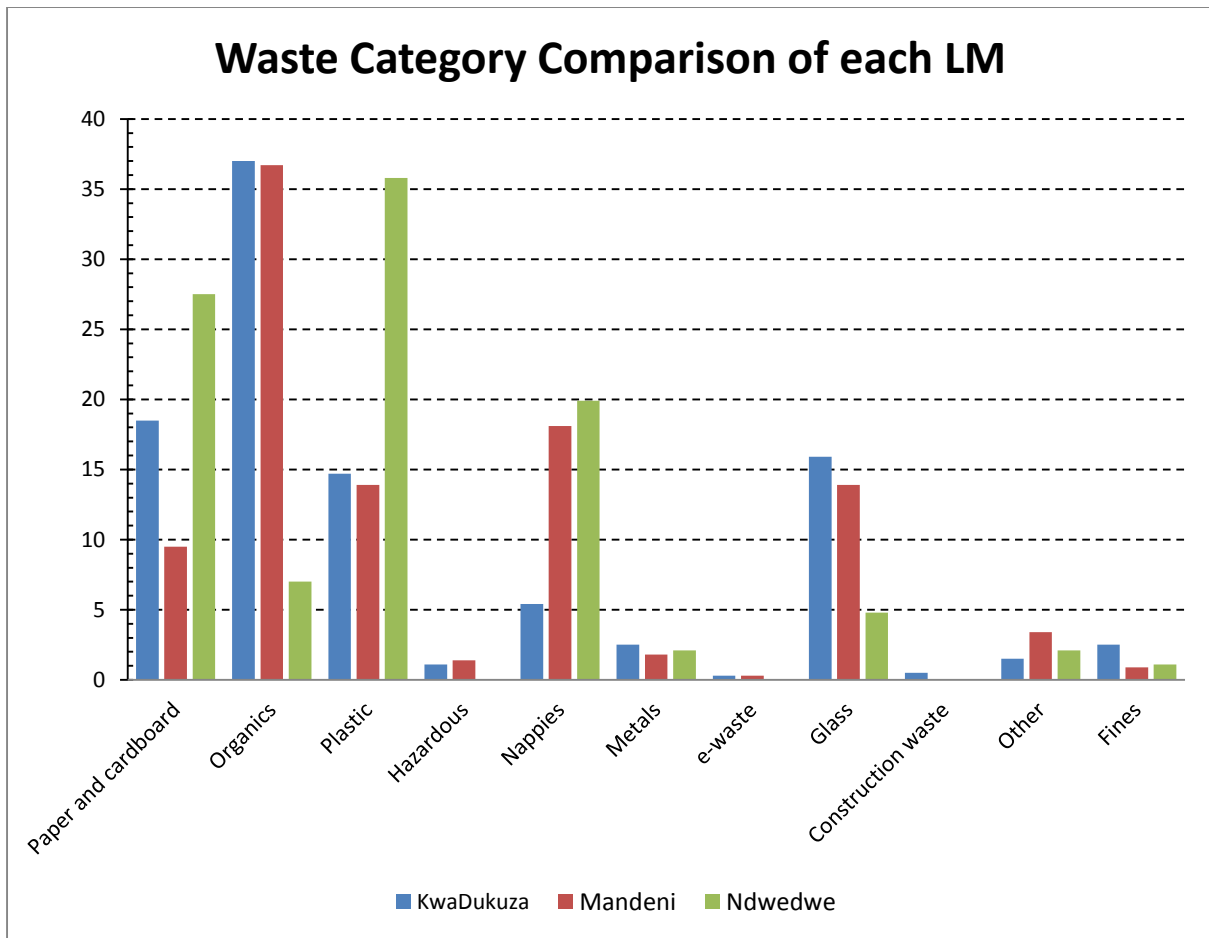


Figure 22: Comparison of the domestic waste stream between the KwaDukuza, Mandeni and Ndwedwe local municipalities

As per the figure above, the percentages of waste present for most of the waste streams are comparable between the three municipalities. A significant difference between paper and cardboard, organics, plastics, and glass was observed between the three LMs. The waste characterisation data does, however, indicate that a large proportion of the waste stream is recyclable.

6.3.7 Projected Waste Stream Composition Trends

Predictions on future waste generation quantities are dependent on population growth and any changes in economic landscape of the iDM. New industries or changes in business practices will also affect the types and quantity of waste generated, as well as an increase in household and business recycling and composting of organic waste. The population size of the KLM, MLM and NLM increased annually by 4.08%, 1.55% and 0.37% respectively between the 2011 census results and 2016 Community Survey. It is therefore anticipated that waste generation rates will increase by similar proportions as the population grows. Using the projected population growth, the projected increase in waste generation per waste type has been calculated and is given below.

Table 40: Projected tonnages of various waste components for 2024 (to be completed)

	KwaDukuza		Mandeni		Ndwedwe	
Waste category	(%)	Mass (tons)	(%)	Mass (tons)	(%)	Mass (tons)
Paper and cardboard	18.5	12377.6	9.5	2589.5	27.5%	6401.1195
Organics	37.0	24755.1	36.7	10003.5	7.0%	1635.3225
Plastic	14.7	9835.2	13.9	3788.8	35.8%	8340.14475
Hazardous	1.1	802.9	1.4	408.9	-	
Nappies	5.4	3612.9	18.1	4933.6	19.9%	4625.6265
Metals	2.5	1672.6	1.8	490.6	2.1%	490.59675
e-waste	0.3	200.7	0.3	81.8	-	
Glass	15.9	10638.0	13.9	3788.8	4.8%	1121.364
Construction waste	0.5	334.5	0.0	0.0	-	
Other	1.5	1003.6	3.4	926.8	2.1%	490.59675
Fines	2.5	1672.6	0.9	245.3	1.1%	256.97925
Total	100.0	66,905.81	100.0	27,257.44	100.00	23,361.75

6.4 Waste Recycling

Collecting and sorting recyclable materials is currently dominated by the private sector within the local municipalities in the IDM, with several recycling companies currently operating in the iDM, specifically in the KLM and MLM.

6.4.1 Municipal Waste Recycling Programmes

Programmes or operations for recycling driven by local municipalities are currently only operated by the KLM and MLM. These are detailed in the table below.

Table 41: Recycling initiatives and challengers identified by each LM within the IDM

	Municipal recycling activities	Main Challenges
KLM	<ul style="list-style-type: none"> The municipality currently provides a waste yard premises to one local recycler. Another local recycler has been given a contract for the 	<ul style="list-style-type: none"> Insufficient budget and lack of infrastructure to expand recycling projects and initiatives within the KLM.

	Municipal recycling activities	Main Challenges
	<p>collection of waste deposited in the recycling bins in the CBD, as well as the paper waste collected at municipal offices. The municipal paper recycling bins was an initiative of the environmental planning unit in the KLM. The CBD recycling bins was a municipal initiative inspired by similar bins seen in the Cape Town CBD. Currently, there are 19 bins that are placed within the Stanger CBD and the affluent areas along the coast such as Ballito and Tinley Manor. It was reported that recycling initiatives in the affluent areas are well supported and that more recycling waste bins would be required in these areas to accommodate the good support received from these communities.</p> <ul style="list-style-type: none"> • The municipality has donated wheelie bins to local recyclers to contain and move the recyclable waste. • The municipality is currently developing a drop-off centre, a MRF and a composting facility at the Yellowwood Drives Transfer Station in Stanger. Construction works have commenced for the earthworks at the transfer station. Staff will be appointed to sort recyclable waste which would be sold to larger recycling companies and the non-recyclable waste disposed to landfill. A private contractor may also be used to handle the re-sale of recyclables from the drop-off centre and to manage the composting facility. • The municipality has implemented a two-bag waste separation system in the south of the KLM for recycling domestic waste at source and the separation of garden waste at source. A private contractor was appointed to collect waste from residential and business areas and to transport the recyclable and garden waste to the Ballito transfer station. 	<ul style="list-style-type: none"> • The lack of awareness and responsibility of the residents of the KLM to implement recycling initiatives. This is the main concern in the northern region of the KLM. • Tonnages of recycled waste are not collated by the LM.
MLM	<ul style="list-style-type: none"> • Paper recycling is undertaken in the MLM municipal offices and is collected by a private recycling company. • Approximately 200 kg of office paper is recycled per month. 	There are insufficient skilled technical resources to implement recycling initiatives. There is also insufficient budget and lack of infrastructure to conduct recycling within the MLM.
MPLM	There are currently no recycling programmes in place that are managed by the MPLM.	Insufficient resources including skilled staff, finances, infrastructure and equipment to initiate recycling projects in the MPLM.
NLM	There are currently no recycling programmes in place that are managed by the NLM. In 2016/17 there was a recycling initiative with the Youth Jobs in Waste Programme. The main recycling initiative was the collection of waste recyclables and reselling these to larger recycling companies. At the end of the Youth Jobs in Waste programme the employment	Insufficient resources including skilled staff, finances, infrastructure and equipment to initiate recycling projects in the NLM.

	Municipal recycling activities	Main Challenges
	contracts were not renewed and no staff were kept on by the municipality. Recycling initiatives run by the municipality had stopped when the Youth in Programme was ended. There were no reports or documents generated for this programme.	

6.4.2 Private Recyclers

Several private recyclers are operating within the iDM, mainly in the KLM and the MLM. The recycling is undertaken independently and without assistance or interaction with the LMs. There is a lack of information regarding recycling in the MPLM and NLM. It was reported in the MPLM and the NLM IWMPs that recycling does not occur within these two LMs; however, informal recycling was noted in the IWMPs for both MPLM and NLM.

The recyclers have reported that they interact very seldom with the municipalities with regards to their waste operations.

From interviews with recyclers it is apparent that most are unaware of their obligation to register their facilities in terms of the National norms and standards for storage of waste (GN926 of 2013) and the newly promulgated National norms and standards for sorting, shredding, grinding, crushing, screening and bailing of waste (GN1093 of 2017) and the National standards for scrapping or recovery of motor vehicles (GN925 of 2013) or reporting in terms of the Waste Information Regulations (GN265 of 2013).

The profiles of the main recycling companies operating in the iDM, mainly the KLM and MLM, are given below. Information provided below was given during interviews with the facility managers. Some managers did not release certain information about their business due to privacy of this information. Information of recyclers was also provided by waste managers within the LMs.

Several supermarkets or retail hubs such as the Renckens Spar in the MLM use skips adjacent to their buildings for general waste collection, but plastics and cardboard are also collected in separate skips and are bailed and then collected by private recyclers. Recycling is occurring at the iSithebe transfer station within the iThala industrial park. General waste and some industrial waste types are collected by the waste collection service provided by the iThala industrial estate. At the transfer station waste is spread out on a large concrete platform with a TLB and informal waste pickers collect recyclable waste from the waste at the transfer station. Private recyclers visit the transfer station and purchase the recyclable waste from the informal recyclable waste pickers recyclers and sell these to larger recycling companies in Durban and Johannesburg. The recycling and waste collection is managed by the iThala

Industrial Park. SAPPI operates in the MLM and buys paper waste from various companies and recycles it. SAPPI also buys paper waste from informal pickers at the iSithebe Transfer Station. Premier Waste appears to be the primary choice of recycler for most businesses in the Ithala Industrial Park in the MLM and through some areas of KwaDukuza as well. Garden refuse produced by some businesses such as Skip-go is taken to Karibu Nursery for composting.

Table 42: Private recyclers within the iLembe District Municipality

	Types of waste recycled	Years in operation	Catchment	Selling to	Main challenges
KwaDukuza Local Municipality					
Vinodh's Recycling	Timber (sells as firewood or takes pallets apart and makes new ones).	26	Durban and Richard's Bay (EC interiors sawmills). Timber collected countrywide.	Furniture manufacturers and DIY retailers	General waste recycling is competitive and prices fluctuate too much. Tariffs at DCL are too high when disposing general waste.
DemaTrans	Paper, newspaper and cardboard, E-waste, Plastics, Glass, Cans (aluminium), Plans for composting organic waste (tried vermiculture)	5	Free collection from houses (Old Dolphin Coast, Ballito, Salt Rock, Umhlali, Melville, Stanger and Tongaat)	Resold to manufacturers of the respective initial product and larger company in Durban (company name not provided).	Lack of land for developing facilities. Lack of drop-off facilities. Composting is too long a process. Have to invest in their own fleet.
Dash Car Wash & Sebenza Sonke Recycling	Glass bottles, Cardboard, Paper	4	Stanger (mostly businesses + skips in the CBD)	Premier Waste Recyclers	Competition (9 recyclers in the area). Limited help from the municipality. Businesses not willing to separate waste.
Environmental Waste Recyclers	Business and domestic waste, Plastic, Cardboard, Paper, Glass, Metal	17	Stanger (businesses and domestic)	Supplying recycled waste to larger recycling company in Mandeni (company name not provided)	Reaching beneficial B-BBEE status proves difficult.
Mandeni Local Municipality					
Ozone Friendly Recyclers	Plastics (make pellets)	Not provided	MLM	Export to China and Mozambique.	Expense of transport too high. Tariffs of general waste disposal too high (Ithala).
Premier Waste	Plastics (make pellets). Sell paper and	17	Operate in KZN and 2	Paper and cardboard to	Rental for municipal skips to high (use

	Types of waste recycled	Years in operation	Catchment	Selling to	Main challenges
Recyclers	cardboard to paper recyclers. Sell scrap metal		branches in Mandeni (waste from various businesses and industries)	mills Make pallets and pellets for selling to plastic companies	own) Tariffs for general waste disposal too high (Ithala) Deliver own general waste as collection too expensive
Skyton Recycling Pty (Ltd)	Cardboard and paper sold to paper recyclers. Plastic pelletized and woven into bulk bags. Plans to recycle rubber for roads.	30	Packaging and manufacture industry. iSithebe transfer station (buy from informal pickers). Schools and businesses	Mondi/Mpact (paper recyclers). Non-ferrous metals sold to Reclam. Metals sold to companies in Stanger and to local companies in MLM	Tariffs at iSithebe for general waste too high. No municipal support. Undercover storage too expensive
Reclam Group	Metals of various types. Cardboard	48	Stanger and MLM (national company). Manufacturers and engineers.	Resold to manufacturers and engineers in Durban	Skip rental too expensive. Tariffs at iSithebe transfer station too high.
Ndwedwe Local Municipality					
No recycling initiatives noted in IWMP.					
Maphumulo Local Municipality					
Noted in IWMP that private recyclers do exist and buy from informal pickers, but no details provided for these companies.					



A: The Ballito Transfer Station



B: Waste sorting at the Ballito transfer station



C: Recycling bins at Heston



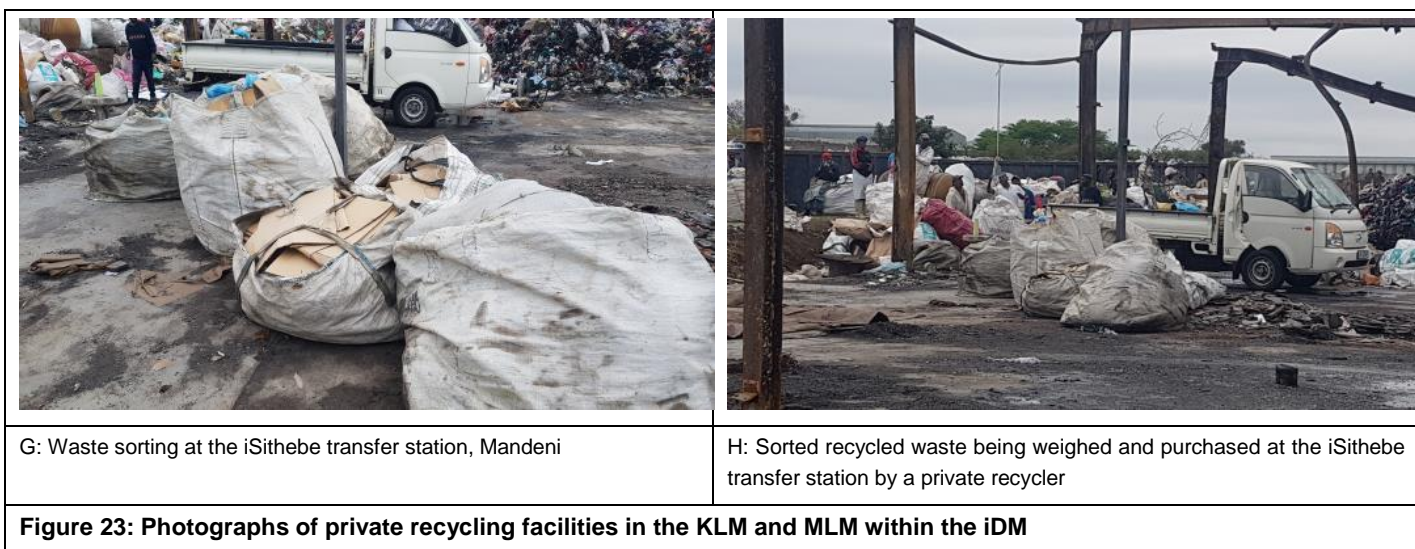
D: Recycled waste at Dash Car Wash and Recycling & Sebenza Sonke Recycling



E: Waste bins for recycling in front of the iLembe District municipal offices in Stanger



F: Paper recycling by the KwaDukuza LM



6.4.3 E-waste Recycling

DemaTrans located in the KLM, places bins at businesses and collects their domestic waste, including E-waste. The collected waste is separated and recycled waste is sold to larger recycling companies or manufacturing companies.

The New Reclamation Group (Reclam) recyclers based in Mandini within the MLM, accept E-waste. While very little E-waste was found in the domestic waste samples sorted during the waste characterisation, there is likely to be more E-waste generated by the engineering and manufacturing industries which were not sampled during the waste characterisation.

E-waste recycling does not occur within the MPLM and NLM according to the respective IWMPs.

6.4.4 Hazardous Waste Recycling

The recycling of hazardous waste is very limited in the local municipalities within the iDM, likely due to the costs involved in the processes required to recycle hazardous waste, the low quantities of waste involved, and the low demand for the recycled product.

Hazardous waste in the iDM is mainly produced through farming activities, through health care facilities, in companies within the iThala industrial Park and in larger industrial companies within the KLM. The KZN government is responsible for developing hazardous waste management plans for the Province.

Compass waste manages the hazardous health care waste in iDM and the only form of recycling or reuse noted for HCRW is sterilizing and reusing Daniel sharps from health care centres.

6.4.5 Municipal Waste Reduction Initiatives

The only waste reduction initiatives are undertaken in the southern region of the KLM. Separation at source of recyclable waste and garden waste is undertaken in the southern region and a MRF and composting facility are situated at the Ballito transfer station. The KLM has also commenced with the development of a MRF, drop off centre and composting facility at the Yellowwoods Drive transfer station. There are no other waste reduction initiatives or facilities such as MRFs, buy-back centres or composting facilities in the iDM and no other municipality is operating a two-bag recycling separation at source programme.

6.5 Waste Infrastructure in the iDM

The table below indicates the waste infrastructure within the iDM.

Table 43: Waste infrastructure within the iDM

Municipality	Facility name and Type	Status	Licence	Coordinates
Transfer Stations				
KwaDukuza	Yellowwoods Drive Transfer Station, Stanger. The transfer station is operated and managed by the KLM.	Operational	Not permitted.	29°19'55.31"S , 31°18'4.63"E
KwaDukuza	Ballito Transfer Station, Land is owned by the municipality and the transfer station is operated and managed by the Dolphin Coast Waste Management (DCWM).	Operational	Permitted.	29°29'29.19"S , 31°12'25.10"E
Mandeni	Isithebe Transfer Station, iThala Industrial Estate, Mandini	Operational	Permitted.	29° 6'5.22"S; 31°25'20.59"E
Landfill Sites				
KwaDukuza	Dolphin Coast Landfill Site, KwaDukuza	Operational	Permitted: 16/2/7/U403/D3/Z1/P460.	29°18'31.10"S , 31°19'44.97"E
KwaDukuza	Shakaville Landfill Site,	Closed in 2006.	Permit for closure: 16/2/7/U403/D3/Z1. Licence for decommissioning and	29°19'48.62"S ; 31°18'171.19" E

			permanent closure: DC29/WML/0020/2017	
Mandeni	SAPPI Tugula Landfill Site, Mandini (GLB+ landfill)	Operational	Permitted	29°18'31.10"S , 31°19'44.97"E
Mandeni	iSithebe Industrial Estate Landfill, Mandini	Closed and rehabilitated.	Permitted for closure.	29° 6'6.89"S, 31°24'33.79"E

The following map shows the placement of waste infrastructure (disposal sites and transfer stations) currently used within the iDM.

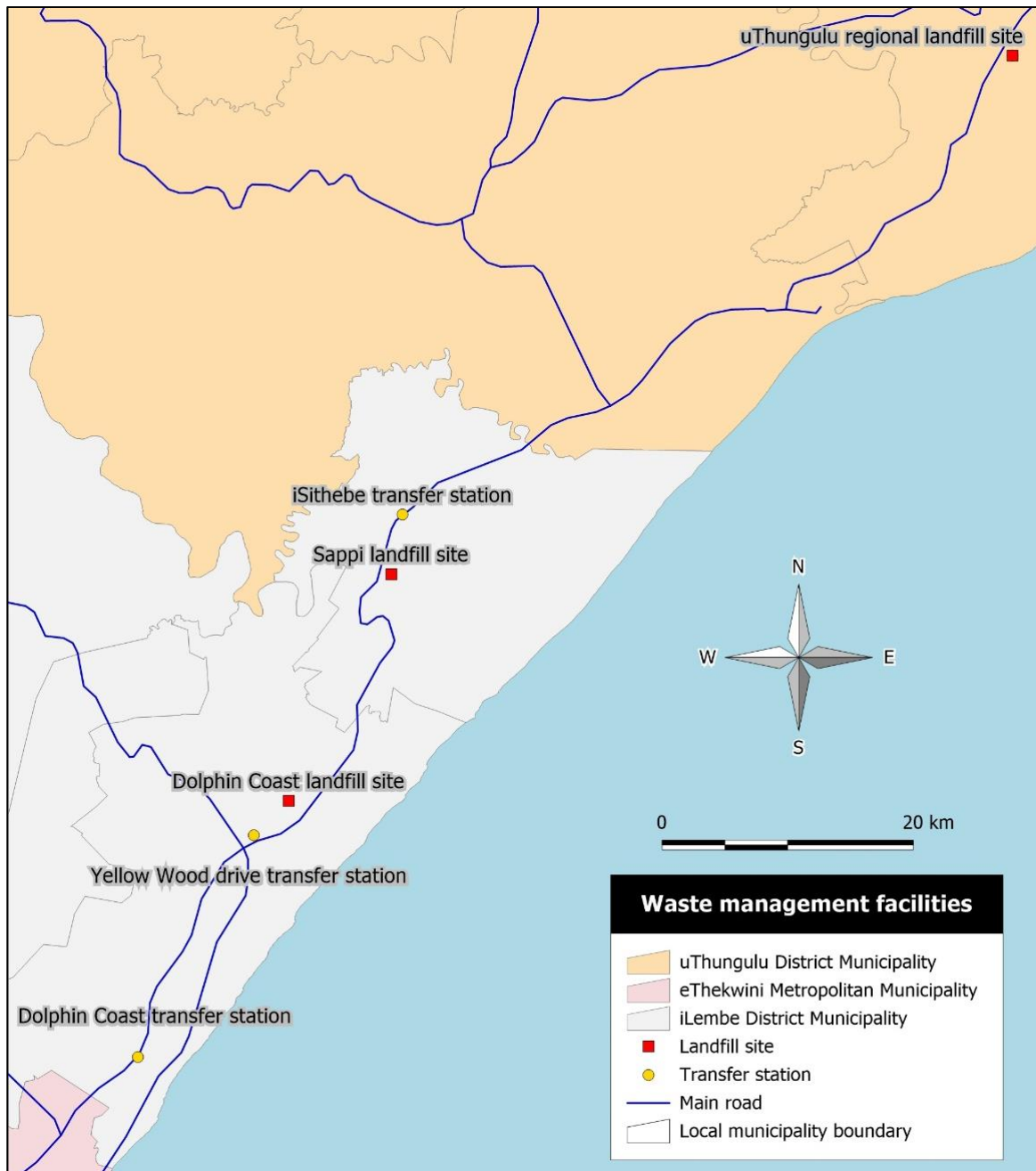


Figure 24: Current disposal sites and transfer stations used by municipalities in iDM

6.6 Waste Collection and Transportation

6.6.1 Domestic Waste Collection Service Data

The waste collection services as per the KZN Community Survey for the households within each municipality of the iDM are indicated in the tables and pie charts below (Statistics South Africa, 2016). Only 24% of households in the iDM receive a weekly waste collection service. A total of 10% and 58% of households within the iDM dump their waste at a communal dumping site or dump their waste at their own private dump site respectively. Therefore a total of 68% of the households within the iDM dump their domestic due to the lack of waste collection and waste disposal facilities.

Table 44: Waste collection services in the IDM (Statistics South Africa, 2016)

Municipality	Weekly collection service (nr. of households)	Removed less often than weekly	Communal refuse dump	Communal container/ central collection point	Own refuse dump	Dump or leave rubbish anywhere (no refuse disposal)	Other
Mandeni	11,107	269	4,521	2,124	26,740	733	185
KwaDukuza	50,728	3,552	4,957	7,190	20,325	2,682	1,850
Ndwedwe	312	70	1,112	433	29,718	1,842	395
Maphumulo	0	52	324	0	15,992	3,678	478
iLembe	62,147	3,942	10,915	9,747	92,775	8,934	2,908

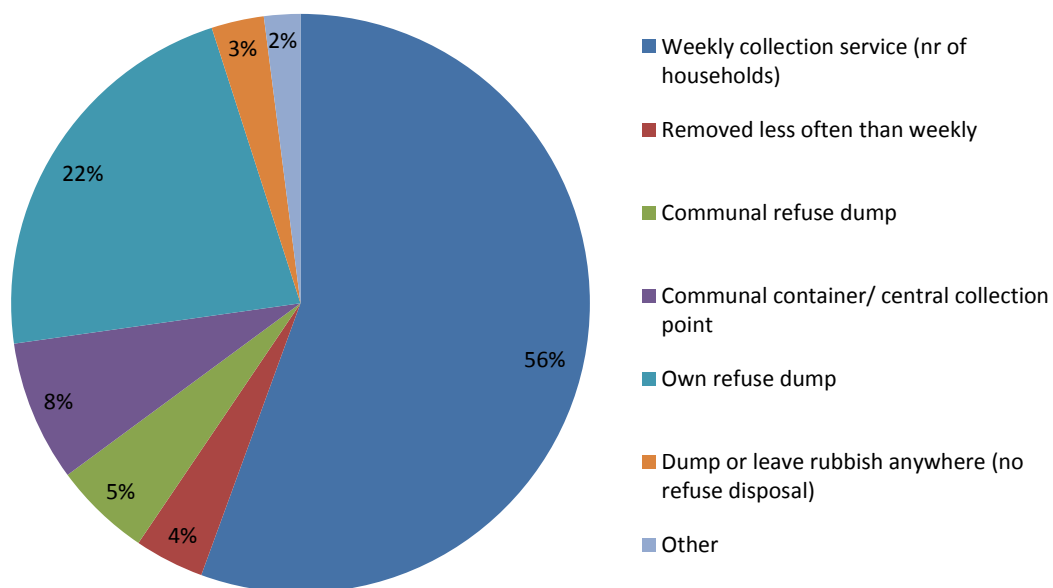


Figure 25: KwaDukuza waste collection and disposal (Statistics South Africa, 2016)

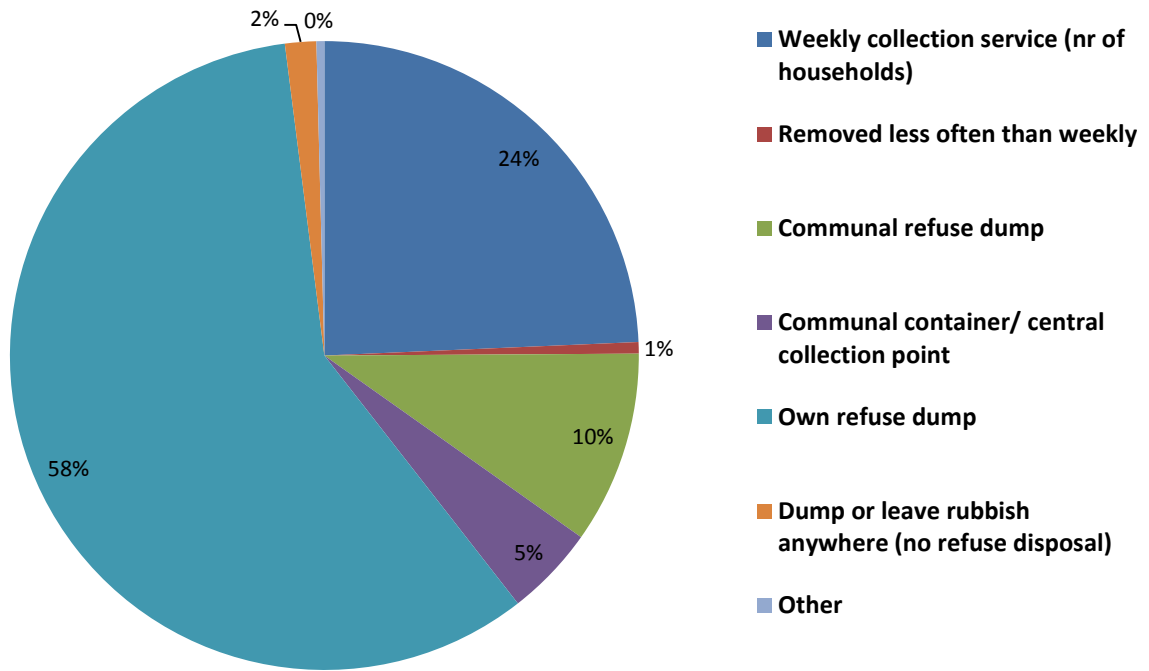


Figure 26: Mandeni LM waste collection and disposal

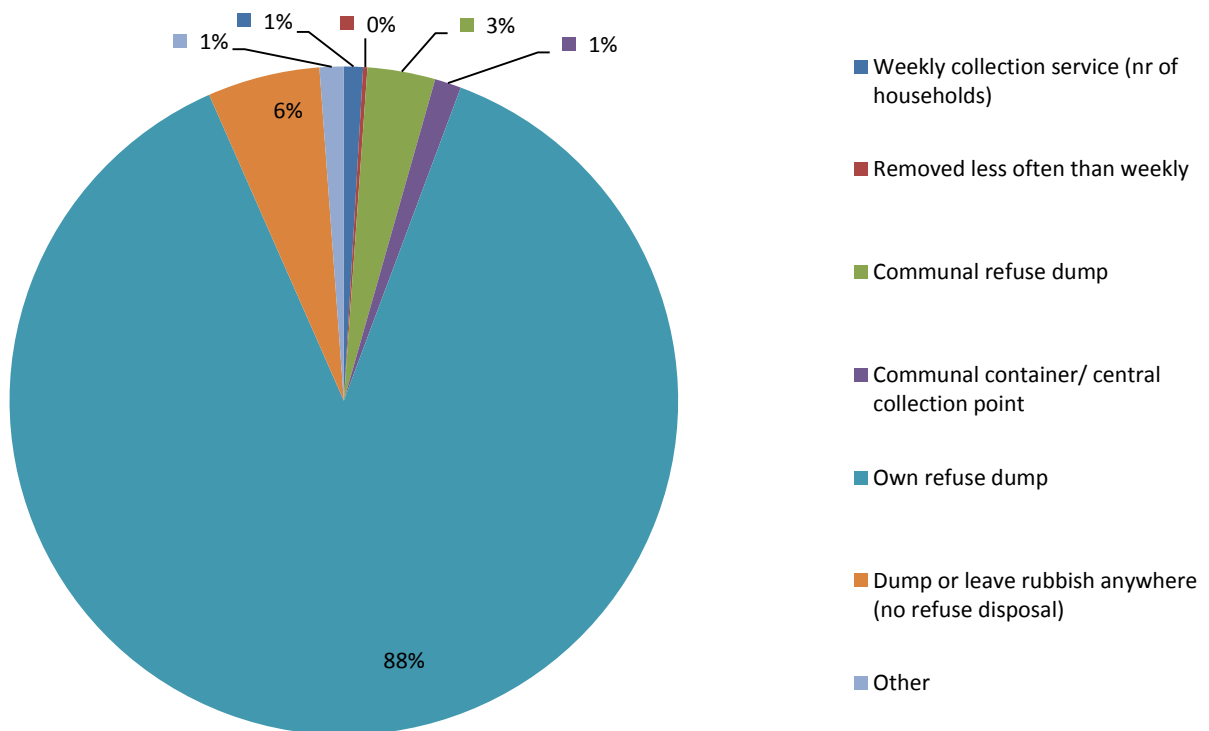


Figure 27: Ndwedwe LM waste collection and disposal

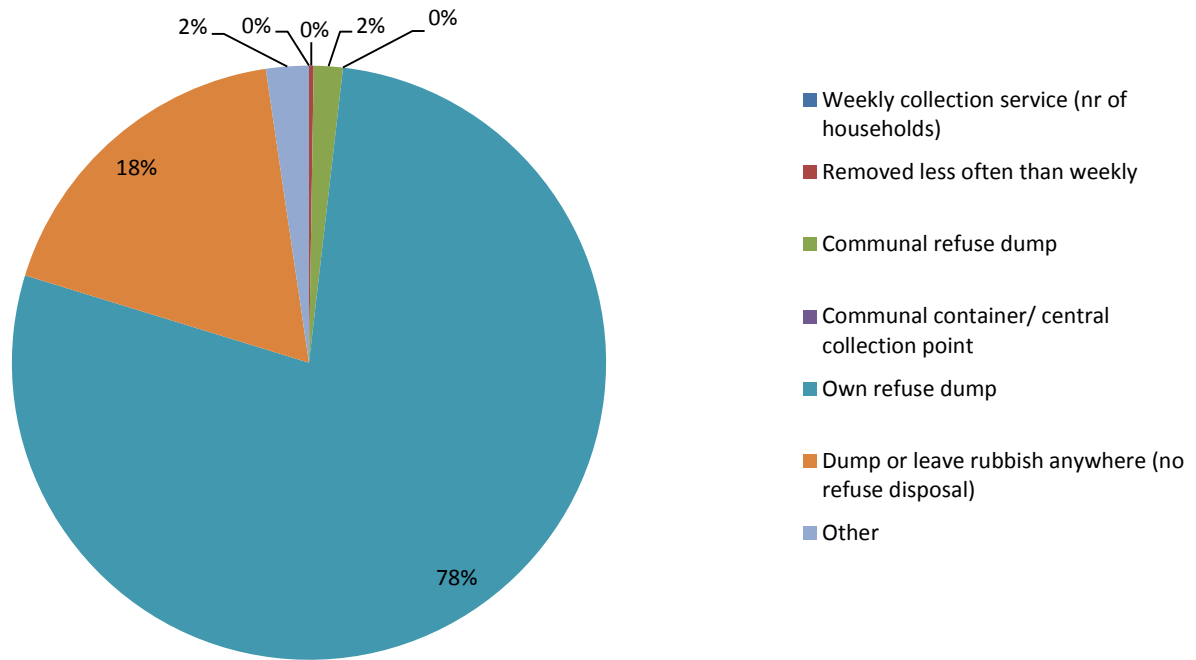


Figure 28: Maphumulo Local Municipality waste collection and disposal

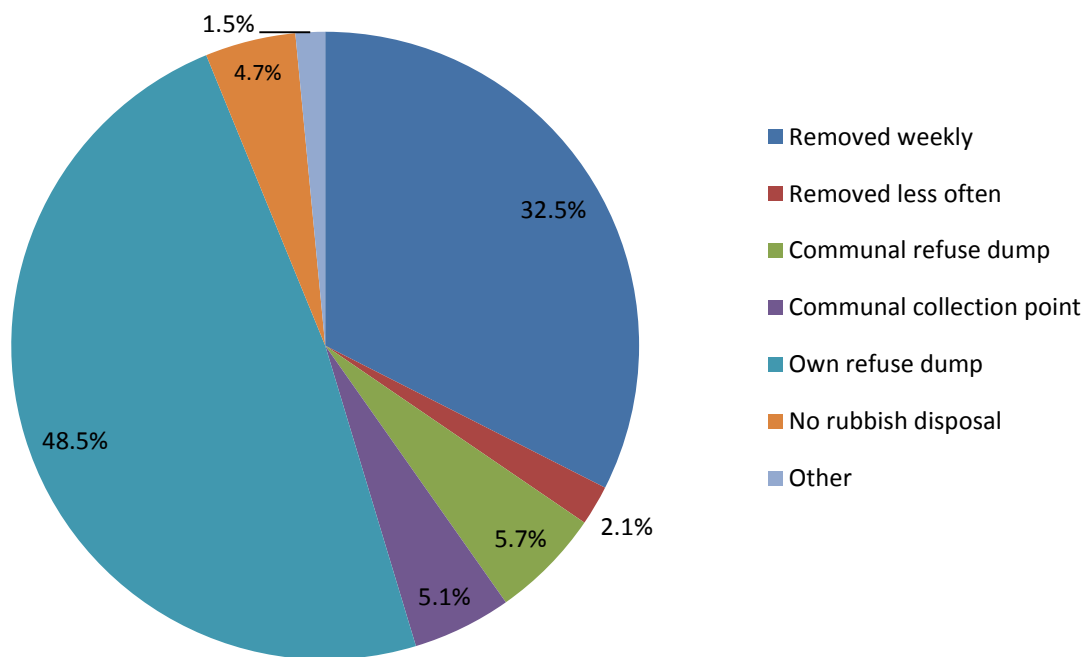


Figure 29: Waste removal and disposal services in ILembe District Municipality.

As part of the Stats SA KZN Community Survey (Statistics South Africa, 2016), residents were asked to rate the quality of the refuse removal services in their municipality. According to the KZN community survey of 2016, the majority of citizens (28.8%) of the iDM, as seen in the figure below, believe that refuse removal services are good. This is far lower than the Provincial average of 42%. According to the figure, 22% of the population do not receive a refuse removal service.

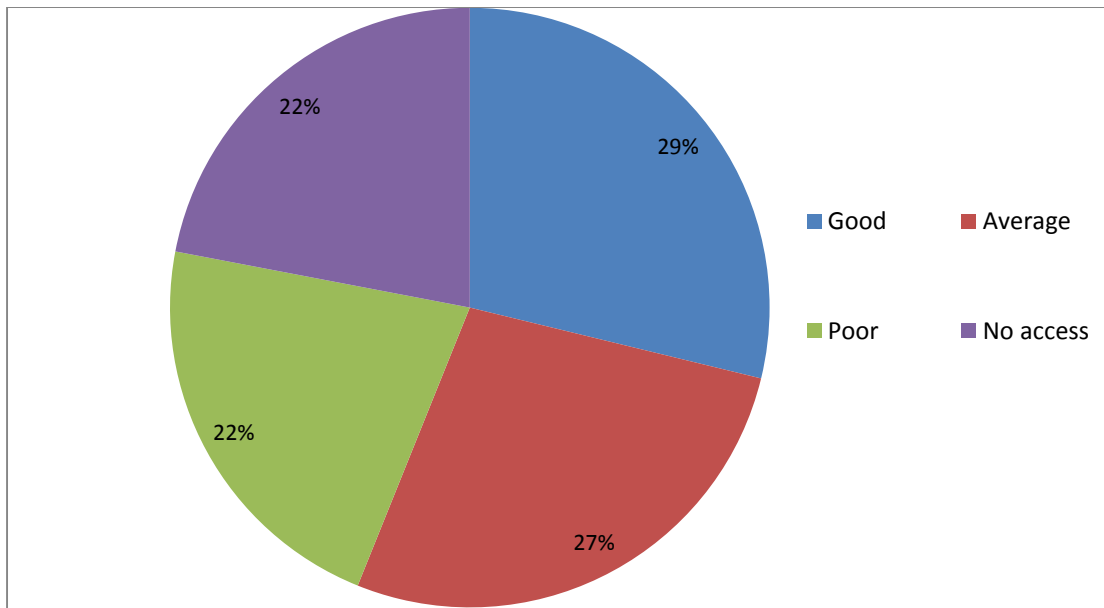


Figure 30: Public perception of quality of refuse removal services in iLembe District Municipality

6.7 Waste Collection Tonnages for the Local Municipalities

The waste collection and disposal tonnages for waste collected in the KLM and the MLM is provided in the table below. Waste disposal tonnages have been collated by the MLM; however this is only since January 2019. Volume data of waste disposed of at the DCWM have been collated by the KLM, since February 2018. The volume data was converted to mass with a density conversion factor of 500 kg/m³ for compacted waste. The data collated by the LMs do not include tonnages of waste generated by large industries and businesses which make use of private companies to collect and dispose of waste. There are no tonnage or volume data for waste collected and disposed of by the NLM and the MPLM. The waste is collected by a private waste company and disposed of at the Dolphin Coast Landfill site, but tonnages of waste disposed are not collated.

Table 45: Waste Collection Tonnages per Local Municipality

Municipality	Waste Disposal Tonnages
KLM	40.6 tonnes of waste per year
MLM	4,444 tonnes of waste per year
MPLM	No Information Available
NLM	No Information Available

6.8 Domestic, Business and Industry Waste Collection

The 2018/19 IDP for iDM notes that waste collection in the district is limited to mainly urban areas, and that infrastructure, facilities and equipment for effective waste collection and management is lacking. Due to these downfalls in waste management along with a lack in education of the public regarding waste management, illegal dumping of waste has become a major issue in iDM. The iDM is not responsible for waste collection; this remains the responsibility of the local municipalities.

6.8.1 Waste Collection in the KwaDukuza Local Municipality

Residential areas in the northern region of KLM, including Stanger and surrounding communities, are currently serviced once a week with a kerbside waste collection service by the municipality. Suburbs closer to the CBD are receiving a kerbside collection, while the informal settlements are provided with communal skips, which are also serviced on a weekly basis. Residential areas in the southern region are serviced by a private waste contractor, Dolphin Coast Waste Management (DCWM), who has a service level agreement with the municipality for collection of domestic and business waste from the Southern region.

While the coverage area of skips is good in the peri-urban areas, the skip placement is more of a challenge in the rural areas where houses are distributed across large areas in low densities. Skip coverage in such areas is generally not as good as the coverage in peri-urban areas.

In the northern region, waste is collected twice daily from the CBD in Stanger by the KLM. The reason for the high frequency of waste collection in the CBD is business owners putting out waste at irregular times and informal pickers who rip open business waste bags to recover recyclables or food, which creates an unsightly waste in the streets. In the Southern region, DCWM collect waste 3-7 times a week from the commercial centres.

The KLM is currently undertaking a Section 78 study to investigate the costs and benefits of potentially outsourcing the waste collection function to a private contractor. The municipality has reported that their main costs related to waste collections are the employee costs and vehicle maintenance. It was reported that employee overtime was costing the KLM waste department approximately R1.5 million per financial year.

The Stanger hospital and government clinics in KLM are not using the local municipal waste collection service for their general waste, but have selected to use Durban Solid Waste to collect and dispose of

their general waste. The reason given was that the KLM could not provide the correct size skips needed at the hospital.

Black bags are provided to residents who are up to date with their rate payments and to indigent persons according to the municipal indigent register. It was reported that black bags are also provided to residents of the Southern Coastal region by DCWM; however, further details regarding the policy for black bag distribution by DCWM were not provided.

Garden refuse services is managed by the Parks and Gardens department of the Community Services Directorate. Residents who require garden refuse services are given four polypropylene bags (50 kg capacity) per month and these are collected by the Parks and Gardens department once a week. A small fee is charged for this and is included into the waste service tariff.

6.8.2 Mandeni Local Municipality

The MLM carries out the waste collection services within the municipal area. Previously, the waste collection was undertaken by a service provider until 2017. At this time, the municipality employed all staff that worked for the service provider and purchased waste collection trucks to perform the waste collection service in-house. For the Mandini Suburb and surrounding urban areas that receive a kerbside collection service, thirty black bags are supplied to these households every 3 months. A total of 108 skips are placed throughout the rest of the peri-urban and some rural areas of MLM over a 200 km radius.

Mandini suburb is the only residential area within the MLM that receives a weekly kerbside waste collection service. Waste is collected weekly from business areas mainly in Mandini in the MLM as well. The waste collection service provided to businesses is dependent on the waste collection service required by the business. The waste collection can range from once a week to six times per week. Community facilities such as schools, clinics, community halls, parks, recreational beach areas and community halls also receive a waste collection service. Black bags or waste bins are provided to these facilities.

The MLM services skips that are placed mainly in peri-urban and rural areas where a door-to-door waste collection service is not provided. The collection of waste from these skips varies from weekly to once every two weeks. The MLM uses a 10 ton compactor truck which is equipped with a winch system to empty skips. While the coverage area of skips is good in the peri-urban areas, the skip placement is more of a challenge in the rural areas where houses are distributed across large areas in low densities.

Skip coverage in such areas is generally poor. Once waste is collected by the compactor trucks it is taken to the Utungulu Municipality landfill site.

6.8.2.1 Waste collection within the Isithebe Industrial Estate within the Mandeni Local Municipality

The iSithebe industrial estate which is owned by iThala Development Finance Corporation is a 414 hectare self-contained industrial estate within Mandeni in the MLM. There are approximately 268 tenants (businesses) that are in production within the industrial estate. iThala owns all of the sites within the industrial estate except for 49 privately owned sites. The industrial estate employs approximately 20,000 – 25,000 people. A very large percentage of the business and industrial waste generated in the MLM is generated within the industrial estate as it houses most of the larger industrialised companies within the MLM. The industrial estate provides a waste collection service to some tenants within the estate and other tenants prefer to use other privately owned waste collection companies for the removal of their waste. The MLM does not provide a municipal waste collection service to any of the companies within the industrial estate. The waste service provider appointed by the industrial estate collects waste from some of the companies and transports this to the iSithebe transfer station. The waste is spread across a large concrete floor where recyclable waste is retrieved/ or reclaimed by informal waste pickers and sold to private recycling companies. Thereafter the waste is collected and placed into large skip bins and transported to the Dolphin Coast Landfill Site. A large percentage of waste generated within the iSithebe industrial estate is disposed of at the Dolphin Coast Landfill Site as it accepts general and hazardous waste.

6.8.3 Maphumulo Local Municipality

The urban areas within the MPLM, Maphumulo Town and Ntunjambili area, are the only areas receiving a waste collection service by the municipality and only Maphumulo Town receives a weekly collection service by the municipality. Waste is collected by Dolphin Coast Waste Management (DCWM) on behalf of the Municipality and is disposed at the waste at the Dolphin Coast Landfill site located in the KLM. Strategic points for placing skips in urban and rural areas to extend the waste collection service have been identified, but this still needs to be implemented (Smangaliso Consulting Firm, June 2015). Collection of waste from businesses within the MPLM is collected by DCWM as well.

6.8.4 Ndwedwe Local Municipality

The NLM provides a weekly waste collection service to households within Ndwedwe and Glendale by removing black bags and placing them in 6 m³ skips supplied by Dolphin Coast Waste Management

(Pty) Ltd (DCWM) (Nemai Consulting, February 2017). The number of skips per village is detailed below:

- Ndwedwe: 6 skips
- Glendale: 2 skips

DCWM is the service provider that was contracted by the municipality to provide waste removal services. They collect the waste from the waste skips and offload these at a transfer station within King Shaka's Head, Ballito approximately 40 kms from the Ndwedwe and from Glendale. From here the waste is collected and disposed of at the Dolphin Coast Landfill site in Stanger, KLM.

Within other areas of the NLM, namely Bhamshella, Montebello and Sonkombo, the community disposes of their waste into skips also supplied by DCWM. The skips are placed within the town centres at focal points and where businesses are situated. DCWM collects the waste in the skips as and when required once skips are full and under instruction from the NLM. Waste management staff of the NLM, advised that the collection service is provided weekly. The number of skip bins placed within the town centres are detailed below:

- Bhamshella: 3 skips
- Montebello: 1 skip
- Sonkombo: 1 skip

Similarly, waste collected from the skip bins in Bhamshella, Montebello and Sonkombo are offloaded at a transfer station within King Shaka's Head, Ballito and then collected and disposed of at the Dolphin Coast landfill site in Stanger. The waste transfer station at King Shaka's Head is approximately 50 kms from Bhamshella.

According to the NLM IWMP, the main reason the NLM cannot provide a waste collection service to the greater part of the areas within the NLM is due to the largely spaced settlements that are inaccessible due to the terrain and lack of road infrastructure (Nemai Consulting, February 2017).

6.8.5 Vuthela Waste Efficiency Study

The quantities and types of waste generated by businesses within the KLM and MLM were assessed by Triplo4 as part of the Vuthela Waste Efficiency Study (Triplo4, April 2019) which focussed on the ways that waste generated within the KLM and the MLM could be used for job creation through recycling

and waste beneficiation projects and activities. The Triplo4 2019 report also considered the results of a Waste Beneficiation Survey undertaken by the Durban University of Technology which considered waste produced by 22 businesses specifically within the iSithebe Industrial park.

From the summary of waste generated within the MLM and KLM as part of the Vuthela Waste Efficiency Study, it is estimated that the following waste types and tonnages are produced by businesses and industrial companies per month. These are indicated in Table 46 below. For the companies that responded to the Triplo4 survey, 80.9 tonnes of waste are generated per month which is equivalent to 970.8 tonnes of waste per year.

Table 46: Main Waste Types Produced from 35 Surveyed Companies in the MLM and KLM (Ltd, 2019)

Waste Type	Waste Generated per month (tonnages)
Paper	5.3
Plastic	60
Tin/cans	2.7
Glass	1
Textile waste	6
Food waste	2.8
Used oil (density of cooking oil used is 920 kg/m ³ used for ±300L)	0.0276
Tyres (average mass of 10 kg per tyre used for 200 units)	2
E-waste	0.003
Scrap metal	0.4
Wood waste	0.06
Fluorescent lights	0.608
Waste per month (tonnes)	80.9

During the Triplo4 study, surveys regarding general waste and hazardous waste generation were provided to 220 companies within the KLM and MLM and responses were received from 137 companies, but only 35 companies were willing to participate in the survey. The information received was not separated or presented per municipality and it is assumed that this was done so that the information of participating companies would remain discreet. Table 47 below summarises the feedback received from companies that formed part of the study.

Table 47: Summary of information received during the Vuthela Waste Efficiency Study for business waste in the KLM and the MLM (Triplo4, April 2019)

Waste Stream	Quantity (per month)	Generator	Collection	End Disposal/Sink
Paper	± 1,000 kg	Local businesses including industrial parks (based on approx. 27 companies).	Collected by property manager (e.g. Ithala Property Group), private waste collectors (e.g. Dolphin Coast Waste Management - DCWM) and KDM Waste Services	<ul style="list-style-type: none"> Landfills i.e. SAPPI landfill in Mandeni. DCWM separates the waste at a transfer station and sent to Mpact. KDM transports waste to DCLM landfill
	± 2 000 kg	Factories / mills (based on 2 companies)	Collected by private collection services (e.g. DCWM)	DCWM separates the waste at a transfer station and sent to Mpact.
	± 2 000 kg	Shopping Complexes (based on 3 major shopping complexes in Ballito and Mandeni)	Private waste (e.g. SmartMatta, DCWM, The Reclamation Group and DontWaste) companies collect separated general waste	Recycling plant in eThekwini (e.g. Smart Matta recycling Plant, The Reclamation Group) and DCWM separates the waste at a transfer station and sent to Mpact.
	± 300 kg (per school)	School (based on approx. 10)	PRASA (Paper recycling association of SA) collection	PRASA recycling plant in JHB
	± 8 000 kg of paper per month			
Plastic	± 30 000 kg	Local Businesses including industrial parks (based on approx. 27 companies)	Collected by property manager (e.g. Ithala Property Group, private waste collectors (e.g. DCWM) and KDM Waste Services	<ul style="list-style-type: none"> Landfills i.e. SAPPI landfill in Mandeni. DCWM separates the waste at a transfer station and sent to MO'S in eThekwini
	± 10 000 kg	Factories / mills (based on 2 companies)	Collected by private collection services (e.g. DCWM)	DCWM separates the waste at a transfer station and sent to MO'S in eThekwini
	± 20 000 kg	Shopping Complexes (based on 3 major shopping complexes in Ballito and Mandeni)	Private waste companies collect separated general waste (e.g. DCWM, DontWaste and SmartMatta)	Recycling plant in eThekwini (e.g. Smart Matta or DontWaste recycling Plant) and DCWM separates the waste at a transfer station and sent to MO'S in eThekwini
	± 60,000 kg of plastic per month			
Tin / cans	± 2,000 kg	Local Businesses	Collected by property manager (e.g. Ithala Property	Landfills i.e. SAPPI landfill in Mandeni.

Waste Stream	Quantity (per month)	Generator	Collection	End Disposal/Sink
		including industrial parks (based on approx. 27 companies)	Group), private waste collectors (e.g. Dolphin Coast Waste Management - DCWM) and KDM Waste Services	
	± 200 kg	Factories / mills (based on 2 companies)	Collected by private collection services (e.g. DCWM)	DCWM separates the waste at a transfer station and sent to Collect-A-Can in eThekweni
	± 500 kg	Shopping Complexes (based on 3 major shopping complexes in Ballito and Mandeni)	Private waste companies (i.e. SmartMatta, DCWM and DontWaste) collect separate general waste	Recycling plant in eThekweni (e.g. Smart Matta recycling Plant) and DCWM separates the waste at a transfer station and sent to Collect-A-Can in eThekweni
	± 2,700 kg of tin/cans per month			
Glass	± 250 kg	Businesses (based on approx. 27 companies)	Collected by property managers (Ithala Property Group), private waste collectors (e.g. DCWM), informal waste collectors and Municipal Waste Services	<ul style="list-style-type: none"> Landfills i.e. SAPPI landfill in Mandeni DCWM separates the waste at a transfer station and sent to Wasteplan Informal waste collector ship the glass (must not be damaged or broken) to an unspecified company in JHB
	± 250 kg	Shopping complex (based on 3 major shopping complexes in Ballito and Mandeni)	Private waste companies (e.g. SmartMatta, DCWM and DontWaste) collect separated general waste	Recycling plant in eThekweni (e.g. Smart Matta recycling Plant) and DCWM separates the waste at a transfer station and sent to Wasteplan
	± 500 kg (per school)	Schools (based on approx. 10 schools)	The Glass Recycling Company	Transported to JHB to their recycling plant
	± 5,500 kg of glass per month			
Textile waste	± 4 000 kg	Factories (based on approx. 3 factories)	Left outside the factory for the local community to informally collect if needed. However if the textile waste is not collected by the community before the assigned refuse removal day, the	<ul style="list-style-type: none"> Local community (if informally collected) DCLM and Mandeni SAPPI Landfill

Waste Stream	Quantity (per month)	Generator	Collection	End Disposal/Sink
			excess textile waste is collected by the municipal waste services and taken to a landfill One company in Mandeni send all waste to the SAPPI landfill in Mandeni.	
	± 2 000 kg	Industrial parks	Collected by property manager, Ithala Property Group	DCLM and Mandeni SAPPI Landfill
± 6 000 kg of textile waste per month				
Food Waste	± 500 kg	Businesses	Collected by municipality waste collectors	DCLM and Mandeni SAPPI Landfill
	± 2 000 kg	Shopping complex	Shopping complexes are currently seeking ways into which food waste can be composted or used reused in some way. The Lifestyle Centre is currently undertaking research in order to find a more eco-friendly was to dispose of their food waste (e.g. a compost heap in the local area). However, until such a sink is found the food waste is disposed via the municipality services or private collection services (DCLM) and Mandeni SAPPI Landfill	DCLM and Mandeni SAPPI Landfill
	± 300 kg	Factories / mills (based on approx. 3 factories)	Dependent on the food product most cooked items are collected by farmers. Uncooked food waste is collected by DCLM	<ul style="list-style-type: none"> Used for animal feeds on farms Uncooked food is disposed of at a landfill (unspecified)
± 2,800 kg of food waste per month				
Used Oil (mainly used cooking oil and minimal spent oil from petrol filling stations)	± 30 litres	Shopping complexes	Collected by used oil collecting companies such as Oilkol, Spentoil and Rose Foundation	<ul style="list-style-type: none"> Some oil collected is sent to the hazardous landfill run by DCLM. Oil collected by used oil collections companies end sink could not be identified due to a lack of contact. According to Spent-oil website, After the oil is collected from various outlets, it is graded and

Waste Stream	Quantity (per month)	Generator	Collection	End Disposal/Sink
				sold to various companies where several products can be made, such as paint base, putty, Bio diesel and rubber.
Tyres	± 200 units	Local businesses	Collected by local waste collectors (Informal collectors connected to the Waste Bureau) and transported out of iLembe	Waste Collection depot in Richard's bay, Harrismith and Amanzamtoti. The depot sell them off or remake rubber products (i.e. in Harrismith). NPC – a member of Intercement, buys tyres as a fuel source.
e-waste (excluding data from the recycling plants, such as SIMS)	± 3 kg	Local businesses	From liaison with companies, e-waste is disposed of by themselves.	Disposed of at e-waste recycling plants in Ballito – SIMS and Indalo
Larger (mostly industrial) Scrap Metal (ferrous and non-ferrous)	± 400 kg	Industries	Waste is taken, by mostly larger scrap yards or scrap collectors such as the Reclamation group.	<ul style="list-style-type: none"> Scrap metal collected by bigger scrap yards is often taken to yards in eThekweni and sold off or smelted again. The Reclamation group could not be contacted due to ties with the DUT Commerce study.
Wood Waste	± 60 kg	Industries	Left outside the factory for the local community to informally collect if needed. To date, all wood by-products get collected as this is an easy source of fuel.	Re-used by local community.
Medical waste	No data provided	Medical practices and pharmacies	Private collection companies (i.e. Compass)	The waste is transported to treatment facilities in eThekweni where it is autoclaved, shredded and landfilled. Anatomical, pharmaceutical and cytotoxic waste is incinerated.
Batteries	No data provided, but	No data provided by the sampled companies	Although not allowed, most batteries are disposed of via the standard of general waste disposals.	<ul style="list-style-type: none"> Some types of batteries are exported. Woolworths send the battering to Nova

Waste Stream	Quantity (per month)	Generator	Collection	End Disposal/Sink
	assumed to be Minimal		Some batteries go through to the e-waste facilities. Woolworths in Ballito currently holds a station to allow proper disposal of batteries.	<p>Lighting. Nova lighting could not be contacted to establish the end sink due to lack of information available online and no feedback from telephonic attempts.</p> <ul style="list-style-type: none"> Hirsch's is currently working with the commercial batteries companies (e.g. Duracell or energizer) to recycle batteries collected by Hirsch's. Currently there is no recycling facility for batteries in South Africa. Technology is extremely expensive. Alkaline batteries can go to Hazardous landfill, however non-alkaline are shipped out of SA to Europe or Japan.
Pesticide Containers	2-3 5L containers	Farms	N/A	Most farmers dispose of the containers at the DCLM hazardous landfill site. Smaller farmers allow their workers to use the containers if need be by rinsing out the pesticide residue.
Fluorescent Lights	580 kg	Industrial Business Parks (Ithala Properties)	Collected by unspecified vendor	Disposal site unknown
	28 kg	Mill (based on 1 mill)	Collected by Reclite	Reclite separated the fractions for reuse in other applications
	unknown	Shopping Centre (1 centre)	Collected by DCWM	Goes to DCWM transfer site, and thereafter to Reclite for storage and separation (treatment and recycling done in JHB).

6.8.5.1 Waste Beneficiation Survey undertaken by the Durban University of Technology

A Waste Beneficiation Survey was undertaken by the Durban University of Technology which provided waste produced by 22 businesses specifically within the iSithebe Industrial Park. Of the 22 companies that responded to the survey undertaken by the DUT, only twelve companies knew the tonnage of generated waste (Tripl04, April 2019). The total waste generated by these companies was 14,213 tonnes per year. The tonnages of some of the individual companies provided in the Vuthela Waste Efficiency Study report are provided below.

- 7,000 tonnes for SAPPI
- 6,000 tonnes for the UN Brewery (main waste type was identified as water with lots of Sodium Hydroxide and husks)
- 752 tonnes for Whilpool – main waste was indicated as metal
- 260 tonnes for Gomma Gomma – main waste type is wood
- 100 tonnes for Atlas timbers – main waste is timber
- 50 tonnes for Web and Sling – main waste is plastic
- 25 tonnes for Freedom Stationers – main waste is paper
- 1 tonnes for Eulinda Engineering, Powertrans – main waste type is metal

The highest generator of waste was SAPPI with 7,000 tonnes of waste per year and the UN Brewery with 6,000 tonnes of waste per year. These two companies represent a 91% (mass basis) of the waste generated within the iSithebe industrial estate of the companies that responded to the survey.

The main waste types generated from input material and business processes by the 22 companies that responded to the survey are indicated in the pie chart below. From the pie chart it is evident that metals and plastics are the most produced as primary wastes by a number of companies followed by textiles and wood.

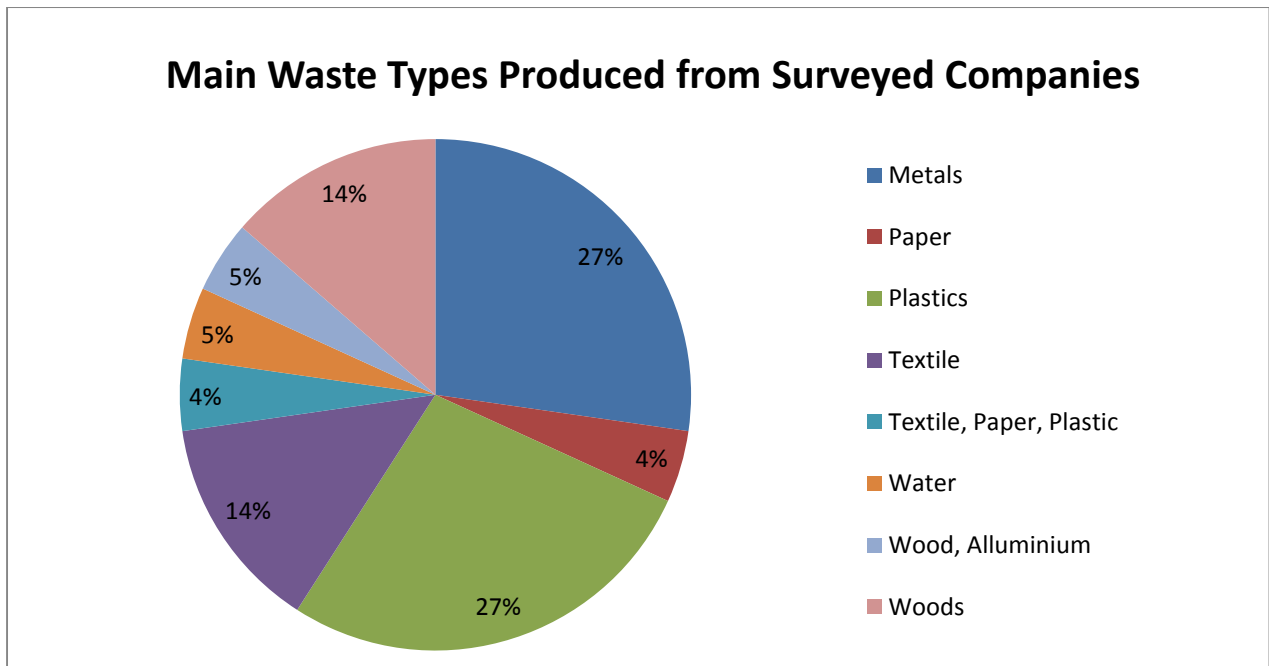


Figure 31: Main Waste Types Produced from Surveyed Companies

6.9 Waste Collection Management Fleet

The waste collection fleets for municipalities are vital as these perform the core function of waste collection and without these vehicles and plant, an adequate and reliable waste collection service cannot be provided. A lack of sufficient fleet and an ageing, unreliable fleet can prevent a local municipality from providing an adequate waste collection service. Details of the waste collection fleet per local municipality are presented in the table below. It is evident from the table that the waste collection fleet is inadequate to perform the waste collection service for each municipality and achieve the waste collection targets of the NWMS.

Table 48: Waste management fleet per local municipality with vehicle challenges and needs

Local Municipality	Fleet	Challenges
KwaDukuza	5 x Compactor trucks which are currently operational 1 x compactor truck which is being repaired 3 x Skip trucks 2 x staff transport vehicles	<ul style="list-style-type: none"> • Vehicle breakdowns • Long turnaround time to repair vehicles which affects the waste collection service • Many new establishments and fleet unable to keep up with the waste collection demand • Lack of funding for new waste collection vehicles
Mandeni	3 x Compactor trucks 1 x staff transport vehicles (bakkie)	<ul style="list-style-type: none"> • Need an extra compactor in order to account for when one is being repaired.

		<ul style="list-style-type: none"> The MLM is currently tendering for a bakkie, compactor and trailer to assist with the waste collection service
Ndwedwe	1 compactor truck – rear end loader	N/A
Maphumulo	No waste management fleet as DCWM collects waste	N/A

6.10 Transfer Stations and Drop-off Centres

There are three formal, operational transfer stations in the iDM at present. Two transfer stations are situated in the KLM (Yellowwood Drive and Ballito), and one in the Isithebe Industrial Park in the MLM. Only the Yellowwood Drive facility is available for use by the public. There are no such publically accessible facilities in the MLM. Tonnages of waste deposited at the facilities are not collated by the LMs. The MPLM has an informal drop-off facility (1) but this is restricted to a cleared area with just a skip for receiving domestic waste. There are no transfer stations or drop-off centres in the NLM. A brief description of these transfer stations is given in the table below.

Table 49: Summary of transfer stations within the KLM and MLM within the iDM

Local Municipality	Transfer Stations
KwaDukuza LM	<p>Yellowwood Drive Transfer Station:</p> <p>The transfer station comprises two bulk containers and two concrete platforms. The facility has a raised platform, but little stormwater control. It is situated on a large site and the undeveloped area within the boundary fence is approximately 4,700 m². The facility is not currently permitted. A permit application for waste activities under Category C of the GN921 (2013) was submitted, but the Provincial Department EDTEA responded saying that a registration under the Norms and Standards for Storage of Waste (GN 926 of 2013) is required. The facility needs to be registered as it has the capacity to store in excess of 100 m³ of general waste. The KLM has commenced with construction works at the transfer station for the development of a waste drop off centre and a small MRF where domestic waste is separated by type to recover recyclable waste and reduce waste destined for landfill. The municipality will also need to consider the requirements of the Norms and Standards for Sorting, Shredding, Grinding, Crushing, Screening and Bailing of Waste (GN 1093 of 2017) for the development of the planned drop off centre and MRF. The KLM also intends to develop a composting site for garden refuse at the transfer station as well. Composting falls under the category of waste treatment. A composting facility which has the capacity to process in excess of 10 tonnes of waste per day requires a waste management license in terms of the list of waste management activities that have, or are likely to have a detrimental effect on the environment (GN 921, as amended).</p> <p>Ballito Transfer Station:</p> <p>The transfer station comprises a warehouse, large outdoor waste storage area, bailing and compacting equipment. The site is owned by the KLM, but is leased and run by</p>

	Dolphin Coast Waste Management (DCWM). Domestic waste from the southern region of the KLM is transported via truck to the site. Once off-loaded, the recyclable waste is sorted by type, and non-recyclable waste is taken to the Dolphin Coast Landfill for disposal. The recyclable waste is sold to a larger recycling company in Durban. The transfer station also has a garden waste drop off and composting facility. Garden waste from the southern region of the KLM is collected from households and transported to the transfer station where it is shredded and composted by a service provider.
Mandeni LM	Isithebe Industrial Park Transfer Station: The Isithebe Industrial Estate owns and operates its own transfer station. General waste is collected within the Industrial Estate using skip trucks. The waste is transported to the transfer station where recyclable waste is collected by informal reclaimers. Waste that is not recycled, is stored in several large skip bins until it is collected and transported to the Dolphin Coast landfill site in the KLM. The recycled waste is purchased directly from these informal reclaimers by recycling companies. A covered area was constructed for the reclaimers to separate the recyclable waste from the waste stored at the transfer station, however this had burnt down in August 2018. The site is currently not operating within in permit requirements.
Ndewdwe LM	There are currently no transfer stations or drop off facilities within the NLM.
Maphumulo LM	The drop off facility in the MPLM consists of a cleared area with a waste skip for receiving domestic waste. A sign board is also located at the drop off facility titled "solid waste recycling transfer station". The drop off facility is therefore not managed according to its initial purpose. Waste management staff of the MPLM indicated that the waste is collected by DCWM when required.

6.11 Waste Treatment and Disposal

6.11.1 Treatment

Currently the only waste treatment facility is the Dolphin Coast Landfill that accepts hazardous liquids and solids as well as general waste. A portion of the waste on site is composted to release methane gas, which is captured and used for energy. A zero liquids to landfill culture has been adopted at the landfill which means that liquids are filtered out of the system using technology known as VSEP (Vibratory Shear Enhanced Processing). This is a membrane system that vibrates at a high rate, which separates the leachate from the solids in the waste stream and reduces the amount of liquid leachate that enters the landfill (Dolphin Coast Landfill Management, 2016).

It is recorded on the South African Waste Information Centre (SAWIC, 2019) that the total biological treatment (e.g. biodegradation, composting, biogas generation, including general and hazardous waste treatment) for the KwaDukuza municipality totalled 6,117.0 tonnes in 2018.

6.11.2 Composting

There is currently only a municipal composting facility and garden refuse drop-off centre at the Ballito transfer station in the KLM. The garden waste is mainly collected in the southern and central region of the KLM and is transported to the transfer station. The composting of the garden waste is undertaken by a service provider, Living Earth. The KLM has also commenced with construction works at the Yellowwood Drive transfer station for the development of a garden waste drop off facility and a composting facility. The municipality has a chipper that they intend to use to chip garden refuse. It is envisioned that garden refuse collected within the northern region of the KLM would be composted using the chipper and the compost used to create a small nursery for growing plants that can be used for public area greening.

None of the other LMs within the iDM have a garden waste drop off centre or a composting facility. A number of privately owned plant nurseries within the iDM accept green waste and have composting facilities on site. Municipal and privately-owned garden refuse collectors take their garden refuse waste to nurseries to supply their compost heaps.

Guidelines on minimum quantities of feedstocks or formulas for calculating a minimum quantity of feedstock required to make a composting facility economically viable for a municipality were not found during the literature review. However, the Assessment of The Municipal Integrated Waste Management Infrastructure: Eden District (Western Cape Government, Department of Environmental Affairs and Development Planning, 2016) had reported 350 tons / week as a minimum quantity of garden / green organic waste required to make composting at a centralised facility economically viable. Unfortunately, the study supporting this minimum quantity for a centralised facility was not referenced. Further analysis of the green waste generated within the iDM and that can be utilised for composting should be undertaken to determine

From a legal compliance and best-practice perspective, engaging in composting is important as it can reduce the organic fraction of waste going to landfill and save on transport costs, which is important in a region where a significant portion of waste is being hauled long distances to landfill. The norms and standards for disposal of waste to landfill require that all municipalities should divert 25% of their collected garden waste from landfill by 2018 and divert 50% of their collected garden waste from landfill by 2023 (DEA, 2013). As the tonnages or volumes of garden waste diverted from landfill are not collated by any LM in the iDM, it is uncertain whether the LMs (especially the KLM) are meeting the 25% diversion standard which was to be achieved by 2018. The LMs and iDM need to commence with garden waste diversion, composting and collating of diversion and composting tonnages to meet these 25% and 50% diversion standards.

6.11.3 Landfill and Waste Disposal Sites

There are no municipal owned or operated landfill sites in the iDM. There are however two privately owned landfill sites in the iDM which are the Dolphin Coast Landfill site in KLM and the SAPPI Tugela landfill in MLM. The table below indicates where waste collected in each LM is disposed of. The iDM is currently in the process of looking for a suitable site to develop a regional landfill site. An assessment of each landfill site within the iDM was not included in the scope of works for the development of the iDM IWMP.

Table 50: List of landfill sites that are utilised by the LMs within the iDM

Local Municipality	Landfill used	Distance to Landfill	Tariff costs	Remaining airspace
KwaDukuza	Dolphin Coast	Within Stanger in KwaDukuza	R 890.34/ton for general waste (as at 09.09.2019). R496/ ton for accepting this waste from KLM (2017).	50 years
Mandeni	King Cetshwayo	160 kms (return trip)	R 185.56/ton	4 - 5 years for current phase/cell used. 30 years airspace in total.
Maphumulo	Dolphin Coast	120 kms (return trip)	Unknown	50 years
Ndwedwe	Dolphin Coast	100 kms (return trip)	Unknown	50 years

6.12 Hazardous and Health Care Risk Waste Disposal

Hazardous waste is defined by the National Environmental Management Waste Act (NEMWA) as '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'. Hazardous waste commonly found in the domestic waste stream includes fluorescent light bulbs, batteries, chemicals and paints.

Animal carcasses are a form of infectious waste that is produced by abattoirs. National Standards for the Disposal of Waste to Landfill (DEA, 2013) prohibits infectious and animal carcass waste from being disposed to landfill.

Health care risk waste is waste that contains infectious agents, sharps, hazardous chemicals or pharmaceuticals, or is genotoxic or radioactive. Used needles and medication are all classified as HCRW and are generally found as part of the domestic waste stream. Hazardous and health care risk should be treated and then disposed of at a hazardous landfill site or a general site if delisted. There are no HCRW treatment facilities in the iDM.

Health care risk waste generated by Government health care facilities in the iDM is managed through the Provincial Department of Health (DoH). The Provincial DoH has contracts in place for the management of HCRW. This is for the collection and transportation of HCRW from hospitals, clinics and community health centres, the supply of health care consumables and the treatment and disposal of HCRW from hospitals, clinics and community health centres. Provincial health care facilities in the KZN which includes all health care facilities in the iDM are serviced by Compass Waste, who collect the HCRW and treat it at their autoclave facility in Durban. This treatment facility falls outside the iDM area.

The management of hazardous and health care risk waste does not fall within the ambit of the Local Municipality's responsibility, but falls within the responsibility of Provincial Government. The iDM and LMs however have a role in reporting miss-management of hazardous waste. The waste management staff of the iDM have indicated that dumping of medical waste has occurred within the iDM.

None of the municipalities have any facilities for the management of household hazardous waste.

Tonnage data for hazardous waste treated/ disposed in the iDM which are reported on the South African Waste Information Centre (SAWIC) are provided below:

- 324.8 tonnes of Health Care Risk Waste that was treated/ disposed in the iDM during 2018 for one facility
- 332.4 tonnes of Health Care Risk Waste that was treated/ disposed in the iDM during 2017 for one facility
- 2079.7 tonnes of Health Care Risk Waste that was treated/ disposed in the iDM in 2016 for 2 facilities
- 790.3 tonnes of Health Care Risk Waste that was treated/ disposed in the iDM in 2015 for 2 facilities.

While these reported figures are likely to be significantly lower than the actual amount of HCRW generated in the iDM, it gives an indication of the quantities of HCRW being generated. Of concern regarding the reported HCRW data is the significant differences in reported data for the tonnages and for the number of facilities that data is reported for.

6.13 By-law Enforcement and Illegal Dumping and Littering

6.13.1 Illegal dumping

Illegal dumping is a significant problem throughout the iDM. This is mainly due to the lack of waste collection services within a large portion of the iDM as according to the KZN Community Survey where only 39.6% of waste is collected for disposal (waste collected weekly, less often and from a communal collection point). Dumping occurs within communities, and at times next to communal skip bins, in the CBD and in open areas. Waste from illegal dumping sites is collected on an irregular basis by each municipality within the iDM. When implemented within the LMs, the Youth Jobs in Waste programme was used to collect waste from illegal dumping sites.

An illegal dumping assessment was undertaken by the MLM and the location of the illegal dumping hotspots identified by the MLM is provided in the table below.

Table 51: illegal dumping hotspots identified by the KLM and the MLM

Location and GPS coordinates of illegal dumping hotspots in the MLM	
Along R102 before Tugela River Main bridge	Lat: 29° 9' 58.43" S; Long 31° 24' 58.43" E
Along R102, Heading North from Total Garage (from Mandeni side direction)	Lat: 29° 9' 38.35" S; Long 31° 27' 6.09" E
In Kwasithebe Area by the 7 th day Church	Lat: 29° 5' 20.53" S; Long 31° 25' 55.62" E
In Kwasithebe Area on open space between two Ndimande skips	Lat: 29° 5' 54.76" S; Long 31° 25' 27.69" E
Island corner of Yenzokuhle Creche and Siyavikelwa School, Sundumbili	Lat: 29° 7' 34.20" S; Long 31° 23' 50.96" E
End of the King Fisher Road, Mandeni	Lat: 29° 9' 38.12" S; Long 31° 25' 24.82" E
In Ward 13, Ward 14, P459 and P415	Coordinates not provided

During staff interviews the main causes for illegal dumping were proposed as:

- The waste collection service does not service the entire iDM therefore the communities that do not receive a waste collection service resort to illegal dumping dispose of waste.
- There are insufficient waste bins and communal skips within the iDM therefore communities have nowhere to dispose of their waste which leads to illegal dumping.
- There are no landfill sites or transfer stations near residential areas within each LM where the communities and businesses (including construction-related businesses) can take their waste to for disposal.

- The available landfill sites situated in the KLM and MLM are privately owned and waste disposal rates are very high for individuals or small businesses that would like to dispose of waste. The landfill sites are also far from residents within the iDM.
- Illegal dumping information such as hotspots, dates and times when dumping most frequently occurs, and complaints are being tracked within some LMs, but there are no staff patrolling open spaces, and staff do not have the authority to issue fines for dumping.
- Dumping incidents are not reported by the community to the municipality.

6.13.2 Littering

Littering is a major concern in the iDM and is clearly noticeable within towns across the iDM despite litter pickers (also called street sweepers) being utilised by the municipalities throughout the LMs. Waste management programmes such as the Food for Waste and Youth Jobs in Waste programmes were used to clean town centres and furrows when the programmes were operating in the LMs. The frequency of litter removal by the litter pickers varies between municipalities and towns. The larger, more urban and affluent towns such as Stanger, Ballito, Mandeni and Sundumbili, receive a daily litter picking service and towns are noticeably cleaner while in the smaller, more rural towns within the iDM, the streets and communities are cleaned infrequently.

The main reasons for littering were proposed by waste management staff as:

- The communities are not educated on the correct manner to dispose of waste and the impact that littering has on the environment.
- There is insufficient funding for street side bins and waste skips for densely populated areas and work areas such as town CBDs.
- There is no waste collection service in rural areas therefore the communities resort to littering.
- The public burn waste in communal skips which leads to windblown waste and litter.
- Business owners do not have adequate waste storage facilities and put waste out at all times of the day.
- Scavenging from bins and black bags put out for collection leads to waste spreading and littering.
- Lack of enforcement of littering. In the MLM, by-laws are in place, but not enforced. In the other LMs, there are no by-laws and therefore no enforcement.

6.13.3 By-laws and Enforcement

The table below provides the status of by-laws in the iDM.

Table 52: Status of by-laws at LMs within the iDM

Municipality	By-Law Status	Progress or Challengers
iLembe DM	No by-laws are in place.	Department within the iDM responsible for waste management to implement before the construction and operation of the regional landfill site.
KwaDukuza LM	There are no gazetted by-laws for waste management for KLM at present.	Draft by-laws have been reviewed by a legal team, and are currently under review by the Department of Cooperative Governance and Traditional Affairs (COGTA) and will be approved thereafter.
Mandeni LM	The waste management by-laws for the MLM were gazetted in 2010 and were reviewed in 2015. The by-laws are comprehensive and include sections on littering, dumping, offences and penalties.	Illegal dumping incidents and complaints are received by the MLM, but there is insufficient staff for enforcing the waste by-laws.
Maphumulo LM	No by-laws are in place.	The municipality are in the process of drafting waste by-laws and were assisted by the iDM waste department with this. Once completed the MPLM intends to have the bylaws reviewed by the Department of Cooperative Governance and Traditional Affairs (COGTA).
Ndwedwe LM	No by-laws are in place.	The municipality intends to commence with drafting waste by-laws with assistance from the iDM department responsible for waste management. The Department of Cooperative Governance and Traditional Affairs (COGTA) have encouraged the NLM for the development of waste management by-laws.

The waste manager of the KLM indicated that fines were issued for littering and illegal dumping by traffic officers within the KLM as littering and dumping are included in the KLM traffic by-laws. The information of these fines were however not collated by the KLM.

Enforcement of waste management by-laws is lacking in all local municipalities. There are no dedicated peace officers or staff that act as waste rangers in any municipality. The municipalities can use municipal police or traffic officers to issues fines for illegal dumping, but in practice, enforcement of illegal dumping is not prioritised. The Senior Environmental Officer of the iDM indicated that there are five Environmental Management Inspectors (EMIs) in the Environmental Health Department; however these are not involved in waste management. A complaints register for illegal dumping is maintained by the KLM and the MLM, but to date there has been no fines in place for these reported illegal dumping incidents within these LMs in the iDM.

6.14 Waste Management Institutional Management

6.14.1 Waste Management Officer

There is currently no designated Waste Management Officer (WMO) for the iDM in terms of the Waste Act. At the time of this report, Mr Masupha Mathenjwa, the Senior Environmental Officer within the iDM Planning and IDP department was responsible for waste management. The status of the appointment of a WMO within the iDM and the LMs are indicated in the table below.

Table 53: Appointment of a Waste Management Officer in the iDM and four local municipalities

Municipality	Appointment of a WMO
iLembe District Municipality	No WMO. Senior Environmental Officer responsible for waste management in the iDM, but not officially designated as WMO.
KwaDukuza Local Municipality (KDLM)	No WMO. The KLM waste manager is responsible for waste management.
Mandeni Local Municipality (MLM)	No WMO. The MLM waste manager is responsible for waste management.
Maphumulo Local Municipality (MPLM)	No WMO. The MPLM waste manager is responsible for waste management.
Ndwedwe Local Municipality (NLM)	Buhle Sishi, the waste manager, is the designated waste management officer (WMO).

6.14.2 Organogram

The iDM does not have a waste management department; however, waste management within the District is the responsibility of the Planning and IDP department within the iDM with the capacity and responsibility of Environmental Management and Planning. Through the development of the IWMP and the scoping report for the regional landfill site, and recommendations made regarding human resources and financial resources to improve waste management in the District, the iDM will create and fill posts required to implement the objectives and targets of this IWMP. The current (June 2019) structure of the Planning and IDP department of the iDM is shown in the organogram below.

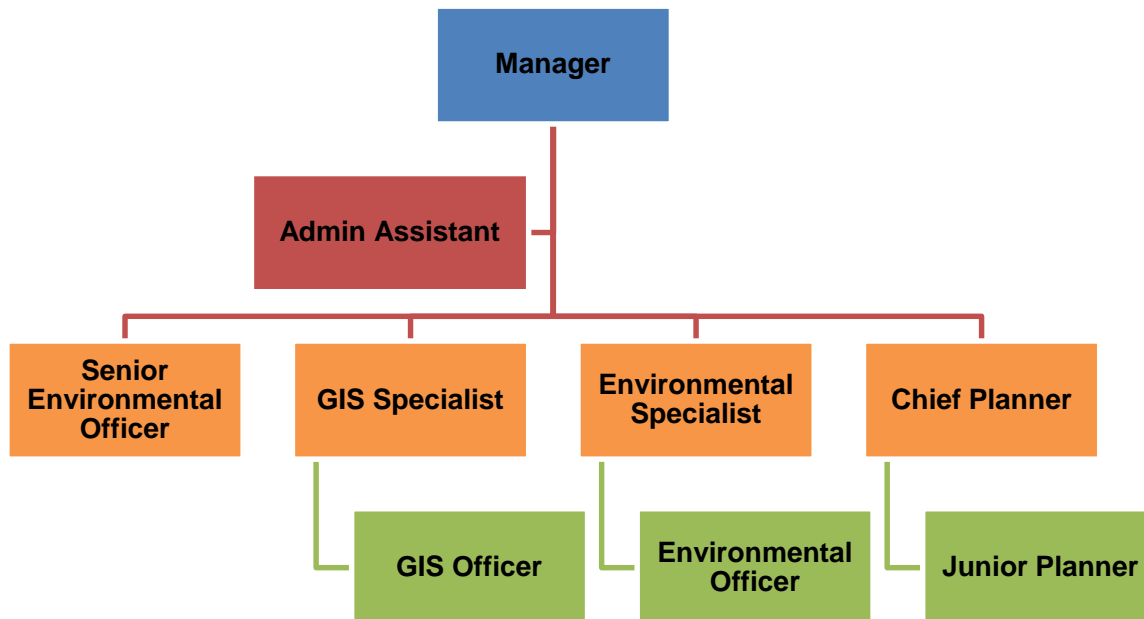


Figure 32: The organogram of the waste division in the iDM Planning and IDP Department

6.15 Institutional Framework

6.15.1 Waste Management Forums

The iDM created a waste management forum during the DEA Youth in Jobs Programme; however, this forum stopped when the DEA Youth in Jobs programme stopped. The iDM Environmental Specialist and Officer meet with the waste managers of the LMs and the DEA representative for the iDM for waste management during forums and workshops. The iDM Environmental Specialist and Officer also attend the Provincial Waste Management forums that are organised and conducted by the KZN Department of EDTEA. In August 2018, the iDM proposed the development of an Environmental Management Forum during which waste management plans, topics and proposed projects as developed within the iDM IWMP would be discussed. The iDM proposed to conduct these forums every second month once the iDM IWMP was finalised.

6.16 Economic and Finances

The iDM is required to budget and provide finances for waste management services specifically for the provision of waste disposal services (such as landfill sites and transfer stations). Traditionally and in general, the provision of waste collection and disposal services provided by municipalities has been under-funded. This situation has been aggravated in recent years due to changes in legislation which

place increasingly demanding requirements on municipalities (provision of recycling facilities, weekly refuse collection services etc.), as well as higher costs of provision of plant and equipment and development of disposal facilities. The iDM does not provide a waste collection service and therefore cannot charge a tariff for an income for the provision of waste infrastructure or facilities. A further factor which negatively impacts on funding of waste management services is that much of the funding available (Equitable Share) has been diverted to other social areas (e.g. housing). It is thus challenging for the iDM to fund the provision of any waste infrastructure and services and equally challenging to influence the increase of tariffs to the necessary levels in the LMs.

According to the iDM IDP for 2017 – 2022 (iLembe District Municipality, 2017), there is no budget allocation for waste management. The IDP however does mention the importance of:

- developing an IWMP and that budget would be confirmed for this,
- developing a regional landfill site to serve each LM within the District,
- providing awareness training to communities to decrease the illegal dumping and littering,
- waste recycling for the local economic development (LED).

The iDM IDP review of 2018/19 indicates that there are two waste management programmes planned for the 2018/19 financial year for KLM and MLM (iLembe District Municipality, 2019). These are the Food for Waste programme and the Waste Recycling Programme. The 2018/19 review of the IDP indicates that allocated budget would be confirmed for these projects.

6.16.1 Income and Expenditure

There is no income and expenditure figures provided for waste services in the iDM IDP (iLembe District Municipality, 2017). Waste collection service is a function of the LMs who are then able to charge a tariff for this service and generate an income from this. As there is no waste collection service provided by the iDM, there are no expenditure figures for this in the iDM IDP. The main expenditure for waste management in the iDM would be for waste management projects and payment of salaries for staff employed by the iDM responsible for the Environmental Management and Planning.

6.16.2 Waste Tariffs

There is no waste collection tariff structure for the iDM as the waste collection service is the function of the LMs within the iDM who are then able to generate an income for the waste collection service provided.

The LMs within the iDM generally apply a 6% annual tariff increase to the waste collection service. The Senior Environmental Officer of the iDM and waste managers in each LM advised that a tariff increase higher than the 6% annual increase cannot be applied due to community unrest that occurs when tariffs are increased beyond 6%.

It should be noted that:

- The iDM have not undertaken a full cost accounting exercise to determine the full cost of the waste service provided within the iDM and to the LMs, and the budget that is required for this
- None of the LMs have undertaken a full cost accounting exercise to determine the full cost of their waste services and to determine if their tariffs are appropriate.
- None of the LMs have done a comparison of the billing schedule (for businesses) and the actual collection service rendered to confirm if businesses are paying the correct tariffs.

6.17 Planned Waste Projects

The iDM IDP 2017-2022 and the 2018/19 annual review of the IDP broadly detail several proposed waste management projects (iLembe District Municipality, 2017) (iLembe District Municipality, 2019). These are detailed in the table below. The IDP indicates that the iDM should fulfil an overarching and coordinating role to the LMs in the iDM to improve the waste management in the iDM.

Table 54: Planned waste projects for the iDM (iLembe District Municipality, 2017)

Nr	Project	Timeframe
1	Scoping investigation for the regional landfill site	2018 - 2019
2	Development of the iDM IWMP	2018 - 2019
3	Waste awareness campaigns	Ongoing
4	Waste recycling initiatives to develop the LED within the iDM.	Ongoing
5	Coordinating all waste management activities within the iDM which includes the four LMs within the iDM.	Ongoing
6	Vuthela Waste Efficiency project – increase the efficiency of waste management and ensure job creation in the KLM and MLM.	2018 - 2019
7	Waste to Energy project	2018 - 2019

6.18 Waste Information Management

The management of waste data in the region is poor. The iDM has yet to define a system for managing waste information and collating waste tonnage information from respective LMs within the District. None of the LMs in the iDM have a waste information management system where waste tonnages are collated on a monthly basis. This also adds to the difficulty of the iDM implementing a waste information management system in place. The key challenges are a lack of technical skills and a lack of operational weighbridges within any of the LMs within the iDM to measure the waste that is collected within the municipal areas and disposed of at the landfill sites. Three of the LMs within the iDM dispose of their waste at the Dolphin Coast Landfill site within the KLM, however waste tonnages are not provided to these LMs, but volumes of waste disposed of are provided. The MLM use the uThungulu landfill site in the King Cetshwayo Municipality for the disposal of their waste. Even though waste tonnages are provided to the MLM on monthly invoices, these monthly tonnages are not collated into one list or report where waste disposal tonnages are maintained. Other key information that is generally not available includes:

- Recycling tonnages
- Fleet management data
- Awareness campaign information
- Expenditure and budgeting information
- Staff development and training plans
- Expansion of the waste collection service

6.18.1 Management of SAWIC Data

6.18.1.1 General waste disposal tonnages as per SAWIS

There are waste disposal tonnage reports for the LMs in the iDM on the SAWIC website (SAWIC, accessed 08.12.2017). According to waste management representatives of the iDM, this waste data is uploaded by the two landfill sites within the iDM, namely the Dolphin Coast Landfill within the KLM and the SAPPI Tugela landfill site within the MLM. This data is not verified by a representative of each LM. The table below highlights the tonnages of general waste disposal available on SAWIC for LMs within the iDM (Department of Environmental Affairs, 2018).

Table 55: General Waste Disposal Tonnages for the LMs within the iDM (Department of Environmental Affairs, 2018)

Year	Municipality Disposal (disposal of waste)			
	KLM	MLM	MPLM	NLM
2012	27,853.8 tonnes	101,867.3 tonnes	-	-
2013	39,500.3 tonnes	110,469.8 tonnes	-	-
2014	44,637.3 tonnes	97,051.6 tonnes	-	-
2015	46,347.1 tonnes	108,237.1 tonnes	-	-
2016	57,483.9 tonnes	129,378 tonnes	-	-
2017	50,788.9 tonnes	149,234 tonnes	-	-
2018	53,575.3 tonnes	113,519 tonnes	-	-

6.18.1.2 Hazardous waste disposal tonnages as per SAWIS

Hazardous waste disposal tonnages are recorded on SAWIS for KLM as hazardous waste is disposed of at the Dolphin Coast Landfill Site. No hazardous waste disposal tonnages are provided for the MLM, MPLM and NLM as a hazardous waste disposal site is not located in either of these LMs. The table below highlights the tonnages of hazardous waste disposal available on SAWIC for KLM.

Table 56: Hazardous waste tonnages in KwaDukuza

Municipality	Year	Disposal (receiving waste)	Recycling/Direct re-use
KLM	2013	152,539.2 tonnes	22.0 (recycling of metals and metal compounds)
	2014	175,374.0 tonnes	Not recorded
	2015	256,135.8 tonnes	Not recorded
	2016	200,725.6 tonnes	Not recorded
	2017	245,398.4 tonnes	390.3 (recycling of metals and metal compounds)
	2018	113,519.0 tonnes	Not recorded

In terms of recording of hazardous waste tonnages in the iDM, hazardous waste is only disposed of at Dolphin Coast Landfill Site, which is a H: H, Class A landfill site. Waste tonnages are recorded by the DCLM with the weigh bridge present at the landfill.

6.19 Community Waste Awareness Campaigns

The iDM indicated that a Youth Environmental Capacity Building Programme that includes waste management campaigns and waste education initiatives is to commence in 2019 for a period of two years. The awareness campaigns were planned in consultation with the DEA, EDTEA and the LMs within the iDM. A total of 88 youths would be appointed for the programme, 22 youths based in each LM and each appointed youth member would be responsible for awareness campaigns within a ward in the LM. One co-ordinator would be appointed to manage the awareness campaign programme as well.

The programme for these awareness campaigns indicated that campaigns would be targeted at schools, community members, political leaders and municipal officials.

The four sub-programmes of the Youth Environmental Capacity Building Programme are:

1. Environmental capacity development through workshops
2. Environmental communication and awareness raising through celebration of Environmental calendar days (e.g. National Water Week, Arbour Day,)
3. Cleaning and greening of illegal dumping areas, and
4. Central Business District and coastal clean-up campaigns.

The iDM is also involved in awareness campaigns that are scheduled and planned by LMs and assists with coordinating and conducting campaigns where required. The table below indicates the waste awareness campaigns that have been conducted by LMs within the iDM.

Table 57: Awareness campaigns undertaken by LMs within the iDM

Municipality	Community or school engagements /campaigns
KLM	No formal waste awareness programme or list of completed awareness campaigns exists for the KLM, but awareness activities have been undertaken. A waste awareness report was compiled in March 2017 to record the waste awareness campaigns held during 2017. A municipal waste representative regularly attends ward community meetings held by ward councillors to talk about waste related issues and educate the public on best practice. Waste awareness campaigns are also planned and undertaken in conjunction with the provincial department of EDTEA at schools within the KLM.
MLM	Two awareness campaigns were planned to be undertaken in 2019 and one campaign had been undertaken by the time this report was drafted. Awareness campaigns were not undertaken in 2018, but awareness campaigns were previously undertaken from 2016 to 2017 by the DEA Youth in Waste programme. The focus of the programme was to raise environmental awareness and cleaning the MLM. Awareness campaigns were undertaken at schools and with door-to-

	door visits.
MPLM	Waste management staff of the MPLM and the iDM indicated that awareness campaigns were previously undertaken within the MPLM. The awareness campaigns are undertaken in conjunction with dump site clean-up campaigns and are scheduled with environmental calendar such as Arbour Day and National Water Week. The MPLM mainly target schools for awareness campaigns. Schools at which training was conducted within 2019 are Nyamaze Primary, Bulkom Primary, and Otinati Primary School. Environmental Awareness campaigns are conducted by the MPLM Environmental Officer. A complete list of waste awareness campaigns does not exist for the MPLM.
NLM	Waste management staff of the NLM and the iDM indicated that awareness were undertaken within the NLM. On average, 10 awareness campaigns are undertaken per year at schools and in communities. No list of completed waste awareness campaigns exists for the NLM. The awareness campaigns are undertaken with assistance from the iDM and the EDTEA.

7 Gap and Needs Analysis

7.1 Needs Analysis

The table below holds key requirements imposed on the iDM by current policy, legislation and guidelines. All key requirements are listed, irrespective of whether the iDM 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.

The needs are presented under the following broad topics defined in the National Waste Management Strategy:

- Institutional issues including:
 - Financial management
 - Human resource management
 - Waste information management
- Waste management service delivery including:
 - Recycling and minimisation of waste
 - Waste Collection and Storage
 - Waste Treatment and Disposal
- Public awareness including:
 - Public awareness and communication

Table 58: Key legal/policy requirements. Some of these, such as provision of collection services, apply only to local municipalities, not to district municipalities.

Topic	Requirement
Institutional Issues	
Municipal waste planning and human resources	<p>National Environmental Management: Waste Act (59 of 2008):</p> <ul style="list-style-type: none"> • Municipalities must submit an IWMP to the MEC for approval. • Municipalities must integrate the IWMP into the IDP. • Municipalities must follow the consultative process as defined in Section 29 of the MSA (separately or as part of the IDP). • Each municipality must formally designate a waste management officer. • Municipalities 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</p>

	<p>Households (GN413 of 2011)</p> <ul style="list-style-type: none"> • Municipalities to integrate the national BRR policy into the municipalities Indigent Policy, if present. • Municipalities to consider formally identifying deserving households/areas for BRR services • Municipalities to implement and maintain indigent register system in line with policy, and implement management programmes to minimise fraudulent activities. • Regularly update the indigent register.
Financial management	<p>National Environmental Management: Waste Act (59 of 2008): All municipalities must keep separate financial statements including a balance sheet of services provided.</p> <p>Municipal Systems Act (32 of 2000): Municipalities must set tariffs and strive to provide waste services in financially and environmentally sustainable manner.</p>
Waste Information management	<p>National Waste Information Regulations (GNR 625, 13 August 2012)</p> <ul style="list-style-type: none"> • All those conducting activities listed in Annex 1 must register on SAWIC. • Activities at different facilities must be registered individually. Includes landfills. Excludes the storage of waste. • Quarterly information to be submitted to the SAWIC by a registered person • All information submitted must be kept for minimum of 5 years.
Service Delivery	
Waste reduction	<p>National Environmental Management: Waste Act (59 of 2008): All municipalities must put in place measures that seek to reduce the amount of waste generated, and where generated, measures to ensure that it is re-used, recycled and recovered, treated and disposed of.</p>
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. • 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>National Norms And Standards For Sorting, Shredding, Grinding, Crushing, Screening Of Waste (GN1093 Of 2017) All waste facilities undertaking the activities of sorting, shredding, grinding, crushing, bailing and screening of waste must register in terms of GN1093 of 2017. All these facilities which have an operational area of 1000m² or more must comply with management requirements set out in the standard.</p>

	<p>National Norms And Standards For Scrapping Or Recovery Of Motor Vehicles (GN925 of 2013)</p> <ul style="list-style-type: none"> Sets minimum requirements for the design, construction and upgrade of motor vehicle scrapping facilities as well as minimum requirements for operation of these facilities <p>National Organic Waste Composting Strategy, Draft (2013)</p> <ul style="list-style-type: none"> WMOs and Municipal Managers need to report, under their IWMP's, projects proposed to be undertaken by them to beneficiate organic waste (in this instance) by means of composting operations.
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. 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 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"> Municipalities 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.
Storage of waste	<p>National Norms & Standards for the Storage of Waste (GN926 of 2013)</p> <p>These requirements must be taken into account when designing and managing storage facilities with capacity >100m³ e.g. transfer stations. Things to consider include access control, signage, leak prevention etc.</p> <p>Waste Tyre Regulations (2017)</p> <ul style="list-style-type: none"> Waste tyres may not be disposed to landfill A waste tyre storage area for a tyre dealer must not exceed 500 m² and any other waste tyre storage area must not exceed 30,00m² and must comply with section 10 of the regulation

	<ul style="list-style-type: none"> Waste Tyre Storage Plans for a waste tyre storage sites are to be approved by the Municipalities Fire Department. Owners or managers of waste tyre stockpiles (a stockpile 500 m²), must submit a waste tyre stockpiles abatement plan to the competent authority.
Waste Disposal	<p>National Standards for the Assessment of Waste for Landfill Disposal (GN635 of 2013) These standards put forward a standard assessment methodology for determining the waste type and appropriate landfill type for disposal.</p> <p>National Standards for the Disposal of Waste to Landfill (GN636 of 2013)</p> <ul style="list-style-type: none"> These standards place restrictions on disposal of certain waste to landfill. New landfill site liner requirements will apply to any new cells constructed at any landfill site. Require that 25% of baseline of separated garden waste be diverted from landfill by 2018 Require that 50% of baseline of separated garden waste be diverted from landfill by 2023 Prohibits that infectious and animal carcass waste be disposed to landfill.
Public Awareness	
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 24 hours. An effective register of complaints must be kept. Municipalities must create awareness around key waste issues as defined in the standards including illegal dumping, recycling and composting Municipalities 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> <p>Municipalities must implement education and awareness training regarding the BRR services in relevant areas.</p>

7.2 Gap Analysis

This section presents the waste management gaps in the iDM applicable to the iDM waste management department as identified through the IWMP process. It is limited to municipal services needs in line with the scope of the IWMP.

The greatest challenges and gaps were identified by municipal staff (staff interviews and workshops) and waste consultants (site visits and research) and the community (IDP public engagements). The gaps identified are presented in the table below.

Table 59: Gap and Needs Assessment for Waste Management in the iDM

Topic	Gaps	Needs
Institutional Issues		
Financial management	<ul style="list-style-type: none"> The iDM waste management department has no budget allocated to waste management. The iDM has not yet developed costing models for the potential regional landfill site. No feasibility assessment has been undertaken to determine cost savings to the municipalities through development of infrastructure to divert waste from landfill to MRFs, composting facilities or construction and demolition waste (C&DW) crushing facilities, etc. The LMs within the iDM have not undertaken a formal full cost accounting review to confirm the suitability of their tariffs. 	<ul style="list-style-type: none"> The iDM waste management department needs to confirm the cost of their required waste activities (advisory, coordinating and monitoring services) and develop a budget accordingly. The iDM needs to develop costing models for the potential regional landfill site, as it moves into scoping, feasibility and design phases. An initial Scoping study is currently underway. At an appropriate later stage, the iDM will need to guide the local municipalities in determining the cost implications of using the regional landfill site. LMs need to undertake full cost accounting exercises to confirm the suitability of their tariffs. The iDM needs to monitor this.
Human resources: Staff and training	<ul style="list-style-type: none"> The iDM has not designated a waste management officer (WMO). Similarly, none of the LMs have designated WMOs. This is a legal requirement. There is a lack of capacity and awareness within the LMs and iDM regarding many aspects of waste management including waste legislation, management of recycling systems, and data management. There is a similar lack of skills and capacity with regard to waste management at the LMs. There is no documented training plan for waste managers, supervisors or operational waste workers. 	<ul style="list-style-type: none"> The iDM needs to designate a WMO. The iDM also needs to monitor the LMs to ensure they designate WMOs. The iDM needs to develop a documented training and development plan for waste management staff. This should include the identification of targeted training courses available to address knowledge gaps. The iDM needs to review their organogram to ensure there are sufficient positions and staff to perform the DM's waste functions. The iDM needs to monitor the LMs to ensure the LMs develop training plans for their waste staff. The iDM waste management department needs to establish and coordinate a District Waste Managers Forum, where waste managers can share knowledge between the district and local municipalities.
Waste Information management	<ul style="list-style-type: none"> There is a lack of awareness regarding the need for waste information management in the LMs. The management of waste data is poor at all LMs. Most LMs in the district lack systems for gathering, collating, and storing key waste data such as disposal 	<ul style="list-style-type: none"> The iDM needs to drive better waste data management in the four LMs and collating this data to generate a district perspective. This would involve advising and monitoring LMs regarding data collection, collation and reporting. All LMs need to develop systems (simple systems can be Excel based) for

Topic	Gaps	Needs
	<p>tonnages, recycling tonnages and awareness campaign information. There is no comprehensive baseline (tonnages) for waste for the district.</p> <ul style="list-style-type: none"> • The iDM lacks a system for gathering waste data from the LMs, collating it, and storing it. • The LMs in the district are not uploading their waste tonnages to the SAWIS, nor do they have proof that any of their service providers are fulfilling this function for them. 	<p>managing waste data including disposal tonnages, recycling rates, IWMP performance audits, facility audits etc. The iDM needs to monitor their progress in this regard. Elements of this .e.g. reporting templates and SOPs could be workshopped at the district forum.</p> <ul style="list-style-type: none"> • The iDM needs to develop and document an internal system for collecting, aggregating and storing key waste data generated by the LMs. • The iDM needs to encourage the LMs to undertake at least annual waste characterisation exercises. The iDM needs to monitor this and aggregate the data for a district perspective.
Future Planning	<ul style="list-style-type: none"> • All the LMs require the development of waste infrastructure such as drop-off centres, transfer stations, and MRFs, however none of the LMs have documented waste infrastructure plans or feasibility studies, which investigate the appropriate location, sites or even where to develop such infrastructure. 	<ul style="list-style-type: none"> • LMs need to undertake a waste infrastructure Master-Planning process whereby they identify regions and ultimately specific erven for the development of key waste infrastructure including waste transfer stations, and recycling drop-off centres. The iDM is to oversee this and consider where facilities may serve more than one LM and how transfer stations will support a possible regional landfill site.
Waste Monitoring		
Monitoring	<ul style="list-style-type: none"> • The iDM currently has no system for monitoring the LMs implementation of their IWMPs. 	<ul style="list-style-type: none"> • The iDM needs to start monitoring the LMs IWMP implementation performance. This could include annual feedback at a district waste manager's forum. • Once the iDM's IWMP is adopted, it will similarly need a system for monitoring its implementation as well.
Service Delivery		
Waste Minimisation and Recycling:	<ul style="list-style-type: none"> • The region is underperforming in terms of waste minimisation but due to the lack of data, the regions progress against national targets (e.g. 25% diversion of recyclable waste from landfill) cannot currently be measured. • There is a lack of systems and infrastructure throughout the district for enabling waste minimisation e.g. separation at source programmes, buy-back centres, waste drop-off centres, Material 	<ul style="list-style-type: none"> • All the LMs need to develop facilities for the drop-off of recyclable waste. These can be incorporated into transfer stations where such exist. These need to be investigated / planned as part of the Master Plans discussed above. The iDM needs to monitor this. • The iDM needs to monitor and advise LMs with regards to the undertaking of pilot projects such as separation at source projects.

Topic	Gaps	Needs
	<p>Recycling Facilities (MRF), garden waste chippers, and crushers for C&DW.</p> <ul style="list-style-type: none"> • There has been a lack of pilot projects in the area to test minimisation programmes such as two bags systems. • There is a lack of data regarding which companies in the LM and district areas are undertaking recycling. • Lack of education regarding waste minimisation and re-use initiatives. 	<ul style="list-style-type: none"> • The iDM needs to develop and maintain a database of companies that are recycling waste in the area, and where possible, determine the tonnages of recyclables collected. This information will assist LMs and the iDM in planning recycling initiatives and understanding job creation potential in the area.
Waste Collection and storage	<ul style="list-style-type: none"> • LMs are currently providing collection services (kerb-side and communal skips) to a limited number of residents in the area, due to the large rural population. The LMs do not have documented plans for expanding these services to peri-urban areas. 	<ul style="list-style-type: none"> • iDM waste department needs to assist LMs to consider where they can expand collection services through kerb-side or communal skip collection and to document future expansion aspirations.
Waste Treatment and Disposal	<ul style="list-style-type: none"> • Investigations and planning regarding the feasibility of a regional landfill site for the area are at an early stage. • There are no municipal disposal facilities or transfer stations in the area which means that the public do not have facilities where they can drop-off waste. This is a key issue as it leads to illegal dumping. • There are no composting programmes, or facilities in the district. Neither the iDM nor the LMs have assessed composting programmes. 	<ul style="list-style-type: none"> • The iDM is to progress the investigation into the feasibility of a regional landfill site. The iDM is currently undertaking a scoping investigation into such a site. • All the LMs need to develop formal transfer facilities for the drop-off of waste. Kwadukuza LM does already have such a site, but the need for further sites should be considered. These need to be investigated / planned as part of the Master Plans discussed above. The iDM needs to monitor this. • LMs need to consider composting options for garden waste including the sourcing of chippers and facilities for composting. The iDM needs to monitor this as well as consider a regional facility.
Public Awareness		
Public awareness and communication	<ul style="list-style-type: none"> • There are no dedicated, trained waste awareness officers (Community Liaison Officers) within the iDM or LMs waste management department. • Insufficient waste education is being undertaken by the LMs and iDM and not enough engagement with businesses and schools. • There is no unified awareness programme or awareness branding across the district and collaboration between LMs/ iDM and private 	<ul style="list-style-type: none"> • The LMs and iDM are to consider creation of a Community Liaison officer posts to champion awareness raising regarding waste education. This should be considered as part of the organogram reviews. • The LMs and the iDM need to develop waste awareness plans and update these on an annual basis. These should include projects such as engagement with schools (school competitions), presentations to businesses, and engagement with community structures.

Topic	Gaps	Needs
	<p>organisations is poor. .</p> <ul style="list-style-type: none"> Neither the LMs nor the iDM have appropriate material (fliers, posters, stickers, presentations) for awareness training. There is a lack of records (documented evidence) of waste awareness campaigns maintained by LMs within the iDM. 	<ul style="list-style-type: none"> The LMs need to develop appropriate awareness material and the iDM needs to consider assisting in this regard. The iDM needs to consider developing a themed message or brand (e.g. a mascot and key message) for waste awareness across the district.
By-Law Compliance and Enforcement		
By-law enforcement	<ul style="list-style-type: none"> Only Mandeni LM currently has waste by-laws. The iDM, KLM, MPLM and NLM have no waste by-laws currently in place. There is no enforcement for waste management in the iDM. There are no dedicated “waste rangers” that are trained peace officers that focus on waste management, and no waste training is given to the existing municipal peace officers. 	<ul style="list-style-type: none"> The iDM needs to encourage LMs to develop waste by-laws and monitor this. The iDM needs to develop its waste by-laws. The LMs are to consider creation of a Waste Ranger post to champion waste compliance. This should be considered as part of the organogram reviews. At a minimum, the waste management departments need to certify one of the waste management staff as a peace officer. The iDM needs to monitor this.
Littering and illegal dumping	<ul style="list-style-type: none"> There is lack of easily accessible waste disposal facilities / drop-off centres in the region which is a key contributor to the challenge of pervasive illegal dumping. There is a lack of street bins and communal skips within towns and urban communities. There is a lack of resources (TLBs and tipper trucks) in the LMs to clean up illegal dumping hotspots. There are insufficient street-sweeping resources to remove waste e.g. the sugar cane that is dropped by cane trucks on town streets. There is a lack of awareness in the community regarding the impact of illegal dumping. 	<ul style="list-style-type: none"> All LMs need to develop appropriate drop-off centres/transfer stations. These need to be investigated / planned as part of the Master Plans discussed above. The iDM needs to monitor this. The iDM needs to encourage and monitor the LMs to compile maps of illegal dumping hotspots in their areas and revise these at least annually. LMs are to review their needs for more street bins and skips. The iDM needs to monitor this. The iDM needs to prioritise the minimisation of illegal dumping and littering during waste management forums.

8 Objectives, Targets and the Desired End State

This section presents the broad key focus areas for waste management from a national level to a local municipal level and defines where waste management improvements should be directed for the iDM. It presents the key waste management objectives for the iDM and gives targets and indicators for measuring their implementation.

8.1 National Waste Management Strategy Objectives

The 2011 National Waste Management Strategy (NWMS) presents a national strategy for improving waste management in South Africa and hence is key in guiding what all spheres of government should be aiming to achieve in terms of waste management. The NWMS is structured around a framework of eight goals. The goals along with their respective targets were supposed to have been met by 2016. The NWMS is currently under review, but has not yet been finalised, hence the goals below are those presented in the 2011 strategy.

Table 60: National Waste Management Strategy Objectives

Goal	Targets for 2016
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
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.
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

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
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 SAWIC have waste quantification systems that report information to WIS
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
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.
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

These goals were ambitious and were largely not achieved in South Africa, particularly those pertaining to municipalities. The goals do however provide an indication of the direction in which waste management practice should be moving in the country.

8.2 Provincial IWMP Objectives for Waste Management

The following objectives were highlighted in the 2012 KwaZulu-Natal IWMP:

1. To address the high backlog in domestic waste collection services experienced in several municipalities. A total of 60% of municipalities in the province are not providing a waste disposal services to more than 75% their population.
 - Licence the general waste landfill sites within the province as many landfill sites were operating without a license and were poorly managed.
 - All landfill sites were to be registered on the South African Waste Information System (SAWIS system) and waste information was to be recorded and updated regularly.

- Develop, publish and implement norms and standards which all major waste recyclers and waste recycling service providers need to comply with. These waste recyclers and service providers were to register with the EDTEA and submit information on waste collected or treated for recycling.
- Define the basis for the introduction, maintaining and promotion of sound recycling initiatives within KZN.
- Ensure that district and local municipality IWMPs report on the measured or estimated quantities of recyclable waste collected and disposed; and set clear, measurable and sufficiently challenging targets for recycling.
- Allocate or recruit sufficient resources and to develop the specialist skills in EDTEA to manage complex procedures, decisions and monitor all the steps in the remediation process of contaminated sites identified in the province. This included developing a register and map with all known contaminated land sites
- Move integrated waste management within the province forward towards a more sustainable state of affairs.
- Identify and document current problems, issues and gaps in waste management.
- Provide a basis for the development, promulgation and/or review of provincial integrated solid waste management regulations that would regulate waste management within the province, as well as serve as a disincentive for poor waste management practices (if necessary).
- Guide, support and challenge district and local municipalities to implement integrated waste management effectively.
- Guide, challenge and implement incentives for private organisations within the province to implement best practice waste management.
- Promote, encourage and support public involvement and forums in all KZN provincial government related waste strategies and activities.

8.3 iLembe District Municipality IDP Waste Management Objectives

The only waste management objective set in the iDM IDP is the development and adoption of the iDM IWMP by 2019/20. The following actions to improve waste management are proposed in the iDM IDP:

- The development of the district's IWMP
- Pilot a recycling programme
- Increase people's awareness of the advantages of good waste management practices.

- Develop a public landfill for the district, since the operation of a regional landfill site is the mandate of the District.

The IDP notes that the current waste management initiatives include the EPWP “food for waste” and “recycling”, however no details about the budget or programme are given.

8.4 iLembe IWMP Objectives and Targets

A total of nine objectives, presented below, have been defined through the IWMP process informed by:

- The Situation Analysis.
- The Gap and Needs Assessment.
- Input from the Situational Analysis and Gap and Needs Assessment PSC workshop.
- Input from draft IWMP PSC workshop.

In line with section 12 of the Municipal Planning and Performance Management Regulations, 2001, the IWMP should set targets that are:

- Practical and realistic;
- Measure the efficiency, effectiveness, quality and impact of the performance of the municipality, administrative component, structure, body or person for whom a target has been set;
- Commensurate with available resources;
- Commensurate with the municipality's capacity; and
- Consistent with the municipality's development priorities and objectives set out in its integrated development.

The objectives in this section represent key areas which, if addressed, will contribute significantly to the iDM fulfilling its broader waste management mandate over the next five years and will address the most pressing waste management issues in the district. The current financial limitations of the iDM have however been considered, and the objectives developed with this in mind. Nonetheless, the recent waste policy and legislation changes necessitate the inclusion of certain objectives so as to ensure legal compliance. The objectives will not necessarily address all waste management challenges within the iDM and not all projects or interventions planned under Section 9 will necessarily have a “home” under the objectives below. Finally, the objectives have, as far as possible, been structured so as to make them measurable.

8.4.1 Objective 1: Financial Management

According to the iDM IDP for 2017 to 2022 and the annual review of the IDP for the 2018/2019 financial year, the iDM currently does not provide a budget for any waste projects or infrastructure development within the iDM. The Planning and IDP department in the iDM responsible for waste management also does not know the true cost of the waste management service provided within the iDM and the service provided to the LMs within its jurisdiction. The iDM should undertake a full cost accounting exercise to determine the true cost of the waste services provided within the iDM. The iDM should also use this IWMP as well to determine the future costs of waste services (advisory, coordinating and monitoring service) to be provided within the iDM. The full cost exercise should also consider the additional staff requirements to fulfil the objectives and tasks within the IWMP.

8.4.1.1 Objective

Ensure that waste management budget is sufficient for implementing the IWMP

8.4.1.2 Targets

- The iDM department responsible for waste management needs to confirm the cost of their required waste activities (advisory, coordinating and monitoring services) and develop a budget accordingly.
- The iDM needs to develop costing models for the potential regional landfill site, as it moves from the scoping phase to the feasibility and design phases. An initial Scoping study is currently underway.
- At an appropriate later stage, the iDM will need to guide the local municipalities in determining the cost implications of using the regional landfill site. This could coincide with the feasibility phase of the regional landfill site.
- LMs need to undertake full cost accounting exercises to determine the true cost of the waste services provided and confirm the suitability of their tariffs that will be charged to the local municipalities. The iDM needs to monitor this.

8.4.2 Objective 2: Internal Management Planning and Resourcing

In accordance with Section 10(3) of the Waste Act, the iDM must designate in writing a 'Waste Management Officer' from its administration. The Waste Management Officer is responsible for coordinating matters pertaining to waste management in that municipality. The Waste Management

Officer must coordinate waste management activities in the manner set out in the national waste management strategy.

The iDM should ensure sufficient staff to implement the objectives and targets of this IWMP and to fulfil their waste management role in the district. In addition a training programme needs to be developed for new and existing employees to empower employees to drive waste management in the district.

8.4.2.1 Objective

Ensure the waste department is sufficiently staffed and capacitated to fulfil its waste management mandate.

8.4.2.2 Targets:

1. Appoint and formally designate a sufficiently capacitated WMO, in writing, by the end of 2019/2020 financial year. The iDM also needs to monitor the LMs to ensure they designate WMOs.
2. The iDM needs to review their organogram to ensure there are sufficient positions and staff to perform the DM's waste functions and implement the target projects of this IWMP.
3. The roles and responsibilities in the form of job descriptions of each employee performing a waste management function according to the organogram and within the district should be documented.
4. The iDM needs to develop a documented training and development plan for staff responsible for waste management. This should include the identification of targeted training courses available to address knowledge gaps.
5. The iDM needs to monitor the LMs to ensure the LMs develop training plans for their waste staff.
6. The iDM department responsible for waste management needs to establish and coordinate a District Waste Managers Forum, where waste managers can share knowledge between the district and local municipalities.
7. The iDM needs to start monitoring the LMs IWMP implementation performance. This could include annual feedback at a district waste manager's forum.
8. Once the iDM's IWMP is adopted, it will need a system for monitoring its implementation as well. The iDM should submit annual reports of the implementation of the IWMP in terms of Section 46 of the MSA and Section 13 of the Waste Act.

8.4.3 Objective 3: Waste Information Management

Appropriate waste information management is lacking in the iDM, and needs to be improved through developing a system for sourcing, collating, reporting and storing the required waste information. Without the necessary information it is difficult for the iDM to develop future plans and set measurable waste management targets to achieve. The iDM needs to ensure that the LMs are included in the development of the waste information management system and monitor that LMs are implementing the waste information system.

The National Waste Information Regulations require municipalities to be registered on the South Africa Waste Information System (SAWIS) and to report on the SAWIS on a quarterly basis (Department of Environmental Affairs, 2008). This is not currently being done by the LMs in the iDM. All requirements of the Waste Information Regulations need to be implemented. Training should be given to the staff responsible for overseeing waste information management in respective LMs.

Limited information on the waste stream composition is available for the municipalities. One waste characterisation was undertaken in the KLM, MLM and the NLM as part of the development of their latest IWMPs. Undertaking bi-annual waste characterisations will enable the municipality to determine the types of waste generated and better quantify the needs for recycling and disposal facilities across the various towns and settlements.

8.4.3.1 Objective

Management of correct waste information in a manner that makes it accessible and useful, and that complies with the Waste Information Regulations.

8.4.3.2 Targets

1. The iDM needs to drive better waste data management in the four LMs and collating this data to generate a district perspective. This would involve advising and monitoring LMs regarding data collection, collation and reporting.
2. All LMs need to develop simple systems (for example an Excel based system) for managing waste data including disposal tonnages, recycling rates, IWMP performance audits, facility audits etc. The iDM needs to monitor their progress in this regard. Elements of this waste information management system .e.g. reporting templates and standard operating procedures (SOPs) could be workshopped

at the district forum.

3. The iDM needs to develop and document an internal system for collecting, aggregating and storing key waste data generated by the LMs.
4. The iDM needs to encourage the LMs to undertake at least one annual waste characterisation exercises. The iDM needs to monitor this and aggregate the data for a district perspective. The implementation of the waste characterisation exercises could be workshopped at the district forum.
5. The iDM needs to oversee the LMs collection of recycling data for the area, including who the recycling role players are and gathering available tonnages. Data to be aggregated.

8.4.4 Objective 4: Waste Minimisation, Recycling and Re-Use

The National Domestic Waste Collection Standards (GN 21 of 2011) mandates LMs to provide an enabling environment for household recycling and the NWMS set the goal of diverting 25% of recyclables from landfill sites by 2016.

The iDM is currently not facilitating recycling within the district or providing initiatives to LMs to conduct recycling. Recycling within the iDM is mainly driven and operated by private waste recyclers. The iDM together with the LMs should create an enabling environment for recycling through a holistic approach of different initiatives including raising awareness and provision of recycling facilities and drop off centres. The provision of recycling drop off stations located in towns which are easily accessible by the public will significantly improve the facilitation of household recycling as well as raise public awareness of the option of recycling waste as an alternative to disposing it. The development of recycling drop-off centres and facilities should be included in the district Waste Infrastructure Master Plan.

Waste minimisation and recycling in the district is not being coordinated and hence opportunities for improving recycling require investigation. The iDM should engage with private recyclers and LM waste managers and investigate opportunities to provide assistance in improving on recycling and compliance of recycling within the district. It was noted during municipal staff interviews that there is insufficient human capacity within the iDM departments responsible for waste management to pursue this.

Another strategy for minimising waste disposed at the landfill is to encourage composting of garden waste. Based on the waste characterisation of the KLM, MLM and the NLM, it is estimated that garden waste and organic waste comprises approximately 35% of the total domestic waste stream. Facilities for composting of this waste should be provided across the iDM. This would assist the LMs to comply with the requirements of norms and standards for disposal of waste to landfill (Department of Environmental Affairs, November 2011).

8.4.4.1 Objective

Create an enabling environment for waste minimisation and recycling within the iDM, and collate information on recycling to develop a hub (centre) of information regarding recycling. The recycling initiatives of LMs should be monitored by the iDM to ensure the implementation and success thereof.

8.4.4.2 Targets

1. All the LMs need to develop facilities for the drop-off of recyclable waste. These can be incorporated into drop-off centres and transfer stations where such exist. These need to be investigated / planned as part of each LM's Waste Infrastructure Master Plan discussed below in section 8.4.5. The iDM needs to monitor this.
2. The iDM needs to monitor and advise LMs with regards to the undertaking of recycling pilot projects such as separation at source projects.
3. The iDM needs to develop and maintain a database of companies that are recycling waste in the municipal area, and where possible, determine the tonnages of recyclables collected. This information will assist LMs and the iDM in planning recycling initiatives and understanding job creation potential in the area.

8.4.5 Objective 5: Waste Collection and Storage

The National Waste Management Strategy requires municipalities to provide 95% of urban households and 75% of rural households with adequate levels of waste collection services. At present, in the iDM area, only 39.7% of households receive a weekly or bi-weekly collection service (kerbside and waste skip service), 54.2% use their own or a communal refuse dump and 6.2% have no refuse removal service. Factors limiting waste collection in the iDM are the high proportion of rural households in remote areas of the district, and the large transportation distances and the lack of road infrastructure to these remote rural households.

While it is not feasible for the LMs in the iDM to provide waste collection services to meet the targets of the National Waste Management Strategy, the LMs must aim to extend the geographical range of waste collection services. The iDM should assist LMs in:

- monitoring their extension of services
- encourage them to develop and maintain fleet management plans, in which the lifespan, condition, and necessity of each vehicle should be evaluated and documented. This will enable

the municipality to prioritize and budget for the expansion and replacement of vehicles over several years.

8.4.5.1 Objective

To provide a reliable weekly collection service in urban areas and to continuously expand the waste collection service into the peri-urban and rural areas as feasible.

8.4.5.2 Targets

1. iDM waste department needs to assist LMs to consider where they can expand collection services through kerb-side or communal skip collection and to document future expansion aspirations.

8.4.6 Objective 6: Waste Transfer and Disposal

There are no municipal owned landfill sites in the iDM area, and there is a significant shortage of transfer station/ drop-off centres in the region, hence there are no affordable disposal facilities available for the public to drop off excess refuse, garden waste and builder's rubble at an affordable disposal rate. All landfill sites in the iDM are privately owned and the absence of easily accessible and affordable waste disposal facilities has contributed significantly to the severe local illegal dumping problem and lack of recycling.

The iDM needs assist LMs to develop or secure public access to transfer facilities or drop-off facilities, in close proximity to large towns within the iDM, where the public can dispose of garden waste, excess domestic waste, and builder's rubble. Builder's rubble could potentially be used as cover material at landfill sites.

8.4.6.1 Objective

To provide the public with an accessible facility for the disposal of refuse, garden waste and builder's rubble.

8.4.6.2 Targets

1. The iDM is to progress the investigation into the feasibility of a regional landfill site. The iDM is currently undertaking a scoping investigation into such a site.
2. LMs need to undertake a waste infrastructure Master-Planning process whereby they identify regions and ultimately specific erven for the development of key waste infrastructure including waste transfer stations, and recycling drop-off centres. The iDM is to oversee this and consider where facilities may serve more than one LM and how transfer stations will support a possible regional landfill site.
3. All the LMs need to develop formal transfer facilities for the drop-off of waste. Kwadukuza LM does already have such a site, but the need for further sites should be considered. These need to be investigated / planned as part of the Master Plans discussed above. The iDM needs to monitor this.
4. LMs need to consider composting options for garden waste including the sourcing of chippers and facilities for composting. The iDM needs to monitor this as well as consider a regional composting facility.

8.4.7 Objective 7: Waste Management Awareness

A lack of public waste management awareness in each LM was identified as a key issue in this IWMP process and which has contributed to the bad waste management of communities and illegal dumping in the district. The National Waste Management Strategy required that 80% of local municipalities and 80% of schools to be running waste management awareness campaigns by 2016. There is a real need for an ongoing awareness programme for waste issues, especially regarding waste minimisation and how to dispose of waste correctly to alleviate illegal dumping as well. Such a programme should engage schools, businesses and residential areas, and should include peri-urban areas.

8.4.7.1 Objective

To ensure a programme of ongoing waste awareness campaigns in the iDM area.

8.4.7.2 Targets

1. The LMs and iDM are to consider creation of a Community Liaison officer posts to champion awareness raising regarding waste education. This should be considered as part of the

organogram reviews.

2. The LMs and the iDM need to develop waste awareness plans and update these on an annual basis. These should include projects such as engagement with schools (school competitions), presentations to businesses, and engagement with community structures.
3. The LMs need to develop appropriate awareness material and the iDM is to assist in this regard and monitor this process to ensure that it is completed and implemented.
4. The iDM needs to consider developing a themed message or brand (e.g. a mascot and key message) for waste awareness across the district.

8.4.8 Objective 8: Waste Management By-Laws and Compliance with Waste Legislation

The iDM currently does not have waste management by-laws in place. The iDM should develop comprehensive waste management by-laws as well as an enforcement plan to guide the enforcement of waste management by-laws. The plan should consider:

- Fining protocols
- How to apply penalties
- Recovery systems
- Required resources.

The lack of resources for enforcement is a significant limiting factor at the municipal level and the appropriate human and financial resources must be allocated at the municipal level if enforcement is going to be successful. At least one Waste Ranger post should be created in the LMs, whose mandate is the enforcement of the waste management by-laws. All existing peace officers need to receive regular training on the waste management by-laws to assist in the enforcement of the these by-laws.

8.4.8.1 Objective

- Development of a set of waste management by-laws and ensure that these are gazetted for implementation
- Raise public awareness of the waste management by-laws.
- Successful enforcement of by-laws to reduce illegal dumping in the iDM area.

8.4.8.2 Targets

1. The iDM needs to develop its waste by-laws.
2. The iDM needs to encourage LMs that do not have by-laws to develop waste by-laws. The iDM to monitor this development.
3. The LMs are to consider creation of a Waste Ranger post to champion waste compliance and enforce the by-laws. This should be considered as part of the organogram reviews. At a minimum, the waste management departments need to certify one of the waste management staff as a peace officer so that they can issue fines. The iDM needs to monitor this.
4. Provide biennial training on the Waste Management By-laws to all LM persons involved in enforcing by-laws according to the enforcement plan developed.

8.4.9 Objective 9: Illegal Dumping

Illegal dumping is the result of various weaknesses in a waste management system, including the lack of infrastructure for waste disposal, the lack of waste collection service provision, public awareness, and enforcement of by-laws. Illegal dumping will be reduced through improved enforcement of by-laws, provision of communal skip facilities with a weekly collection service and public awareness campaigns.

8.4.9.1 Objective

Reduce illegal dumping within the iDM.

8.4.9.2 Target

1. All LMs need to develop appropriate drop-off centres/transfer stations. These need to be investigated / planned as part of the District and LM's Waste Infrastructure Master Plans discussed above. The iDM needs to monitor that LM's include drop-off centres/transfer stations within their Waste Infrastructure Master Plans.
2. The iDM needs to encourage and monitor the LMs to compile maps of illegal dumping hotspots in their areas and revise these at least annually. The size and degree (amount) of illegal dumping at these hotspots should be determined to determine the clean-up costs for these areas.
3. LMs are to review their needs for more street bins within towns and CBD areas and waste skips to minimize littering and dumping of waste. The iDM needs to monitor this.

4. The iDM needs to prioritise the minimisation of illegal dumping and littering during waste management forums.
5. Conduct awareness campaigns in areas where illegal dumping is common to decrease the occurrence of illegal dumping.

9 Implementation Plan

This section presents a plan by which the iDM aims to meet the objectives defined in the previous section of this report. The plan consists of a number of projects and initiatives which, if appropriately executed, should move the iDM towards realising these objectives. An implementation programme is presented in the table below. It is however acknowledged that the iDM 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. The implementation plan table has been set up to allow the iDM to include budget estimates and funding mechanisms, once these have been determined.

The table below outlines these projects and includes an indication of recommended prioritisation and timeframes. Project priority ratings have been discussed and agreed at the stakeholder workshop.

Priority rating for projects is defined as follows:

- (a) **High Priority** – Addresses an issue and/or situation with a potentially high health, safety or environmental (HSE) risk to the public, employees and/or environment; and any legal non-compliance.
- (b) **Moderate Priority** – Addresses an issue and/or situation with a potentially moderate HSE risk to the public, employees and/or environment; and concerns related to waste service sustainability.
- (c) **Low Priority** – Addresses a procedural matter with no HSE risk to people or the environment; and concerns related to good management practices.

The timescales for recommended implementation of the projects are indicated in the table. These timescales should form the basis for more detailed planning in terms of any required tasks associated with for example the following:

- (a) Securing of funding
- (b) Environmental Impact Assessment
- (c) Further detailed studies (e.g. feasibility, geotechnical, social impact, biodiversity, etc.)
- (d) Public participation processes
- (e) Design
- (f) Procurement
- (g) Construction
- (h) Commissioning.

Finally, the implementation plan has been presented in a simple table format so that it can be easily reviewed. The implementation plan should be checked at least annually to determine if sufficient implementation progress is being made. The implementation plan is deemed to be a living document and should be amended accordingly to ensure it remains viable and realistic.

Table 61: Priority Projects and Preliminary Action Plan

No.	Actions	Priority Rating	2019/20	2020/21	2021/22	2022/23	2023/24	Funding: cost	Funding: source
Objective 1: Financial Management and Tariff Structure									
1.1	The iDM waste management department needs to confirm the cost of their required waste activities (advisory, coordinating and monitoring services) and develop a budget accordingly. To be undertaken annually.	High	X	X	X	X	X	To be determined according to waste department scope.	Internal budget
1.2	The regional landfill is confirmed, the iDM needs to develop costing models for the potential regional landfill site, as it moves from the scoping phase to the feasibility and design phases. An initial Scoping study is currently underway. Costing models to be revised as required and are to inform the LM's waste cost planning. The iDM will need to guide the local municipalities in determining the cost implications of using the regional landfill site. This could coincide with the feasibility phase to the development phase of the regional landfill site.	Medium			X	X	X	To be determined according to project scope.	Internal budget
1.4	LMs need to undertake a full cost accounting exercises to confirm the suitability of their tariffs. The iDM needs to monitor this.	High		X	X	X	X	R100k per review	Internal budget
OBJECTIVE 2. Internal Management and Resourcing									
2.1	Waste Management Officer: Formally designate a Waste Management Officer. Section 10(3) of the Waste Act requires this. The prospective WMO must be competent, have the appropriate technical knowledge, receive appropriate training as required and sign acceptance of the responsibilities as specified in the Waste Act. The DEA guideline on appointing WMOs should guide the process.	High	X	X				Nil. Internal project	Internal budget

2.2	The iDM needs to review their organogram to ensure there are sufficient positions and staff to perform the DM's waste functions and implement the target projects of this IWMP.	High	X	X	X				Nil. Internal project.	N/A
2.3	The iDM to document the roles and responsibilities in the form of job descriptions of each employee of the district waste department according to the organogram requirements.	Medium		X	X	X	X		Nil. Internal project	N/A
2.4	The iDM needs to develop a documented training and development plan for waste management staff. This should include the identification of targeted training courses available to address knowledge gaps.	High		X	X	X	X		R50k per year	Internal budget
2.5	The iDM needs to monitor the LMs to ensure the LMs develop training plans for their waste staff.	Medium	X	X	X	X	X		Nil. Internal project	N/A
2.6	The iDM waste management department needs to establish and coordinate a District Waste Managers Forum.	High		X	X	X	X		Nil. Internal project	N/A
2.7	The iDM needs to start monitoring the LMs IWMP implementation performance. This could include annual feedback at a district waste manager's forum.	High	X	X	X	X	X		Nil. Internal project	N/A
2.8	Once the iDM's IWMP is adopted, it will need a system for monitoring its implementation as well. The iDM should submit annual reports of the implementation of the IWMP in terms of Section 46 of the MSA and Section 13 of the Waste Act.	Medium		X	X	X	X		Nil. Internal project	N/A
OBJECTIVE 3: Waste Information Management										
3.1	The iDM needs to drive better waste data management in the four LMs and collating this data to generate a district perspective. This would involve advising and monitoring LMs regarding data collection, collation and reporting. All LMs need to develop systems (simple systems that can be Excel based) for managing waste data including disposal	High	X	X	X	X	X		Nil. Internal project	N/A

	tonnages, recycling rates, IWMP performance audits, facility audits etc. Elements of this could include reporting templates and standard operating procedures (SOPs). The iDM needs to monitor their progress in this regard and workshop these at the district forum.									
3.2	The iDM needs to develop and document an internal system for collecting, aggregating and storing key waste data generated by the LMs.	High	X	X					Nil. Internal Project	N/A
3.3	The iDM needs to encourage the LMs to undertake at least one annual waste characterisation exercise. The iDM needs to monitor this and aggregate the data for a district perspective. The implementation of the waste characterisation exercises could be workshopped at the district forum.	High	X	X	X	X	X		Nil. Internal Project	N/A
3.4	The iDM needs to oversee the LMs collection of recycling data for the area, including who the recycling role players are and gathering available tonnages. Data to be aggregated	Medium		X	X	X	X		Nil. Internal Project	N/A
OBJECTIVE 4: Waste Minimisation and Recycling										
4.1	All the LMs need to develop facilities for the drop-off of recyclable waste. These can be incorporated into transfer stations where such exist. These need to be investigated / planned as part of the LM Waste Infrastructure Master Plans. The iDM needs to monitor this.	High	X	X	X	X	X		TBC, depending on nature of facility.	TBC
4.2	The iDM needs to monitor and advise LMs with regards to the undertaking of pilot projects such as separation at source projects.	High		X	X	X	X		To be estimated according to project scope.	Internal budget
4.3	The iDM needs to develop and maintain a database of companies that are recycling waste in the district, and where possible, determine the tonnages of recyclables collected. This information will assist LMs and the iDM in planning recycling initiatives and understanding job creation potential in the area.	Medium		X	X	X	X		To be estimated according to project scope. Internal project.	Internal Budget

OBJECTIVE 5: Waste Collection and Storage										
5.1	iDM waste department needs to assist LMs to consider where they can expand collection services through kerb-side or communal skip collection and to document future expansion aspirations.	High		X	X	X	X	Nil. Internal.	N/A	
OBJECTIVE 6: Waste Transfer and Disposal										
6.1	The iDM is to progress the investigation into the feasibility of a regional landfill site. The iDM is currently undertaking a scoping investigation into such a site.	High		X	X	X	X	To be estimated according to project scope and terms of agreement.	TBC	
6.2	The LMs need to undertake a Waste Infrastructure Master-Planning process whereby they identify regions and ultimately specific erven for the development of key waste infrastructure including waste transfer stations, and recycling drop-off centres. The iDM is to oversee this and consider where facilities may serve more than one LM and how transfer stations will support a possible regional landfill site.	High		X	X	X	X	R500k	TBC	
6.3	All the LMs need to develop formal transfer facilities / drop-off centres for the drop-off of waste. These need to be investigated / planned as part of their respective Waste Infrastructure Master Plans. The iDM needs to monitor this.	High		X	X	X	X	R4-5M (per facility)	Grant	
6.4	The LMs need to consider composting options for garden waste including the sourcing of chippers and facilities for composting. The iDM needs to monitor this.	High		X	X	X	X	Nil. Internal.	N/A	
OBJECTIVE 7: Waste Management Awareness										
7.1	The LMs and iDM are to consider creation of a Community Liaison officer posts to champion awareness raising regarding waste education. This should be considered as part of the organogram reviews.	High	X	X	X	X	X	R350k/yr per CLO (dependant on LM grading policy)	Internal budget	

7.2	The LMs and the iDM need to develop waste awareness plans and update these on an annual basis at the beginning of each year. These should include projects such as engagement with schools (school competitions), presentations to businesses, and engagement with community structures.	High		X	X	X	X	Nil. Internal.	N/A
7.3	The LMs need to develop appropriate awareness material and the iDM needs to consider assisting in this regard.	Medium	X	X	X	X	X	To be determined by LMs and iDM. Estimated budget of R50k for the iDM	Internal budget
7.4	The iDM needs to consider developing a themed message or brand (e.g. a mascot and key message) for waste awareness across the district.	Low		X	X			TBC. iDM might need to budget for marketing material.	Internal budget
OBJECTIVE 8: Waste Management By-Laws and Compliance with Waste Legislation									
8.1	The iDM needs to develop its waste by-laws.	Medium		X	X			Nil. Internal Project	Internal budget
8.2	The iDM needs to encourage LMs that do not have by-laws to develop waste by laws. The iDM to monitor this development.	High	X	X	X			Nil. Internal Project	Internal budget
8.3	The LMs are to consider creation of a Waste Ranger / Waste Peace Officer post to champion waste compliance and enforce the by-laws. This should be considered as part of the organogram reviews. At a minimum, the waste management departments need to certify one of the waste management staff as a peace officer so that they can issue fines. The iDM needs to monitor this.	High		X	X	X	X	R350k/yr per CLO (dependant on LM grading policy)	Internal budget
8.4	The iDM to provide biennial training on the Waste Management By-laws to all persons involved in enforcing by-laws according to the enforcement plan developed.	Medium		X	X	X	X	Nil. Internal.	N/A
OBJECTIVE 9: Illegal Dumping									

9.1	The iDM needs to encourage and monitor the LMs to compile maps of illegal dumping hotspots in their areas and revise these at least annually. The size and degree (amount) of illegal dumping at these hotspots should be determined to determine the clean-up costs for these areas.	High		X	X	X	X	Nil. Internal project	N/A
9.2	The LMs are to review their needs for more street bins within towns and CBD areas and waste skips to minimize littering and dumping of waste. The iDM needs to monitor this.	High	X	X	X	X	X	Nil. Internal project	N/A
9.3	The iDM needs to prioritise the minimisation of illegal dumping and littering during waste management forums.	High	X	X	X	X	X	Nil. Internal project	N/A
9.4	The iDM to conduct awareness campaigns in areas where illegal dumping is common to decrease the occurrence of illegal dumping.	High	X	X	X	X	X	To be determined based on awareness campaigns planned annually. Internal project	Internal budget

10 Conclusion and Way Forward

GIBB has compiled this Integrated Waste Management Plan (IWMP) for the iLembe District Municipality as a baseline document which would assist municipal officials in their planning to achieve integration of the local municipal solid waste management service in terms of their legislative obligations.

The IWMP provides an overview of the context within which waste management, and more specifically solid waste management, takes place within the iDM and LMs. This context covers the regulatory function relating to the operational, financial, legal and institutional dimension; situational analysis of the socio-economic demographics and current waste management activities within the iDM; as well as a waste management gap and needs analysis. The identified gaps and needs were then evaluated and translated into objectives and targets which culminated into an Implementation Plan with recommended priority ratings and timeframes for implementation.

Although much of the strategy and preliminary action plan presented in this report has been derived from initial discussions with the representatives of the environmental and waste management department within the Planning and IDP Department of the IDM, a draft document was presented, discussed and workshopped with key municipal and others stakeholders at various meetings and workshops. The strategy was then amended and refined to ensure its full acceptance and subsequent adoption.

Identified key needs and gaps are summarised as follows:

- A Waste Management Officer (WMO) needs to be formally designated.
- The organogram for the department responsible for waste management, the Planning and Development Department, needs to be reviewed and amended where required to ensure the implementation of this IWMP.
- Waste information management within the iDM and LMs is weak, and a robust waste information system needs to be set in place.
- Recycling, waste minimisation and re-use initiatives must be promoted within the iDM.
- There is a need for the development of a waste infrastructure masterplan for the iDM which includes the development of landfill sites, transfer stations, and waste drop off centres for the public to use. These facilities then need to be constructed. This will assist in reducing the pervasive illegal dumping issue in the area.

This IWMP presents a 5 year plan for the implementation of projects to address the needs outlined above. These projects are important for realising the required improvements. Nonetheless, it must be

recognised that the IWMP should be considered a 'living document' that would require update from time to time as the local dynamics change.

10.1 Approvals

This IWMP will require council approval prior to it being adopted and implemented by the waste division in the iDM Planning and IDP Department. The plan will also, as required by Chapter 3 of the National Environmental Management: Waste Act (59 of 2008), require endorsement by the provincial environmental Member of Executive Council. The submission of the final IWMP to the MEC of EDTEA and the MEC for Local Government for endorsement is dependent on, primarily, the necessary municipal channels having been followed, in terms of Section 29 of the Municipal Systems Act (32 of 2000).

10.2 Public Participation

The Municipal Systems Act contains extensive provisions pertaining to public participation. This IWMP should be subject to an appropriate Public Participation Process (PPP) before it is accepted as final by the iDM council.

10.3 Monitoring Plan

Regular and ongoing 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 NEM:WA 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

10.4 IWMP Close-out Report

A close out report should be completed at the end of 2024 to summarise the implementation of projects for the period 2019 - 2024. This report should describe which projects have been completed, which have been implemented and which have not been implemented. The success of these projects should be documented as well.

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Appendix A

Policy and Legislation

12 Policy and Legislation

12.1 Introduction

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.

12.2 International conventions

12.2.1 Basel Convention on the control of trans-boundary movement of hazardous wastes and their disposal

The Basel Convention (1989) 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.

12.2.2 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 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.

12.2.3 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, dichloride-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.

12.2.4 London Convention on the Prevention of Marine Pollution by Dumping of Waste and Other Matters

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.

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

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 DEAT 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.

12.2.5 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 probably 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.

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.

12.2.5.1 Activities within the Local Authority

(a) Garnering local political support

- Information sessions and workshops.
- Reports and presentation to committees.
- Physical involvements in projects.

(b) Managing and improving local authorities own environmental performance.

- Corporate commitment.
- Staff training and creating awareness.
- Environmental management systems.
- Budgeting for environmental processes.
- Policy integration across all sectors.

(c) Integrating sustainable development aims within local authorities' policies and activities

- Economic development.
- Tendering and purchasing.
- Tourism and visitor strategies.
- Health strategies.
- Welfare, equal opportunities and poverty strategy.
- Focused environmental services.

12.2.5.2 Activities within the wider community

(a) Awareness raising and education

- Support for environmental education.
- Awareness-raising events.

- Visits and talks.
- Support for voluntary groups.
- Publication of local information.
- Press releases.
- Initiatives to encourage behavioural change and practical actions.

(b) Consulting and involving general public

- Public consultation processes.
- Interaction with NGO's/forums.
- Focus groups.
- Feedback mechanisms

(c) Forging partnerships with other interest groups and activities, such as:

- Meetings, workshops and conferences.
- Working groups/advisory groups.
- Round table discussions.
- Comprehensive Urban Plan.
- International and regional partnerships.

(d) Measuring, monitoring and reporting on progress toward sustainability

- Environmental monitoring.
- Sustainability indicators.
- Targets.
- Environmental Impact Assessments.
- Strategic Environmental Assessment.

12.3 South African Legislation

12.3.1 Constitution of the Republic of South Africa

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 wellbeing; 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.

12.3.1.1 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 –

- (1) provide for the monitoring and support of local government in the province; and
- (2) 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).

12.3.1.2 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:

- 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.

12.3.2 National Environmental Management Act.

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.
- 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 and revised in 2010. 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.

12.3.3 Environment Conservation Act

The Environment Conservation Act (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 Waste Act has repealed sections of the ECA dealing with waste management. More specifically these repealed sections are:

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

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, as follows.

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.

- 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 Waste Act.
- 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 Waste Act.
- 29: Sections (3) and (4), which deal with Offences and Penalties have been substituted by the Waste Act.

Despite the fact that the Waste Act 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.

12.3.4 National Environmental Management: Waste Act

12.3.4.1 Overview

The National Environmental Management: Waste Act (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. The Waste Act does however constitute South Africa's overarching primary waste legislation.

12.3.4.2 Objectives of the Waste Act

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.
- 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.

The Chapters and topics of the Waste Act are as follows:

Chapter 1 - Interpretation and Principles

Chapter 2 - National Waste Management Strategy, Norms and Standards

Chapter 3 - Institutional and Planning Matters

Chapter 4 - Waste Management Measures

Chapter 5 - Licensing of Waste Management Activities

Chapter 6 - Waste Information

Chapter 7 - Compliance and Enforcement

Chapter 8 - General Matters.

12.3.4.3 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: Tasks falling under sections of the act which have yet to be enacted have not been listed. While certain sections of the text are taken verbatim from the Act, interpretation has been added.

Table 62: Tasks required by MLM in terms of NEM:WA.

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 • Ensure effective and efficient Sustainable and Financial management
	9 (3)	The Municipality may furthermore set local standards: <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)	<ul style="list-style-type: none"> • The Municipality must 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

TOPIC	SECTION	REQUIREMENT
		Systems Act (separately or as part of IDP)
	12	Contents for IWMP's, includes: <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.

12.3.4.4 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.

12.3.4.5 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 present a Waste Management Activity Lists describing those waste activities, and thresholds, which require authorisation before they are undertaken. This list was amended in 2013 (Gazette No 921 of 2013). The Waste Act Schedule 1 (Section 19) identifies activities which require a waste management licence. Activities include:

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

Either a Basic Assessment or Scoping and Environmental Impact Assessment (EIA) process is to be carried out with regards to acquiring a licence as stipulated in the environmental impact assessment regulations made under section 24 (5) of the Waste Act).

12.3.4.6 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). IWMPs are mandatory for national and provincial government and specified waste generators, but the situation for local government is made a little more ambiguous by the Constitutional assignment of concurrent powers to provincial and local governments in this respect, with only limited authority assigned to national government.

12.3.4.7 Norms, standards, tariffs and financial Management Systems

Other focal areas of the Waste Act 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.
- 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.

12.3.5 National Environmental Management: Air Quality Act

The National Environmental Management: Air Quality Act (39 of 2004) requires that appropriate 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 Air Quality Act 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.

12.3.6 Atmospheric Pollution Prevention Act

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) (Act 45 of 1965) and its amendments. The administration of the APPA has been assigned to the Air Pollution Control Department under the Department of Environmental Affairs & Tourism.

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.

12.3.7 National Water Act

The National Water Act (Act 36 of 1998) 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.
- 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.
- Requiring that waste discharged or deposited into or allowed to enter a water resource be monitored and analysed according to prescribed mechanisms.

12.3.8 Occupational Health and Safety Act

The purpose of the Occupational Health and Safety Act (OHSA) (Act 85 of 1993) 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.

12.3.9 Health Act

The Health Act (Act 63 of 1977) 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.

12.3.10 Hazardous Substances Act

The Hazardous Substances Act (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.

12.3.11 National Road Traffic Act

The United Nations (UN) recommendations on the transport of dangerous goods have been used to produce sections of the National Road Traffic Act (Act 93 of 1996). 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.

12.3.12 Advertising on Roads and Ribbon Development Act

The Advertising on Roads and Ribbon Development Act (Act 21 of 1940) 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 and 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 subsection shall not permit the deposit or leaving of any article or material on a road.

12.3.13 Waste Tyre Regulations

The Waste Tyre Regulations were first published as Government Notice R.149 on 13 February 2009 and came into effect on 30 June 2009. These regulations were amended in 2016 in General Notice R. 1493 of 2016. The latest Waste Tyre Regulations (R1064 of 2017) were published on 29 September 2017 and came into effect immediately. 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, re-treaded, or un-roadworthy tyre, not suitable to be re-treaded, repaired or sold as a part worn tyre and not fit for the original intended use.
- Prohibits management, recycling, recovery or disposal 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 purchase, sale or export of waste tyres unless authorised.
- 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, particularly regarding waste stockpile abatement and waste tyre storage.

12.3.14 Asbestos Regulations

On 28 March 2008, the Minister of Environmental Affairs and Tourism published as Government Notice R.341 of 2008 entitled “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.

12.3.15 Mineral and Petroleum resources Development Act

The objective of the Mineral and Petroleum resources Development Act (No. 28 of 2002) , amongst others, is to give effect to section 24 of the Constitution by ensuring that the nation’s mineral and petroleum resources are developed in an orderly and ecologically sustainable manner while promoting justifiable social and economic development.

12.3.16 Municipal Structures Act

The main objective of Local Government: Municipal structures Act (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.

12.3.17 Municipal Systems Act

As intended by the Constitution, Waste management services such as refuse collection, removal, transportation and disposal is generally the responsibility of local municipalities⁶.

Municipal Systems Act (Act 32 of 2000) with respect to the Local Government Municipal Systems Act (MSA) defines a municipal service as follows:

“A service that a municipality in terms of its 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.
- Surveys among residents when appropriate and the processing and publication of the results.

12.3.18 Development Facilitation Act

The Development Facilitation Act (Act 67 pf 1995) 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 Development Facilitation Act and form the basis for most of the integrated development plan. Chapter one of the Development Facilitation 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 Development Facilitation 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.
- 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.

12.3.19 The Physical Planning Act

The objective of the Physical Planning Act 125 of 1991 is to provide for the division of the country into regions and to promote regional development. Policy plans consist of broad guidelines for the future physical development of the area and restrictions are placed on the use of land in the area to which the plan relates. Local authorities are required to develop urban structure plans for their areas of jurisdiction.

12.3.20 Promotion of Administrative Justice

The purpose of the Promotion of Administrative Justice Act (“PAJA”) (Act 3 of 2000) 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”).

12.3.21 Promotion of Access to Information

Promotion of Access to Information, (Act 2 of 2000) is 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.

12.4 National Policies and Guidelines

12.4.1 White Paper on Environmental Waste Management

The White Paper on Environmental Management was published in 1998. This policy sets out government's objectives in relation to environmental management, how it intends 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.

12.4.2 White Paper on Integrated Pollution and Waste Management

The White Paper on Integrated Pollution and Waste Management (1999) 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.

12.4.3 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 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 63: 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.

Goal	Description	Targets 2016
		<ul style="list-style-type: none"> Achievement of waste reduction and recycling targets set in Industry IWMPs for paper and packaging, pesticides, lighting (CFLs) and tyre industries
Goal 2	Ensure the effective and efficient delivery of waste services.	<ul style="list-style-type: none"> 95% of urban households and 75% of rural households have access to adequate levels of waste collection services. 80% of waste disposal sites have permits.
Goal 3	Grow the contribution of the waste sector to the green economy.	<ul style="list-style-type: none"> 69 000 new jobs created in 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 SAWIC 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 of the Waste Act.	<ul style="list-style-type: none"> 50% increase in the number of successful enforcement actions against non-compliant activities. 800 EMIs appointed in the three spheres of government to enforce the Waste Act.

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.

12.4.4 Polokwane Waste Summit Declaration

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.
- Develop waste information and monitoring systems.

12.4.5 Local Government Turnaround Strategy

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.
- 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.
- 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.)

12.4.6 Draft Municipal Sector Plan

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 kerbside collection and at drop-off facilities).
- Composting.
- Energy recovery.
- Reducing waste-to-landfill.
- Cleaner production principles for industry.
- Alternative technologies for “different waste streams.”
- 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.

Related institutional and planning arrangements as informed by:

- Municipal Structures Act 117 of 1998.
- Municipal Systems Act 32 of 2000.

12.4.7 Minimum Requirements Documents; Department of Water Affairs and Forestry

The Department of Water Affairs and Forestry (DWAF) Minimum Requirements: Waste Management Series 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 is 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 are to:

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

documents. Note that an EIA must be conducted prior to the establishment of waste disposal facilities. However, the above mentioned waste activity has now been repealed and instead requires a license application under the Waste Act.

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

12.4.8 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”.

12.4.9 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 Waste Act 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:

12.4.9.1 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, 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.

12.4.9.2 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.

12.4.9.3 Waste Excluded from Co-Processing

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

12.4.9.4 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.

12.4.10 National Waste Information Regulations

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. Annexure 1 of the regulations lists activities including recovery and recycling, treatment and disposal of waste for which the person conducting the activity must register in terms of GR 625 of 2012. The municipality has a duty in terms of waste disposal to land (as well as operating waste recycling or treatment facilities) to report waste types and quantities in accordance with these regulations to SAWIC on a quarterly basis.

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

The National Policy for the provision of basic refuse removal services to indigent households as published for general information in notice 413 of Government Gazette No. 34385 on 22 June 2011 was developed in response to the constitutional requirement that all households should have access to basic services regardless of their income level, as well as the adoption of a free basic services in 2001.

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.

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.”
- Raising awareness.

The policy includes:

- A “grid of responsibilities” for each sphere of government.
- 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”.

12.4.12 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 covers 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. 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.

The development of the standards took into consideration the existing innovative practices at local government level across the country and seeks to build on what has already been achieved whilst emphasizing a need to separate recyclable and non-recyclable domestic waste and the protection of human health and the environment.

12.4.13 National Norms and Standards for Assessment of Waste for Landfill Disposal

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

12.4.14 Waste Classification and Management Regulations

The Waste Classification and Management Regulation (GR635, 23 Aug 2013) 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.

12.4.15 National Norms and Standards for Disposal of Waste to Landfill

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

12.4.16 National Norms and Standards for the Storage of Waste

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

12.4.17 National standards for the extraction, flaring or recovery of landfill gas

The National standards for the extraction, flaring or recovery of landfill gas (GN 924 of 2013) aims to control the extraction, flaring and recovery of gas at landfills or recovery facilities to minimise harmful impacts to people and the surrounding environment. The standards require, in planning phase, that an assessment of environmental risks and impacts that are associated with the proposed activities is compiled, and that Environmental Management Plan is compiled to mitigate these risks. The standard contains a set of standard procedures for handling and maintaining of equipment for construction, operational and decommissioning phase. The standard also covers training, emergency response, monitoring and reporting, general requirements and transitional arrangements.

12.4.18 National standards for scrapping or recovery of motor vehicles

The National standards for scrapping or recovery of motor vehicles (GN 925 of 2013) puts forth minimum requirements for the design, construction and upgrading of a motor scrapping facility. The design must consider: sensitive environments; drainage systems; storage and operational areas for off-loading, dismantling, liquid waste, shredding, dispatching parts and recyclables. Specific design requirements are set out for different operational areas. Minimum requirements are given for the operational phase including vehicle dismantling, solid waste management, and liquid waste management. Minimum requirements in the decommissioning phase focus on the compilation of a rehabilitation plan for the facility and disposal of contaminated wastes. The standard also covers training, emergency response, monitoring and reporting, general requirements and transitional arrangements.

12.4.19 National norms and standards for sorting, shredding, grinding, crushing, bailing and screening of waste

The National norms and standards for sorting, shredding, grinding, crushing, screening of waste (GN 1093 of 2017) require all waste facilities (used for sorting, shredding, grinding, crushing, screening of

waste) less than 100 m² in size to register with the competent authority and provide details including the location, types of waste processed, and civil design drawings of the facility as set out in Section 4 of the standard.

The standards require all waste facilities (used for sorting, shredding, grinding, crushing, screening of waste) more than 100 m² in size register with the competent authority as set out in Section 4 of the standard, as well as comply with requirements for the location, design, construction, access control and signage. Operational requirements in Section 8 of the standard address management of operational impacts such as control of hazardous substances, air emissions, discharging of wastewater, noise and odour emissions. The standard also covers training, emergency response, monitoring and reporting, general requirements, requirements during the decommissioning phase and transitional provisions.

12.5 Local Strategy and Policies

12.5.1 iLembe District Municipality Integrated Development Plan

The iDM's present Integrated Development Plan (IDP) covers the period 2017 – 2022. It notes a commitment to providing quality and sustainable waste management services as well as waste management facilities for disposal and recycling to the residents of the iDM, and includes waste management targets and projects. These have been considered in the 'Needs Analysis' section of the report.

12.5.2 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).

12.5.2.1 iLembe District Municipality By-Laws

There are no gazetted by-laws for waste management for the iDM. It is suggested draft by-laws are developed and finalised for gazette. A schedule of fines for illegal dumping or illegal waste management practices should be included in the developed bylaws.

Appendix B

Recording of Waste Disposal Tonnages Requirements

Recording of Waste Disposal Tonnages

Recording the tonnages of waste disposed to landfill is an important part of managing waste. This can be achieved using a weighbridge or through manual recordings. This information is also required for reporting on the South African Waste Information System (SAWIS). The following summary of these two options for recording waste disposal tonnages has been taken as an extract from the DEA's IWMP toolkit (accessed on 08.01.2018).

Option 1: Weighbridge

The weighbridge method involves recording the amount of waste at the point of entry to a landfill and again on the way out. The difference in the mass of the vehicle between the 'in' and 'out' provides the mass of the waste. A weighbridge operator is required to correctly identify the types of waste disposed of. The data is captured using weighbridge software that can simultaneously provide billing information based on the type of waste and the size of the vehicle.

Option 2: Without a weighbridge: Making use of the vehicle capacity and the waste densities template (a volume density estimation system).

In instances where a municipality does not have a weighbridge, it can make use of templates that were developed by DEA. These provide guidance on how waste quantities can be estimated for the different waste streams. The first template provides a list of typical vehicles used to dispose of waste in waste disposal facilities. This template makes use of estimations (by mass) that have been made based on the size of the vehicles measured in cubic meters. The second template contains possible pre-calculated and estimated density values which are based on the type of vehicle carrying a particular pre-classified waste type.

This waste mass estimation system uses the below formula that requires waste volume, waste density and waste loading to determine the mass entering a waste disposal facility:

Formula: waste mass (kg) = vehicle volume (m³) x load/s x waste density (kg/ m³)."

"On a monthly basis a municipality must compile a summary of the quantities of waste received and should submit this information to the South Africa Waste Information Centre (SAWIC). DEA has developed data capture forms which comprise of a landfill monthly data capture form as well as a landfill annual data summary form. Using the daily waste data collection form, municipalities are required to enter the information from the daily data capture form into a monthly data form in order to transfer the handwritten data into a spreadsheet."

Appendix C

IWMP Draft Workshop Comments and Response Report – 13 September 2019

The comments received and raised during the IWMP draft workshop as well as a response to these comments (where applicable) are presented in the table below.

Nr	Comments	Response
1	Masupha Mathenjwa (MM): The EDTEA suggests that the WMO be a waste manager or the Director of Community Services for example, but MM suggests that the WMO be a younger representative in middle management. This individual would have a more hands on approach with the day-to-day operations in waste management and be able to implement the projects/tasks within an IWMP. The Directors are designated as the WMOs, but are seldom involved in the waste management operations and therefore are unaware of the waste practices in the LMs.	
2	MM: Is there a suggestion of a waste management organogram for a district municipality?	GIBB: An example of a District Waste organogram would be provided to the iDM.
3	MM: Province EDTEA is currently not “looking” for landfill sites, but are more focussed on the diversion of waste from landfills with reusing and recycling of waste initiatives. A focus for the EDTEA is also the reduction in waste generation. These are the waste management practices that are prioritised by the EDTEA.	
4	MM: The iDM has a youth community outreach programme that will commence where one coordinator and 88 individuals will be appointed to conduct waste awareness campaigns in the iDM. A total of 22 individuals will be based in each LM. Each individual will be responsible for awareness campaigns in a ward. The 88 individuals will be appointed for 2 years and the coordinator for 3 years.	
5	Munya Mutyora: The Vuthela iLembe LED programme is investigating the beneficiation of sludge waste in the iDM through a Water and Sanitation Masterplan. This detail should be added to the IWMP.	
6	MM: The organogram for the department responsible for waste will be reviewed at the completion of the IWMP. This has been discussed within the iDM during the development of the IWMP.	The review of the organogram was included as a project in the implementation plan of the IWMP as well to ensure that the projects in the IWMP are implemented.

Appendix D

Attendance Registers for the IWMP presentations, progress meeting and workshops



Department :
 Economic Development, Tourism and
 Environmental Affairs
PROVINCE OF KWAZULU-NATAL

Ilembe District Office
 Corner of Link Road and R102, KwaDukuza, Albert House, 1st Floor
 Private Bag X10691, KwaDukuza, 4450
 Telephone: 032-5510900 (0904)
www.kznedtea.gov.za

ATTENDANCE REGISTER

PURPOSE OF THE MEETING : ILEMBE DM, KWADUKUZA, MANDENI LM & ILEMBE WARDENS
VENUE : ELECTRICAL SERVICES BOARD ROOM
DATE : 27/02/2019
TIME : 9:30

Surname & Initials	Organisation	Contact No.	Fax	Email	Signature
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"Leading the attainment of inclusive growth for job creation and economic sustenance"

Figure 33: Attendance register for the KwaDukuza, Mandeni and iLembe Municipalities IWMP Progress Meeting held on 27 February 2019

ILEMBE DISTRICT MUNICIPALITY IWMP SITUATIONAL ANALYSIS WORKSHOP

ATTENDANCE REGISTER

CLIENT: Vuthela Ilembe LED Programme
 PROJECT: Ilembe DM, KwDukuzi LM and Mandeni LM IWMPs Updates
 PROJECT No: GE38104
 PURPOSE: Situational Analysis Workshop
 VENUE: Ilembe Main Boardroom (Disaster Management Building)
 DATE & TIME: 02 July 2019, 09:00 - 13:00



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C:\i\Work\38104 Ilembe IWMPs 2019\LM Situational Analysis Workshop Attendance Register_Rev 3 (EPT100)

Revision 3 / February 2018

Figure 35: Attendance register for the iLembe District Municipality IWMP Situational Analysis Workshop

Appendix E

South African Multidimensional Poverty Index (SAMPI)

The South African Multidimensional Poverty Index (SAMPI), based on the Alkire-Foster method, is a standard used to measure poverty and deprivation in the country. The multidimensional poverty index is made up of several factors that amount to a poor person's experience of poverty with the aim to capture the complexity of poverty. These factors are poor health, lack of education, inadequate living standards, lack of income, disempowerment, lack of decent work and threat from violence (Statistics South Africa, 2014).

The Multidimensional Poverty Index is made up of three sections (dimension); namely health, education and living standards. These are further divided into sub-sections (Indicator) as indicated in the table below. The measure for subsection (deprivation cut-off) is indicated in the table as well.

Table 64: The dimensions, indicators and deprivation cut-offs for the SAMPI (Statistics South Africa, 2014)

Dimension	Indicator	Deprivation cut-off
Health	Child mortality	If any child under the age of 5 has died in the past 12 months
Education	Years of Schooling	If no household member aged 15 or older has completed 5 years of schooling
	School Attendance	If any school-aged child (aged 7 to 15) is out of school
Standard of Living	Fuel for lighting	If household is using paraffin/candles/nothing/other
	Fuel for heating	If household is using paraffin/wood/coal/dung/other/none
	Fuel for cooking	If household is using paraffin/wood/coal/dung/other/none
	Water access	If no piped water in dwelling or on stand
	Sanitation type	If not a flush toilet
	Dwelling type	If an informal shack, traditional dwelling, caravan, tent, other
Economic Activity	Asset ownership	If household does not own more than one of radio, television, telephone or refrigerator and does not own a car
	Unemployment	If all adults (aged 15 to 64) in the household are unemployed

The SAMPI score is determined from the product of the headcount, H, which is the proportion of the households defined as multidimensionally poor using the poverty cut-off, with the intensity of the poverty

experienced, A, which is an average proportion of indicators in which poor households are deprived. Therefore,

$$\text{SAMPI} = H \times A.$$

The SAMPI score for the local municipalities in the iDM, the KZN and South Africa are indicated in the table below for 2001, 2011 and 2016. The SAMPI score for the KZN was second in 2001, 2011 and 2016 after the Eastern Cape Province (Statistics South Africa, 2014) (iLembe District Municipality, 2019). The SAMPI score for the KZN and South Africa were not provided or calculated for the Census 2016 data.

Table 65: The SAMPI score for the local municipalities in the iDM, the KZN and South Africa

Municipality	Census 2001			Census 2011			Census 2016		
	H	A	SAMPI	H	A	SAMPI	H	A	SAMPI
KwaDukuza	19.3%	42.6%	0.082	8.6%	41.2%	0.035	7.9%	41.6%	0.033
Mandeni	17.9%	43.1%	0.077	8.8%	41.2%	0.036	7.2%	41.5%	0.030
Maphumulo	43.5%	42.7%	0.186	25.4%	40.6%	0.103	19.8%	44.8%	0.089
Ndwedwe	34.7%	42.4%	0.147	21.6%	41.0%	0.089	13.8	44.8%	0.062
iLembe			0.000	13.2%	41%	0.054	10.1%	43%	0.043
KwaZulu-Natal	22.3%	43.9%	0.098	10.9%	42.0%	0.046			
South Africa	17.9%	43.9%	0.079	8.0%	42.3%	0.034			

From the table above it is evident that the highest poverty count and intensity of poverty was experienced in the MPLM for 2001, 2011 and 2016, followed by the NLM. The KLM achieved the highest SAMPI score for 2001, 2011 and 2016. Evident from the table above is that the headcount for households living below the multidimensional poverty cut-off have decreased in each LM and the iDM from 2001 to 2016 (refer to **Figure 10** below as well), but that the intensity of poverty experienced by households below the poor cut-off has increased from 2011 to 2016 (refer to **Figure 37** below as well). Therefore the poverty experienced by these households has worsened from 2001 to 2016. The decrease in the SAMPI scores for the LMs and the iDM from 2001 through to 2016 is therefore mainly as a result of the decrease of the Headcount of households living below the multidimensional poverty cut-off.

The figures below indicate the Headcount of people living below the multidimensional poverty cut-off, the Intensity of poverty of people living below the multidimensional poverty cut-off and the SAMPI score for the respective LMs within the iDM, the iDM, KZN and South Africa.

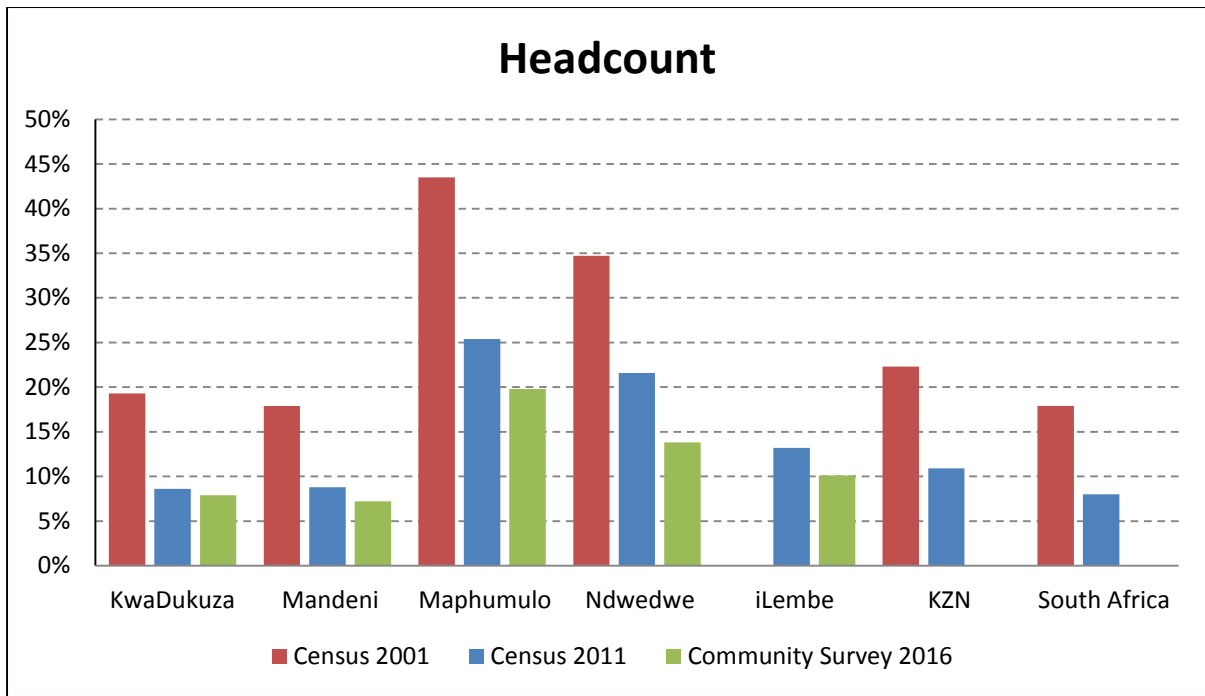


Figure 37: Poverty Headcount for the LMs, iDM, KZN and South Africa in 2001, 2011 and 2016

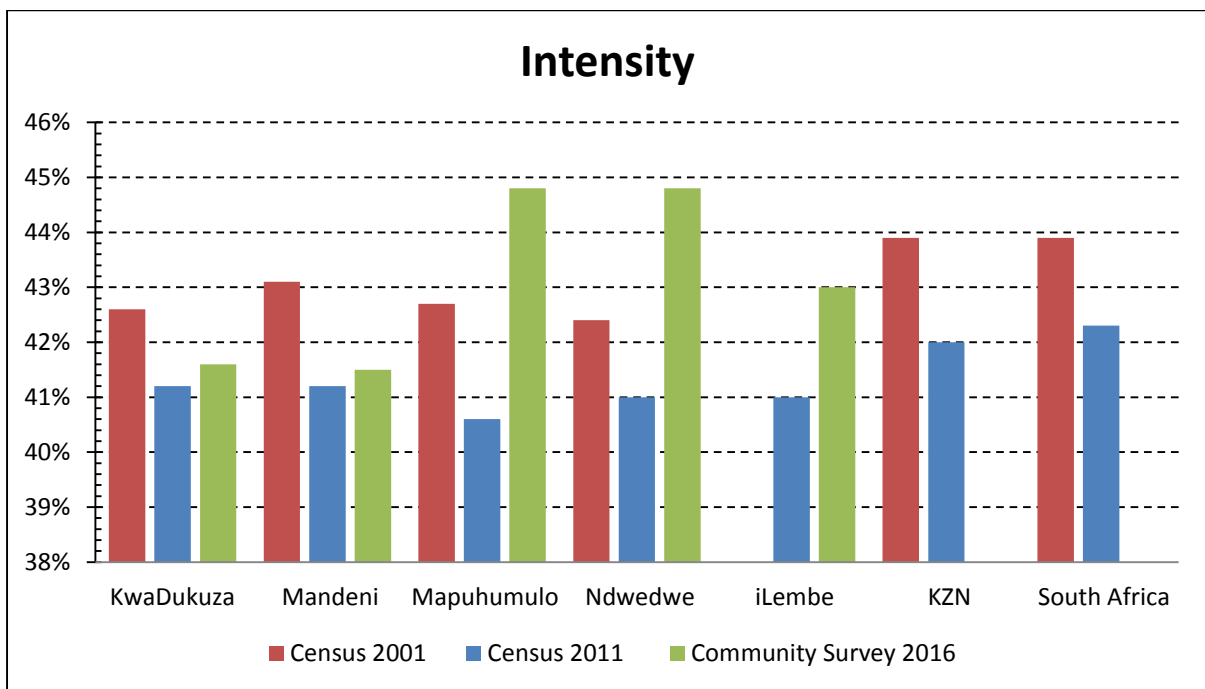


Figure 38: Poverty Intensity for the LMs, iDM, KZN and South Africa in 2001, 2011 and 2016

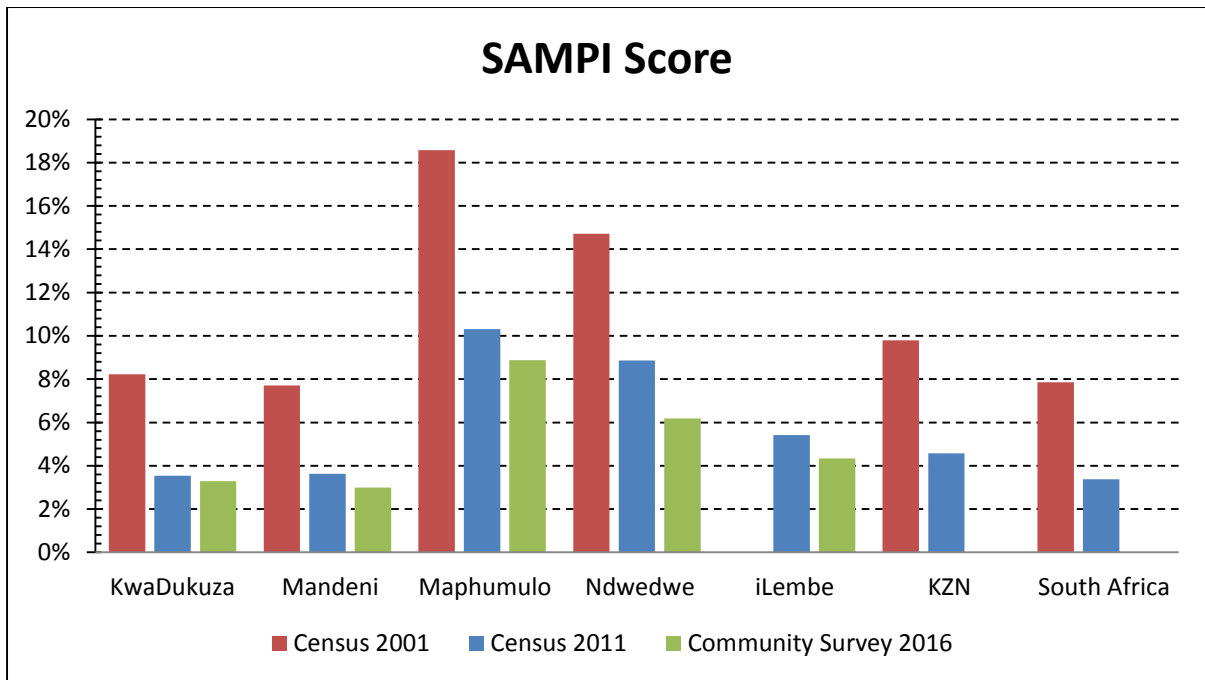


Figure 39: SAMPI score for the LMs, iDM, KZN and South Africa

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DATE 16 October 2019	SIGNATURE 	SIGNATURE 	SIGNATURE 

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