KWADUKUZA LOCAL MUNICIPALITY

INTEGRATED WASTE MANAGEMENT PLAN FINAL DRAFT

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Version 1

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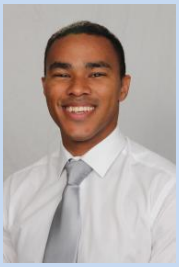
Contact Person 	Ian Malloy Environmental Scientist
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Acronyms and Abbreviations

ASM	Asset Management Plan
APPA	Atmospheric Pollution Prevention Act.
ASP	Africa Stockpiles Programme.
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).
ECDC	Eastern Cape Development Corporation.
ECIC	Eastern Cape Implementation Committee.

ECSECC	Eastern Cape Socio-Economic Consultative Council.
EDTEA	Department: Economic Development, Tourism, and Environmental Affairs
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
LAs	Local Authorities (Local and District level authorities).
LM	Local Municipality.
MEC	Member of Executive Council.
MIIU	Municipal Infrastructure Investment Unit.
KLM	KwaDukuza Local Municipality.
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.
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.
KwaDukuza Local Municipality (KLM)	The local authority administrating the study area.
Environment	The surroundings within which humans exist and that are made up of- (i) the land, water and atmosphere of the earth (ii) micro-organisms, plant and animal life (iii) any part of combination of (i) and (ii) and the interrelationships among and between them: and (iv) the physical, chemical, aesthetic and culture properties and conditions of the foregoing that influence human health and well-being: (NEMA, 1998)
General waste	Waste that does not pose an immediate hazard or threat to health or to the environment, and includes— *(a)* domestic waste;

	(b) building and demolition waste; *(c)* business waste: and *(d)* inert waste. (NEMWA, 2008)
Hazardous waste	Any waste that contains organic or inorganic elements or compounds that may, owing to the inherent physical, chemical or toxicological characteristics of that waste, have a detrimental impact on health and the environment.(NEMWA, 2008)
Incineration	Any method, technique or process to convert waste to flue gases and residues by means of oxidation (NEMWA, 2008).
Industry	Includes commercial activities, commercial agricultural activities, mining activities and the operation of power stations; (NEMWA, 2008)
Inert waste	Waste that *(a)* does not undergo any significant physical, chemical or biological transformation after disposed *(b)* does not burn, react physically or chemically biodegrade or otherwise adversely affect any other matter or environment with which they may come into contact and *(c)* does not impact negatively on the environment, because of its pollutant content and because of the toxicity of its leachate is insignificant (NEMWA, 2008)
Landfill	Site for the controlled disposal of waste materials.
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)
Policy	Provides guidance for legislation and administration. Does not refer to the development of implementation plans; does not refer to operational issues; does not define roles and responsibilities.
Polluter Pays Principle	The Polluter Pays Principle is a principle in international environmental law where the polluting party pays for the damage done to the natural environment.
Precautionary Principle	The precautionary principle permits a lower level of proof of harm to be used in policy-making whenever the consequences of waiting for higher levels of proof may be very costly and/or irreversible: Where a risk is unknown; the assumption of the worst case situation and the making of a provision for such a situation; and Principle adopted by the United Nations Conference on the Environment and Development (1992) that, in order to protect the environment, a precautionary approach should be widely applied, meaning that where there are threats of serious or irreversible damage to the environment, lack of full scientific certainty should not be used as a reason for postponing cost-effective measures to prevent environmental degradation.
Recovery	The controlled extraction 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) though 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 KwaDukuza Local Municipality (KLM) is a Category B municipality situated within the iLembe District Municipality (iDM) of the KwaZulu Natal (KZN) Province. KwaDukuza Local Municipality is located on the East Coast of KZN between the eThekwini Metropolitan Municipality in the south and Tugela River mouth in the north. The KLMM has a coastline stretching approximately 50 km, along which several popular coastal towns such as Ballito and Salt Rock are located. The largest town within the KLM is Stanger which has a population of approximately 51,536 people (StatSA census 2011) supported by agriculture (primarily sugarcane), light industry (engineering, wood products, paper and packaging) and tourism.

The KLM is responsible for the provision of a number of waste management services to the communities within its area of jurisdiction. These services include the collection and safe disposal of domestic and commercial waste. The KLM 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 KLM. This IWMP is a revision of the 2013/2014 Draft IWMP and is intended to be used to guide municipal waste management activities from 2019 – 2024.

1.1.1 Why Undertake an IWMP?

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

1.2 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 3.1.1
12(1)(a)(ii)	An assessment of the quantities and types of waste that are generated in the area	None	Section 3.4 and 3.5
12(1)(a)(iii)	A description of the services that are provided , or that are available for the collection, minimisation, re-use, recycling and recovery, treatment and disposal of waste	None	Section 3.6 and 3.7
12(1)(a)(iv)	The number of persons in the area who are not receiving waste collection services	None	Section 3.1.1.h
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	Section 1.10, 5 and 6
12(1)(b)(ii)	To give effect to the objectives of this Act	None	Section 5 and 6

Waste Act section no.	Requirement	Comments	Section in the IWMP
12(1)(b)(iii)	To identify and address the negative impacts of poor waste management practise on health and the environment	None	Section 5 and 6
12(1)(b)(iv)	To provide for the implementation of waste minimisation, re-use, recycling and recovery targets and initiatives	None	Section 5.5.4
12(1)(b)(v)	in the case of a municipal IWMP, to address the delivery of waste management services to residential premises	None	Section 5.5.5
12(1)(b)(vi)	To implement the Republic's obligations in respect of relevant international agreements	None	Section 4
12(1)(b)(vii)	To give effect to best environmental practice in respect of waste management	None	Section 4 and 5
12(1)(e)	Establish targets for the collection, minimisation, re-use and recycling of waste	None	Section 5.5.4 and 5.5.5
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 5.5.6
12(1)(g)	Indicate the financial resources required to give effect to the plan	None	Section 5.5.1
12(1)(h)	Describe how the municipality intends to give effect to its IWMP	None	Section 6
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 KwaDukuza Local Municipality

This IWMP serves as the complete first generation IWMP for KLM. The KLM appointed a service provider that started compiling a first generation IWMP in 2013/2014, but this was not completed. Therefore it was not approved by council and endorsed by the Provincial Department of Economic Development, Tourism and Environmental Affairs (EDTEA). The iLembe District Municipality IWMP was completed in 2012 and included aspects which were related to the KLM and how waste management could improve in the local municipality and how the District would oversee the waste management function.

1.5 Timeframes and Approval

This IWMP is intended to inform the revision of the KLM IDP. The KLM IDP was last updated in 2018/19 for a period of 5 years therefore the results of this revision of the IWMP will not coincide with the revision of the latest IDP. This IWMP could however be used to inform the next revision of the IDP or be used to inform annual budget applications for waste management in the municipality.

(a) Integrated Waste Management Plans

All municipalities must submit an IWMP to the MEC for endorsement. The municipality is also responsible for incorporating the IWMP into its IDP. Annual performance reports must be prepared in terms of section 46 of the Municipal Systems Act (32 of 2000) and must contain information on the implement of the municipal IWMP.

In terms of section 75(1) of the Municipal Systems Act, 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.

1.6 Integrated Waste Management Planning and IWMPs

The “integrated” aspect of Integrated Waste Management Planning means that all aspects of waste management are considered, from waste generation to 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.”

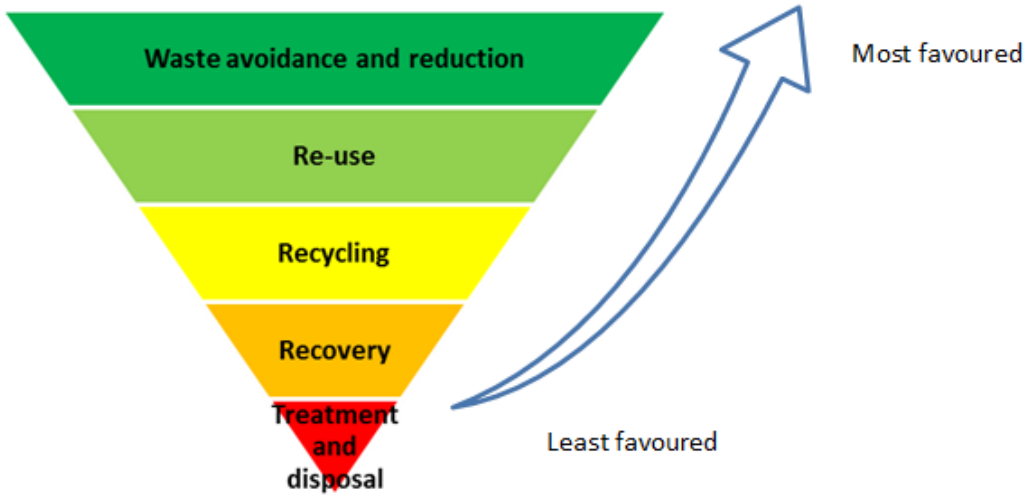


Figure 1: The waste hierarchy as per the National Waste Management Strategy (DEA, 2011)

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.

1.7 Integrated Waste Management Plan Development Process

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

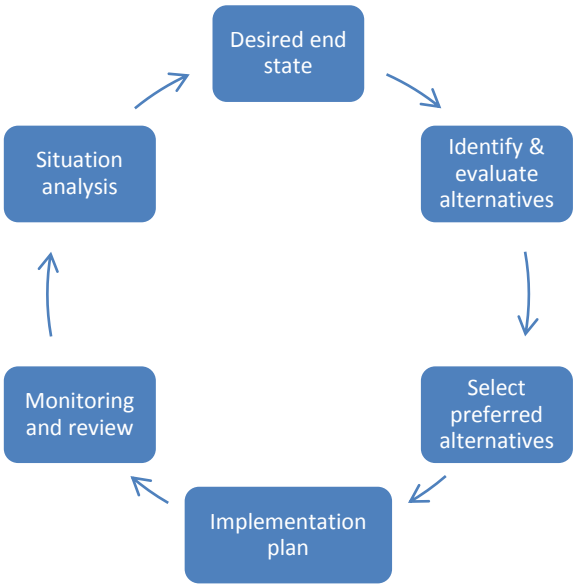


Figure 2: IWMP planning phases as per the Guidelines for the Development of Integrated Waste Management Plans (DEA).

1.8 Scope

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

The drafting of the KLM IWMP is part of GIBB's broader appointment which includes the update of the Mandeni Local Municipality (MLM) IWMP and the update of the iLembe District Municipality (iDM) IWMP as well as a scoping investigation for a regional landfill. This report, however, focuses exclusively on integrated waste management planning in the KLM. The updated MLM and iDM IWMPs and scoping investigation report for a regional landfill are contained in three separate, additional documents.

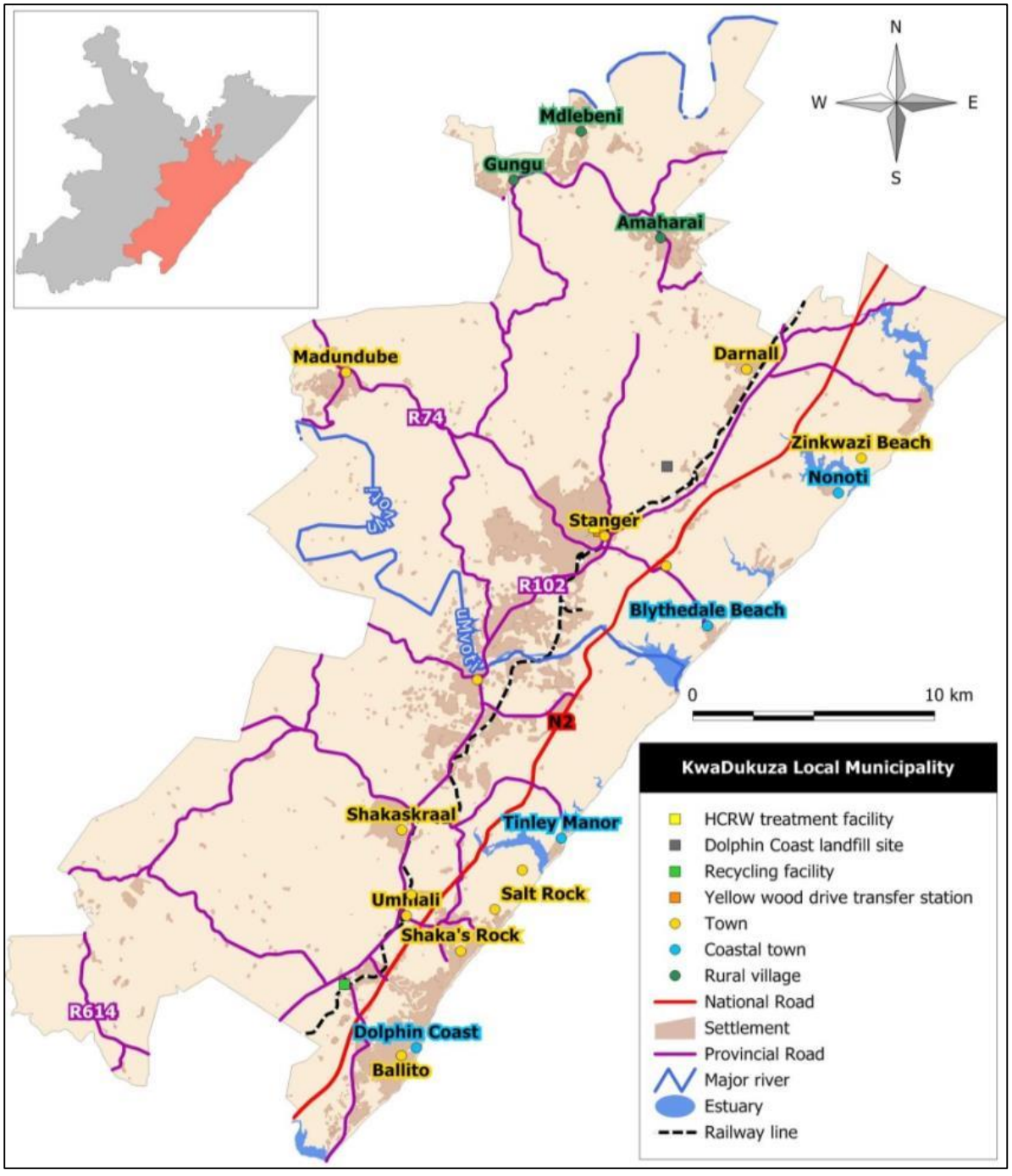


Figure 3: The jurisdictional area of the KwaDukuza Local Municipality and its main towns (including waste infrastructure)

1.9 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.

1.9.1 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.

1.9.2 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.

1.9.3 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.

(a) Waste Management Officer

The Waste Act requires that all local municipalities 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 (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 (DEA, not dated) further expands on the role of the WMO for local municipalities.

1.10 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. A detailed description of waste legislation and guidelines, as well as applicable international legislation, is presented in Appendix A.

1.10.1 Alignment with National Strategic Plans

(a) 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.

(b) National Waste Management Strategy

The first National Waste Management Strategy (NWMS) was published in 1999. It was the first strategy to address South Africa's waste management challenges. The strategy effectively defines South Africa's vision for waste management highlighting themes such as "cradle to grave" management of waste products and the waste management hierarchy which encourages waste disposal only as a last resort.

The NWMS was revised in 2011 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 targets of the NWMS (2011) are considered in the ‘Waste Objectives and Targets’ section of this report.

The NWMS is currently under review. It is anticipated that the revised NWMS will only be finalised after the review of this IWMP is complete. This IWMP is therefore aligned with the targets of the 2011 NWMS as well as the draft goals of the 2018 NWMS.

Table 2: 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 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	• 50% increase in the number of successful enforcement actions against non-compliant activities • 800 environmental management inspectors (EMIs) appointed in the three

Goal	Targets for 2016
Act	spheres of government to enforce the Waste Act

(c) 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:

- Waste minimisation;
- Effective and sustainable waste services; and
- Awareness and compliance

These are further unpacked in **Table 3** below.

Table 3: Summary of 2018 NWMS Goals

Goal	Implementation mechanism
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.	Waste Prevention: • 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. Waste as a Resource: • 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
2. All South Africans live in clean communities with waste services that are well managed and financially sustainable.	Waste Collection: • Implementation of the DEA separation at source policy to promote reuse, recycling and recovery of waste • Safe and environmentally sustainable disposable of hazardous household wastes. Integrated Waste Management Planning: • 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
3. South Africans are aware of waste and a	• Reduction of littering and illegal dumping due to attitudinal shifts and greater public awareness of the environmental damage caused by waste

Goal	Implementation mechanism
culture of compliance with waste management norms and standards exists, resulting in zero tolerance of pollution, litter and illegal dumping.	• 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

(d) 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

(e) 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.

(f) 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:

Put people and their concerns first and ensure constant contact with communities through effective public participation platforms;

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;

Be well governed and demonstrate good governance and administration – cut wastage, spend public funds prudently, hire competent staff and ensure transparency and accountability;

Ensure sound financial management and accounting, and prudently manage resources so as to sustainably deliver services and bring development to communities; and

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.

(g) Municipal Waste Sector Plan (GN 270 of 2012)

This plan, published in March 2012, seeks to address the poor waste management performance of municipalities and to "effectively" address the management of "backlogs" in municipal solid waste service delivery and infrastructure.

1.10.2 Alignment with Provincial Strategic Plans

(a) Provincial IWMP (2012), KwaZulu Natal

The Department of Agriculture and Environmental Affairs (DAEA), the KwaZulu Natal Provincial authority responsible for waste management, drafted the KZN IWMP in 2012. A Hazardous Waste Management Plan was already available for the province, which meant that the main focus of the 2012 provincial IWMP was on overall waste management with particular focus on general waste. While the key focus of the plans addressed provincial performance, they do have implications for local authorities in KwaZulu Natal (KZN). The objectives for general and hazardous waste management of the KZN IWMP and the Hazardous Waste Management Plan have been considered in the 'Waste Objectives and Targets' section of this report.

1.10.3 Alignment with Regional Strategic Plans

(a) iLembe District Municipality Integrated Development Plan

The current iLembe District Municipality (iDM) IDP covers the period 2017 - 2022. The IDP notes the status of IWMPs and waste collection services in each local municipality in the District. The issues noted in the iLembe District Municipality 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:

- 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. The only waste management objective set is the adoption of the IWMP by 2019/20.

The targets and implementation plan of this IWMP have been aligned with the District's IDP targets and projects where these are feasible.

(b) KwaDukuza Municipality Integrated Development Plan (2017 - 2022 and 2018/19)

The KLM's present Integrated Development Plan (IDP) covers the period 2017 – 2022 and the review of the IDP for 2018/19 contains objectives for waste services. These objectives have been considered in the setting of the objectives and targets for this IWMP.

The following objectives were set out in the latest IDP:

- Implementation of integrated waste management principles promoting avoidance, prevention, minimization, reuse, recycling and safe waste disposal.
- Extension of basic waste management services to all residents of KLM.
- Prevention of health risks and environmental pollution from waste management activities and facilities.
- Implementation of a waste information system.
- Institutional strengthening and capacity building.
- Public awareness raising regarding environmental and waste management issues.
- Review of the Refuse Removal By-laws
- Rehabilitation of Shakaville Disposal Site.

The IDP also includes a budget for waste management items. These are presented in the table below:

Table 4: Budget for waste management items provided in the latest KLM IDP (2018/19).

IDP Ref	Vote Description	Budget 2018 / 2019 Council	Indicative Budget 2019 / 2020	Wards
CSPA/21/2018	Street litter bins	R 50,000.00	R 50,000.00	All wards
CSPA/22/2018	Skips	R 250,000.00	R 200,000.00	All wards

CSPA/23/2018	Waste Transfer Station	R 3,000,000.00	R 200,000.00	All wards
CSPA/24/2018	Recycling bins	R 200,000.00	-	11,18,22
CSPA/25/2018	Dry Waste Composting Station		R 1,000,000.00	

(c) KwaDukuza Municipality Waste By-Laws and Policy

The KLM waste by-laws are in the process of being finalised and are being reviewed by COGTA for approval. The following topics are covered by the draft by-laws: Business and Domestic Waste; Industrial Waste; Garden, Special Domestic and Bulky Waste; Building Waste; Special Industrial, Hazardous, Health Care Risk Waste; Disposal of Waste at Waste Disposal Sites; Littering, Dumping and Abandoned Articles; Administrative Enforcement Provisions; General Provisions. According to the KLMM IDP, there is no formally documented waste management policy for the KLM at present.

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 Project Inception

A project inception meeting was held between representatives of GIBB, KLM, MLM, iDM, the Vuthela iLembe LED programme, and DEA on the 20 August 2018 at the iLembe House in KwaDukuza. At the project inception meeting project details including the scope, programme, roles and responsibilities, progress reporting, project risks, information transferal, the project steering committee and key stakeholders, were discussed. The important items raised and agreements made at the meeting were captured in the meeting minutes and the Project Inception Report (24.08.2018).

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 the following documents:

- Provincial Profile: KwaZulu Natal - Community Survey (2016)
- iLembe District Municipality IDP (2018-2019)
- iLembe District Municipality IWMP Status Quo update (2012)
- iLembe District Municipality IWMP revision (2004)
- KwaDukuza Local Municipality IDP (2012-2017)
- KwaDukuza Local Municipality IWMP Draft (2013/2014)
- KwaDukuza Spatial Development Framework (Final draft, 2017)
- Kwadukuza Municipality Waste Management Operational Schedules Plan (2017)

- Kwadukuza Municipality Waste Management Standard Operating Procedures
- Final Status Quo and Scoping Assessment Report for the Waste Efficiency Project within the KwaDukuza and Mandeni Municipalities (2019).

2.2.3 Site and facility Inspections

GIBB undertook inspections of private and municipal waste infrastructure, the waste vehicle fleet, sites of interest such as illegal dumpsites, business centres and residential areas. The table below shows details of the facility inspections that were undertaken:

Table 5: Summary of municipal facility site inspections

Site / Facility	Date
Municipal Waste Offices	21 August 2018
Stanger Transfer Station	21 August 2018
Illegal dumpsites	21 August 2018
Selected communal skips	21 August 2018
Waste Fleet	22 August 2018

Table 6: Summary of privately owned facility site inspections

Site / Facility	Date
Ballito Transfer Station	23 August 2018
Sabenza Sonke Recycling yard	23 August 2018
Dash Car Wash and Recycling yard	23 August 2018
Vinodh's Recycling yard	23 August 2018

2.2.4 Municipal Staff Interviews

Interviews were conducted with municipal staff to gain an understanding of the issues they face regarding waste management and areas they feel require improvement. Interviews were held with the following:

- Executive Director for Community Services (Siyabonga Khanyile)
- Manager of Waste Management (Wilson Mhlongo)
- Superintendent for Waste (Thembi Mthembu)

2.2.5 Business/ Industry / Social Services Interviews

Representatives from KwaDukuza-based companies / organisations were interviewed to understand their business operations and key waste management challenges:

- Dermatrans (Stanger)
- Environmental Waste Recyclers (Stanger)
- Heston (Stanger)
- Skip-go (Ballito)
- Dolphin Coast Landfill Management (KwaDukuza)
- Waste representative for Stanger Hospital (Nomusa Ndlovu)

2.2.6 Project Steering Committee

At the project inception meeting the specific organisations/ companies that should form part of the Project Steering Committee (PSC) was confirmed. The table below records the details of the PSC.

Table 7: Details of Project Steering Committee

Organisation / Company	Members	PSC representative
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
Kwa-Zulu Natal Department of Economic Development, Tourism and Environmental Affairs	Nomusa Xaba and Heather Sheard	Nomusa Xaba
Vuthela iLembe LED Programme	Monja Esterhuizen, Richard Clacey, Megan Iyer, Shannon Moffet	Monja Esterhuizen
iLembe District Municipality	Linda Mncube, Masupha Mathenjwa, Thandeka Thusi, Langalakhe Msomi, Sibusiso Mahlangu	Linda Mncube
UWP Consulting	Monja Esterhuizen, Richard Clacey	Monja Esterhuizen
GIBB (Pty) Ltd - Waste Consultant	Walter Fyvie, Anna Taylor, Ian Malloy, Chad Dustan, Charl Kruger, Kate Flood, Geoff Purnell (Independent specialist consultant to GIBB)	Ian Malloy

2.2.7 Key Stakeholders

Similarly, Key Stakeholders for this project were identified at the project inception meeting. These are listed below.

Table 8: Details of Key Stakeholders

Organisation / Company	Name of Representative Members
Department of Environmental Affairs	Chuma Gushu
Ndwedwe Local Municipality	Nkanyiso Mkhwanazi
Maphumulo Local Municipality	Chris Mhlongo

2.2.8 Presentations and Workshops

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

Table 9: Presentations and workshops undertaken during the IWMP

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	1 – 2 July 2019
Draft IWMP with Objectives and Implementation Plan	13 September 2019

2.2.9 Assumptions and Limitations

This situational analysis has drawn information from a number of sources including KLM records and information from KLM staff interviews. It is assumed that the information given verbally in interviews and documented information is accurate.

(a) Situational Analysis

A waste management plan can only be effective if informed by adequate information on the current systems and resources, including human resources available to the municipality. It is important to understand the waste quantities and types being produced, as well as commercial activities in the KLM. Effective planning for waste minimisation and recycling initiatives are dependent on such data, however,

little information on waste quantities and types was readily available at the time of this report. Information on waste management in the KLM gathered by GIBB is summarised and discussed in the sections below.

The *Situation Analysis* section of this report provides an overview of the present waste management activities undertaken by the municipality. It introduces the biophysical context, demographics of the KLM, discusses its local economy and describes the present waste management services.

3 SITUATION ANALYSIS OF WASTE MANAGEMENT IN KWADUKUZA LM

3.1 Overview Description of KwaDukuza Municipal Jurisdiction

3.1.1 Demographics

(a) Population Profile

According to Stats SA Community Survey conducted in 2016 (Statistics South Africa, 2016), the KwaDukuza population totalled 276,719 in 2016, and experienced a high (4.08 %) annual grow rate from 2011 to 2016. The KLM has been the fastest growing local municipality in the Province over the last 5 years. The population of the KLM constitutes 42% of the population of the iLembe District Municipality and 2.5% of the population of the KwaZulu Natal Province. If the current annual growth rate remains constant, the population would reach a total of 353,018 by 2023.

The community survey shows that in 2016, the KwaDukuza Local Municipality comprised of 91,284 households which increased by 21,000 households from 70,284 in 2011. The trend in average household size in the KwaDukuza Local Municipality is decreasing with an average household size of 3.0 people per household in 2016 compared to 3.2 people per household in 2011. The average household size is lower than that of the iDM (3.4 people per household) and that of KZN province (3.8 people per household) (Statistics South Africa, 2016).

(b) Ethnic Profile

The majority of the population of the KLM are black African, who makes up 76.3% of the population's households, followed by Indian/Asian households comprising 15.1% and White households comprising 7.7%, with Coloured households comprising 0.9% of the population (Statistics South Africa, 2016).

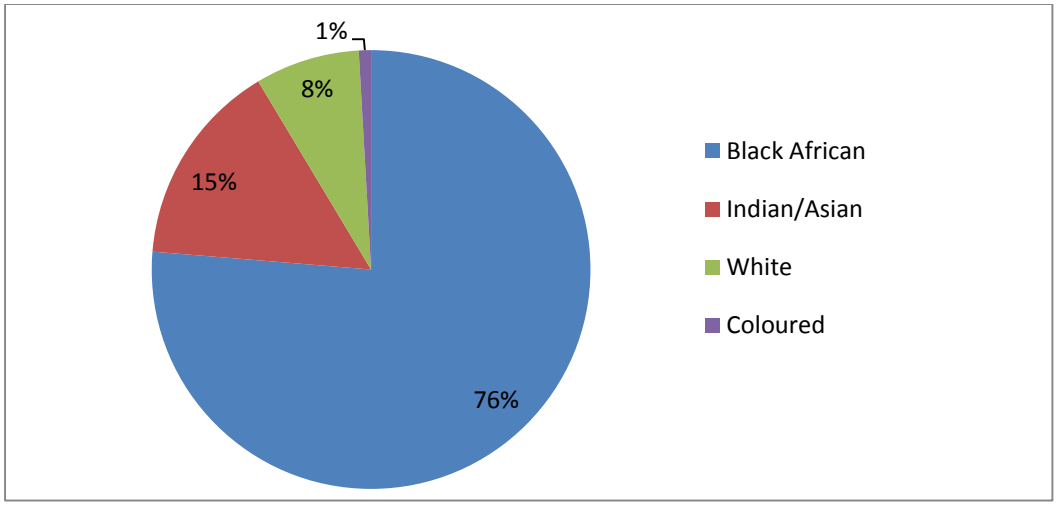


Figure 4: Ethnic profile of KwaDukuza *(Statistics South Africa, 2016)*

(c) Gender Profile

Approximately 51.1% of the South African population is female. The KZN Province has a similar ratio of females to males (52.1%: 47.9%). Women in KZN constitute a slightly higher majority of the population (Stats SA Community Survey, 2016).

(d) Language

The majority of the population of the KLM speak IsiZulu as their home language. In 2011, the total percentage of isiZulu speakers was 65.8% which was lower than the provincial total (77.7%). The second and third most predominant languages in KwaDukuza were English (20.7%) and IsiXhosa (6.9%) (Statistics South Africa, 2011). According to the Community Survey Data of 2016, 82.5% of the KZN province spoke isiZulu, 12.5% of the population spoke English, 3.1% spoke isiXhosa and 1% spoke Afrikaans (Statistics South Africa, 2016).

(e) 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 indicate that over 2.1 million are living with HIV in the KZN province and 7.9 million in South Africa are living with HIV A total of 27% of the South Africans living with HIV are located in the KZN province. With a total population of 11 065 240 people in the KZN province, this indicates that 19% of the KZN population are living with HIV (Statistics South Africa, 2016).

(f) Access to Piped Drinking Water

According to the community survey (Statistics South Africa, 2016), 77.2% of households in the KLM have access to safe drinking water. Of this percentage, 41.3% had access to drinking water from a community stand, 28.5% have access piped drinking water inside a dwelling and 19.9% have access to water inside a yard.

(g) Access to Electricity

According to the community survey, 72.1% had an in-house prepaid meter, 17.3% had an in-house conventional meter, 4.6% had connected to another source which the household pays for, and 1.5%

had connected to another source which the household does not pay for. Only 4% of the population in the KLM does not have access to electricity (Statistics South Africa, 2016).

(h) Waste Removal

Nationally the percentage of households receiving no waste removal service decreased from 8.7% in 2001 to 7.1% in 2011 (Stats SA census, 2011). The same trend was noted in the KLM. In 2011, 60.7% of the population in the KLM received at least a weekly waste collection service from the municipality or a private company (Statistics South Africa, 2011). In 2016, only 56% of the population in KLM received at least a weekly waste collection service from the municipality or a private company (Statistics South Africa, 2016). However, as noted in the survey data and introduced in the KLM, 7.9% of the population have access to a communal central waste collection access point. The total population percentage that is serviced is therefore 63.9% (Statistics South Africa, 2016). This is a slight increase 3.2% increase from the 60.7% of households with at least weekly service recorded by the Stats SA census in 2011.

Refer to section 2.6.1 for more information regarding the waste collection in the KLM.

3.1.2 Local Economy

The main contributors to the KLM's local economy are agriculture, majority sugarcane farming and processing which contributes 23% to the KLM GDP; light industry, including engineering, and manufacturing of paper and packaging; and tourism. The region boasts a number of seaside resorts and popular coastal towns for holiday making and recreation, including Ballito. The economy of KLM is dominated by primary and secondary sectors with a smaller portion from the tertiary sector, meaning the economy has a good balance of sectors.

According to the KZN Provincial Growth and Development Plan, the agricultural sector contributes 8% towards employment in the iLembe District Municipality. While this is a relatively low contribution to employment in the District, the agricultural industry is growing and increasing employment within the agricultural sector has been set as a primary economic goal for the province.

While the unemployment rate in the KLM is high (46%), KLM is experiencing a high rate of population increases and several new housing, health care and commercial complexes are being developed in the area, which will provide work opportunities. A key area of focus is education in the population, with only 1.5% of the KLM population having a higher education than secondary school, and only 14% having

completed secondary school. Also of concern is the income levels of the majority of the households in KLM, with 81.4% of households surviving on less than R6,300 per month (Statistics South Africa, 2011).

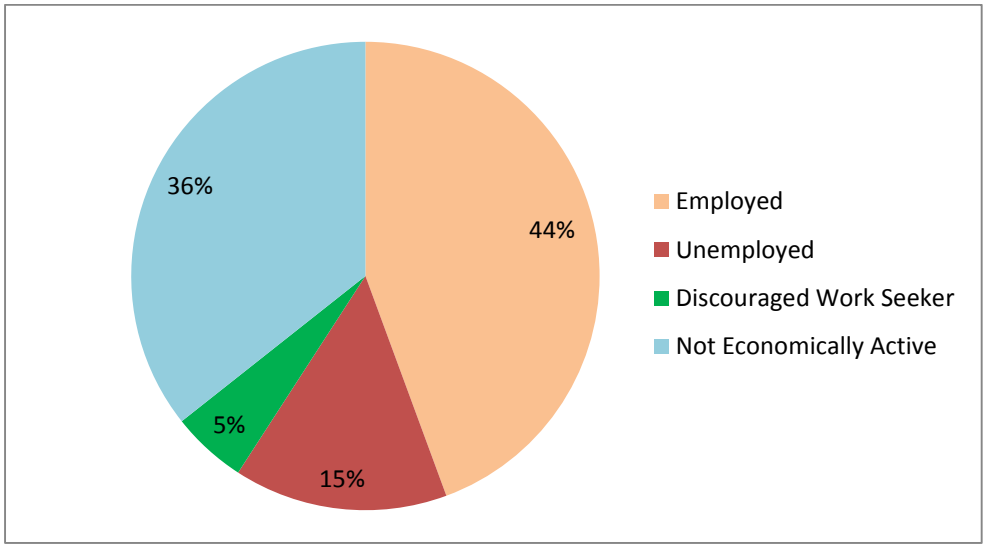


Figure 5: Employment statistics for KLM, 2011 *(Statistics South Africa, 2011)*.

3.2 Implementation of 2013/2014 KwaDukuza Integrated Waste Management Plan (Draft)

During 2013 the KLM commenced with the development of an IWMP, however, this was not completed. The KLM has used this IWMP to plan their waste management activities, expansion of waste collection services and their waste infrastructure development. The draft IWMP however identified eight priority areas namely:

- Priority 1: Waste minimisation and recycling
- Priority 2: Waste collection services
- Priority 3: Waste disposal
- Priority 4: Assessment of all potential waste and historical sites
- Priority 5: Garden waste and composting
- Priority 6: Waste information system
- Priority 7: Waste management education, capacity building and awareness
- Priority 8: Organizational, institutional and regulatory

Each priority consisted of one target each with a set of objectives to reach each target. The success or the implementation of these targets were assessed as part of the situational analysis of the waste management in the KLM.

Priorities, and associated targets, have been classified as complete, in progress and incomplete according to table 6 below. The timeframes for projects have not been considered, for example, if the deadline for a project was 2016, but it was only completed in 2018, it is still listed as complete.

Priority/target status for each Priority

- Complete: 2 targets (25%)
- In progress: 4 targets (50%)
- Incomplete: 2 targets (25%)

Table 10: Implementation status of the 2013/2014 KLM IWMP Draft targets

Goals	Targets	Status	Comment
Priority Area 1: Waste Minimisation and Recycling			
To implement sustainable recycling in KDM giving due consideration to social, environmental and economic factors.	A target of 30% reduction of the domestic and commercial waste streams disposed to landfill within the short term (2010 - 2012).	**Incomplete**	• The vast majority of waste is still disposed of at landfill or illegally dumped. • Recycling is ongoing in the KLM, but it cannot be verified if this represents 30% of waste diversion to landfill. • Large quantities of metal is said to be recycled according to SAWIS, but no data for general waste recycling is available.
Priority Area 2: Waste Collection Services			
To provide an appropriate, affordable and sustainable waste collection service to all people in the Municipality and ensure that they live in a healthy and clean environment free of illegal dumping.	99% of all households receive a regular waste collection services and illegal dumping is phased out by year 2015.	**Incomplete**	• Waste removal is only regular in urban areas and in rural areas skips are placed far apart. • According to StatsSA (2016), 56% of all households receive a weekly refuse removal and 7.9% have access to a communal waste collection point (skip bin). • A weekly waste skip collection service is made available to all rural areas in the KLM, but illegal dumping still persists and is a concern.
Priority Area 3: Waste Disposal			
Ensure sufficient long-term waste disposal capacity that is environmentally and publicly acceptable, and also to ensure that the landfills are progressively rehabilitated in such a manner so as to minimize the impact on the environment.	Develop and commission waste drop off facilities in strategic areas within the municipal area by 2012.	**Complete**	• The Shakaville Landfill Site has been capped, but complete rehabilitation of the site is required. A closure licence is in place for the landfill site. • There are two transfer stations with recycling activities in the KLM. The Ballito transfer station to the south of the KLM serves as a MRF for the recovery of recyclable material and as a garden waste drop off centre. The KLM has commenced with the upgrade of the Yellowwoods Drive transfer station. The transfer station would serve as a MRF and a drop off centre for garden waste where it would be chipped and transported to composting

Goals	Targets	Status	Comment
			facility. The KLM has commenced with design and identified a site for the composting facility.
Priority Area 4: Assessment of All Potential Waste and Historical Sites			
To ensure assessment of all historical waste sites.	To comply with the legislative requirements for waste disposal by landfilling.	**In progress**	• Illegal dump sites have been mapped, but are still numerous within the municipality and no waste management by-laws are in place to address this issue • Many illegal dumping sites are cleaned by KLM and the waste disposed of at landfill • The by-laws have been compiled by the KLM and are awaiting review and approval from COGTA.
Priority Area 5: Garden Waste and Composting			
To divert green and garden waste from the general waste stream to composting facilities.	To divert 25% green and garden waste per annum currently being landfilled to existing or new garden waste composting sites by 2018.	**Complete**	• There is a drop-off facility and a composting facility for garden waste at the Ballito transfer station. The KLM has appointed a service provider to collect garden waste from residents in the south of the KLM and transport this to the Ballito transfer station. Garden waste is collected in the central and northern part of the KLM and transported to the Ballito transfer station as well. The garden waste is chipped and composted at the transfer station by a service provider, *Living Earth*. The Ballito transfer station is a licenced facility for its various waste diversion practices. • The KLM has commenced with upgrading the Yellowwoods Drive transfer station which would also serve as a garden waste drop off centre where this waste will be chipped and composted. The upgrade of the transfer station is proposed to be completed by August 2020.
Priority Area 6: Waste Information System (WIS)			
To develop an accurate and empirical waste information management system for research and planning purposes.	To develop a fully operational WIS by 2018.	**In progress**	• Record keeping of waste disposal tonnages to the DCWM landfill and recycling tonnages from the transfer stations are maintained since 2018.

Goals	Targets	Status	Comment
			• Additional information and data is maintained by the KLM, however a full WIS is not in place at the KLM.
Priority Area 7: Waste Management Education, Capacity Building and Awareness			
To create an enabling environment for capacity building, environmental education and awareness for the population of KwaDukuza Municipality.	That 20% of the population of KwaDukuza Municipality will have been exposed to information and been made aware of waste management and waste management planning issues by the end of 2018.	**In Progress**	• The 20% target is in progress (partially reached) as waste awareness campaigns are conducted in the KLM. The KLM needs to maintain a record of awareness campaigns undertaken to quantify the number of people reached by the awareness campaigns. • Internal meetings are conducted within the KLM amongst municipal staff and awareness campaigns are conducted at the ward meetings of the KLM. • Strategic waste awareness programmes and community meetings have been ongoing. • The EDTEA visits schools with KLM to educate students • Anti-dumping car stickers and posters/flyers have been made available to the public. Taxi drivers were also targeted during awareness campaigns and received car bumper stickers for awareness.
Priority Area 8: Organizational, Institutional and Regulatory			
Successful implementation and review of the IWMP from an organizational and institutional perspective with all targets set up by the IWMP being realized.	To establish effective implementation, monitoring and enforcement waste by-laws by 2018.	**In Progress**	By-laws have been drafted and are in the process of being reviewed by COGTA. Thereafter the by-laws should be approved.

3.3 Progress towards Compliance with National Waste Management Strategy Goals

A review of the progress in the KLM with regards to the implementation of the 2011 NWMS goals and targets was undertaken. Where information was available, an assessment of the compliance with each of the targets was undertaken and documented.

Table 11: National Waste Management Strategy Objectives

Goal	Targets for 2016	Progress to compliance with targets by the KLM
Promote waste minimisation, re-use, recycling and recovery of waste.	25% of recyclables diverted from landfill sites for re-use, recycling or recovery.	• According to SAWIS data, only metals are recycled • Municipal recycling initiatives are underway; however, there is no mass or volume data to indicate the mass/volumes of recycled material is diverted away from landfill. • One waste yard was provided to a service provider, DCWM. The yard is operated as a transfer station, a MRF, a garden waste drop off centre and a composting facility. • 19 Waste recycle bins in Stanger CBD (Ballito, Tinley Manor, etc.) • Wheelie bins donated to private recyclers to assist with recycling activities
	All metropolitan municipalities, secondary municipalities, and large towns have initiated separation at source programmes	• The KLM has commenced with separation at source programme in the south of the KLM. A service provider, DCWM, was appointed to collect the recyclable waste and garden waste from households in the south of the KLM and transport these to the Ballito transfer station. Paper recycling is undertaken within the municipal offices as well. Separation of garden waste from the domestic waste stream has commenced in the central and the north KLM and is collected by the municipal collection service. This garden waste is transported to the Ballito transfer station as well. There is a plan to commence with separation of recyclable waste in the central and north KLM by 2020.
	Achievement of waste reduction and recycling targets as set in industry waste management plans for paper and packaging, pesticides, lighting (CFLs) and tyre industries	• The REDISA tyre IndWMP has been withdrawn, therefore the targets are no longer applicable.

Goal	Targets for 2016	Progress to compliance with targets by the KLM
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.	• All urban areas are serviced using refuse collection trucks and all rural areas are serviced using waste skips • Skip placement is a concern in rural areas as they are too far apart in some areas which leads to illegal dumping. • There are no municipal-owned waste disposal sites in the KLM that require a permit. The waste transfer stations in Stanger and Ballito are permitted according to the National Norms and Standards for the respective transfer and storage of waste.
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	• 29,833 people employed in the formal waste sector in 2012 (Department of Science and Technology, 2012) • ± 62,147 People working in informal sector in the country as waste pickers (Department of Environmental Affairs, 2016).
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	• Ward community meetings are regularly held by ward councillors around waste issues and to educate the public on best practice; and car stickers and posters with “no littering” are made available to public • Awareness campaigns are undertaken at schools. • The EDTEA often joins KLM staff on school visits to educate scholars.
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	• Current IWMP outdated and 2018/19 IDP is not informed by updated IWMP, new IWMP in progress. The current IDP does make provision for waste management services, development of infrastructure within the KLM. Not all targets are met within the IWMP developed in 2013/2014. • Dolphin Coast Landfill (DCL) is reporting on behalf of KwaDukuza as they operate the only permitted landfill in KLM and waste is disposed of at the DCL.
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	• A tariff of charges document is available for KLM and an overall waste management budget has been set in the 2018/19 IDP. However, this was not based on a full cost accounting exercise for waste services in the KLM.

Goal	Targets for 2016	Progress to compliance with targets by the KLM
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.	• A Site Engineering Needs Assessment and Preliminary Closure Design Report was conducted in 2017 for the Shakaville Waste Landfill and the site was subsequently decommissioned and capped/rehabilitated in 2018. A closure licence is in place for the Shakaville landfill site.
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	• By-laws have been drafted and are in the process of being approved by COGTA. The enforcement of waste by-laws can be undertaken once the by-laws are approved. • No littering is included in traffic by-laws which allows traffic officers to issue spot fines for littering. The traffic officers act as environmental management inspectors. • The number of fines issued are not collated and documented by the waste department which makes it difficult to determine whether the KLM has increased the number of successful enforcement for littering.

3.4 Waste Profile

3.4.1 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. All 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.

(a) Waste Collection Quantities

The KLM and DCWM have provided waste volumes disposed of at DCWM landfill site as seen in **Table 12** below. The DCWM landfill site is equipped with a weigh-bridge, but volumes of waste are provided by DCWM to the KLM rather than tonnages. In a guideline for waste characterisation by the Department of Environmental Affairs and Development Planning (DEADP) a conversion factor of 500 kg/m³ was used to convert waste volumes into kilograms based on the average weight of compacted domestic waste (DEADP, 2017). This conversion factor has been used to determine tonnage estimates for the KLM in **Table 12**.

Table 12: Monthly waste disposal tonnages for waste collected by the KLM and DCWM

Month	Areas of Waste Collection	Cubic Metres	Tons (DEA 500 kg/m³ conversion factor)
February	KLM South (DCWM)	220	110
	KLM North (KLM)	1220	610
March	KLM South (DCWM)	294	147
	KLM North (KLM)	1860	930
April	KLM South (DCWM)	294	147
	KLM North (KLM)	6818	3409

Month	Areas of Waste Collection	Cubic Metres	Tons (DEA 500 kg/m³ conversion factor)
May	KLM South (DCWM)	294	147
	KLM North (KLM)	12500	6250
June	KLM South (DCWM)	296	148
	KLM North (KLM)	6455	3227.5
July	KLM South (DCWM)	401	200.5
	KLM North (KLM)	8183.5	4091.75
August	KLM South (DCWM)	322	161
	KLM North (KLM)	7170.75	3585.38
September	KLM South (DCWM)	322	161
	KLM North (KLM)	7170.75	3585.38
October	KLM South (DCWM)	336	168
	KLM North (KLM)	6990.75	3495.38
November	KLM South (DCWM)	Not provided	Not provided
	KLM North (KLM)	Not provided	Not provided
December	KLM South (DCWM)	243	121.5
	KLM North (KLM)	6338	3169
Average (Waste per month from Feb 2018-June 2019)	KLM South (DCWM)		3386.44 tonnes
	KLM North (KLM)		

On average, from February 2018 to June 2019, approximately 3,386.44 tonnes of waste was collected per month in the KLM and disposed of at the DCWM landfill site. Should this be used as an average monthly waste collection tonnage, approximately 40 637.28 tonnes of waste was collected for a year in the KLM.

(b) Theoretical domestic waste generation quantities

The 2006 South Africa State of Environmental Report (SOER), (Department of Environmental Affairs, 2006) 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.

It is assumed that that the numbers of people per households in high, middle and low income households are the same. An average of 3.0 people per household was used to determine the waste generated per income group (Statistics South Africa, 2016). The total number of 91,284 households and 276,719 people were used to calculate the waste generation data. The income brackets were correlated as closely as possible with the income groups used in the most recent survey of households and income groups (Stats SA census 2011).

Table 13: Summary of size of income groups in the KLM (Statistics South Africa, 2011)

Income group	Annual Household Income	Percentage (2011)	Number of households ()	Number of People (2016)
Low	No income	12.8%	11,685	35,420
	R1 - R 4,800	3.9%	3,560	10,792
	R4,801 - R9,600	7.0%	6,390	19,370
	R9,601 - R19,600	21.3%	19,443	58,941
	R19,601 - R38,200	23.0%	20,995	63,645
	R38,201 - R76,400	13.4%	12,232	37,080
Sub-total low income		*81.4%*	*74,305*	225,249

Income group	Annual Household Income	Percentage (2011)	Number of households ()	Number of People (2016)
Middle	R76,401 - R153,800	7.1%	6,481	19,647
	R153,801 - R307,600	5.3%	4,838	14,666
	R307,601 - R614,400	3.9%	3,560	10,792
	R614,401 - R1,228,800	1.6%	1,461	4,428
Sub-total middle income		*17.9%*	*16,340*	49,533
High	R128,801 - R 2,457,600	0.4%	365	1,107
	R2,457,601+	0.3%	274	830
Sub-total high income		*0.7%*	*639*	1,937
Total		100%	91,284	276,719

The population of KLM per income bracket is as follows:

- Low income: 81.4 %
- Middle income: 17.9 %
- High income: 0.7 %

Based on the number of persons per income bracket and the waste generation volumes per income bracket, the predicted annual waste generation figures in the table below have been calculated. It is estimated that **47,999.4 tonnes** of waste was produced **2016** in the KLM as the population data for 2016 was used.

Table 14: Estimated quantity of general household generation waste per income group in 2016

Income group	Per day (tonnes)	Per month (tonnes)	Per year (tonnes)
Total low income households	92.4	2,809.0	33,708.6
Total middle income households	36.7	1,114.9	13,378.8
Total high income households	2.5	76.0	912.1
Total	131.6	4,000.0	47,999.4

Using a growth rate of 4.08% per year as indicated in the KZN Community Survey 2016 (Statistics South Africa, 2016), it is assumed that the waste generation would increase as per the growth rate. It is calculated that **54 117,5 tonnes** of waste from households would be generated in **2019.**

Based on the waste collection tonnages and the domestic waste generation quantities there is a significant difference in the waste being collected in the KLM and the waste generated in the KLM. The KLM waste department needs to improve its reporting on the WIS for waste disposal tonnages and verify how much waste is being disposed of at the Dolphin Coast Landfill.

3.4.2 Waste Characterisation of Domestic Waste Stream

The section below presents the outcomes of a waste characterisation exercise that was undertaken simultaneously for the KLM and Mandeni Local Municipality. Only the results for the KLM have been presented below.

(a) Survey Areas

Based on previous experience, the domestic waste profile can vary between different income levels. Waste was therefore collected from both high and low income areas in the municipal area, as shown in the table below.

Table 15: Waste characterisation details

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

(b) Characterisation Methodology

(i) Execution

1. 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 Gledhow and Thembeni suburbs was collected; there was no selective collection of waste. All the waste put out for collection at each of the selected 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.

3. Waste was taken to the KwaDukuza transfer station for sorting.
4. The GIBB project team provided a training session for KLM and MLM employees before the sorting occurred. A translator was used to translate the training from English to Zulu. The training covered:
    - The importance of waste characterizations
    - Sorting procedure
    - Identification of different categories of waste
5. Waste was sorted by a team which consisted of:
    - 4 GIBB employees
    - 4 KLM waste department employees
    - 9 MLM waste department employees
    - Waste was transferred onto four sorting tables. Black bags were sorted to completion, one at a time. This was to prevent the accumulation of unsorted, smaller items on the tables.

Waste was sorted according to type, as indicated in Table 16 below.

Sorted waste was placed into empty wheelie bins labelled for different waste types (as shown in

Table *16*). These bins where weighed before and after to determine the mass of waste received. The 1 m^2 electronic scale at the municipal stores was used to weigh the wheelie bins. The results were recorded on field sheets.

6. The plastics fraction was then further separated according to type of plastic.
7. Once weighed, the contents of all wheelie bins were disposed in the waste skips bins at the transfer station for final collection and disposal to landfill.

Table 16: Waste characterisation categories used in the waste characterisation exercise

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

Category	Examples
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
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 6: Waste characterisation underway

Figure 7: Sorting tables and bins set up (left), weighing of bins (right)

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. This was not possible within the scope of this study, which limited the characterisation to a one-day characterisation. According to the United Nations Environmental Programme guideline 'Developing an Integrated Solid Waste Management Plan Volume 1' (UNEP, 2009) the average confidence level achieved by the sample size used in this study (a one-day waste characterisation) is 70%.

This report contains a full methodology of the process employed, and data collection sheets can be provided to the municipalities to allow them to undertaken waste characterisations in-house going forward. It is recommended that an annual waste characterisation is undertaken in the municipality. 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.

(c) Waste Characterisation Results

The table below breakdowns down the waste characterisation results for the areas sampled in KLM. The results have also been combined to give an average for the municipality.

Table 17: 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.	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

Waste category	Quantity (kg) low income	% Composition low income	Quantity (kg) high income	% Composition high income	Combined Quantity (kg)	Combined % Composition
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	1.6	1.3	2.4	1.2	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 18: 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	1.3	1.2	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

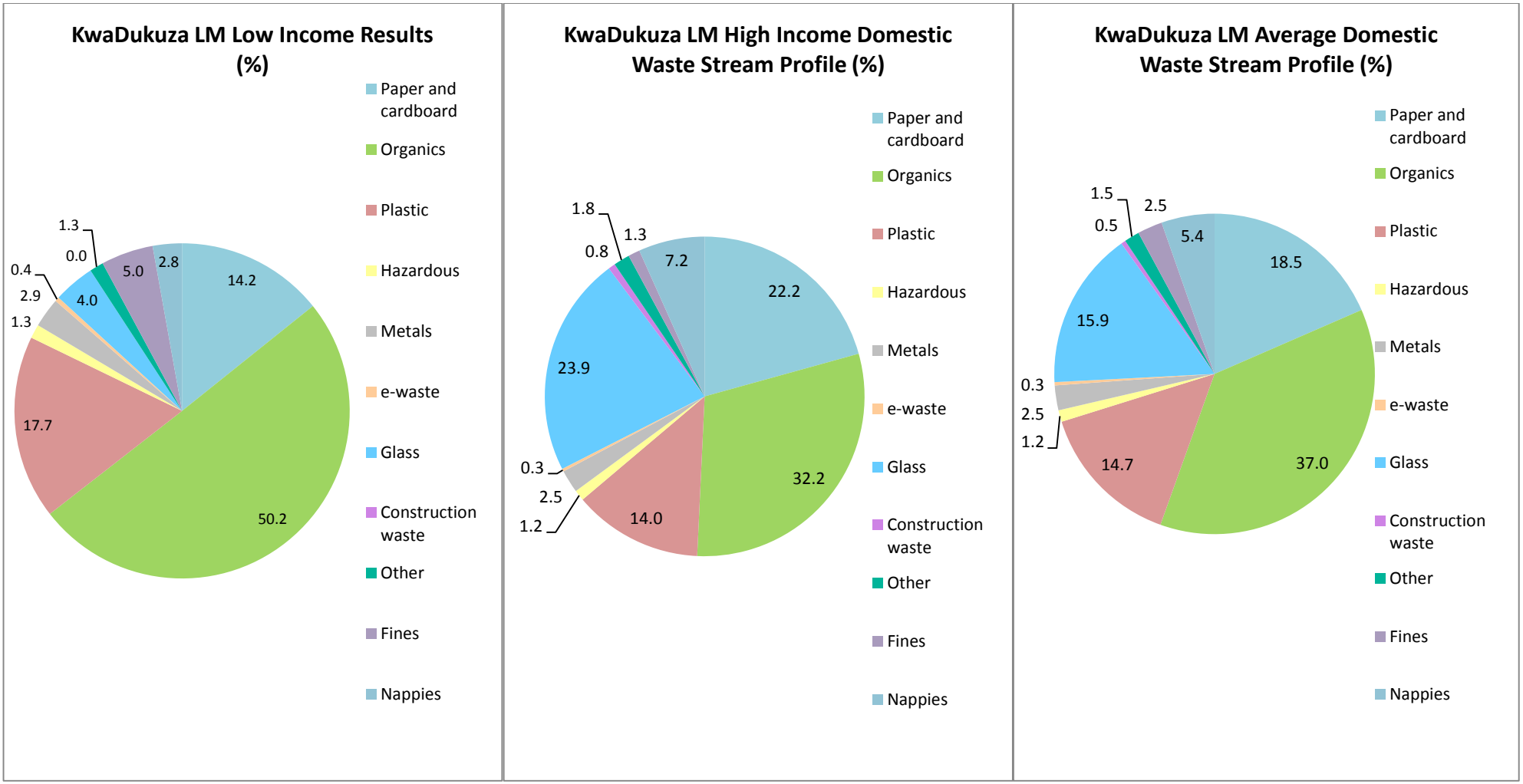


Figure 8: Waste characterisation results summary for KwaDukuza Local Municipality

(d) Analysis of Results for 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 composted 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 recyclable materials. 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. A high percentage (51.6%) of the domestic waste stream sample was composed of recyclable materials (paper, cardboard, metal, glass and plastics).

Furthermore, according to information received by retailers during the KLM oil and dry waste recycling proposal and pilot study done in 2016, on average 90.39% (weight in dry waste) and 9.61% (weight in wet waste) could be separated at source within the KLM CBD (Triplo 4 Sustainable Solutions, 2019).

The following observations are made for the different waste types:

(i) Organics

Organic waste was the largest category of waste in the characterisations by weight. The following sub-categories of organic waste were noted; food waste (31.1%) and garden waste (5.8%), and a very small fraction of wood waste (0.1%). It was noted that the low income area waste sample contained more food waste and garden waste than the high income area sample. The smaller quantities of food waste contained in the high income area samples may be due to the better facilities for food storage and preservation such as fridges and freezers.

(ii) Paper and cardboard

In total the paper and cardboard category made up 18.5% of the waste sample, making it the second largest component of waste sampled. 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.

The following table presents the plastic characterisation results.

Table 19: Paper and cardboard characterisation results

Paper and cardboard category	Combined quantity (kg)	% of the total paper and cardboard (%)	% 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

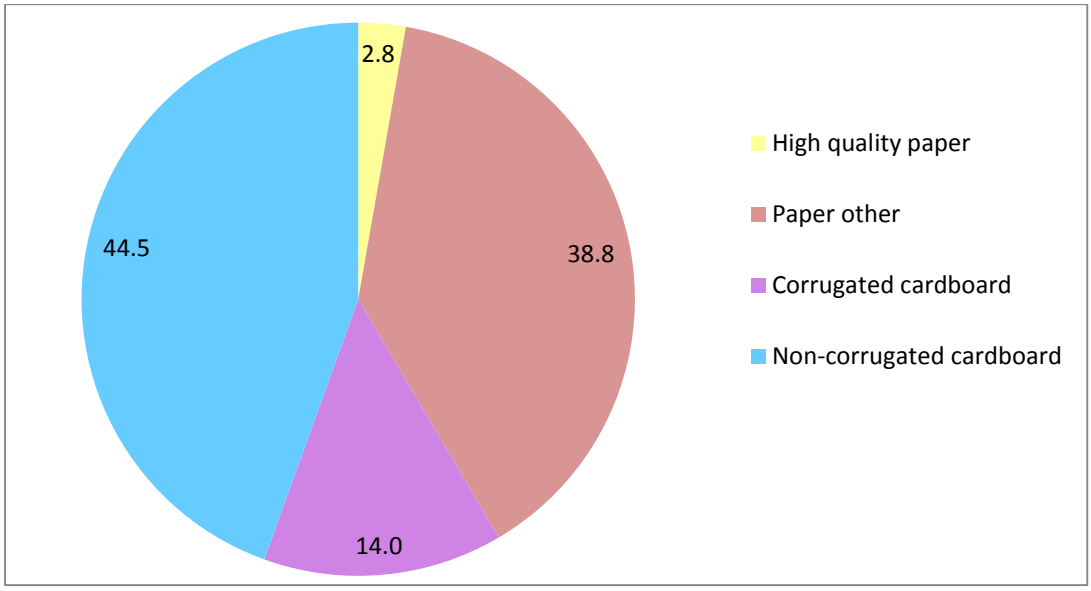


Figure 9: Paper and Cardboard characterisation results for KwaDukuza Local Municipality

The highest paper and cardboard waste stream was 'non-corrugated cardboard' made up of 44.5% of the waste stream, 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 14.0% the paper and cardboard waste stream. Very little high quality 'office' paper was found in the waste stream (2.8%).

(iii) Glass

Glass accounted for 15.9% of the waste sample. The majority of glass was comprised of food and drink bottles and jars. The portion of glass in the high income waste sample was larger than the low income glass sample due to many alcoholic drinks bottles that were noted in the high income waste sample. The glass fraction found in the high income sample may be, for example, due to a party held at one of the households sampled and may be higher than the mean portion of glass in high income waste.

(iv) Plastics

Plastics made up 14.7% of the waste sample. 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 20: 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.

Table 21: Plastic characterisation results

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

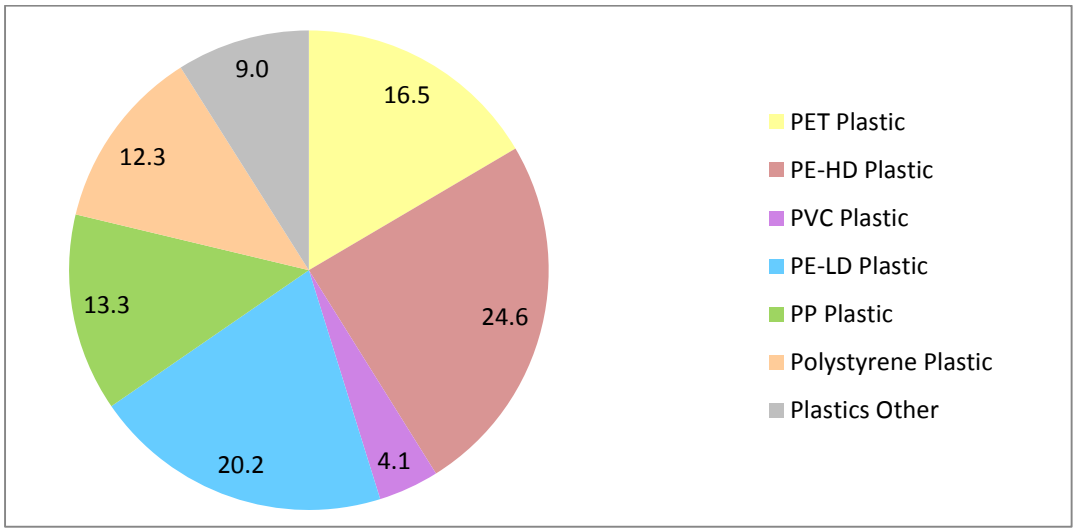


Figure 10: Plastic characterisation results for KwaDukuza Local Municipality

From the above results, one can see 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.

(v) Hazardous waste

Hazardous waste from the domestic waste stream sample constituted 6.5% of the waste stream. The majority of this hazardous waste (5.4% of all waste) consisted of used nappies and sanitary towels which are classified as health care risk waste (HCRW). A small component of hazardous waste consisted of expired pharmaceuticals. The remainder of the hazardous waste stream consisted mainly of batteries.

(vi) Metal

A total of 2.5% of the waste sample was composed of metal. Most of the metal found in the domestic waste stream was empty food tins and drinks cans.

(vii) Fine

This category included all waste material too small to be sorted and included mostly small fragments of organic material, such a food crumbs, cigarette butts, sand or grit. Fines made up 2.5% of the waste stream. This category gives an indication of the proportion of the domestic waste stream that cannot be composted or recycled because it is mixed organic and non-organic waste. If waste was separated at source, this proportion of fines that are 'lost' out of the compostable / recyclable material could be reduced.

(viii) Other

This category included old clothing, decorations and textiles. Overall, the 'other' category made up 1.5% of the waste stream. It was found from the survey that there was slightly higher 'other' waste type from the high income sample (1.6%) than that from the low income sample (1.3%).

(ix) Construction waste

Very little construction waste was found in the domestic waste stream. The construction waste stream only made up 0.5% of the total waste sample.

(x) E-waste

E-waste made up 0.3% of the waste sample. The majority of e-waste found in the characterisation was the wiring from electronic equipment and some electronic equipment.

3.4.3 Projected Residential Waste Generation Trends

Predictions on future waste generation quantities are dependent on population growth and any changes in economic landscape of the KLM. The population size of the KLM increased by 4.08% per year from 2011 to 2016 according to the KZN Community Survey so it is assumed for this calculation 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 22: Projected tonnages of various waste components from 2019 to 2024

Waste category	Composition – Combined Households in 2018. (%)	Projected quantity generated in 2019 (tonnes)	Projected quantity generated in 2020 (tonnes)	Projected quantity generated in 2021 (tonnes)	Projected quantity generated in 2022 (tonnes)	Projected quantity generated in 2023 (tonnes)	Projected quantity generated in 2024 (tonnes)
Organics	37.0	20023.5	20840.4	21690.7	22575.7	23496.8	24455.5
Plastics	14.7	7955.3	8279.8	8617.7	8969.3	9335.2	9716.1
Paper & cardboard	18.5	10011.7	10420.2	10845.4	11287.9	11748.4	12227.7
Fines	2.5	1352.9	1408.1	1465.6	1525.4	1587.6	1652.4
Hazardous and HCRW	6.5	3517.6	3661.2	3810.5	3966.0	4127.8	4296.2
Glass	15.9	8604.7	8955.8	9321.1	9701.5	10097.3	10509.2
Metal	2.5	1352.9	1408.1	1465.6	1525.4	1587.6	1652.4
Other	1.5	811.8	844.9	879.4	915.2	952.6	991.4
E- waste	0.3	162.4	169.0	175.9	183.0	190.5	198.3
Construction waste	0.5	270.6	281.6	293.1	305.1	317.5	330.5
Total	100	54117.5	56325.5	58623.6	61015.4	63504.8	66095.8

3.5 Business Waste Generation

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 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 (Triplo4, April 2019). During this 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. Of the 137 companies that responded, only 35 companies within the KLM and MLM were willing to participate in the survey. The information received from the surveyed companies in the KLM and the MLM were not separated or presented per municipality in the waste efficiency study. It is assumed that this was done so that information of participating companies would remain discreet. Nevertheless, the information is provided in the IWMP to indicate types of waste generated and tonnages produced by these companies within the study area as examples of tonnages produced by companies of similar size and unit production rates. Table 24 summarises the feedback received from companies that formed part of the study.

From the summary of waste generated within the MLM and KLM as part of the Vuthela Waste Efficiency Study it is estimated that the waste types and tonnages produced by businesses and industrial companies are as per that shown in the table below. The cumulative waste total for those companies that responded to the Triplo4 survey was 80.9 tonnes of waste per month, which is equivalent to 970.8 tonnes of waste per year.

Table 23: Main Waste Types Produced from Companies which responded to the survey *(Triplo4, April 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 kgs 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

Table 24: Summary of information received during the Vuthela Waste Efficiency Study (Triplo4, 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	• 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
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	• 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
Tin / cans	± 2,000 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	Landfills i.e. SAPPI landfill in Mandeni.

Waste Stream	Quantity (per month)	Generator	Collection	End Disposal/Sink
			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 eThekwini
	± 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 eThekwini (e.g. Smart Matta recycling Plant) and DCWM separates the waste at a transfer station and sent to Collect-A-Can in eThekwini
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	• 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 eThekwini (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
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 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.	• Local community (if informally collected) • DCLM and Mandeni SAPPI Landfill

Waste Stream	Quantity (per month)	Generator	Collection	End Disposal/Sink
	± 2 000 kg	Industrial parks	Collected by property manager, Ithala Property Group	DCLM and Mandeni SAPPI Landfill
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	• Used for animal feeds on farms • Uncooked food is disposed of at a landfill (unspecified)
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	• 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 sold to various companies where several products can be made, such as paint base, putty, Bio diesel and rubber.

Waste Stream	Quantity (per month)	Generator	Collection	End Disposal/Sink
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.	• Scrap metal collected by bigger scrap yards is often taken to yards in eThekwini 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 eThekwini where it is autoclaved, shredded and landfilled. Anatomical, pharmaceutical and cytotoxic waste is incinerated.
Batteries	No data provided, but assumed to be Minimal	No data provided by the sampled companies	Although not allowed, most batteries are disposed of via the standard of general waste disposals. Some batteries go through to the e-waste facilities. Woolworths in Ballito currently holds a station to allow proper disposal of	• Some types of batteries are exported. • Woolworths send the battering to Nova 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. • Hirsch's is currently working with the

Waste Stream	Quantity (per month)	Generator	Collection	End Disposal/Sink
			batteries.	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).

3.6 Waste Recycling

Collecting and sorting recyclable materials is currently dominated by the private sector in the KLM. Several recycling companies are currently operating in KLM, but no large-scale recycling programmes are run by the municipality. There are however, several recycling initiatives undertaken by the municipality, as well as plans to begin a municipal recycling operation at the Yellowwoods transfer station once the upgrade is complete.

3.6.1 Municipal Recycling Initiatives

The municipality has made effort to support some local recycling businesses:

- The municipality currently provides a waste yard premises to one local recycler, however, there have been complaints from other local recyclers who claim this premises is not being used as a waste yard by the beneficiary, as it was intended. The site serves as a transfer station for waste collected in the south KLM, a MRF, a garden waste drop off centre and a composting facility.

- Another local recycler has been given a contract for the 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 KwaDukuza. 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.

- The municipality has donated wheelie bins to local recyclers to contain and move the recyclable waste.

The municipality has commenced with the upgrade of the Yellowwoods Drive transfer station with the development of facilities for a MRF, garden waste drop off centre and composting facility. A weighbridge will be installed at the transfer station as well. The proposed plan is to involve a private contractor to collect waste from residential and business areas and to use municipal employees to sort waste at the MRF. Agreements and contracts would be entered into with local recycling companies to collect the separated recyclable waste and the non-recyclable waste would be disposed to landfill. A private contractor may also be used to handle the re-sale of recyclables from the MRF. This initiative is in line with one of the targets listed under the KZN's seven strategic goals (job creation). The target listed is "The implementation of waste management services such as waste to energy and recycling projects should be done in a way as to encourage the creation of sustainable jobs, local economic development

and empowerment of local entrepreneurs particularly those that have been historically disadvantaged." (KwaDukuza IDP, 2012).

The municipal waste manager also indicated that a two-bag waste separation system for recycling domestic waste at source has been implemented in a large portion of the urban areas in the south KLM. The waste (domestic waste and recycled waste) is collected by a service provider and transported to the Ballito transfer station where it separated and recycled. The general waste which is collected is transported to the DCL for final disposal.

3.6.2 **Private Recyclers**

There are a number of private recyclers operating in the KLM, and many informal pickers who reclaim recyclable waste from business waste and the Central Business District (CBD) street bins in order to sell the recyclables to small recycling businesses operating in the KLM. The municipality faces the challenge of keeping the CBD streets clean; black bags put out for daily collection are often torn open by informal pickers looking for recyclables. Local recyclers mainly sell their waste to larger recycling companies in Mandeni and Durban, who transport the waste to processing facilities in Durban and Johannesburg.

Local recyclers act as a link between the informal waste pickers who recover recyclables from the domestic and business waste stream and larger recycling companies. The profit margins are small and their business depends on adequate waste quantities needed to make up transportable waste loads. Some recyclers have reported that they are keen to partner with the municipality to increase their waste stock. While recyclers mentioned that implementing a two-bag system would be ideal, they would be happy to sort mixed domestic waste to recover recyclables. It was also reported that recyclers have security issues and have noted informal pickers have stolen recyclable waste out of their yards to try to re-sell it to them. In 2018 a local recycling business Planet Care, which was a branch of a larger recycling company shut down due to low profitability due to the competitive industry. Some recyclers reported challenges in diversifying their waste handling activities without the required equipment. One recycler reported that their company was constructing their own machinery for processing plastics but required financial assistance to get all the necessary equipment and services in place for operations.

Several private recyclers were noted within the KLM and registered through meetings with the KLM. Company information was shared with the KLM and the KLM assisted the companies with providing recycling infrastructure in the form of recycling bins and recycling bags. Once registered in October 2018 the companies agreed to record their monthly recycling rates and report to the KLM. Table 25 below represents the data provided by three recyclers following a 3 month period from October to

December 2018. The waste data is provided per waste type to ensure that data per recycler remains discreet.

Table 25: Quantity of recycled materials for three private recyclers in the KLM (October – December 2018)

Items	Total
Glass	96.5 kg
Paper	36 kg
Plastic	32 kg
General Waste	115 kg

From interviews with recyclers (not limited to the above recyclers) it is apparent that most are unaware of waste recycling standards and their obligation to:

- register their facilities in terms of the National norms and standards for storage of waste (GN926 of 2013)
- the newly promulgated National norms and standards for sorting, shredding, grinding, crushing, screening of waste (GN 1093 of 2017)
- the National standards for scrapping or recovery of motor vehicles (GN 925 of 2013),
- or reporting in terms of the Waste Information Regulations (GN 265 of 2013).

The profiles of some of the main recycling companies operating in KLM are given below. Information provided below was provided during interviews with the facility managers. Some managers did not release certain information about their business due to privacy of this information.

Table 26: Profiles of local recycling businesses within the KwaDukuza Local Municipality

Company Name	Years in business	Location of facility	Types of waste accepted	Waste handling activities	Catchment and distribution	Challenges
Dermatrans	5 years	Ballito	Domestic waste	Waste sorting, storage and bailing	Collecting domestic waste from the Southern region of KwaDukuza. Supplying to a larger recycling company in Durban.	Lack of supporting municipal programmes or infrastructure such as a 3-bag system and Drop-off centres for separation at source.
Senbeza Sonke	2 years	Stanger	Paper, cardboard, glass, metal,	Waste sorting, storage and bailing	Collecting from Stanger CBD and municipal offices. Supplying a larger	Lack of waste feedstock

Company Name	Years in business	Location of facility	Types of waste accepted	Waste handling activities	Catchment and distribution	Challenges
			plastic.		recycling company in Mandeni.	
Dash Car Wash and Recycling	4 years	Stanger	Paper, cardboard, glass, metal, plastic.	Waste sorting, storage and bailing	Collecting from KLM. Supplying a larger recycling company in Mandeni.	Low prices for waste and theft
Environmental Waste Recyclers	17 years	Industrial area, Stanger	Paper, cardboard, glass, metal, plastic.	Waste sorting, storage and transport. Wanting to start plastic processing .	Collecting from Stanger and surrounds. Supplying recycling companies in Mandeni and Durban.	Lack of waste feedstock and financing for equipment and facilities.
HK Scrap Metals	3 years	Stanger	All types of ferrous and non-ferrous scrap metal.	Collection, sorting and storage of scrap metal.	Collecting from Stanger and surrounds. Distribution was not disclosed.	Limited communication and support from the waste department.

3.6.3 Recycling of Business Waste

Some supermarkets allow the public to use their recycling bins. For example Pick n Pay stores recycle batteries, light bulbs, ink cartridges, plastic bags and packaging in-store. Paper recycling is common in offices and schools, and they using an external recycler to collect paper waste. Larger businesses such as Heston sort recyclables at their offices and use an external contractor, based in Durban, to collect recyclable waste from their manufacturing operations and offices.

3.6.4 E-waste Recycling

The New Reclamation Group (Reclam) recyclers accept E-waste. The closest Reclam facilities are situated in Mandeni. While the waste characterisation showed very little e-waste in the domestic waste samples, there is likely to be a significant amount of e-waste generated by the engineering and manufacturing industries.

3.6.5 Hazardous Waste Recycling

The recycling of hazardous waste is very limited in the local municipality, likely due to the costs involved in the processes required, the low quantities of waste involved, and the low demand for the recycled product. According to the 2019 Waste Efficiency Project undertaken by Triplo4, an oil study was conducted in 2016 and consisted of sampling of retail shops, restaurants and mechanical workshops within KLM. The study showed that the oil (mineral and cooking) is either collected by companies that re-use the oil or is disposed to landfill. However, the vast majority (just over 54%) of the used oil is unaccounted for. This is concerning as oil can be reused, recycled for use in various industries requiring oil and can also be used for fuel to generate energy (Triplo4, 2019).

3.6.6 Waste Reduction Initiatives

The municipality has commenced with construction works at the Yellowwoods Drive transfer station for the establishment a drop-off centre and a MRF for the sorting of the northern region's domestic and business waste. This would result in a reduction in waste going to landfill as recyclables would be recovered from the domestic waste stream and sold to local recyclers. Due to the construction and development of the garden waste drop off centre at the Yellowwoods Drive transfer station, the municipality also plans to chip the garden waste and develop a composting facility at the transfer station which will further reduce the quantity of organic waste disposed to landfill.

Dermatrans are currently operating the Dolphin Coast Transfer Station in Ballito. Domestic waste from the southern region of KwaDukuza including Ballito, Salt Rock, Shakas Rock, Umhlali, Meville and parts of Tongaat, is taken to the transfer station and sorted manually by workers and stored on site. Recyclables are sold onto a larger recycling company in Durban. Garden waste is also collected from households by a service provider and transported to the transfer station. Composting of the garden waste is also conducted at the Dolphin Coast Transfer Station. The operations at the transfer station decreases the quantity of recyclable and organic waste that is disposed to landfill.

A: Recycling yard of Dash Car Wash and Recyclers

B: Municipal recycling bins in the CBD

C: Informal picker reclaiming waste from street bin

D: Municipal paper recycling bins in the municipal offices

Figure 11: Photographs of private and municipal recycling facilities in KLM

3.7 Waste Collection and Transportation

3.7.1 Domestic, Business and Industry Refuse Removal

Residential areas in the northern region of KwaDukuza, including Stanger and surrounds are currently serviced once a week 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.

Some common issues reported by waste collectors are fires made by the community in the communal skips, as well as domestic and builder's rubble dumped in the streets or near the skips. Skip locations, as well as illegal dumping hotspots have been mapped. 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 as well as 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 collects waste 3-7 times a week from the commercial centres.

The KLM is currently undertaking a Section 78 study which investigates the financial benefits versus costs of 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 municipality 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 division 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. The following table provides a detailed breakdown of the frequency of the collection service in respective areas of the KLM.

Table 27: Refuse Removal Schedule for KLM

	Frequency of refuse collection						
Place	**Twice Daily**	**Daily**	**5 days a week**	**4 days a week**	**3 days a week**	**2 days a week**	**once a week**
Collected by KLM							
CBD							
uShaka mall and Wholesales							
Stanger Manor							
R.A. Moodley Home							
Town view							
Darnall							
Rocky park							
Blythedale beach							
Glenhills							
Zinkwazi							
Newtown							
Stanger Manor (left side)							
Department of Transport							
Lackfield							
Stanger Manor (garage)							
Melville							
Indian village							
Stanger height							
High Ridge							
Doctorskop							
Stanger Manor Secondary							
North Coast business area							
Morningside							
Police station area							
Industrial Crescent area							
CBD and Down side							

	Frequency of refuse collection						
Place	**Twice Daily**	**Daily**	**5 days a week**	**4 days a week**	**3 days a week**	**2 days a week**	**once a week**
Hospital flats							
ML & Stanger secondary schools							
Industrial area (Shakaville)							
Shakavill							
D-Section							
Gledhow							
Zamani							
Lindelani							
Doringkop							
Chanel							
Steve Biko							
Luthuli Museum, Centre and Toll plaza							
Driefontein							
Down side							
Industrial area							
Spur, Spar, KFC, Checkers, Stanger Supermarket, Shoprite, Boxer, Chester							
eThembeni							
SKIPS							
Stanger Taxi Rank							
Transfer Station Site							
Bussiness Storage Area							
Kwamsomi,Makhalathini,Ebhubha,Mhlaba,Mhosheni,Sofaya,Quba,Ngqobheni, Mphithiza,Zihlabathini, Mtambo & Sgodini, Bar Area							
Tennis Court, Madanishini, Bar & Groundini							
Mbesi, Manqele, Mphenyane,Luthuli Area,Central Mission,Dipini R102,Mfuleni,							

	Frequency of refuse collection						
Place	**Twice Daily**	**Daily**	**5 days a week**	**4 days a week**	**3 days a week**	**2 days a week**	**once a week**
Hall, Mjoza, Njekane, Charlottdale, Silwane, B&B							
Park & Disabled School							
Suncity, Crossing & Top Shop							
Sibisi,Mshazi & Ground							
Mathuneni & Eringini							
Sontweni, Mthethwa & Park							
Top Shop, Summer Hill House							
Esitolo							
Hostel & Monkey Town							
Ekhoneni & New Road							
Bussiness Storage Area							
Ntshawini Taxi Rank							
Kwatwele, Hall & Clinic							
Mabhodweni, Kobhanana & Tavern							
Special Training School							
Collected by DCWM							
Coastal areas from Zimbali to Tinley Manor, incl. Palm Lakes and Shakaskraal							
Townships – Shakashead, Nkobongo, Shayamoya and Etete							
Commercial premises							

The table below shows the access to waste removal services in KLM in 2011 (Stats SA census 2011) and 2016 (Stats SA KZN community survey, 2016).

Table 28: Access to Waste Removal Services

Type of refuse disposal	Stats SA census, 2011 (%)	Stats SA community survey, 2016 (%)	Difference (%)
Removed by local authority / private company at least once a week	60.7	56	-5.13
Removed by local authority / private company less often	2.7	4	1.19
Communal refuse dump	4.1	5	1.33
Communal container / collection point		8	8
Own refuse dump	26.5	22	-4.23
Dump or leave rubbish anywhere - no rubbish dump	5.4	3	-2.46
Other	0.6	2	1.43

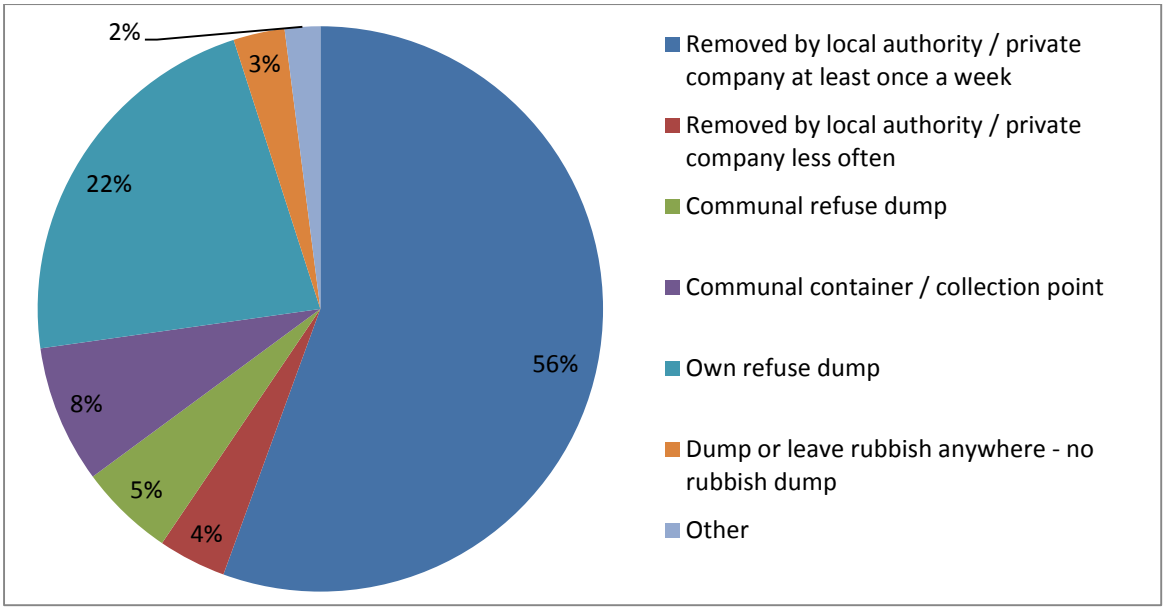


Figure 12: Access to refuse removal services (Statistics South Africa, 2016)

During the Stats SA KZN community survey (2016) residents were asked to rate the quality of refuse removal services in their municipality. While these results are applicable to the iLembe District Municipality and not specific to KLM, they give an indication of the status of service delivery in the district as a whole. The results are shown in the figure below.

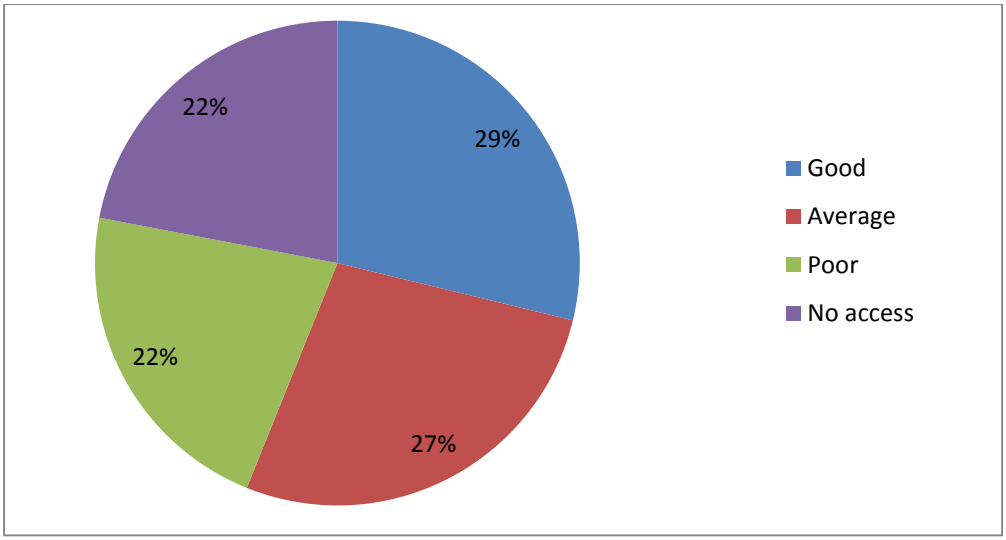


Figure 13: Residents ratings of the quality of refuse removal services in the iLembe District Municipality (Statistics South Africa, 2016)

3.7.2 Waste Management Fleet

Details of the waste collection fleet are presented in the table below.

Table 29: Waste Collection Fleet

No.	Type of vehicle	Model	Year	Area serviced	Mileage
1.	Compactor Truck (KDM 210)	Nissan CM12	1991	Glenhills	Under workshop
2.	Compactor Truck (KDM106)	Nissan UD80	2005	Stanger Manor	205 914
3.	Compactor Truck (KDM197)	Nissan UD80	2003	Townview	136 567
4.	Compactor Truck (KDM109)	Nissan UD90	2006	Zinkwazi & Darnall	278 611
5.	Compactor Truck (KDM114)	Mercedes Benz 1412	1997	Stanger CBD	101 107
6.	Skip Truck (KDM211)	Nissan CW45	1993	Coastal Towns, commercial premises and townships	148 622
7.	Skip Truck (KDM111)	Isuzu FVR	2007	Coastal Towns, commercial premises and townships	Under workshop
8.	KDM112	Mercedes Benz Mod	2007	Coastal Towns, commercial premises and townships	Under workshop
9.	Staff Transport (KDM163)	Nissan Hardbody	2000	Coastal Towns, commercial premises and townships	198 947

10.	Staff Transport (KDM110)	VW Golf 4L	2007	Coastal Towns, commercial premises and townships	137 430
11.	Compactor Truck (KDM255)	Isuzu 10 ton	(not available)	Coastal Towns, commercial premises and townships	71 463

The waste management fleet in KLM varies greatly from vehicles with mileage as high as 278 611 km to vehicles that are below 100 000 km mileage. It was reported that vehicles frequently break down and there is a long turn-around time for vehicle repairs by the municipal workshop. A vehicle replacement plan has not yet been drawn up. The need for additional compactor trucks was highlighted by the waste manager. The delay in servicing of vehicles and the lack of replacement vehicles hinders efficient refuse collection at times.

3.7.3 Transfer Stations

There are two operational transfer stations in KLM at present. These transfer stations are situated in Stanger at Yellowwood drive, and in Ballito. The tonnages of waste deposited at the Yellowwood Drive Transfer Station are not recorded and tonnages from the Ballito Transfer Station were not available at the time of this report. A description of these transfer stations is given below:

(a) Yellowwood Drive Transfer Station

The transfer station comprises two bulk containers and two concrete platforms. The facility has a raised platform but little stormwater control. The facility is situated on a large site and the undeveloped area within the boundary fence is approximately 4,700 m^2. 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 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 m^3 of general waste. The municipality has commenced with construction works at the transfer station to include a garden waste drop-off centre and a MRF where domestic waste is sorted 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. The municipality intends to develop a composting facility at the transfer station for chipped garden waste. 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).

A: Storage of street bins and skips at the Transfer Station

B: View towards the street from the Transfer Station

C: View towards the northern boundary of the premises

D: View of unused area at the northern end of the premises

Figure 14: Photographs of the Yellowwood Drive Transfer Station

(b) Ballito Transfer Station

The transfer station comprises a warehouse, large outdoor waste storage area and bailing and compacting equipment. The site is owned by the KLM, but is leased and run by Dolphin Coast Waste Management (DCWM). Domestic waste from the southern region of 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.

A: Waste handling at the Transfer Station

B: Storage of bailed waste at the Transfer Station

Figure 15: Photographs of the Ballito Transfer Station

3.8 Waste Treatment and Disposal

3.8.1 Treatment

In the KLM several companies and healthcare facilities (besides DCWM) are registered on SAWIC and of these only two are treating waste and one is recycling waste. The companies, the type of waste they handle and their associated treatment options along with general comments are noted in Table 30 below.

Table 30: Companies registered with SAWIC within the KLM

KwaDukuza Local Municipality		
Company	**Waste Classification**	**Comment**
Blue Crane Projects	Hazardous	Only to comply with norms and standards
Bulbul Drive Waste Disposal	Hazardous	Decommissioned
Prince's Grant	Hazardous	Effluent, waste water or sewage treatment works
Senbayfi Healthcare	Hazardous	Chemical disinfectant with shredding
SIMS Recycling	Hazardous	Recycling hazardous waste in excess of 1 ton per day. Process an excess of 100 tons per day of general waste or in excess of 1 ton of hazardous waste per day.

Furthermore, 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 municipality totalled 6,117.0 tonnes in 2018.

3.8.2 **Composting**

There are currently no municipal-operated composting facilities or garden refuse drop-off sites in the KLM. A privately operated composting facility is situated at the Ballito transfer station and the municipality, through the appointed waste collection service provider, provides the composting company with garden waste. The garden waste is collected from the urban and residential areas in the south of the KLM. The KLM also collects garden waste from the central and north KLM and transports it to the Ballito transfer station for composting. The waste manager advised that this was a cheaper option for the municipality than to dispose of the garden waste at the Dolphin Coast Landfill. This has also necessitated the need for the development of the garden waste drop off centre at the Yellowwood Drive transfer station. A number of privately owned plant nurseries such as the Karibu Nursery have composting facilities on site. Some garden refuse collectors, such as Skip-go take their garden refuse waste to nurseries to supply their compost heaps.

The municipality has plans to establish a composting facility at the Yellowwood Drive Transfer Station in Stanger. The municipality has a chipper that they plan to use to chip garden refuse. It is proposed that garden refuse collected from residents in the central and north KLM would be composted using the chipper and the compost would be provided to the public or to create a small nursery for growing plants that can be used for public area greening.

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) has reported 350 tons / week as a minimum quantity of garden / green organic waste required to make a composting at a centralised facility economically viable. Unfortunately the study supporting this minimum quantity for a centralised facility was not referenced. Using the results of the waste characterisation conducted for this IWMP and waste generation data it is estimated that approximately between 451 tons (in 2019) and 527 tons (by 2023) of organic waste will be produced per week in KLM.

Nonetheless, from a legal compliance and best-practice perspective, municipal composting facilities should be considered, even if they need to be subsidised. In the KLM, the municipality will recover some costs from not disposing the garden refuse to landfill, but does not intend to produce compost for commercial sale. The Norms and Standards for Disposal of Waste to Landfill (GN 636 of 2013) require that all municipalities should divert 25% of their garden waste from landfill by 2018 and divert 50% of their garden waste from landfill by 2023 (DEA, 2013). Assuming that 40 637.3 tonnes of waste is collected per year based on the waste collection data provided by the KLM, and that 6% of the domestic

waste stream is garden waste based on the waste characterisation, the total amount of garden waste collected per year is approximately 2438.2 tonnes (6% of 40 637.3 tonnes). The municipality should therefore plan to provide sufficient capacity at waste drop off centres for approximately 610 tonnes (25% of collected garden waste) of garden waste/organic waste per year by 2018, as well as composting facilities where this garden refuse can be processed. By 2023 the municipality should provide sufficient capacity to divert approximately 1,220 tonnes (50% of collected garden waste) of garden waste from landfill. It is however assumed that the waste collection service would increase in the KLM, and that the KLM would therefore need to provide more capacity than the 1,220 tonnes of garden waste by 2023.

3.8.3 Landfill and Waste Disposal Sites

There is one waste disposal site currently in use in the KLM area, the Dolphin Coast Landfill, which is a privately owned and managed landfill. The majority of KwaDukuza's general and hazardous waste is disposed of at the Dolphin Coast Landfill. Local recycling companies and builder's rubble contractors have reported that the costs for disposal at the landfill are high and that this may be a contributing factor to illegal rubble dumping sites in KwaDukuza. Information for the landfill site is provided in Table 31 below.

The Shakaville Waste Landfill located on Erf 3595 Stanger (site centre co-ordinates are 29°19'48.62"S; 31°18'171.19"E) has been closed. The Shakaville landfill was used by the KLM for the disposal of domestic and garden waste disposal. The site was permitted for closure (permit number: 16/2/7/U403/D3/Z1) in 2006 and it was reported that waste dumping ceased in 2007. A Site Engineering Needs Assessment and Preliminary Closure Design Report was conducted in 2017 for the Shakaville Waste Landfill. The site has since received a licence for decommissioning and permanent closure in October 2018 (ref: DC29/WML/0020/2017). Currently vagrants have established informal housing on the closed landfill site.

(a) KwaDukuza (Dolphin Coast) Landfill

Table 31: Summary of the landfill in KwaDukuza

Landfill Name	KwaDukuza Waste Treatment and Disposal Facility: Leachate Treatment Facility, commonly known as the Dolphin Coast Landfill.
Location	Portion 19 of the farm New Guelderland no. 1404 and portion 25 of the farm New Guelderland in KwaDukuza.
Co-ordinates	29°18'31.10"S; 31°19'44.97"E.
Site classification	H:H.

License status	Permitted (Permit number: 12/9/11/L770/4/R1).
Status	Operational.
Buffer	The closest infrastructure (housing) is approximately 400 meters from the landfill.
Access	Access control via a security gate and fencing is provided.
Facilities	Solid hazardous waste disposal landfill, hazardous liquid waste treatment facility, laboratory for testing waste, and weighbridge.
Waste Information Management	Dolphin Coast Landfill provides waste manifests to customers.
Stormwater management	A stormwater drainage and containment system is in place.
Leachate Management	A leachate storage and treatment facility is present.
Recycling	No recycling operations occur at the landfill.
Challenges and Recommendations	There are 2 conventional waste laboratories on the landfill site, but the lead-time experienced is lengthy. A new SANAS accredited laboratory is planned for construction to decrease lead-time The site only services 8 wards in KLM and charges R496/ ton for accepting this waste from KLM (KLM, 2017).

Figure 16: KwaDukuza (Dolphin Coast) Landfill aerial photographs

(b) Future Planning for iLembe Regional Waste Disposal Site

The Vuthela iLembe LED programme is currently funding a study to investigate the development of regional landfill site to service the iLembe District Municipality, which includes the KwaDukuza Local Municipality, the Mandeni Local Municipality, the Ndwedwe Local Municipality and the Maphumulo Local Municipality. This study, named a 'scoping investigation for a regional landfill site', will investigate suitable sites for the development of a regional landfill site. Thereafter, negotiations for land (if applicable), funding applications and environmental permitting of the proposed site will need to be undertaken before the site can be developed. A regional landfill would greatly benefit the KLM. Currently the KLM are paying high rates (R496/ton) for general waste disposal because the waste is being disposed to hazardous waste landfill. Other local municipalities in the district are also using the landfill sites of neighbouring local municipalities and paying high waste transportation costs.

3.8.4 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.

Health care risk waste is waste that contains infectious agents, sharps, hazardous chemicals or pharmaceuticals, or is genotoxic or radioactive. Used needles, discarded medication or any infectious wastes are all classified as HCRW but are often found in small quantities in the domestic waste stream.

The main producers of HCRW in the KLM are:

- Hospitals:
    - Stanger Hospital
    - Netcare Alberlito Hospital
    - KwaDukuza Private Hospital
- Clinics and Healthcare centers:
    - Darnall
    - Mpumelelo
    - Glenhills
    - KwaDukuza

- Kearsney
- Ballito
- Shakaskraal
- Groudville
- Nanodi
- MdletsheHealth
- Huletts Clinic
- Ballito Medical Centre
- Ballito Clinic
- Private Clinic (Ballito)

Hazardous and health care risk should be treated and then disposed of at a hazardous landfill site or a general site if delisted. Provincial health care facilities in KLM are serviced by Compass Waste who collect HCRW and treats it at their autoclave facility in Durban.

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 local municipality however has a role in reporting miss-management of hazardous waste, should it occur.

The South African Waste Information Centre (SAWIC) does not have records of Health Care Risk Waste disposal and generation tonnages for HCRW in KwaZulu Natal. This is further proof of the lack of a waste information system and a lack of reporting of waste tonnages to SAWIC.

3.9 By-law Enforcement and Illegal Dumping and Littering

3.9.1 Illegal dumping

Illegal dumping is a problem in KLM, and was mentioned as one of the three top challenges by the KLM waste department. Dumping is common near communal skips, in the streets of the CBD and in open areas. Several illegal dumpsites occur in Stanger alone. These sites are managed by private persons who record and charge a low fee for disposal at the illegal dumpsites. During the field trip to KwaDukuza, as part of the situation analysis investigations, two builder's rubble contractors were caught dumping rubble at two illegal dumpsites on one day. When questioned on why they are not using the Dolphin Coast Landfill they responded that disposing that the Dolphin Coast Landfill was too expensive. This

highlights a lack of enforcement as well as the need for a general waste landfill or drop-off facility for builder's rubble in the vicinity where general and inert waste can be disposed of at a lower cost.

The municipality is trying to address illegal dumping in the following ways:

- Drafting by-laws that allow for fines and penalties for illegal dumping. The waste management by-laws have been drafted and are in the process of being approved by COGTA.
- Issuing fines for perpetrators caught in the act of illegal dumping
- Mapping illegal dumping hotspots (priority areas)
- Conducting community awareness at schools and at community meetings held by councilors

Some of the main challenges with regards to illegal dumping are:

- Building contractors activities are not monitored
- Illegal dumping has become an accepted practice in some communities
- Dumping around communal skips occurs when skips are full or because the skip is too high for some people to place waste inside
- Dumping around street bins occurs when street bins are overfilled. Many of the businesses in the CBD do not have waste holding facilities and consequently dump waste on the street.

3.9.2 **Littering**

Litter pickers (otherwise called street sweepers) are employed by the municipality to clean town centres and roadways. There are day shift and night shift staff operating on a daily basis. The waste collected by street sweepers is collected by compactor trucks. The duties of the street sweepers include:

- Changing of refuse bags in street bins
- Litter picking
- Identifying and reporting damaged bins and dumped building rubble

The large sugarcane farming industry presents a challenge in the KLM as sugarcane casings blow off cage trucks and litter the edges of roadways. The cane looks unsightly and can block roadway stormwater drains. The municipality employs workers to clean the sugarcane from roadways on a daily basis. A list of roads and intersections receiving a street cleaning service are indicated in the table below.

Table 32: Roads and Intersections receiving a street cleaning and litter picking service

Roads receiving street sweeping service CBD	
Mahatma Gandhi Street	King Shaka Street
Hullett street	Lindley Street
Albert Luthuli Street	Dawnside
Cato Street	Gizenga Street
Hospital	Balcomb Street
Manguza	Peterson Street.
Intersection of Roads	
From FNB to Sabha hall	From Dawn view along King Shaka to Downside
Lot 14 to Taxi Rank (Manguzi)	From centre fair to tunnel (Gizenga)
From old mutual along Hullet to old age home.	

The frequency of street sweeping in the various areas may increase due to the following:

- Seasonal changes
- Excessive tree canopy locations
- Storm events
- Special events which create increased foot traffic with increased littering of papers.

The following main challenges with regards to littering were noted by waste management staff:

- Public burn waste in communal skips
- Scavenging from bins and black bags put out for collection
- Business owners do not have adequate waste storage facilities and put waste out at all times of the day
- Lack of by-laws enforcement
- Shortage of fleet due to two trucks being taken for repairs
- Shortage of staff (in case one employee is sick there is no replacement)
- Informal salons along the streets e.g. Hullets and Kingshaka streets
- Surplus asphalt from road maintenance being left or dumped along the roads makes it hard for employees to clean the roads properly.

- Building rubble from the renovations taking place in town within the retail shops was left on the side of the road.

Figure 17: Business waste strewn near a street bin in Stanger

3.9.3 By-law Enforcement

There are no gazetted by-laws for waste management for KLM at present, therefore enforcement of by-laws cannot be implemented within the KLM. 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. The waste manager advised that spot fines can be issued by traffic officers as issuing of fines for littering is included in the KLM traffic by-laws.

3.10 Waste Management Institutional Functioning

3.10.1 Waste Management Staff

The current structure of the waste management sub-directorate of the KLM is shown in the organogram below. One of the top-three challenges reported by the waste manager was the expense of overtime wages and strikes organised by unions. This issue has prompted the Section 78 investigation into out-sourcing of the waste collection function. The waste manager has reported that there are currently only two vacancies within the waste department, being two drivers.

EPWP programmes are run by the KLM whereby up to 35 staff members are employed on 6 month contracts to manage waste in each of the wards within the KLM. Some staff members clean large shopping centres and some clean the CBD. Teams are monitored by team leaders who conduct random

visits in order to ensure that all team members are working as required and staff members report findings to their team leader. Internal EPWP staff members assist the KLM in several waste management activities such as street sweeping, litter collection, waste collection and clearing illegal dump sites.

Some staff members also distribute refuse bags, which are collected from the municipal waste management offices. However, the community has expressed concern that refuse bags are only distributed during the week while most people are working and outside of the CBD, forcing them to travel in order to collect refuse bags.

The KLM also engages in “Clean and Green” projects whereby up to 23 staff members work from Monday to Friday cleaning streets, collecting litter, clearing dumpsites and in some areas also deliver refuse bags to the community.

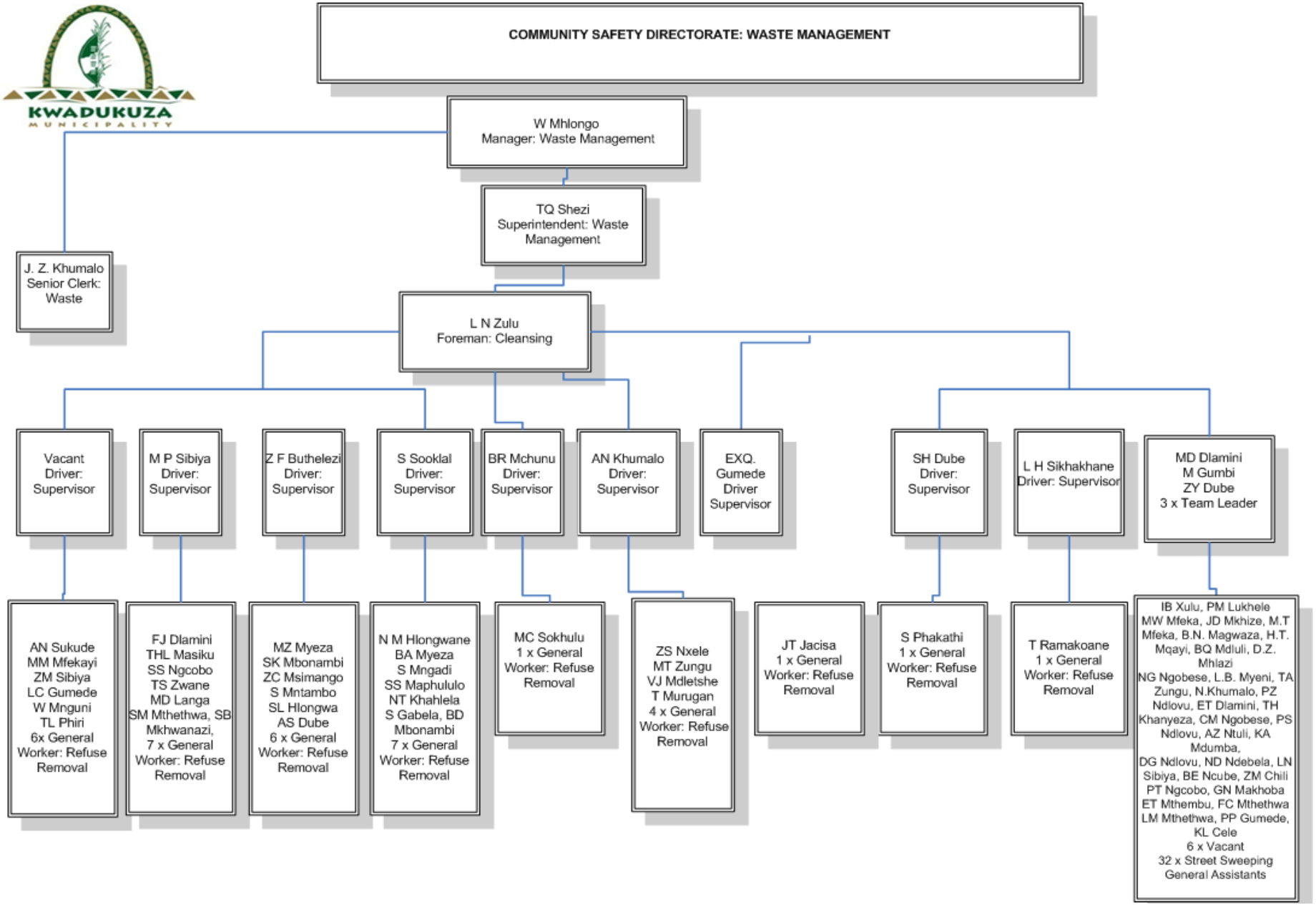


Figure 18: The KwaDukuza Local Municipality Waste Management Department Organogram

3.10.2 **Economic and Finances**

The KLM is required to budget and provide finances for waste management services. 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. These increases often outstrip the rate at which tariffs or rates can be increased. 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 smaller municipalities to fund the provision of waste services and equally challenging to introduce or increase tariffs to the necessary levels.

The revenue income (from the billing of tariffs) and expenditure for the KLM, and the operating expenditure as a percentage to the capital expenditure, is detailed in the table below (IMQS, 2019). The revenue increased significantly between 2017 and 2018 to R 57 million and has allowed the department to generate a surplus of income of R 29 million.

Table 33: KLM Waste Department Revenue and Expenditure (total in R) *(IMQS, 2019)*

	2018	**2017**	**2016**	**2015**
Refuse removal income	57,437,000	48,402,000	57,371,000	54,849,000
% growth in Revenue from previous year		**19%**	**-16%**	**5%**
Refuse removal contracted services	(25,769,000)	(29,294,000)	(24,439,000)	(18,777,000)
Refuse bags	(2,389,000)	(3,585,000)	(1,756,000)	(1,659,000)
Surplus	29,279,000	15,523,000	31,176,000	34,413,000
% Growth in surplus		**89%**	**-50%**	**-9%**

The capital expenditure of the department is very low according to the normal capital expenditure to operating expenditure for waste collection according to *Table 36*. In addition, the KLM has underspent over the past 3 years on capital spending for solid waste infrastructure, which is a concern.

Table 34: KLM Waste Department Capital Expenditure as a % of the Total Waste Collection Expenditure (total in R) *(IMQS, 2019)*

	2018	2017	2016
Capital Expenditure	293,000	177,000	881,000
Total Refuse expenditure	28,158,000	32,879,000	26,195,000
% Capital Expenditure/Total refuse expenditure	1%	1%	3%
Acceptable norm	10%-20%	10%-20%	10%-20%

Note: According to the KwaDukuza IDP 2017 (KLM, 2018/19), current indigent support provided to registered indigent households is as indicated in the table below:

Table 35: Funding for indigent household refuse removal

Service	Households	Amount Subsidised Per Household	Amount Subsidised Monthly	Amount Subsidised Yearly
Refuse removal	15,069	R 76.21	R 1,148,333.33	R 13,780,000.00

(a) The KLM budget for capital and operational costs

The KLM currently budgets for capital and operational costs of the waste collection service. There are a number of capital projects that the KLM has planned in the short term to address some of the waste collection backlog such as the expansion of the Yellowwood Drive Transfer Station and provision of bins in the CBD for recycling. The projects and budgets for these are indicated in the table below.

Table 36: KLM Solid Waste Budgeted Capital Programmes (value in R) *(IMQS, 2019)*

Program/ Project description	Asset Class	Total Project estimate	Previous Year 2017/18	Current Year 2018/2019	Budget Year 2019/20	Budget Year 2020/21
Street Litter Bins	Machinery and Equipment	R100,000		R50,000	R50,000	
Skips	Machinery and Equipment	R450,000		R250,000	R200,000	
Drop Off	Solid Waste	R340,359	R340,359			

Centre	Infrastructure					
1 x Weigh bridge	Machinery and Equipment	R1,275,403	R433,403	R842,000		
Waste Transfer Station	Solid Waste Infrastructure	R5,000,000		R3,000,000	R2,000,000	
Recycling Bins	Machinery and Equipment	R295,000	R95,000	R200,000	–	
Dry Waste Composting Station	Solid Waste Infrastructure	R1,000,000		–	R1,000,000	
Total		**R8,460,762**	**R868,762**	**R4,342,000**	**R3,250,000**	

3.10.3 The KLM Asset Management Plan

According to the Asset Management Plan for the KLM, the waste department only owns skips, bins, vehicles for waste collection and one transfer station (IMQS, 2019). The condition of the waste collection vehicles of the KLM are poor, with more than 80% of its value depreciated, which indicates that these assets would have to be replaced in the short term, and that the municipality would need to prioritise budget for these. In contrast, both the skips and bins are in a good condition.

The total asset value for solid waste in the KLM is represented as R 7.5 million in the financial asset register. The calculated replacement value in 2018 is at R 9.5 million (which accounts for the time value of money). The depreciated replacement cost is at R 4.9 million, which indicates that the majority of the waste department assets has not yet substantially depreciated. The overall portfolio health for the waste department is regarded as 'fair'.

(a) The KLM Asset Management Plan Level of Service

According to the KLM Asset Management Plan (IMQS, 2019), the total capital cost and annual operational cost to achieve a 100% waste collection service in the urban and rural areas is R9 million and R 3 million respectively. The capital costs were once off and the operational costs are annual costs. The details of these are provided in **Table 37** below. The capital costs were budgeted for the development of drop off centres, waste transfer stations and a dry waste composting station.

Table 37: Cost implications to the KLM to address the waste collection service backlog and achieve 100% collection (IMQS, 2019).

Cost of Upgrading to Target Level				
	Resolving no service backlog capital (once off cost)	Resolving no service backlog operations (cost per annum)	Resolving urban lack of service backlog capital (once off cost)	Resolving urban lack of service backlog operations (cost per annum)
Urban	R 3,686,000	R 1,594,000	R 3,031,000	R 1,149,000
Tribal/Traditional	R 2,320,000	R 298,000		
Farm	-	-		
Total	R 6,007,000	R 1,892,000	R 3,031,000	R 1,149,000
Total Capital Backlog Eradication:				**R 9,038,000**
Total Operational Backlog Eradication per annum:				**R 3,041,000**

(b) The KwaDukuza LM 10-year Life Cycle

The 10-year life cycle plan according to the AMP of the KLM indicates that approximately R 1.2 million should be budgeted a year for ten years for capital costs (for investment and renewal costs) to address the existing waste collection backlog (R 9 million) and the future increased waste generation to occur in the KLM (R 3 million). The R1.2 million budgeted per year for 10 years equates to R 12 million capital cost.

The operational and maintenance costs (OPEX) for the KLM to ensure eradication of the waste collection backlog and providing this service to additional customers increases from approximately R 27.6 million per year in 2019 to R 31.7 million per year in 2028 (IMQS, 2019).

It was noted that due to the large financial costs to completely eradicate the waste collection backlog, the KLM should focus on specific areas for the provision of waste collection services and that these areas should be prioritised for waste collection services. On average, the KLM should budget R30 million per year for ten years for capital costs and operational costs to eradicate the waste collection backlog and provide for waste diversion and waste minimisation projects (IMQS, 2019).

3.10.4 **Waste Tariffs**

Charging a fee for municipal waste collection is an important source of income for the waste management department. The introduction of cost-recovery tariffs enables municipalities to fund the "maintenance, renewal and expansion of solid waste infrastructure" (DEA, 2011). The local municipality is tasked with setting waste tariffs. The tariff should be considered carefully in order to set a fee that is in line with the goals of the tariff. The goal of the tariff is to recover collection costs as far as possible and for the municipality to provide a financially viable service for the majority of domestic and commercial units. Tariffs must reflect the costs associated with providing the service, including operating and maintenance, capital, replacement and financing costs, taking into account other subsidies the municipality may have (DEA, 2011). Waste tariff setting should be done with the aims of promoting waste minimisation and the economical, efficient and effective use of resources taken into consideration.

The municipality should also consider that while a high fee may make the municipal collection uncompetitive with private waste removal contractors, the under-pricing of waste services sends inappropriate signals to households and waste generators and discourages waste minimisation (DEA, 2011).

The 2018/19 Tariff Policy for KLM follows a tariff determination process to develop yearly tariffs. The process begins with a review of current tariffs during preparation of the annual budget. The proposed tariffs are then presented to the community at council meetings. The tariffs should reflect the actual cost of the service. Once tariffs have been determined or amended, they must be displayed in a notice for public view. The public can then comment on or object to the proposed tariff. The Council then considers all comments and objections and either amends, accepts or withdraws proposed tariffs. The Council's decision is then displayed in another notice for public comment before finalisation (KwaDukuza Local Municipality, 2018).

1. VALUE ADDED TAX MUST BE ADDED TO ALL TARIFFS LISTED BELOW (EXCEPT TO FINES, REFUNDABLE DEPOSITS, INTEREST CHARGES OR WHERE INDICATED AS INCLUSIVE OF VALUE ADDED TAX) 2. ALL APPROVALS OF APPLICATIONS FOR SERVICES LISTED BELOW SHALL BE SUBJECT TO THE APPLICANT OBTAINING A CLEARANCE TO THE EFFECT THAT KWADUKUZA MUNICIPAL ACCOUNTS IN THE NAME OF THE APPLICANT/OWNER ARE NOT IN ARREARS				2018/19 (EXCL VAT)	2018/19 (INCL VAT)
		(i)	1 X Weekly Domestic	158.26	182.00
		(ii)	2 X Weekly Domestic/Bed and Breakfast	179.13	206.00
		(iii)	Special rate for Gated Estates : 2 X Weekly Domestic/Bed and Breakfast	226.09	260.00
		(iv)	Bulk removal by application per Skip - 1 M3 bulk container	360.87	415.00
		(v)	Bulk removal by application per Skip - 1.75 M3 bulk container	469.57	540.00
		(vi)	Bulk removal by application per Skip - 8 M3 bulk container	1,705.22	1,961.00
(ix)		(vii)	Bulk removal by application per Skip - 14 M3 bulk container	2,998.26	3,448.00
(x)		(viii)	Additional refuse charge/s where more than one dwelling exists on a special residential property, per additional dwelling, a further	115.65	133.00
	(b)	**EXCLUDING LIMITED GARDEN REFUSE REMOVAL - commercial customers**			
		Commercial includes R12.00 dumping surcharge			
		(i)	1 X Weekly	209.57	241.00
		(ii)	2 X Weekly	245.22	282.00
			Otto Bin (Poley Cart) * 2 weekly	735.65	846.00
		(iii)	3 X Weekly	289.57	333.00
			Otto Bin (Poley Cart) * 3 weekly	862.61	992.00
		(iv)	4 X Weekly	344.35	396.00
			Otto Bin (Poley Cart) * 4 weekly	1,031.30	1,186.00
		(v)	5 X Weekly	372.17	428.00
			Otto Bin (Poley Cart) * 5 weekly	1,111.30	1,278.00
		(vi)	Hotels, per number of units per premises as determined by the Ilembe District Municiaplity from time to time.	289.57	333.00
		(vii)	6 X Weekly	449.57	517.00
			Otto Bin (Poley Cart) * 6 weekly	1,348.70	1,551.00
		(viii)	7 X Weekly	504.35	580.00
			Otto Bin (Poley Cart) * 7 weekly	1,500.87	1,726.00
		(ix)	240 litre Poly Cart container - as per agreement with the municipality	793.04	912.00
	(c)	**EXCLUDING LIMITED GARDEN REFUSE REMOVAL - applicable to domestic customers only**			
		Domestic includes dumping surcharge of R12.00			
		(i)	1 X Weekly : Old age Homes	111.30	128.00
		(ii)	1 X Weekly : Designated areas (Subsidised areas)	111.30	128.00
	(d)	**SPECIAL REMOVAL**			
		(i)	Special removal by application	Cost plus 20%	Cost plus 20% + VAT
		(ii)	Garden refuse per load..	Cost plus 20%	Cost plus 20% + VAT
		(iii)	Builders, dry industrial and other.. by agreement	Cost plus 20%	Cost plus 20% + VAT
		(iv)	Skip - 6 cubic metres, per removal	Cost plus 20%	Cost plus 20% + VAT
R 2.2	**DEAD ANIMALS**			No Charge	No Charge
R 2.3	**ABANDONED THINGS INCLUSIVE OF VEHICLES.**				
		Removal in terms of section 131 of Ordinance 21 of 1966		Actual cost plus 10%	Actual cost plus 10% + VAT
R 2.4	**STORAGE FOR A PERIOD NOT EXCEEDING FOUR MONTHS - per day**				
	(a)	Use of refuse dump in respect of refuse emanating from property within the Council's area of jurisdiction		Actual cost plus 10%	Actual cost plus 10% + VAT
	(b)	Refuse other than that referred to above per cubic metre		200.00	230.00

Figure 19: Waste management tariffs for the KLM (KwaDukuza Local Municipality, 2018)**.**

The municipality has the challenge of billing for the correct waste removal service according to what is required. For example, the truck drivers and refuse removal team are sometimes asked to remove

waste more often than what is being paid for by the business in question. Some businesses also put out extra bins and black bags to increase the amount of waste that is removed from their premises without paying the appropriate fee for the additional receptacles. The waste removal team does not have easy, quick access to a database of rate payers to enable them to verify the correct quantity and frequency of removal service required by each business.

3.11 Planned Waste Projects

The KLM has made budget available for the Yellowwood Drive transfer station upgrades which include the development of a MRF, a garden waste drop-off centre and a composting facility. Approximately R 3 million has been made available for the 2018/2019 financial year of which approximately R 1 million has been spent on the initial earthworks of the transfer station. An additional amount is proposed for the 2019/2020 financial period for the completion of the transfer station upgrades (R 5 million) and the purchase of a weigh bridge (R 1 million). The following budgets have been approved in the current and previous financial year for waste projects.

For the 2019/2020 financial year:

- R 700 000 for the development of the composting facility
- R 500 000 for skips and street litter bins
- R450 000 for recycling bins
- R2.2 million for a street sweeping truck to service the North and South of the KLM.

For the 2018/2019 financial year:

- R 250 000 for waste skips, recycling bins and street litter bins.

3.12 Waste Information Management

The KLM has yet to define and develop a complete system for managing waste information. While the Dolphin Coast Landfill provides waste manifests for waste disposed at the landfill, these disposal tonnages were not collated and readily available. Dolphin Coast Landfill Management does report to the South African Waste Information Centre (SAWIC) on behalf of the KLM.

The KLM does not have any central system or server where waste information is stored and instead employees store waste information on laptops and hard-drives. Backing-up of information is done as employees see fit and is not a regulated procedure. Thus when staff and management changes occur,

information could easily be lost. Information is also less easily available or transferable when it is not stored on a central server.

3.12.1 SAWIC Waste Disposal Tonnages

The following tonnages report for KLM was available on the SAWIC website (accessed 04.02.2019). As the DCWM landfill site is the only landfill site within the KLM, it is assumed that the tonnages represent waste disposed of at the DCWM landfill site. As indicated above, it is also assumed that the waste tonnages are uploaded by the DCWM onto the SAWIS. According to the SAWIC tonnage report, more hazardous waste than general waste is disposed of at the DCWM landfill site.

Table 38: 2018 Tonnage report for KLM on SAWIC

Group	No. of Facilities	General (tonnes)	Hazardous (tonnes)	Total (tonnes)
KwaDukuza (KZN292) D1: Disposal of waste to land (e.g. specially engineered landfill)	1	40,626.8	105,119.4	145,746.2
R5: Recycling of metals and metal compounds	2	123,038.7	2,266.3	125,304.9
T1: Biological treatment (e.g. biodegradation, composting, biogas generation)	1	6,117.0	0.0	6,117.0

3.13 Community Waste Awareness Campaigns

The KLM does not have a formal waste awareness programme, however 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. Awareness campaigns are ongoing and are well supported by communities in the KLM.

A Food for Waste Programme has been implemented in the past in the KLM. It was a Department of Public Works project implemented by an Independent Development Trust. Beneficiaries of the program were employed under 6 month contracts, which terminated in May 2017. Before the beneficiary contracts had terminated the beneficiaries demanded permanent employment by taking the KLM to the Bargaining Council. Due to this the KLM discontinued this programme going forward (Triplo4, 2019).

A **Litter4Tokens** campaign has also been implemented in the KLM with the aim of increasing recycling and raising awareness within the community. The campaign requires community members to exchange recyclable materials for tokens that can be used to purchase goods at a token shop in Shakashead. Each bag or recyclables is exchanged for one token (Triplo4, 2019).

The KLM does not have any Waste Community Liaison Officers (CLOs), and this was mentioned as a priority by KLM waste management staff for promoting effective waste awareness.

4 GAP AND NEEDS ANALYSIS

4.1 Needs Analysis

The table below holds key requirements imposed on the KLM by current policy, legislation and guidelines. All key requirements are listed, irrespective of whether the KLM 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 39: Key legal/policy requirements applicable to the KLM's waste management function.

Topic	Requirement
Institutional Issues	
Municipal waste planning and human resources	**National Environmental Management: Waste Act (59 of 2008):** • KLM must submit an IWMP to the MEC for approval. • KLM must integrate the IWMP into the IDP. • The KLM 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. • KLM must submit annual reports of the implementation of the IWMP in terms of Section 46 of the MSA.

Topic	Requirement
	National Policy for the Provision of Basic Refuse Removal (BRR) Services to Indigent Households (GN413 of 2011) • KLM to integrate the national BRR policy into the KLM's Indigent Policy, if present. • KLM to consider formally identifying deserving households/areas for BRR services • KLM 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	**National Environmental Management: Waste Act (59 of 2008):** • All municipalities must keep separate financial statements including a balance sheet of services provided. **Municipal Systems Act (32 of 2000):** • Municipalities must set tariffs and strive to provide waste services in financially and environmentally sustainable manner.
Waste Information management	**National Waste Information Regulations (GNR 625, 13 August 2012)** 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	**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.

Topic	Requirement
Waste recycling and drop-off centres	• National Domestic Waste Collection Standards (GN21 of 2011) • 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. **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, screening of waste must register in terms of GN1093 of 2017. All these facilities which have an operational area of 1000m^2 or more must comply with management requirements set out in the standard. **National Norms And Standards For Scrapping Or Recovery Of Motor Vehicles (GN925 of 2013)** • Sets minimum requirements for the design, construction and upgrade of motor vehicle scrapping facilities as well as minimum requirements for operation of these facilities **National Organic Waste Composting Strategy, Draft (2013)** • 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	**National Domestic Waste Collection Standards (GN21 of 2011)** • 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

Topic	Requirement
	National Policy for the Provision of Basic Refuse Removal Services to Indigent Households (GN413 of 2011) • KLM 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	**National Norms & Standards for the Storage of Waste (GN926 of 2013)** • These requirements must be taken into account when designing and managing storage facilities with capacity >100m^3 e.g. transfer stations. Things to consider include access control, signage, leak prevention etc. **Waste Tyre Regulations (2017)** • Waste tyres may not be disposed to landfill • A waste tyre storage area for a tyre dealer must not exceed 500 m^2 and any other waste tyre storage area must not exceed 30,00m^2 and must comply with section 10 of the regulation • Waste Tyre Storage Plans for a waste tyre storage sites are to be approved by the KLM Fire Department. • Owners or managers of waste tyre stockpiles (a stockpile 500 m^2), must submit a waste tyre stockpiles abatement plan to the competent authority.
Waste Disposal	**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. **National Standards for the Disposal of Waste to Landfill (GN636 of 2013)** • 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	**National Domestic Waste Collection Standards (GN21 of 2011)** • All complaints regarding waste must be dealt with promptly, and responded to within 24 hours. • An effective register of complaints must be kept. • KLM must create awareness around key waste issues as defined in the standards including illegal dumping, recycling and composting • KLM 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

Topic	Requirement
Capacity building and training	**National Policy for the Provision of Basic Refuse Removal Services to Indigent Households (GN413 of 2011)** • KLM must implement education and awareness training regarding the BRR services in relevant areas.

It should be noted that if the KLM were to develop a MRF, or undertake any sorting, shredding, grinding or waste bailing activities, other norms and standards would be applicable.

4.2 Gap and Needs Analysis

This section presents the waste management gaps in the KLM area as identified through the IWMP process and the situational analysis investigation undertaken as part of the development of the IWMP. 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), waste consultants (site visits and research) and the community (IDP public engagements). The gaps identified are presented in the table below.

Table 40: Gap and Needs Analysis for Waste Management in KLM

Topic	Gaps	Needs
Institutional Issues		
Financial management	• The KLM has not undertaken a formal review of their waste tariffs including a full cost accounting review of their waste service costs. In addition, the funding model for waste management is not efficient. • The finance department and the waste department do not have systems in place that allow them to verify that people (particularly business) are being charged correctly for services rendered. • No clear rebate system in place for indigent households	• A full cost accounting review of their waste service costs and a formal review of their waste tariffs should be undertaken by the KLM. This review should also consider the operational costs of implementing recycling and the development and operational costs of required waste infrastructure including transfer stations, drop-off centres, composting facilities and a MRF. • A formal system should be developed to verify that people (and particularly) businesses are correctly billed for the waste collection service they receive for the KLM to recover costs on the services rendered.
Human resources and waste planning: Staff and training	• The waste management officer position is currently vacant. This is a key legal non-conformance. • The KLM waste department is understaffed and there are several unfilled posts • There is no documented training plan for waste managers and supervisors. Identification of targeted training courses available to address knowledge gaps has not been undertaken • Lack of training for designated waste officers within management staff and new staff that are appointed do not receive training for day-to-day work requirements.	• The waste management officer position and vacant posts within the organogram should be filled. • The waste management organogram should be reviewed to ensure sufficient staff are employed to expand the waste collection. The appointment of staff for awareness campaigns, illegal dumpsite cleanup campaigns, and illegal dumping enforcement should be included in the amended organogram. Critically, the responsibility for the management of waste information and data should be designated to a staff member with numerical literacy and Excel skills. • A documented training plan for waste managers and supervisors should be developed with targeted training courses available to address knowledge gaps with regards to waste management, management of waste information and development of waste recycling programmes.
Waste Information management: Waste recording and reporting	• No waste tonnage information and record keeping system in place for KLM • Data for waste generated by the population is not accurate (different	• The KLM should collate the waste collection and disposal tonnages of domestic collection waste for the KLM. The collation of information for the masses of municipal recycling programme

Topic	Gaps	Needs
	on SAWIS and in IDP) • The KLM does not collate any general waste, industrial or recycled waste information for businesses or private companies within the MLM. • The KLM is not informed about waste management practices in the industrial areas within the KLM • Poor fleet management and record keeping	should be undertaken as well. • The KLM should verify the waste disposal tonnages to landfill on the SAWIS. • The KLM should educate and instruct all business and companies that generate large quantities of waste to register their companies on the SAWIS and to indicate on their waste disposal and recycling tonnages on SAWIS. The KLM should follow up on the submission of waste tonnage information on the SAWIS.
Contract Management	• Limited contract management capacity within LM • Lack of waste management contracts/agreements with businesses and industrial clients including the auditing of their waste facilities.	• The KLM to ensure waste managers receive required training to develop and manage waste contracts within the LM.
Future Planning	• There is no documented infrastructure plan which considers site selection and costs for waste facilities. These facilities include transfer stations, MRFs, drop off centres and buy-back centres. • There is no working mechanism for the waste department to provide input (e.g. road width and inclusion of waste drop-off centres) into the design requirements of new settlement areas. • No plan or feasibility study exists which considers the expansion of waste collection services to the peri-urban and rural areas that are currently unserviced.	• A waste infrastructure masterplan which identifies sites/ erven for the development of required waste infrastructure such as transfer stations, MRFs, drop off centres and buy-back centres should be developed. This needs to consider the possible future development of a district landfill site. • The MLM should develop a plan for the expansion of the waste collection services to those serviced peri-urban areas in the MLM. This would largely be through the expansion of the communal waste skip system to rural areas within the MLM.
Service Delivery		
Waste Minimisation and Recycling:	• Lack of infrastructure to enable recycling e.g. buy-back and drop-off centres, or a Material Recycling facility (MRF) in urban and rural areas • Lack of formal waste separation programme • Lack of knowledge of National Norms and Standards within private recycling companies	• The KLM needs to consider the development of a MRF as well as recycling facilities at future waste drop-off centres, so as to make recycling facilities more readily available to the public. This should be investigated and planned as part of the waste infrastructure masterplan referred to above. • The KLM needs to consider instituting a formal waste recycling programme, including separation at source recycling initiatives,

Topic	Gaps	Needs
	• Lack of community involvement in recycling (recycling bins are provided in some areas and they are filled with mixed waste) • No E-waste or hazardous waste recyclers present in KLM.	initially in the form of a pilot project. • The KLM needs to engage with the private recyclers in the area, maintain a list of such recycling companies and an estimation of their volumes.
Waste Collection and storage	• Contracted waste collectors are not supervised, particularly in Southern region of LM • Kerbside refuse collection coverage reaches around 60% of the LM. Waste skips are used to collect waste from the remaining 40% of LM • Waste collection service non-standardized throughout LM • Collection of skip waste not coordinated with high disposal rate • Collection of animal carcasses not well-coordinated • Distribution of black refuse bags is not efficient and is inconsistent • No garden waste collection plan or drop off sites are in place • Only one garden refuse site exists in LM on private land • Insufficient fleet as some vehicles are old and no replacement vehicles are available during servicing of existing fleet.	• The KLM needs to develop a documented waste collection plan that will focus on the mapping of collection areas, collection routes to be used by vehicles, mapping of waste collection skips and bins, and where to place these skips and bins to effectively expand the future collection service • The KLM needs to develop and implement vehicle maintenance and replacement plans for its waste fleet. • Purchase (or secure lease contract) another REL compactor to provide backup capacity in the case of breakdowns as there are only two waste vehicles used for the collection of waste from skips. • Staff should be designated to supervise the contracted waste collector • Develop a plan to increase the collection of waste from skips as per the disposal rates of communities.
Waste Treatment and Disposal	• Only one private landfill is available in the LM and there is currently no municipal landfill within the LM • The high costs and long distance to the landfill discourages the disposal of waste by people within the KLM. • No management system in place for the handling of hazardous waste, there is a lack of treatment options and infrastructure in LM.	• The KLM needs to compile a waste infrastructure masterplan referred to above in the Future Planning section, and to develop required infrastructure for waste treatment and disposal. • The KLM needs to develop and implement the Infrastructure Masterplan discussed above, particularly the development of drop-off centres and transfer stations. This will provide the public with accessible waste disposal facilities.
Public Awareness		

Topic	Gaps	Needs
Public awareness and communication	• Lack of awareness in correct hazardous waste management • Lack of dedicated waste CLO who can communicate and educate the community on waste management • Lack of involvement from community in awareness and education meetings	• The role of waste awareness officer needs to be allocated to a specific staff member or, ideally, a post created for this role. • The KLM needs to develop a waste awareness and education programme within the KLM that covers the full ambit of responsible waste management including waste minimisation, and decreasing illegal dumping. • The KLM needs to prioritise areas where illegal dumping is common and severe for awareness campaigns. Monitor these areas for a period after the awareness campaigns to determine whether the awareness campaigns were a success. • The KLM needs to keep comprehensive records of all awareness activities that it undertakes or supports.
By-Law Compliance and Enforcement		
By-law enforcement	• There are no adopted waste by-laws in the KLM. • As a result of the lack of waste by-laws, there is no waste by-law enforcement currently being undertaken for waste management in the MLM. • There is no training of peace officers that can serve to enforce the waste by-laws in the KLM.	• The MLM should ensure that the by-laws are adopted and that peace officers are trained to enforce waste management by-laws.
Littering and illegal dumping	• Insufficient street-side bins and communal skips within wards that currently do not have waste skips and that do not receive a waste collection service • Vehicles (TLB and tip truck) to collect waste from illegal dumping hotspots • Insufficient staff to clear illegally dumped waste • Access to areas where illegal dumping has occurred with large waste	• The KLM needs to provide street side bins in business/commercial areas within the KLM and communal skips within wards and areas that do not currently have a waste collection service and where illegal dumping is severe. • The KLM needs to secure (purchase or lease) the needed plant to facilitate clean-up of illegal dumping hotspots. • The KLM needs to secure the needed staff to address illegal

Topic	Gaps	Needs
	collection vehicles is often not possible due to the lack of access roads, and terrain. Dumping increases in areas where dumping is not removed • The community is not educated about why dumping is a serious issue and it has become an accepted practice	dumping.

5 Objectives, Targets and the Desired End State

This section presents the broad key focus areas for waste management in the municipality and defines where waste management improvements should be directed. It presents the key waste management objectives for the KLM and gives targets and indicators for measuring their implementation.

5.1 National Waste Management Strategy Objectives

The National Waste Management Strategy (NWMS) is structured around a framework of eight goals. The goals along with their respective targets 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 41: 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 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 SAWIC 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	• Assessment complete for 80% of sites reported to the

contaminated land.	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

These goals were ambitious and were largely not achieved in South African, 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.

5.2 Provincial IWMP Objectives

The following main objective was highlighted in the 2012 KwaZulu Natal IWMP:

"Advance the integration and optimisation of waste management in KwaZulu-Natal for the protection of human health and wellbeing by maximising the effective use of available resources, minimising financial costs and associated environmental impacts and improving the quality of life of all people living in KwaZulu-Natal; through taking the lead and initiative and by implementing relevant national strategies and enforcing legislation in the province."

Subsequent to the main objective further key objectives were proposed below:

- 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
- Address waste management issues and gaps systematically and effectively
- Ensure that the KZN provincial government implements all existing legislation requirements in terms of waste management, most notably the Waste Act
- 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)
- Describe the Status Quo of waste management in the context of the Province
- 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

- Define the basis for the introduction, maintaining and promotion of sound recycling initiatives within KZN
- Promote, encourage and support public involvement and forums in all KZN provincial government related waste strategies and activities
- Document procedures followed during the development of the IWMP.

5.3 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.

5.4 Objectives and Targets for the KLM IWMP, 2019

The main strategic objective of this IWMP is:

To achieve integration of the local municipal solid waste management service and regulatory function relating to the operational, financial, legal and institutional dimension, through giving effect to all relevant policy principles.

To achieve the strategic objective above, a total of nine objectives have been defined through a process informed by:

- the Situation Analysis;
- the Gap and Needs Assessment;
- input from the IWMP working group; and
- the review of the implementation of the objectives defined in the 2017 IWMP draft.
- Input from draft IWMP PSC workshop.

These objectives represent key areas which, if addressed, will contribute significantly to the KLM fulfilling its broader waste management mandate over the next five years. They typically address the most pressing waste management issues in the KLM. The current financial and budgeting limitations of the KLM have however been considered in the development of the objectives. Nonetheless, waste policy and legislation do necessitate the inclusion of certain objectives so as to ensure legal compliance. The objectives will not necessarily address all waste management challenges facing the KLM but do however present the most significant, strategic "wins" for waste management. The objectives presented in the 2017 KLM IWMP draft have also been reviewed as part of this IWMP exercise and the majority of them remain central to this latest IWMP.

Finally, the objectives have, as far as possible, been structured so as to make them measurable. The objectives are all considered important and implementation thereof should run concurrently. Each objective has been assigned a number of targets in order to make it achievable.

5.4.1 Objective 1: Financial Management and Tariff Structure

A review of the cost of waste services provided in the KLM has been undertaken in May 2019 through an Asset Management Plan (AMP) for the solid waste department. The AMP also details the costs required by the KLM to eradicate the backlog of waste services in the KLM over a ten year period to ensure that each household receives a weekly waste collection service. The KLM should prioritise the eradication of the waste collection backlog to certain densely populated areas per year as to strategically increase the waste collection service to the most number of households. The AMP also details the shortfall of the current tariff billing system and the negative effects this has on the KLM performing the waste collection service. The shortfalls are the KLM not billing all businesses and households correctly for the waste collection service provided and the KLM not receiving the monies from households and businesses once they are billed for the waste collection service.

The KLM does have a tariff structure, but there is a need to amend the tariffs to speak to a full cost accounting exercise to determine the true cost of the waste management function in order to ensure that the budget for waste management is used for the best customer service and used where it is needed most. The KLM has a large number of households located in peri-urban land that are not registered on the customer database.

A reconciliation of the billing system and collection services should be done. The frequency of collection services given to individual businesses needs to be compared to the current billing system to ensure that all households and businesses are being billed appropriately. It is possible that some businesses are being undercharged.

Greater communication between the finance department, responsible for tariffs and billing, and the waste department will facilitate the above processes. The required budget for the IWMP implementation must be determined and compared with the approved waste management budget and projected budgets annually so that funding can be sought for projects that will not be covered by the department's annual budget.

(a) Objective

Ensure that the waste management budget is sufficient for implementing the IWMP and AMP, and that appropriate tariffs are charged that reflect the true cost of waste service provided.

(b) Targets

- The waste management budget is to be reviewed, and all costs associated with the implementation of this IWMP and the AMP are to be specified so as to determine the funding shortfall and ensure funding and budget over the next five to ten years.
- Undertake a full cost accounting exercise for the waste service to determine the true complete cost of providing the current waste service, as well as that required in terms of this IWMP.
- Subsequent to the full cost accounting exercise undertake a reconciliation of tariffs charged and collection services delivered to businesses to ensure that these businesses are charged correctly. To be repeated every 2 years minimum.
- Develop a system of registering houses on tribal land, where relevant, on the customer database, by 2022.

5.4.2 Objective 2: Internal Management Planning and Resourcing

A Section 78 investigation was prompted following the issue of the municipality paying overtime wages and dealing with strikes by union members within the KLM waste department. The investigation serves as a means of determining feasibility of out-sourcing the waste collection that is currently carried out partly by the municipality for northern and CBD areas of KLM. A private waste management service provider already manages waste in the southern areas of KLM.

In accordance with Section 10(3) of the Waste Act, each municipality authorised to carry out waste management services by the Municipal Structures Act, must designate in writing a 'Waste Management Officer' from its administration to be 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 waste management organogram requires review and the filling of several vacant posts to ensure effective waste management and implementation of the projects identified in this IWMP.

(a) Objective

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

(b) Targets

- Formally designate a sufficiently capacitated WMO, in writing by the end of the 2019/2020 financial year.
- Fill vacant posts within the current waste management department according the organogram.
- Revise the waste management sub-directorate organogram based on the requirements of this IWMP. Thereafter, create and fill these posts according to the revised organogram.
- Create a waste mascot for the KLM to assist with waste awareness in the KLM.
- Develop a training needs list with proposed dates and training courses for training of all staff included in the revised organogram by end of the 2019/20 financial year. This training needs list will feed into the MLM's training plan.
- Submit annual reports of the implementation of the IWMP in terms of Section 46 of the MSA and Section 13 of the Waste Act.

5.4.3 Objective 3: Waste Information Management

Appropriate waste information management in the KLM is lacking, and needs to be improved through developing a system for sourcing, collating, reporting and storing the required information. The collating of tonnage information for waste collected and disposed of at the DCWM landfill site is very important for future waste management planning. In addition, recycled waste information should be collated by the KLM.

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 currently not being done by the KLM, but is being done on behalf of the KLM by the DCWM. The KLM needs to verify the tonnages uploaded onto SAWIS by the DCWM. 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 MLM.

There is currently no comprehensive information available on the types of waste which currently constitute the general domestic waste stream in the KLM area. One waste characterisation for waste collected within the KLM was undertaken as part of this IWMP. 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.

There is no server for the storage of waste management information in KLM and data is currently stored as soft copies on staff members' laptops rather than in a central location that can be easily accessed.

The KLM's complaints register requires revision. All complaints should be logged electronically and details of action taken to address complaints and timeframes should be logged. This system would enable the KLM to determine how effectively they are addressing complaints.

(a) Objective

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

(b) Targets

- Establish an appropriate waste information system that includes a data capture and reporting procedure for waste tonnages recorded at the landfill sites and waste facilities by the end of 2019/20 financial year.
- Reporting or verifying waste tonnages on a quarterly basis on the SAWIS from the end of 2019.
- Comply with Waste Information Regulations registration and reporting requirements by the end of 2019.
- Registration on the SAWIS by the end of 2019.
- Establish an appropriate waste information system that includes a data capture and reporting procedure for waste tonnages of businesses and industrial business. This includes the registering of these companies on the SAWIS as per the regulations of the Waste Information Regulations.
- Undertake bi-annual characterisation of domestic waste stream
- Revise the complaints register to allow tracking of complaints.

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

The National Domestic Waste Collection Standards (GN 21 of 2011) mandate the KLM to provide an enabling environment for household recycling and the National Waste Management strategy requires 25% of recyclables to have been diverted from landfill sites by 2016.

The KLM is currently only facilitating in-house paper recycling and provision of waste bins in the CBD for separation of recyclable waste. Recycling waste bins have been placed in Stanger and in Ballito, but are not being used adequately by the public in Stanger. The KLM does not have any system in place to monitor the volumes of waste recycled or the success of recycling initiatives. There is insufficient human capacity within the department to pursue this. The recycling of waste is dominated by the private sector.

The KLM will need to create an enabling environment for recycling through a multi-pronged approach of different initiatives including awareness raising, and the development of an accessible drop off centre for recyclable waste and MRF in the southern and northern areas of KLM is considered important for raising the profile of recycling in the area. A Waste Infrastructure Master Plan should be undertaken to determine more suitable locations to develop drop-off centres and transfer stations. Awareness of these facilities should be promoted through awareness campaigns at public meetings, education initiatives at schools and with the use of social media. The KLM will have to consider entering into agreements with private recycling companies to provide collection services at the drop off centres or MRFs.

Another strategy for minimising waste disposed at the landfill is to encourage composting of garden waste. Garden waste and organic waste comprises approximately 37% of the total domestic waste stream and a facility for composting of this waste should be provided. This would assist the municipality to comply with the requirements of norms and standards for disposal of waste to landfill (Department of Environmental Affairs, November 2011).

(a) Objective

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

(b) Targets

Due to the lack of existing tonnages for recycled material, no specific numerical performance targets have been set, however the following are proposed to ensure that these activities are commenced.

- Encourage separation of waste at source by establishing drop off centres for recyclables in town centres and at existing waste facilities in line with the recommendations of the waste infrastructure masterplan. Establishment of composting facilities in the KLM area to be included in the waste infrastructure masterplan.
- Commence with formalising and documenting waste reclaiming and recycling activities by the end of 2019.
- Develop a sufficient information system for recording recycling tonnages in the KLM by 2023.
- Encourage participation of SMME's and co-operatives in waste re-use and recycling by assisting local businesses and community groups with re-use and recycling projects. Assist at least one business and one community group annually from the beginning of the 2020/21 financial year with their recycling initiatives.

5.4.5 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 KLM area, only 56% of households receive a collection service, 5% use their own or a communal refuse dump and 27% have no refuse removal service. Factors limiting waste collection in the KLM are the dispersed nature of rural households and the associated large transportation distances, as well as a lack of backup waste management vehicles during periods when vehicles are being serviced.

While it is not feasible for the KLM to provide a waste collection service to meet the targets of the National Waste Management Strategy within the next five years, the KLM must aim to extend the geographical range of waste collection services through developing more drop-off centres and providing a more strategic placement of skips and bins in outer-lying rural villages. Kerbside refuse collection coverage reaches approximately 60% of the households within the LM. Geographically, waste skips are used to collect waste from the remaining 40% of LM.

A waste collection fleet management plan must be developed to ensure expansion of the collection service areas and timeous replacement for aging and failing vehicles. 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.

(a) 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.

(b) Targets

- Formalise a strategy for the communal skip bin programme in the KLM. This should look to focus on the most densely populated areas and confirm a target maximum distance that any dwelling should be from a bin (currently informally agreed to be 250m).
- The KLM is to document a plan for expanding the waste collection service in urban areas with waste collection vehicles and in peri-urban and rural areas with the use of the communal skip collection systems. A mapping exercise should be undertaken and the plan should indicate target expansion areas, anticipated timeframes and associated costs.
- A vehicle management plan and replacement roster is to be developed for all waste collection vehicles by the end of the 2020/21 financial year to ensure the fleet remains operational and to ensure that more vehicles are procured for the system.

5.4.6 Objective 6: Waste Transfer and Disposal

There is currently no municipal owned landfill in the KLM and the DCWM manages a private landfill within the KLM. There are currently two transfer stations in the KLM that are situated in Stanger at Yellowwood Drive, and in Ballito. There are no municipal drop-off centres, and builders' rubble and garden refuse are disposed of at privately owned sites or illegally dumped within the KLM. There are also no gazetted waste management by-laws available for the KLM that require the need for transfer stations, garden refuse and building rubble sites. These factors have led to high levels of illegal dumping.

The KLM needs to expand, or secure public access to more transfer facilities and drop-off centres 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.

(a) Objective

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

(b) Targets

- Develop a Waste Infrastructure Masterplan for the development/expansion of transfer stations, the development of waste drop off centres, recycling and composting facilities within the KLM. The masterplan to include the proposed development of the district regional landfill site.
- Develop, or secure public access to, a drop off centre or transfer station for the disposal of excess general waste, garden waste or builder's rubble by the end of the 2020/2021 financial year.

5.4.7 Objective 7: Waste Management Awareness

Currently there are awareness campaigns being undertaken at schools and community meetings involving the KLM and the DEA are occuring. Non-littering stickers and car licence disks are also provided to the public. However, there is still a need for improvement in waste management awareness which is an ongoing process. Awareness has been identified as a key issue in this IWMP process. There is a real need for an ongoing awareness programme for waste issues, especially regarding waste minimisation and how to dispose of waste correctly. Such a programme should engage schools, businesses and residential areas, and should include peri-urban areas. The KLM also needs to support other awareness initiatives such as the DEA's Youth in Waste programme and private recyclers. There is also a need for awareness in waste management to the public should the KLM waste department not be able collect waste from the public for any reason, such as refuse truck mechanical breakdowns.

(a) Objective

To ensure a programme of ongoing waste awareness campaigns in the KLM area with a focus on reduction and recycling.

(b) Targets

- Establish an annual programme of awareness campaigns at the beginning of each year and align with the awareness campaigns of the DEA, EDTEA and the iDM. Schools and residential areas around the illegal dumping sites should be prioritised for awareness campaigns. Waste by-laws should be communicated through these awareness campaigns as well.
- Undertake a minimum of 8 awareness campaigns/interventions per year.
- The KLM should support and promote other awareness initiatives undertaken within the KLM that are coordinated by the DEA, EDTEA and the iLembe District Municipality (iDM).

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

Waste management by-laws have been drafted by the Waste Manager of the KLM, but are not yet gazetted. The KLM should develop an enforcement plan to guide the enforcement of waste management by-laws once gazetted. 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 and the appropriate human and financial resources must be allocated if enforcement is going to be successful. At least one Waste Ranger (waste peace officer) post should be created, whose mandate is the enforcement of the waste management by-laws once gazetted. All existing KLM peace officers need to receive regular training on the waste management by-laws. The Waste Ranger and Waste Management Officer should attend an Environmental Management Inspectorate Course.

Finally, the KLM must undertake a campaign to ensure that all waste service providers are registered in terms of the by-laws.

(a) Objective

Develop a set of waste management by-laws and ensure that these are gazetted for implementation and enforcement and raise public awareness of these by-laws.

(b) Targets

- Develop by-laws and ensure that these are gazetted
- Develop an enforcement plan for the waste management by-laws
- Provide biennial training on the Waste Management By-laws to all persons involved in enforcing by-laws according to the enforcement plan developed.
- Appoint one waste ranger whose core duty will be to enforce the waste by-laws. Such an individual should be an appointed Peace Officer so that they are empowered to issue fines.

- Train and formally appoint existing waste supervisors as peace officers so that they are able to enforce anti-dumping laws (once gazetted).
- Develop a system for maintaining electronic records of enforcement actions

5.4.9 Objective 9: Illegal Dumping

Illegal dumping is the result of various weaknesses in a waste management system, including infrastructure and service provision, public awareness, and enforcement. Illegal dumping is a problem for the KLM but the scale of the challenge has never been fully quantified. A number of the other objectives (e.g. enforcement of by-laws) in this IWMP will contribute to reducing illegal dumping, however specific interventions are required to address this specific issue.

The KLM should undertake a map-based study of the illegal dumping hotspots annually and determine remediation costs which are to be budgeted for. The KLM should reduce illegal dumping by 30% by 2023 by expanding the waste skip collection service, public awareness campaigns and appointing a dedicated waste management ranger.

(a) Objective

To reduce illegal dumping in the KLM area.

(b) Targets

- Undertake a dumping hotspot assessment and update this annually. The locations and size of the hotspots are to be mapped to determine clean-up costs and prevention actions.
- Once the number of hotspots is determined through the mapping of all illegal dumping hotspots in the KLM, conduct dumping hotspot clean-up campaigns at areas most severely affected by illegal dumping.
- Reduce the number of hotspots by 30% between 2019 and 2023.
- Provide prevention measures at these cleaned illegal dumping locations such as the placement of skip bins, provision of a waste collection service and placement of “no dumping” signage to reduce the reoccurrence of illegal dumping.
- Conduct awareness campaigns in areas where illegal dumping is common to decrease the occurrence of illegal dumping.

6 Implementation Plan

This section presents a plan by which the KLM 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 KLM towards realising these objectives. An implementation programme is presented in the table below. It is however acknowledged that the KLM 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 table below outlines these projects and includes an indication of recommended prioritisation and timeframes. The table has been set up to allow the KLM to include budget estimates and funding mechanism, once these have been determined. Project priority ratings have been discussed and agreed at the stakeholder workshop.

Priority rating for projects is defined as follows:

- **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.
- **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.
- **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:

- Securing of funding
- Environmental Impact Assessment
- Further detailed studies (e.g. feasibility, geotechnical, social impact, biodiversity, etc.)
- Public participation processes
- Design
- Procurement
- Construction
- 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 42: 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	Undertake a full cost accounting exercise to determine the true cost of the waste management function, by the end of the 2021/22 financial year. The KLM to use the AMP and to determine a ring fenced cost for all waste management and collection activities undertaken in the MLM.	High	X	X				To be determined according to project scope. Approx. R100 000 once off.	Internal budget
1.2	The waste management budget is to be reviewed, and all costs associated with the implementation of this IWMP and the AMP are to be specified so as to determine the funding shortfall and ensure funding and budget over the next five years.	High		X	X	X		To be determined according to project scope.	Internal budget
1.3	Undertake reconciliation of tariffs charged and collections services delivered to businesses to ensure that these businesses are charged correctly. To be repeated every 2 years minimum from the 2020/21 financial year.	High		X		X		Nil. Internal project	Internal budget
1.4	Continue with the system of registering houses on tribal land, where relevant, on the customer database. Indigent database to be updated as well.	Medium	X	X	X	X	X	Nil. Internal project	Internal budget
Objective 2: Management and Resourcing									
2.1	Waste Management Officer: Formally designate a Waste Management Officer by the 2020/21 financial year. 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	N/A

No.	Actions	Priority Rating	2019/20	2020/21	2021/22	2022/23	2023/24	Funding Cost	Funding Source
2.2	Review organogram based on the needs of fulfilling the requirements of this IWMP.	High	X					Nil. Internal Project	N/A
2.3	Create and fill new posts as required.	High		X	X	X	X	Determined by organogram	Internal budget
2.4	Create a waste mascot for the KLM to assist with waste awareness in the KLM.	Low			X	X	X	To be confirmed based on mascot involvement in awareness campaigns.	Internal budget
2.5	Training: Develop an annual training plan with proposed dates for training for all staff included in the revised organogram. The training plan to be revised annually. Provide biennial training on the Waste Management By-laws to all persons involved in enforcing by-laws according to the enforcement plan developed. All technical staff to attend a waste training course, as appropriate, and to be revised on at least a 5 year cycle. Waste Management Officer to attend the provincial training provided for reporting on SAWIS.	Medium		X	X	X	x	R50,000 per year	N/A
2.6	IWMP implementation and annual reports: The implementation plan should be distributed to all persons responsible for managing projects / programs in the implementation plan. Undertaken an annual review of progress against the IWMP implementation plan and compile annual progress reports in accordance with the requirements of Section 13 of the Waste Act.	High	X	X	X	X	X	Nil. Internal Project	N/A
Objective 3: Waste Information Management									
3.1	Establish an appropriate Waste Information System for sourcing, collating, storing and reporting required information including: • Information required in terms of by-laws. • Collection tonnages • Disposal certificates • Facility permits. • Data capturing and reporting procedure for recycled waste tonnages of businesses and industrial business. This includes the registering of these companies on the SAWIS as per the	High	X	X	X			Nil. Internal Project	N/A

No.	Actions	Priority Rating	2019/20	2020/21	2021/22	2022/23	2023/24	Funding Cost	Funding Source
	regulations of the Waste Information Regulations. The information of recycled to be collated from 2020.								
3.2	Verify waste tonnages on a quarterly basis on the SAWIS from the end of 2019.	High	x	x	x	x	x	Nil. Internal Project	N/A
3.3	Review Waste Information Regulations and comply.	High	X	X				Nil. Internal Project	N/A
3.4	Develop a server for waste information storage that KLM and DCWM can access for sufficient recording of waste information.	High	X	X				Nil. Internal Project	N/A
3.5	Review of complaints management system: Update the complaints register used by the KLM. All complaints should be logged electronically and details of actions taken to address complaints should be registered.	Medium	X	X	X	X	X	Nil. Internal Project	N/A
3.6	Undertake annual characterisation of domestic waste stream.	High	X	X	X	X	X	Nil. Internal Project	N/A
Objective 4: Waste Minimisation									
4.1	The KLM has one operational MRF in the South (Ballito) and one MRF under construction and as part of the Yellowwoods Drive transfer station upgrade in the North (Stanger). Investigate options for establishing further drop-off centres and MRFs in the central part of the KLM. To be incorporated with Waste Infrastructure Masterplan (see 6.1) Municipalities are required to provide an enabling environment for recycling in term of the National Domestic Waste Collection Standards (GN 21 of 2011). While it is not feasible for the KLM to provide a door-to-door collection service for recyclables, drop-off centres and MRFs should be established to mainstream recycling and public involvement. Waste recycling tonnages should be recorded and information stored on a KLM server or WIS. To be incorporated with Garden Refuse Transfer Station (see 6.1)	High		X	X	X	X	R 3 million per drop off centre R 5 million per transfer station	Internal budget

No.	Actions	Priority Rating	2019/20	2020/21	2021/22	2022/23	2023/24	Funding Cost	Funding Source
4.2	Develop agreements with private recycling companies to provide collection services at drop-off centres and MRFs to increase recycling rates.	Medium		X	X	X	X	Nil. Internal Project	N/A
4.3	Encourage participation of SMME's and Co-operatives in waste recycling and re-use (IDP objective) by: • Assisting local recyclers. • Assisting community re-use and recycling projects. • Assist at least one local recycling / re-use business per year by providing support such as assisting with the development of business plans, information on recycling network within the iLembe District Municipality, and applications for funding. • Assist at least one community re-use or recycling project per year by providing support such as assisting with project advertising or sponsorship of equipment.	Medium	X	X	X	X	X	To be determined according to project scope.	TBC
4.4	In-house recycling for municipal offices: The KLM should expand the in-house paper recycling programme to other waste types and other offices within the KLM. Non-municipal offices should be considered as well for this. A contractor should be appointed to collect paper and shredded paper from all municipal offices.	High	X	X	X	X	X	To be determined according to project scope. Internal budget.	N/A
Objective 5: Waste Collection									
5.1	Compile a plan and conduct mapping exercise for expanding kerbside collections and communal skip collection systems to the peri-urban and rural areas. This should indicate target expansion areas, anticipated timeframes and associated costs.	High	X	X	X	X	X	Nil. Internal Project	N/A
5.2	Extend kerbside collection service by 100% by 2023 (i.e. double the kerb side collection service).	High		X	X	X	X	To be determined by the project scope. Internal Project	Internal budget

No.	Actions	Priority Rating	2019/20	2020/21	2021/22	2022/23	2023/24	Funding Cost	Funding Source
5.3	A vehicle and equipment management, maintenance and replacement roster is to be developed for all waste collection vehicles to ensure they remain operational and that new waste collection vehicles are procured. Roster to be updated annually based on vehicle condition and future waste collection demand.	High	X	X	X	X	X	Nil. Internal Project	N/A
Objective 6: Waste Transfer and Disposal									
6.1	Waste infrastructure Masterplan: Compile a masterplan for waste management facilities and infrastructure that is required for the KLM, and where the best strategic locations for establishing this infrastructure are. The study should include identification of potential sites considering landownership and development. Costing and proposed dates for construction should be included in the plan as well. Facilities included in the masterplan are: • Development of drop-off centres for general waste, garden waste and builder's rubble • Development of transfer stations • Development of buy-back centres • Development of MRFS • Development of composting facilities. To be undertaken before the end of the 2022/23 financial year.	High	X	X	X	X		R350,000 once off	TBC
Objective 7: Waste Management Awareness									

No.	Actions	Priority Rating	2019/20	2020/21	2021/22	2022/23	2023/24	Funding Cost	Funding Source
7.1	Plan the annual calendar of awareness campaigns for each year. Residential areas around the illegal dumping sites should be prioritised for awareness campaigns	High	X	X	X	X	X	Nil. Internal Project	N/A
7.2	Undertake at least 15 waste management awareness campaigns annually to raise awareness. To be focused around the drop-off centre (to be established), littering, waste recycling and enforcement of by-laws.	High	X	X	X	X	X	R 50,000 per year	Internal Budget
7.3	Support at least one government or private training and awareness initiative, where appropriate, per year.	High	X	X	X	X	X	To be determined according to project scope.	Internal Budget
7.4	Information leaflet: Continue with waste management information leaflet which addresses: • The relevant municipal departments and key contacts. • Kerb-side collections: What is acceptable, what is not and how to tell the difference. • Recycling: What is recyclable, separating at source, and where to drop-off. • Hazardous waste: What to do with your hazardous domestic waste. • Illegal dumping, by-laws and the applicable fines. The information should be available on the KLM website. Update this every year.	Medium		X	X	X	X	Nil if undertaken internally. R20,000 (printing)	Internal Budget
Objective 8: Enforcement of Waste Management By-laws									
8.1	Develop by-laws and ensure that these are gazetted for implementation and enforcement	High		X				Nil. Internal Project	N/A
8.2	Develop an enforcement plan to guide process of enforcing waste by-laws once gazetted. It should consider fining protocols, how to apply penalties, recovery systems and general involvement of peace officers.	High		X	X	X		Nil. Internal Project	N/A
8.3	Create one new Waste Ranger position and fill it (should receive the peace officer training to enforce by-laws).	High		X	X			Salary to be confirmed. Approx. R150 – R250 k per year	Internal Budget

No.	Actions	Priority Rating	2019/20	2020/21	2021/22	2022/23	2023/24	Funding Cost	Funding Source
8.4	Provide bi-ennial training on the Waste Management By-laws (once gazetted) to all existing KLM Peace Officers.	Medium		X		X		Nil. Internal Project	Internal Budget
8.5	Run a campaign to ensure all waste service providers are registered in terms of the by-laws.	Medium	X	X	X	X	X	Nil. Internal Project	Internal Budget
8.6	Train and formally appoint existing waste supervisors as peace officers so that they are able to enforce anti-dumping laws (once gazetted).	Medium	X	X	X	X	X	Nil. Internal Project	
Objective 9: Illegal dumping									
9.1	Continue with dumping hotspot assessment and update this annually. This map-based study of illegal dumping hotspots will include determining remediation costs.	High	X	X	X	X	X	Nil. Internal Project.	Internal Budget
9.2	Conduct dumping hotspot cleaning campaigns and remediate existing hotspots. Reduce the number of hotspots by 30% of current number of hotspots by 2024.	High	X	X	X	X	X	R250, 000 per year. Internal Project	Internal Budget
9.3	Implement dumping prevention measures (e.g. provision of a waste collection service, signage, barriers, awareness campaigns, etc.)	High	X	X	X	X	X	R100, 000 per year Internal project.	Internal Budget

7 Conclusion and Way Forward

7.1 Approvals

This IWMP will require council approval prior to it being adopted and implemented by the Cleansing Services Sub-directorate. 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 for 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).

7.2 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 KLM council.

7.3 Monitoring and Progress of the IWMP

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:

- the extent to which the plan has been implemented during the period;
- the waste management initiatives that have been undertaken during the reporting period;
- the delivery of waste management services and measures to be taken to secure the efficient delivery of waste management services, if applicable
- the level of compliance with the plan and any applicable waste management standards;
- the measures taken to secure compliance with waste management standards;
- the waste management monitoring activities;
- the actual budget expended on implementation of the plan;

- the measures that have been taken to make any necessary amendments to the plan;
- 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

7.3.1 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 implemented and which have not been as well as the success of these projects.

8 References

DEADP. (2017). *Waste Characterisation Guideline for Municipalities.* Cape Town: Department of Environmental Affairs and Development Planning.

Department of Environmental Affairs. (2008). *National Environmental Management: Waste Act (59/2008): National Waste Information Regulations.* Pretoria: Republic of South Africa.

Department of Environmental Affairs. (2016). *Report on the determination of the extent and role of waste picking in South Africa.* Pretoria: Department of Environmental Affairs.

Department of Environmental Affairs. (November 2011). *National Waste Management Strategy.* Pretoria.

Department of Science and Technology. (2012). *South African Waste Sector – 2012. An analysis of the formal private and public waste sector in South Africa. A National Waste RDI Roadmap for South Africa: Phase 1 Status Quo Assessment.* Pretoria: Department of Science and Technology.

IMQS. (2019). *KwaDukuza Local Municipality Asset Management Plan.* KwaDukuza: KwaDukuza Local Municipality.

KwaDukuza Local Municipality. (2018). *2018/19 Tariff Policy.* Stanger: KwaDukuza Local Municipality.

KwaDukuza Local Municipality. (2018). *Final Integrated Development Plan for 2018-2019 Financial Year.* Stanger.

KwaDukuza Local Municipality. (2018). *Triff of Charges 2018/19.* Stanger: KwaDukuza Local Municipality.

Ltd, T. S. (2019). *Vuthela Final Status Quo and Scoping Assessment Report for the Waste Efficiency Project within the KwaDukuza and Mandeni Municipalities.* Kwadukuza: Vuthela.

SABC. (2018, July 29). *SABC News*. Retrieved May 03, 2019, from SABC News: http://www.sabcnews.com/sabcnews/kzn-remains-province-with-highest-number-of-people-living-with-hiv/

Statistics South Africa. (2011). *Stats SA*. Retrieved September 7, 2018, from Stats SA: http://www.statssa.gov.za/?page_id=993&id=mandeni-municipality

Statistics South Africa. (2016). *Provincial Profile: KwaZulu-Natal Community Survey 2016.* Pretoria: Statistics South Africa.

Triplo4. (April 2019). *Final Status Quo and Scoping Assessment Report for the Waste Effeciency Project within the KwaDukuza and Mandeni Local Municipalities, iLembe District, KZN.* Stanger, KwaDukuza.

- Department of Environmental Affairs and Tourism (DEAT), 2006. *South Africa Environment Outlook. A report on the state of the environment*. Department of Environmental Affairs and Tourism, Pretoria.

- Department of Environmental Affairs; 2008. *National Environmental Management Act, Act No 62 of 2008.* Department of Environmental Affairs, Pretoria.

- Department of Environmental Affairs, 2011. National Policy for the Provision of Basic Refuse Removal Services to Indigent Households, Government Notice 413 of 2011. Department of Environmental Affairs, Pretoria.

- Department of Environmental Affairs; 2011. *National Waste Management Strategy, 2011.* Department of Environmental Affairs, Pretoria.

- Department of Environmental Affairs; 2011. National Environmental Management: Waste Act, Act No. 59 of 2008: National Domestic Waste Collection Standards; Government Notice 21 of 2011. Department of Environmental Affairs, Pretoria.

- Department of Environmental Affairs; 2011. *Solid waste tariff setting guidelines for local authorities, 2011.* Department of Environmental Affairs, Pretoria.
- Department of Environmental Affairs; 2012. *Municipal Waste Sector Plan; Government Notice 270 of 2012.* Department of Environmental Affairs, Pretoria.
- Department of Environmental Affairs, 2013. National Environmental Management: Waste Act 59 of 2008: National Norms and Standards for the Storage of Waste, General Notice 926 of 2013. Department of Environmental Affairs, Pretoria.
- Department of Environmental Affairs; 2014. *National Environmental Management: Waste Amendment Act, Act No, 26 of 2014.* Department of Environmental Affairs, Pretoria.
- Department of Environmental Affairs. (2016). *Report on the determination of the extent and role of waste picking in South Africa*. Pretoria: Department of Environmental Affairs.
- Department of Environmental Affairs, n.d. Guideline for the Designation of Waste Management Officers (WMOs) as Provided for in Section 10 of the National Environmental Management: Waste Act, 2008 (Act No.59 of 2008).
- Department of Environmental Affairs, n.d. Guideline for the Development of Integrated Waste Management Plans (IWMPs).
- Department of Environmental Affairs, n.d. *IWMP toolkit*, accessed from the web address http://iwmp.environment.gov.za/iwmp_toolkit on 08.01.2018.
- Department of Environmental Affairs and Development Planning. (2017). *Waste Characterisation Guideline for Municipalities*. Cape Town: Department of Environmental Affairs and Development Planning.
- Department of Science and Technology. (2012). South African Waste Sector – 2012. An analysis of the formal private and public waste sector in South Africa. A National Waste RDI Roadmap for South Africa: Phase 1 Status Quo Assessment. Pretoria: Department of Science and Technology.
- KwaDukuza Local Municipality. (2018). 2018/19 Tariff Policy. Stanger: KwaDukuza Local Municipality.
- KwaDukuza Local Municipality. (2018). *Tariff of Charges 2018/19.* Stanger: KwaDukuza Local Municipality.
- Statistics South Africa. (2011). Stats SA. Retrieved September 7, 2018, from Stats SA: http://www.statssa.gov.za/?page_id=993&id=mandeni-municipality
- Statistics South Africa. (2016). Provincial Profile: KwaZulu-Natal Community Survey 2016. Pretoria: Statistics South Africa.
- Statistics South Africa, 2012. *Census 2011 Provinces at a glance*. Statistics South Africa, Pretoria.
- Stats South Africa, 2017. *Community Survey 2016.* Statistics South Africa, Pretoria.
- Triplo4. (April 2019). Final Status Quo and Scoping Assessment Report for the Waste Effeciency Project within the KwaDukuza and Mandeni Local Municipalities, iLembe District, KZN. Stanger, KwaDukuza.
- United Nations Environmental Programme, 2009. *Developing an Integrated Solid Waste Management Plan Volume 1 Training Manual.* United Nations Environmental Programme, Japan.

Appendix A

Policy and Legislation

9 Policy and Legislation

9.1 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 countries 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.

9.2 International conventions

9.2.1 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.

9.2.2 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.

9.2.3 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.

9.2.4 **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. Nomphelo 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.

9.2.5 **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.

(a) **Activities within the Local Authority**

(i) Garnering local political support

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

(ii) 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.

(iii) 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.

(a) **Activities within the wider community**

(iv) 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.

(v) Consulting and involving general public

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

(vi) 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.

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

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

9.3 South African Legislation

9.3.1 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.

(b) **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).

(c) **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.

9.3.2 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.

9.3.3 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 mention 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.

5

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 appealed sections of the ECA, remain in force and are considered to have been made under the Waste Act.

9.3.4 National Environmental Management: Waste Act

(d) 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.

(e) 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.

(f) **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 43:Tasks required by KLM 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: • Integrating the IWMP and IDP • Ensuring access to services • Ensuring affordable service delivery • Ensure effective and efficient Sustainable and Financial management
	9 (3)	The Municipal may furthermore set local standards: • 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)	• 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 Systems Act (separately or as part of IDP)
	12	Contents for IWMP's, includes: • 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.

(g) **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.

(h) **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).

(i) **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 voluntary 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.

(j) **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.

9.3.5 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.

9.3.6 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.

9.3.7 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.

9.3.8 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.

9.3.9 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.

9.3.10 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.

9.3.11 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.

9.3.12 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 any may recover from the said person the cost of the removal or destruction. The preceding provision do not apply to any object or material which has been or is being used for or in connection with farming, or to soil excavated in the course of alluvial digging: provided that this sub-section shall not permit the deposit or leaving of any article or material on a road.

9.3.13 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.

9.3.14 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.

9.3.15 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.

9.3.16 **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.

9.3.17 **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 serviced 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 subsidization 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.

9.3.18 **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.

9.3.19 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.

9.3.20 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").

9.3.21 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.

9.4 National Policies and Guidelines

9.4.1 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.

9.4.2 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.

9.4.3 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 44: Goals and targets of the NWMS (2011)

Goal	Description	Targets 2016
Goal 1	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 cities and large towns have initiated separation at source programmes. • 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.	• 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.	• 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.	• 80% of municipalities running local awareness campaigns. • 80% of schools implementing waste awareness programmes.
Goal 5	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 SAWIC have waste quantification systems that report information to WIS.
Goal 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.
Goal 7	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.
Goal 8	Establish effective compliance with and enforcement of the Waste Act.	• 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.

9.4.4 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 92012 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.

9.4.5 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.)

9.4.6 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.

9.4.7 **Minimum Requirements Documents; Department of Water Affairs and Forestry**

The 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 form 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.

9.4.8 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”.

9.4.9 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:

(k) **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.

(l) **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.

(m) **Waste Excluded from Co-Processing**

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

(n) **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.

9.4.10 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.

9.4.11 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”.

9.4.12 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.

9.4.13 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.

9.4.14 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.

9.4.15 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.

9.4.16 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

9.4.17 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 complied, 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.

9.4.18 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.

9.4.19 National norms and standards for sorting, shredding, grinding, crushing, 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 100m2 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 100m2 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.

9.5 Local Strategy and Policies

9.5.1 KwaDukuza Local Municipality Integrated Development Plan

The KLM's present Integrated Development Plan (IDP) covers the period 2017 – 2022. It has been finalised and represents the first IDP for the amalgamated municipality. It notes a commitment to providing quality and sustainable waste management services to the residents of KLM, and includes waste management targets and projects. These have been considered in the 'Needs Analysis' section of the report.

9.5.2 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).

KwaDukuza Local Municipality By-Laws

There are no gazetted by-laws for waste management for KLM. By-laws have been drafted and were reviewed in 2014 but have not yet been finalised.

It is suggested draft by-laws are revised and finalised for gazette. A schedule of fines for illegal dumping or illegal waste management practices should be included in the updated 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	Wilson Mhlongo (WM): With regards to waste minimisation the KLM has a tender out for the provision of a weigh bridge and the upgrades to the Yellowwood Drive transfer station have commenced. The contractor on site is nearly complete with the earthworks. A drop-off centre for a garden waste, composting facility and a small MRF will be developed at the transfer station. The transfer station with the small MRF, drop off centre and the composting facility should be operational by August 2020. Budget has been made available for all the construction works, facilities and equipment that are required at the transfer station.	
2	WM: There is 100% geographical waste collection service in the KLM and there is a waste collection service in each area and ward within the KLM. The collection service is either a kerbside or waste skip collection service.	
3	WM: The KLM has mapped the waste collection system and skip bin collection system using the GIS.	
4	WM: The KLM is in the process of a Section 78 assessment for waste collection services in the south, central and north KLM regions. Subsequent to the study for the south, the KLM has developed a new contract for waste collection services with the waste collection service provider. The aim of the waste collection service is to provide a kerbside collection service to all households in the KLM and phase out the skip collection system as this is not as successful as illegal dumping still persists in areas where a skip collection system exists.	
5	Masupha Mathenja (MM) enquired about separation at source programmes in the KLM.	WM: There is a 2-bag separation at source programme already in place in the south KLM and recyclable waste and garden waste is taken to the Ballito transfer station. The KLM allows the residents in the south 3 x 50 kg sacks of garden waste per week for collection. This programme started in 2010. A separation at source programme is difficult in the north and central KLM due to lack of fleet for the collection of the recyclable waste and the garden waste.

Nr	Comments	Response
6	WM: Illegal dumping (rubble dumping) is a problem in the KLM.	
7	WM: A closure licence is in place for the Shakaville landfill and the site has been decommissioned, capped and fenced. However, alien vegetation is a concern and the KLM needs to remove this and completely rehabilitate the landfill.	The KLM needs to ensure that the Shakaville landfill complies with all the conditions of the closure licence.
8	MM: The KLM and the iDM should consider the use of a chip system on waste collection vehicles that measures waste disposal masses without the use of a weighbridge. The system allows the municipality to capture waste disposal masses for each household or business.	
9	WM: The KLM has developed a system for recording the garden waste collected as the KLM is billed per truck load of garden waste collected.	The KLM should try to determine the tonnage of garden waste collected by using a density conversion factor for garden waste. The KLM will be able to determine the percentage diversion of garden waste from landfill and whether they are meeting the 25% diversion NWMS goal.
10	WM: The KLM needs to develop a WIS that is complete and reliable for waste collection and disposal tonnage. The KLM cannot report tonnages on SAWIS until the disposal data is accurate.	
11	WM: The KLM has undertaken several awareness campaigns. Illegal dumping and littering is due to human behaviour and accepted practice, and has become a norm in the KLM. The KLM has targeted taxi drivers as well and provided them with no littering bumper stickers. MM: The iDM has a youth community outreach programme that will commence where one coordinator and 22 individuals will be appointed to conduct waste awareness campaigns in the KLM. Each individual will be responsible for awareness campaigns in a ward. The 22 individuals will be appointed for 2 years and the coordinator for 3 years.	The KLM should keep a record of all awareness campaigns undertaken and maintain attendance registers to quantify the total number of people reached during the awareness campaigns.
12	WM: The media has reported several occasions that waste is a big concern and problem in the KLM	The KLM to engage with the media and advise the good work and initiatives that the waste department has undertaken and are proposing for the KLM. The KLM waste department is to also use social platforms such as Facebook for good publicity regarding waste management and awareness.
13	WM: Community Services department issues fines for illegal dumping and littering through the traffic by-laws. The by-laws are enforced by traffic officials in the KLM. The development and approval of the waste by-laws will allow the KLM to focus and enforce all waste related by-laws through peace officers and traffic officers. Funds are required for the waste enforcement should the KLM consider the development of a waste ranger post. MM: The introduction of EMIs are important for the LM waste management by-laws and the KLM should	

Nr	Comments	Response
	consider this as a course for waste by-law enforcement.	
14	MM: The fines for the waste by-laws should be communicated through awareness campaigns. If the people know that they can get a fine for illegal dumping and littering, this might halt the illegal dumping and littering in the KLM.	
15	MM: The person or organisation operating the landfill site should report the waste disposal tonnages on SAWIS on behalf of the person or organisation disposing of waste at the landfill.	
16	WM: The waste department has KPIs for how well they perform their work duties. This has stimulated the success of recycling in the KLM and in turn the waste department has received more funds for waste infrastructure projects.	
17	WM: Recycling is not a success in Stanger because of human behaviour. The residents in Ballito understand the importance of recycling therefore implement and commit to recycling initiatives. Through awareness campaigns the residents in the north KLM should be informed regarding the importance of recycling.	
18	WM: The KLM has commenced with reconciliation of waste service provided to businesses and the tariff charged to these businesses. The KLM has determined that one business area/hub (Stanger Plaza) was undercharged by R1.7 million and another business area/hub was undercharged by R 950 000. Graduates (data and statistical management students) are used to reconcile the waste collection service with tariffs for residents in the KLM.	
19	WM: The KLM is to enter into a new contract agreement with the DCL that no payment will be issued to the company until a breakdown of the waste disposed and recovered is provided to the KLM. This will allow the KLM to verify tonnages on SAWIS, and to collate data regarding waste disposal, diversion, recovery and recycling for the KLM. Currently paper and cardboard, plastic and cans are removed from the waste stream entering the landfill site. The removal and recycling of glass from the waste to commence to be implemented in future.	
20	The KLM has many skips but only 2 skip collection vehicles. The KLM needs to develop a vehicle replacement and management roster for vehicles.	
21	MM: With regards to littering and illegal dumping, is skip bins still a requirement?	WM: A kerbside waste collection service is the best way to decrease illegal dumping and the KLM is striving to increase the percentage of households that receive a kerbside waste collection service. For example, in ward 29 there are several waste skips, but illegal dumping continues. People in the KLM burn waste in the waste skips for no reason. The waste skips therefore do not last that long. It is approximately

Nr	Comments	Response
		R30 000 per 8 m^3 waste skip which is very expensive and people do not see or understand that. The use of skips are therefore not that successful.
22	WM: The waste department is in constant talks with the technical department for the use of plant and equipment for clean-up of illegal dump sites.	
23	MM: The iDM is to hold a District forum which will address waste management. The forum will be targeted at Environmental and Waste Managers from Province to LMs.	
24	MM: Waste collectors should be registered with the KLM for the collection and transportation of waste. The KLM needs to standardise the waste collection for private waste collectors.	

Appendix D

Attendance Registers for the IWMP presentations, progress meeting and workshops

edtea

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

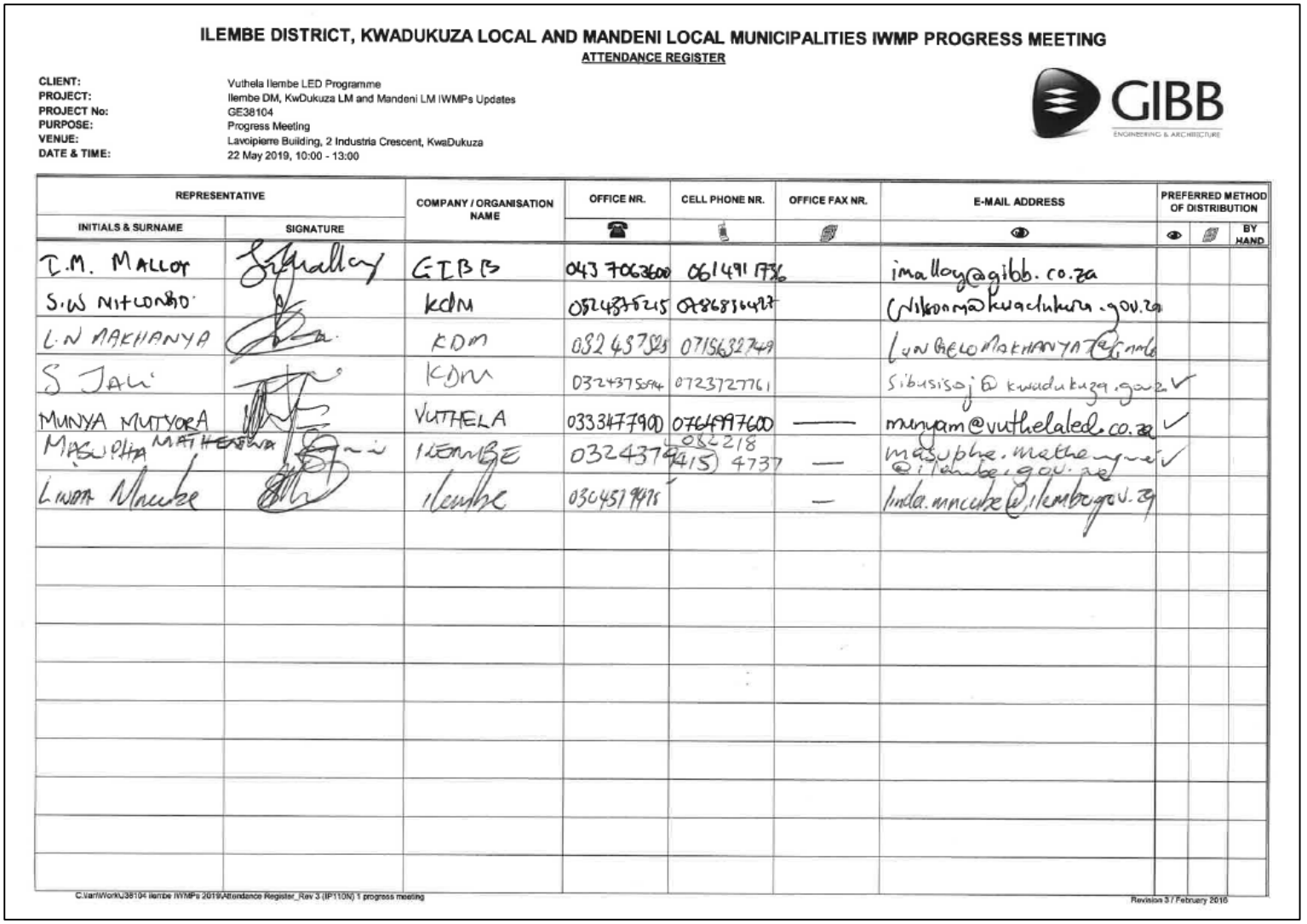
ATTENDANCE REGISTER

PURPOSE OF THE MEETING : ILEMBE DM, KWADUKUZA, MANDENI LM & IWMP UPDATES
VENUE : ELECTRICAL SERVICES BOARDROOM
DATE : 27/02/2019
TIME : 9:30

Surname & Initials	Organisation	Contact No.	Fax	Email	Signature
FYVIE, WALTER	GIBB	072 8439650	/	wfyvie@gibb.co.za	
Wilson Mhlongo	KDLM	0786833427	—	Wilsonm@kwadukuza.gov.za	
Sm Dlamini	MLM	0726359166	—	Mbongeleni.Dlamini@Mandeni[illegible]	
MASUPHA MATHENJWA	IDM: DPSS	082 2184737	—	masupha.mathenjwa@ilembe.gov.za	
Xaba NP	EDTEA-PWM	0828222511	—	nomusa.xaba@kzn[illegible].gov.za	
NAADIRA NADASEN	TRIPLO4	0727566786	—	naadira@triplo4.com	
ESTERHUIZEN, M	Vuthela	0845805808	–	monjae@vuthelaled.co.za	
MALLOY, I.M.	GIBB	061 4911736		imalloy@gibb.co.za	

"Leading the attainment of inclusive growth for job creation and economic sustenance"

Figure 20: Attendance register for the KwaDukuza, Mandeni and iLembe Municipalities IWMP Progress Meeting held on 27 February 2019



ILEMBE DISTRICT, KWADUKUZA LOCAL AND MANDENI LOCAL MUNICIPALITIES IWMP PROGRESS MEETING

ATTENDANCE REGISTER

CLIENT: Vuthela Ilembe LED Programme
PROJECT: Ilembe DM, KwDukuza LM and Mandeni LM IWMPs Updates
PROJECT No: GE38104
PURPOSE: Progress Meeting
VENUE: Lavoipierre Building, 2 Industria Crescent, KwaDukuza
DATE & TIME: 22 May 2019, 10:00 - 13:00

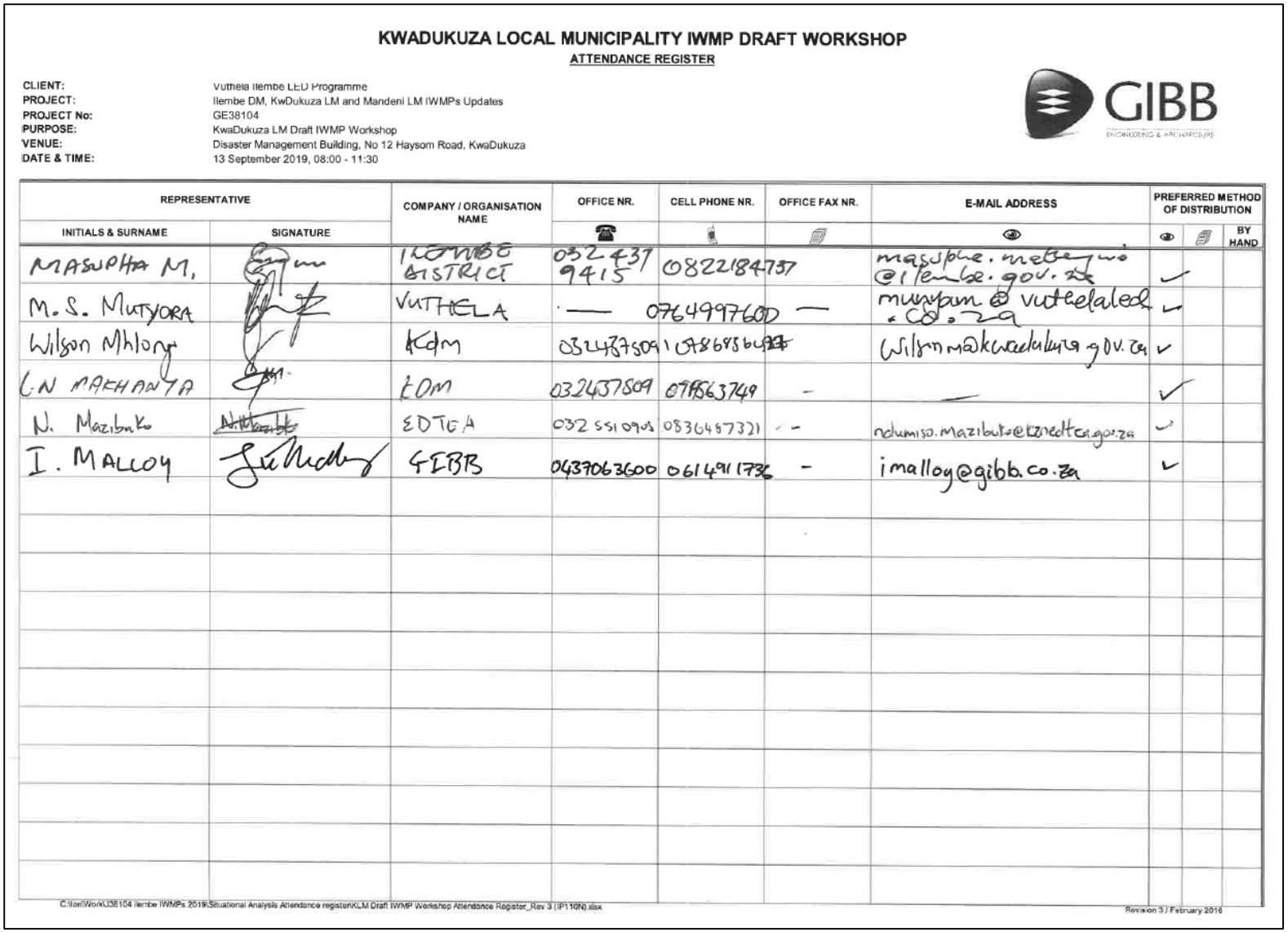
GIBB ENGINEERING & ARCHITECTURE

REPRESENTATIVE		COMPANY / ORGANISATION NAME	OFFICE NR.	CELL PHONE NR.	OFFICE FAX NR.	E-MAIL ADDRESS	PREFERRED METHOD OF DISTRIBUTION		
INITIALS & SURNAME	SIGNATURE		☎			@	@		BY HAND
T.M. MALLOY		GIBB	043 7063600	061491 [illegible]		imalloy@gibb.co.za			
S.W NITCONDO		KDM	0524375215	0786816427		[illegible]@kwadukuza.gov.za			
L.N MAKHANYA		KDM	0324375215	0715632749		[illegible]			
S JALI		KDM	0324375894	0723727761		sibusisoj@kwadukuza.gov.za	✓		
MUNYA MUTYORA		VUTHELA	0333477900	0764997600	—	munyam@vuthelaled.co.za	✓		
MASUPHA MATHENGWE		ILEMBE	032437[illegible]	(032) 218 4737	—	masupha.mathengwe@ilembe.gov.za	✓		
Linda Mncube		Ilembe	0304519[illegible]		—	linda.mncube@ilembe.gov.za			

C:\arr\Work\38104 ilembe IWMPs 2019\Attendance Register_Rev 3 (IP110N) 1 progress meeting

Revision 3 / February 2016

Figure 21: Attendance register for the KwaDukuza, Mandeni and iLembe Municipalities IWMP Progress Meeting held on 22 May 2019



KWADUKUZA LOCAL MUNICIPALITY IWMP DRAFT WORKSHOP

ATTENDANCE REGISTER

GIBB ENGINEERING & ARCHITECTURE

CLIENT:	Vuthela Ilembe LED Programme
PROJECT:	Ilembe DM, KwDukuza LM and Mandeni LM IWMPs Updates
PROJECT No:	GE38104
PURPOSE:	KwaDukuza LM Draft IWMP Workshop
VENUE:	Disaster Management Building, No 12 Haysom Road, KwaDukuza
DATE & TIME:	13 September 2019, 08:00 - 11:30

REPRESENTATIVE		COMPANY / ORGANISATION NAME	OFFICE NR.	CELL PHONE NR.	OFFICE FAX NR.	E-MAIL ADDRESS	PREFERRED METHOD OF DISTRIBUTION		
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C:\Ian\Work\GE38104 Ilembe IWMPs 2019\Situational Analysis Attendance register\KLM Draft IWMP Workshop Attendance Register_Rev 3 (IP110N).xlsx

Revision 3 / February 2016

Figure 22: Attendance register for the KwaDukuza Local Municipality IWMP Draft Workshop

DOCUMENT CONTROL

FORM IP180_B

CLIENT	:	UWP Consulting
PROJECT NAME	:	KwaDukuza Municipality IWMP **PROJECT No.** : GE38104
TITLE OF DOCUMENT	:	KwaDukuza Local Municipality IWMP Final Draft
ELECTRONIC LOCATION	:	\\eastlondon-5\projects\J38104_Ilembe IWMPs 2018\03_Project Management Plan Design\G_Document Management - Reports\Outgoing\KwaDukuza LM\Final Draft\KwaDukuza Local Municipality IWMP FinalDraft.docx

	Approved By	**Reviewed By**	**Prepared By**
REVISION 1	**NAME** **Walter Fyvie**	**NAME** **Kate Flood and Walter Fyvie**	**NAME** **Chad Dustan and Ian Malloy**
DATE **27 September 2019**	**SIGNATURE**	SIGNATURE	SIGNATURE

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