



DRAFT INTEGRATED WASTE MANAGEMENT PLAN (IWMP)

**20 October 2017
Makhado Local Municipality**

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TECHNICAL DEFINITIONS

Building and demolition waste means waste, excluding hazardous waste, produced during the construction, alteration, repair or demolition of any structure, and includes rubble, earth, rock and wood displaced during that construction, alteration, repair or demolition;

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

Communal Waste Disposal Site is the smallest waste disposal site classification with a capacity of less than 25 tonnes per day;

Composting is the controlled aerobic biological decomposition of organic matter, such as food scraps and plant matter, into humus, a soil-like material. Aerobic is the decomposition process in the presence of oxygen;

Constitution means the Constitution of the Republic of South Africa, 1996;

Container means a disposable or re-usable vessel in which waste is placed for the purposes of storing, accumulating, handling, transporting, treating or disposing of that waste, and includes bins, bin-liners and skips;

Decommissioning in relation to waste treatment, waste transfer or waste disposal facilities, means the planning for and management and remediation of the closure of a facility that is in operation or that no longer operates;

Department means the Department of Environmental Affairs;

Disposal means the burial, deposit, discharge, abandoning, dumping, placing or release of any waste into, or onto, any land;

Domestic waste means waste, excluding hazardous waste, that emanates from premises that are used wholly or mainly for residential, educational, health care, sport or recreation purposes;

Environment has the meaning assigned to it in section 1 of the National Environmental Management Act;

Environment Conservation Act means the Environment Conservation Act, 1989 (Act No, 73 of 1989);

General waste means waste that does not pose an immediate hazard or threat to health or to the environment, and includes—

- a) domestic waste;
- b) building and demolition waste;
- c) business waste: and
- d) inert waste;

Groundwater is all waters flowing or existing under the ground surface;

Hazardous waste means any waste that contains organic or inorganic elements or compounds that may, owing to the inherent physical, chemical or toxicological characteristics of that waste, have a detrimental impact on health and the environment;

Industry includes commercial activities, commercial agricultural activities, mining activities and the operation of power stations;

Inert waste means waste that—

- a) does not undergo any significant physical, chemical or biological transformation after disposal;
- b) does not burn, react physically or chemically biodegrade or otherwise adversely affect any other matter or environment with which it may come into contact; and

c) does not impact negatively on the environment, because of its pollutant content and because the toxicity of its leachate is insignificant;

Integrated Waste Management Plan is a plan which has been compiled to provide the cost effective and technically and environmentally acceptable solutions to the total waste management in the municipality. It addresses the situation analysis, and offer solutions to ensure responsible waste management. As such it addresses waste generation, waste minimisation and re-use, collection of all waste, disposal infrastructure (disposal facility requirements) and disposal according to environmentally sound practices and within the requirements of relevant legislation and regulations. A plan prepared in terms of Section 12 of the National Environmental Management: Waste Act (Act 59 of 2008);

Medical waste is any waste generated by hospitals, clinics, nursing homes, doctor's offices, medical laboratories, research facilities and veterinarians, which are infectious or potentially infectious;

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;

Minister means the Minister of Environmental Affairs;

Municipality means a municipality established in terms of the Local Government: Municipal Structures Act, 1998 (Act No. 117 of 1998);

Municipal Systems Act means the Local Government: Municipal Systems Act, 2000 (Act No. 32 of 2000);

National Environmental Management Act means the National Environmental Management Act, 1998 (Act No. 107 of 1998);

Operating Plan consists of drawings, descriptions and other documents regarding the operation of the waste disposal site, placement of waste, building daily cells and lifts, leachate management, waste disposal gas management and all other functions related to the operation of the waste disposal site;

Operator is the person or organisation responsible for the operation of the waste disposal site. The operator may be the owner, another public agency or private contractor;

Organ of state has the meaning assigned to it in section 239 of the Constitution;

Owner is the person or organisation that owns the property and/or facilities that constitute the waste disposal site;

Pollution has the meaning assigned to it in section 1 of the National Environmental Management Act;

Reclamation is the unauthorised separation of solid waste for recyclable materials and food for human consumption;

Recycle means a process where waste is reclaimed for further use, which process involves the separation of waste from a waste stream for further use and the processing of that separated material as a product or raw material;

Re-use means to utilize articles from the waste stream again for a similar or different purpose without changing the form or properties of the articles;

Site Feasibility is the initial step in the DEA permitting/licensing process that establishes the basic site features and general feasibility for a fully permitted/licensed waste disposal site;

Solid Waste is waste of a solid nature generated by a person, business or industry;

Sorting is the authorized separation of solid waste materials for the purpose of recycling or disposal, either at the source of generation or at a solid waste management facility;

Special waste is a non-hazardous waste, which due to its nature requires special or separate handling at a sanitary waste disposal site. Special wastes include but are not limited to tires, asbestos, demolition waste, industrial sludge of a non-hazardous nature, paper mill sludge, olive oil waste, abattoir wastes and petroleum waste oil;

Storage means the accumulation of waste in a manner that does not constitute treatment or disposal of that waste;

Waste means any substance, whether or not that substance can be reduced, re-used, recycled and recovered—

- a) that is surplus, unwanted, rejected, discarded, abandoned or disposed of;
- b) which the generator has no further use of for the purposes of production;
- c) that must be treated or disposed of; or
- d) that is identified as a waste by the Minister by notice in the Gazette, and includes waste generated by the mining, medical or other sector, but—
 - i) a by-product is not considered waste; and
 - ii) any portion of waste, once re-used, recycled and recovered, ceases to be waste;

Waste Disposal Classification is a system under the DWAF Minimum Requirements for classifying waste disposal sites according to the type, size of waste stream and its potential for significant leachate generation;

Waste disposal facility means any site or premise used for the accumulation of waste with the purpose of disposing of that waste at that site or on that premise;

Waste management activity means any activity listed in Schedule 1 or published by notice in the

Gazette under section 19, and includes—

- a) the importation and exportation of waste;
- b) the generation of waste, including the undertaking of any activity or process that is likely to result in the generation of waste;
- c) the accumulation and storage of waste;
- d) the collection and handling of waste;
- e) the reduction, re-use, recycling and recovery of waste;
- f) the trading in waste;

- g) the transportation of waste;
- h) the transfer of waste;
- i) the treatment of waste; and
- j) the disposal of waste;

Waste Management facility is a place, infrastructure, structure or containment of any kind, wherein, upon or at, a waste management activity takes place and includes a waste transfer station, container yard, landfill site, incinerators, lagoons, recycling and composting facilities;

Waste management licence means a licence issued in terms of Section 49;

Waste management services means waste collection, treatment, recycling and disposal services;

Waste minimisation programme means a programme that is intended to promote the reduced generation and disposal of waste;

Waste transfer facility means a facility that is used to accumulate and temporarily store waste before it is transported to a recycling, treatment or waste disposal facility;

Waste treatment facility means any site that is used to accumulate waste for the purpose of storage, recovery, treatment, reprocessing, recycling or sorting of that waste.

ABBREVIATIONS

AP Action Plan

CBD Central Business District

CEC Committee for Environmental Co-ordination

CONNEPP Consultative National Environmental Policy Process

DEA Department of Environmental Affairs

LEDET Limpopo Department of Economic Development, Environment and Tourism

DFA Development Facilitation Act 67 of 1995

DME Department of Minerals and Energy

DTL Departmental Task Leader

DWAF Department of Water Affairs and Forestry

DWA Department of Water Affairs

ECA Environment Conservation Act, Act No. 73 of 1989

EIA Environmental Impact Assessment

EPR Extended Producer Responsibility

E-waste Electronic Waste

IDP Integrated Development Plan

IP&WM Integrated Pollution and Waste Management

IWM Integrated Waste Management

IWMP Integrated Waste Management Plan

LGTA Local Government Transition Act 209 of 1993

LFA Logical Framework Analysis

LTT Louis Trichardt Town

MIG Municipal Infrastructure Grant

MRF Material Recovery Facility

NEAF National Environmental Advisory Framework

NEMA National Environmental Management Act, Act No. 107 of 1998

NEMWA National Environmental Management Waste Act, Act No. 59 of 2008.

SAWIS South African Waste Information System

TLB Tractor Loader Backhoe

VDM Vhembe District Municipality

WMO Waste Management Officer

MSA Municipal Systems Act

2. Situation analysis

With reference to the map in figure 1, the Makhado Municipality is characterised by distinct features in that there is a main central business district (CBD) situated not far from the N1 and four smaller CBD situated in other three R293 towns which are Dzanani, Waterval, Vleifontein and Tshakhuma/Levubu at about 54 kilometres radius away from the main town (Louis Trichardt). There are three industrial areas within Makhado Municipality namely; Louis Trichardt ;Madombidzha and Dzanani.

The higher income lower density populations adjoin north and south of Swongozwi Street, North East (New Town), East (Eltivillas) and South East of the CBD (Makhado Park).

The middle income medium density population is fairly well situated at R293 towns such as Dzanani, Watervaal, Vleifontein and Tshikota Township. The lower income higher density population is spread further away from the CBD which are mainly in rural areas. The Municipality does not have informal settlements. Rural areas are mainly far from the CBD and concentrated further in all **three Makhado regions**.

The existing Vondeling landfill site which was closed on the 30th of June 2017 situated about three kilometres east from the CBD, and the new Makhado Landfill site is situated at about seven km west of main CBD. With the closure of Vondeling landfill site, the new Makhado landfill site with an estimated life span of 50 years has started with the operation on the 01st of July 2017 and will be under an operation of an appointed private company.

The municipality's By-law was promulgated in 2014 and waste management policy was approved by the municipality in 2014 which stipulates all functions and services rendered by Waste Management Division (WMD) within the Municipality. According the 2011 Census there are approximately **134889** households, with **13606** receiving waste management services, and **19491 receive number of service**. No households are serviced by private refuse removal service providers. The number of households not receiving services is approximately **121283** (according to Makhado IDP 2017). There are approximately **R 8 197 780.00** (annual billing for 2015/16) generated from residential, commercial and industrial customers made up of industry, commerce, schools and home businesses.

2.1. DEMOGRAPHICS (POPULATION AND DEVELOPMENT PROFILES)

2.1.1 Growth & Demographic Profile

Growth estimates	
Municipality Population (as per Census 2011):	516031
Estimated Population Growth (%) as per Census 2011:	0.43

Estimated current population as of 2016 (year is a parameter):	527126
Demographic profile	
Age:	
Youth	359028
Middle age	108948
Old age	48053
Gender:	
Male	236795
Female	279236
Education:	
Primary	133470
Secondary	211278
Tertiary	20886
Employment:	
Employed	78768
Unemployed	286078

Table 1: Growth & Demographic Profile

Figure 2: Population distribution graphs:

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<p>Graph 11 If you are reading this message, please be sure to enter all of the relevant data to obtain a graph.</p>	<p>Graph 12 If you are reading this message, please be sure to enter all of the relevant data to obtain a graph.</p>
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The **age** graph shows that youth outnumber middle age people by almost three times and the old age lower by half. The **education** graph shows that there are almost twice more people with secondary education than primary education and almost eight times lower people with tertiary education than secondary education.

Generally, the graph shows that people are educated to a minimum of tertiary education level.

The **employment** graph shows that more people are unemployed than employed, The **gender** graph shows that females outnumber males considerably.

Assumptions

- There is a fairly good level of education amongst the populace so there should be an understanding and acceptance of education and awareness campaigning with regards to waste management. If so the populace would be amenable to change.
- Because of the education levels, waste management initiatives would be easily communicated to this group (Local Recycling forums, Home Base Care Groups, Schools, Environmental forums, Hawkers, Traditional councils, Bus and Taxi association) via the correct education and awareness programmes.
- Due to a high level of unemployment, there should be a greater acceptance of the waste hierarchy in order to reduce costs and improve savings. The waste **management** hierarchy is also a route to earning an income.
- The gender graph is significant in that females are many and are generally the house keepers, and together with the children and the elderly can be used to implement the separation at source ventures.
- The ability to afford **waste** services is relatively low due to a higher unemployment ratio.
- High levels of recyclables will result from this group (Local Recycling forums, Home Base Care Groups, Schools, Environmental forums, Hawkers, Traditional councils, Bus and Taxi association) and the ability to pay for services is high.

2.1.2 Dwelling Types

House or brick/concrete block structure on a separate stand or yard or on a farm:	121461
Traditional dwelling/hut/structure made of traditional materials:	6749
Flat or apartment in a block of flats:	655
Cluster house in complex:	215
Townhouse (semi-detached house in a complex):	168
Semi-detached house:	432
House/flat/room in backyard:	682
Informal dwelling (shack in backyard):	1737
Informal dwelling (shack not in backyard e.g. in a informal/squatter settlement or on a farm):	1736
Room/flat on a property or larger dwelling/servants quarters/granny flat:	337
Caravan/tent:	139
Other:	578

Table 2: Dwelling Types

Figure 3: Dwelling types graphs:

Graph 22

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

2.1.1. Domestic Waste generation

Current waste generation and estimated future waste generation (In tonnes)	
Current domestic waste generation rates	2235.16
Future domestic waste generation rates (in 10 years)	22351600

Table 3: Domestic Waste generation

Figure 4: Domestic waste generation graph:

Graph 23

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2.3. WASTE QUANTITIES AND TYPES

2.3.1. Weighbridge

YEAR	TOTAL (TON)
2011	74 125.21
2012	82 775.00
2013	87 598.00
2014	94 498.00
2015	102 716.00
2016	104 355.10

Table 4: Waste Quantity received at Vondeling the last 6 six years.

2.3.2. Volume density estimation system

Makhado Landfill Site		
Waste type/streams	Waste generated per annum (tons)	Total percentages
Organic waste	21914.6	21 %
Cans	7263.1	6.95998 %
Paper	24210.4	23.2 %
Glass	7868.36	7.53998 %
Plastic	21184.1	20.3 %
Construction and demolition waste	21914.6	21 %
Tyres	0	0 %
Other	0	0 %
Total		100 %

Table 5: Volume density estimation system

2.3.3. Waste stream analysis

WASTE STREAM	2011	2012	2013	2014	2015	2016
GENERAL WASTE	42 992.62	48 009.50	50 806.84	54 808.84	59 575.28	60 525.95
GARDEN WASTE	15 566.30	17 382.75	18 395.58	19 844.58	21 570.36	21 914.57
BUILDERS RUBBLE	9 636.28	10760.7 5	11387.7 4	12284.7 4	13353.0 8	13566.1 8
NON CONTAMINATED SOIL	5930.01	6622	7007.84	7559.84	8217.28	8348.40
	74 125.21	82 775.00	87 598.00	94 498.00	102 716.00	104 355.10

Table 6: Different Waste Streams received at Vondeling Landfill site for the past 6 six years.

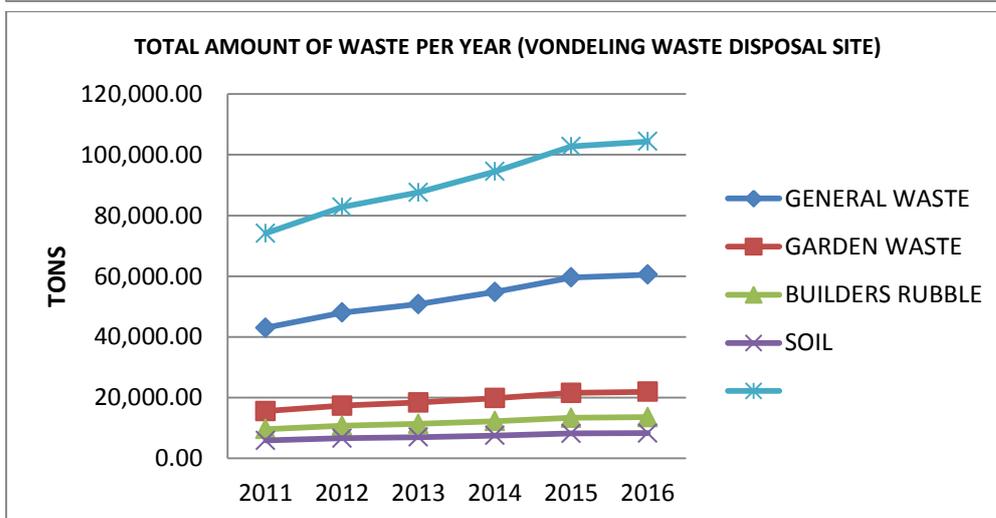
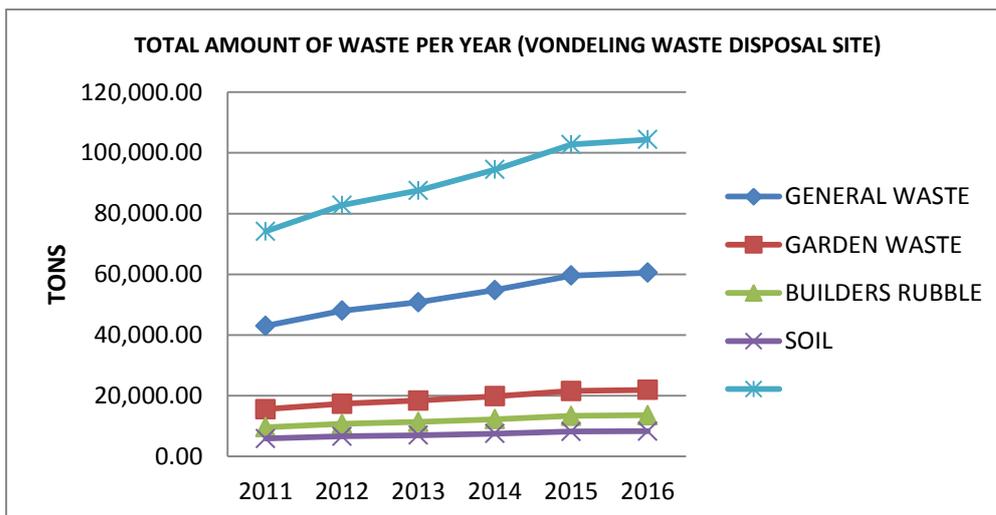


Figure 5: Graph showing total amount of different waste stream going to the landfill site per year

TABLE SHOWING DIFFERENT AMOUNT OF WASTE STREAMS PER YEAR.

GENERAL WASTE	
YEAR	TOTAL (TONS)
2011	42 992.62
2012	48 009.50
2013	50 806.84
2014	54 808.84
2015	59 575.28
2016	60 525.95

Table 7: Quantity of General Waste

GARDEN WASTE	
YEAR	TOTAL (TONS)
2011	15 566.30
2012	17 382.75
2013	18 395.58
2014	19 844.58
2015	21 570.36
2016	21 914.57

Table 8: Quantity of Garden Waste

SOIL	
YEAR	TOTAL (TONS)
2011	5930.01
2012	6622
2013	7007.84
2014	7559.84
2015	8217.28
2016	8348.40

Table 9: Quantity of Soil Generated

BUILDERS RUBBLE	
YEAR	TOTAL (TONS)
2011	9 636.28
2012	10760.75
2013	11387.74
2014	12284.74
2015	13353.08
2016	13566.18

Generated

Tables 10: Quantity of Building Ruble

2.4. WASTE RECYCLING, TREATMENT AND DISPOSAL

2.4.1. Status Quo of Waste Disposal Facilities

2.4.1.1 VONDELING LANDFILL SITE



Figure 6: Picture showing entrance view of Vondeling Dumping Site

- The site was established in 1981 with the aim to close a quarry. The total size of the area is 10ha and is situated at part of remainder of portion 7 of the farm Bergvliet 288 LS in Louis Trichardt, within the district of Vhembe in Limpopo Province. In 1997 the site was issued a permit in terms of section 20 of the Environmental Conservation Act, 1989 (Act 73 of 1989) by the Department of Water Affairs and Forestry as class G:S:B- (with permit number 16/2/7/A700/D1/Z1/P256).
- The site is currently 100% full to its design capacity and not managed in accordance to the licence requirements regarding the covering material (soil).
- The site received a closure and rehabilitation permit/ Waste Management Licence issued in terms of section 49(1)(a) of the National Environmental Management: Waste Act, 2008 (Act 59 of 2008) by National Department of Environmental Affairs in 2012 with the licence number 12/9/11/L729/5.
- The site received an average of 8 696 ton per month of general waste generated from all of Makhado three regions.

Types of waste disposed at Vondeling Landfill site



Figure 7: Types of waste disposed at Vondeling Landfill Site

2.4.1.2 MAKHADO LANDFILL SITE

Figure 8: Picture showing entrance view of Makhado Landfill Site

- Makhado Landfill site was issued with the Waste Management Licence in terms of section 49(1)(a) of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) as class G:M:B- site by National Department of Environmental Affairs in 2011 with the licence number 12/9/11/L423/5.
- The site is situated at portion 1 of farm Rietvly No. 276-LS, Vhembe District, Louis Trichardt in Limpopo, and has got the total area of 20 ha.

2.4.2. Status Quo of Waste Transfer Facilities

2.4.2.2 DZANANI REFUSE TRANSFER STATION



Figure 9: Picture showing site entrance of Dzanani Refuse Transfer Station

Dzanani Refuse Transfer Station was issued with Waste Management Licence in terms of section 49(1)(a) of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) as class G:C:B- site by the Limpopo Department of Economic Development, Environmental and Tourism (LEDET) in 2010 with the licence number 12/4/10-A/1/V3. The site is situated at the remainder of Dzanani Township, Dzanani, Vhembe District, Limpopo, and has got the total area of 2.5 ha.

This transfer station is valuable for waste sorting and ensuring that all recyclables material are sorted from the waste and also ensuring that whatever is sent to the landfill is minimal and necessary for disposal. This transfer station also assists in managing and diverting harvesters away from the landfill. The other advantage with this facility is that it is close to residential areas hence illegal dumping may be minimised. The compactor trucks may also be efficiently used as they move only between the transfer station and the landfill less often.

2.4.3. Status Quo of Waste Recyclers

- The municipality facilitate and support local recycling projects, big and imaged private recycling companies.
- 14 waste recycling agencies has been formed and registered with the municipal recycling databases.
- ± 2 074 200 total kg of waste recycled annually (these include glass, plastic, paper, and cans).
- 2 composting projects exist at Limpopo Dairy and KW Plant hire cc which is situated at stand no. 1322 and 1324 at Grobler Street in Louis Trichardt.
- Management of used oil from private and municipal workshops is being collected by OilKol for recycling, and the company provide them with proper used oil storage container.
- The management of E-waste is still a challenge within the municipality since there is no company that is doing recycling, and as such communities are still referring e-waste to landfill for disposal because there is no approved facility within Makhado Municipality.

2.4.4. Status Quo of other types of facilities

2.4.4.1 KUTAMA/SINTHUMULE REFUSE DROP-OFF-POINTS

6 Drop off points have been developed by the National Department of Environmental Affairs in the Kutama/Sinthumule area in 2012 with the aim of reducing the backlog of waste collection in rural areas. These 6 drop-off-points were positioned in a strategic manner so that the entire community can be able to access them without traveling long distance. The facilities have a design capacity of handling almost 60m³ of non-hazardous waste and were developed in Madombidzha, Ramahantsha, Ravele, Madodonga, Tshikwarani, and Maebani Villages.



Figure 10: Picture showing front view of drop-off-point at Kutama/Sinthumule

2.5. WASTE COLLECTION SERVICES

2.5.1 National Domestic Waste Collection Standards

Item	Total number
Households	134889
Serviced households	13606
Un-serviced households	121283
Indigent households	24464
Un-serviced indigent households	14678.4
Service Level A: On-site appropriate and regularly supervised disposal	0
Service Level B: Community transfer to central collection point:	19491
Service Level C: Organised transfer to central collection points and/or kerbside collection:	1427
Service Level D: Mixture of Service Level B and Service Level C:	0
Total Serviced households as per the National Domestic Waste Collection Standards:	20918

Table 7: Waste Collection data

Figure 11: National Domestic Waste Collection Standards Graph:

Graph 24
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2.5.3. WASTE COLLECTION OVERVIEW

Makhado town, the Air Force Base and the surrounding townships (3 x R293 towns) have a proper waste management collection system in place, with sufficient capacity for the short to medium term. The lack of adequate waste disposal facilities contributes to the illegal disposal of waste by burning and this consequently affects the air quality (air pollution).

It is furthermore important to note that the municipality is responsible for operating and maintaining the waste management service dealing with solid waste collection, storage and management particularly at household and business level. The Limpopo Provincial Department of Health is responsible for the monitoring and management of Health Care Risk Waste (medical waste). While the monitoring and management of Hazardous waste is the competency of National Department of Environmental Affairs (DEA).

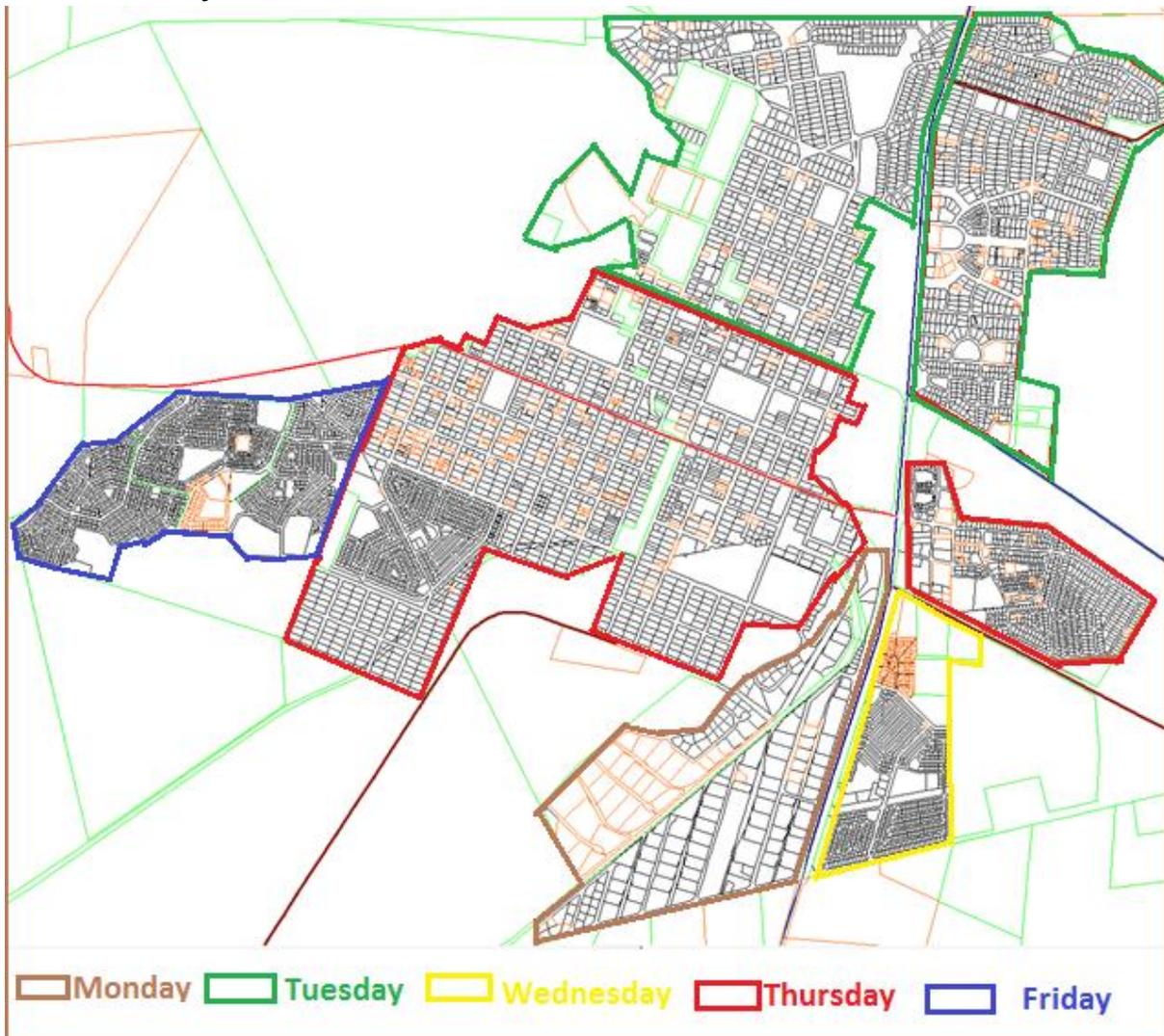
The areas of Kutama/Sinthumule and along Williespoort to Siloam tarred road are serviced with a rudimentary system for waste collection. There are also plans in the pipeline to develop at least two more waste drop off terminals in all remaining regions per annum. Table 7 above gives the number of households either receiving in one form or another or not receiving the service at all.

Frequency

- Collection of refuse from Town CBD is done twice per day by refuse removal trucks.
- Collection at other business premises is done twice per week.
- Collection of garden refuse is done on request.
- Collection from households in all regions is done once per week.
- Collection from public areas is done once per week.

- Removal of refuse mass containers is done as and when it is full in the CBD and industrial area only.

Routes and days in LTT



Collection Routes and Days for other Regions

Route	Day/s
Kutama/ Sinthumule	Sunday
Vleifontein R293	Tuesday & Friday
Waternal R293	Monday & Thursday
Dzanani R293	Wednesday & Friday
Dzanani, from Williespoort to Siloam	Tuesday & Thursday
Braamboss (Air Force Base)	Wednesday
Tshakhuma	Wednesday

- Makhado Town CBD, refuse collection and removal is done daily.

- Makhado Town Households, done every Tuesday & Thursday
- Tshikota Households – every Friday
- Makhado Town Extension 08, every Wednesday
- Makhado Town Industries is done on Monday, Wednesday and Friday

2.5.4. DETAILS OF VEHICLES

WASTE COMPACTOR TRUCK

NO	Make & (year model)	Reg. No.	Volume	Area	Condition		
					Poor	Fair	Good
01	Nissan (2014)	CPF 843 L	22m ³	LTT			X
02	Nissan (2014)	CPF 852 L	22m ³	LTT			X
03	Nissan (2007)	BCS 278 L	19m ³	Vuwani	X		
04	Nissan (2010)	BYZ 051 L	12m ³	Dzanani		X	
05	Nissan (2011)	CDS 089 L	12m ³	Watervaal		X	
		Total	87m ³ per day				

Table 8: List of Waste Compactor Truck

REFUSE TRACTORS

No	Make & (Year Model)	Reg. No.	Volume	Area	Condition		
					Poor	Fair	Good
01	Ford Tractor (1997)	CWR 608 L	4 m ³	LTT	X		
02	Ford Tractor (1997)	CWR 611 L	4 m ³	LTT	X		
03	Ford Tractor (2001)	CVK 077 L	4 m ³	Dzanani	X		
04	Trailer (1997)	DHY 593 N	4 m ³	LTT	X		
05	Trailer (1997)	DHY 594 N	4 m ³	LTT	X		
06	Trailer (1997)	DGR 667 N	4 m ³	LTT	X		
07	Trailer (1997)	DGR 683 N	4 m ³	LTT	X		
08	Trailer (1997)	CVK 168 L	4 m ³	Dzanani	X		

Table 9: list of refuse collector tractors-trailer combination

WASTE LANDFILL COMPACTION MACHINES

No	Make & (Year Model)	Reg. No.	Area	Condition		
				Poor	Fair	Good
01	Agrico (1995)	No Reg. no.	Vondeling Landfill Site	X		
02	Dressta (2014)	No Reg.no	Vondeling Landfill Site			X

Table 10: List of Waste landfill compaction machines

LDV's

No	Make	Reg. No.	Volume	Area	Condition		
					Poor	Fair	Good
01	ISUZU		1 ton	LTT		X	
02	ISUZU	CGF 254 L	1 ton	Watervaal		X	
03	ISUZU	CGF 263 L	1 ton	Dzanani		X	

Table 11: List of LDV vehicle within waste management section

*** Note that the indicated VEHICLE CONDITION is a subjective assessment of the vehicles and no mechanical assessment of the vehicles had been conducted for this study. The opinion of the municipal official was also obtained during the assessment of the vehicles.*

Vehicles which are 14 years and older are likely to be replaced in the near future. The Municipality owns all equipment and vehicles, vehicles which are more than 5 years are maintained and serviced by the Municipal workshop.



Figure 12 : Agrico Landfill Compactor Machine

Figure 13 : Refuse Collector Tractor-trailer combination



Figure 14 : 11m3 Refuse Compactor Truck stationed at Dzanani Region



Figure 15: 11m3 Refuse Compactor Truck stationed at Watervaal Region.



Figure 16: LDV vehicle used by Supervisor at Makhado Region



Figure 17: 22m3 Refuse Compactor truck stationed at Makhado Region



Figure 18: LDV Vehicle used by foreman at Watervaal Region

6.5.2. 2.6 FINANCING OF WASTE MANAGEMENT

2.6.1 Budget/Expenditure: Income and expenditure

Item	Amount
Collection	
Capex-purchase (vehicles)	R 7000000
Maintenance	R 6000000
Fuel	R 1500000
Receptacles	R 2500000
General	R 1400000
Subtotal	R 18400000
Governance	
Staff (remuneration)	R 8000000
Education and awareness	R 800000
IWMPS	R 200000
By-laws	R 0
Subtotal	R 9000000
Disposal	
Transfer station	R 600000
Disposal sites	R 10200000
Acquisition of land, equipment	R 0
Regulatory compliance, EIA's and licence	R 0
Subtotal	R 10800000
Total	R 38200000

Table 12: Budget/Expenditure: Income and expenditure

Figure 20: Budget/Expenditure graph:

Graph 25
If you are reading this message, please be sure to enter all of the relevant data to obtain a graph.

1.6.2. Revenue sources

Funding Source	Amount
MIG Funding	R 8000000
Equitable share funding	R 17900000
Revenue from waste disposal fees	R 0
EPWP Incentives Grant	R 2000000
Total	R 27900000

Table 13: list of revenue sources

6.5.3. 2.7 GAP AND SITUATION ANALYSIS FOR MAKHADO LOCAL MUNICIPALITY

Certain needs pertaining to core functions of waste management within Makhado municipality were identified which required attention and are as follows:

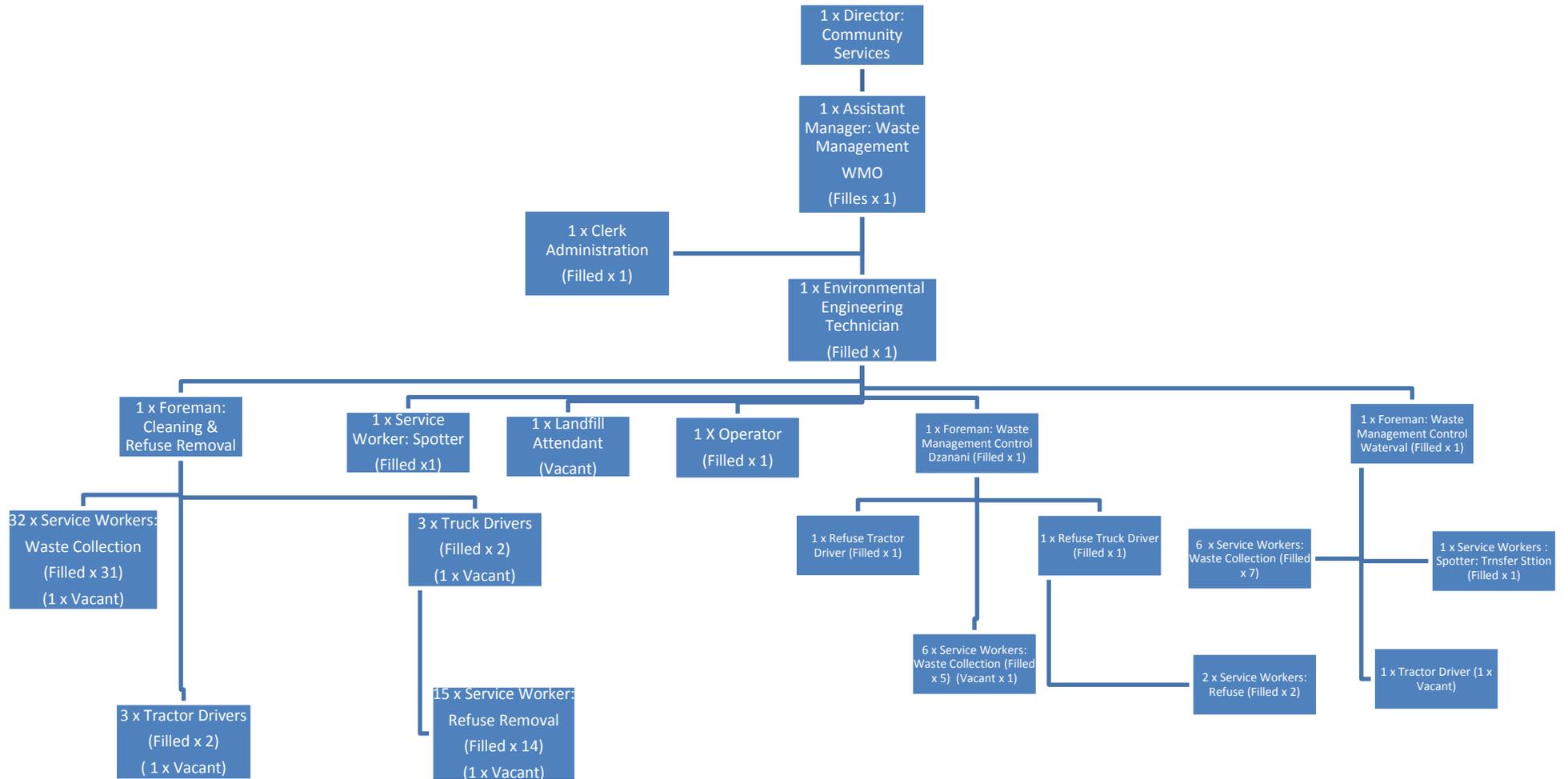
- Garden refuse are disposed off at the existing Vondeling waste disposal sites with no processing of the garden waste. The exact volumes of garden refuse need to be determined (entrance control at disposal facilities) to determine the feasibility of composting garden refuse.
- A large quantity of recyclable material are going to the landfill site which is cost effective (i.e. transportation cost of the material to and from the landfill to the recycling/recovering Centre)
- The Municipality should also extend the free basic refuse removal service to indigents in un-serviced settlements on an on-going basis.

- Should any new developments take place in the area, the Municipality should include new developments for the provision of a waste collection and disposal service. It is essential that in conjunction with the Town Planning Section that future residential and business area expansion are catered for in terms of refuse removal and development of waste management plan. This will allow Makhado Municipality to determine the possible costs involved at an early stage and therefore will be able to adjust their budget accordingly. This will also allow Makhado Municipality to service the new areas when they are developed.
- The municipality has good legislations (such as Municipal Waste Management By-Laws and Waste Management Policy) in place but they are not known by all concerned/ citizens of Makhado Local Municipality.
- Illegal disposal of waste is common like in any other municipal areas within the country. This issue should be addressed in order to manage and minimise illegal activities pertaining to waste disposal. Current strategies to prevent illegal disposal are inadequate. The Municipality should speed up the purchasing of TLB, Tipper truck, and mass containers which must be placed in strategic places and open spaces where illegal dumping is regularly occurring.
- Municipality have a shortage of personnel for education and awareness, street cleaning, waste collection and for the proper management of waste management facilities. There is an urgent need to increase personnel by filling all vacant positions, create new positions and fill them. For example, positions need to be created and filled for an environmental/ waste education personnel, landfill site manager, gate control, weighbridge controller, and refuse transfer station caretaker in order to control the access onto the waste management sites and for record-keeping of incoming vehicles, waste quantities and to ensure that only permissible wastes are referred to sites.
- A detailed financial investigation should be done by Makhado Municipality in order to ring-fence the service specifically for waste management.
- To provide a cost effective waste management service, the payment of service tariffs should be improved and the tariff structure should be investigated to be practical and be standardised.
- The extent and financial implications of the free basic refuse removal service to indigents should be determined to ensure that the cost shortfall not covered by the Equitable Share is budgeted for accordingly by the municipality.
- The Municipal waste collection vehicles are generally in a fair condition, with the exception of three (3) refuse removal tractor-trailer combination that are old and due for replacement. A vehicle replacement plan should be put in place for when the replacement is due so that the Municipality can comply with waste management minimum requirements and standards.

- The newly constructed Makhado waste landfill site should be utilised and operated according to license conditions as soon as possible since the existing Vondeling waste disposal site needs to be closed and rehabilitated according to the approved closure and rehabilitation plan and closure licence conditions.
- Municipality has increased the service delivery to most households and to indigents in the municipal area with the assistance of National Department of Environmental affairs through the development of Kutama/Sinthumule refuse drop-off-points. Refuse drop-off-points need to be developed in other regional areas to optimize service delivery.
- The Municipality should compile a waste removal map/schedule which illustrates all the daily waste collection areas in the municipal area. Un-serviced areas will then also be identified and can be included in future waste collection planning. New developments should also be updated on this map/schedule.
- There is a lack of information about the generation, collection and disposal of hazardous waste (includes medical and industrial waste) within the Municipality. Municipalities should compile a list or database of all industries and medical waste facilities (including old age homes and other private institutions) in their area of jurisdiction, with a contact person and an indication of what is being done with their medical/industrial waste not collected by the Municipality, i.e. who collects the waste, how much and where is it being disposed of.

2.6.3. Organisational and institutional matters

Figure 21: Organogram: Waste Management Division



3. Desired end state

3.1. SETTING STRATEGIC GOALS, TARGETS AND INDICATORS

Goal 1: Promote recycling and recovery of waste			
Objectives	Targets	Activities	Timeframe
Reduce the quantity of recyclable material going to landfill by encouraging community to venture into recycling activities.	separation at source from households	Implement sorting and collection of recyclables at source, e.g. kerbside recycling programmes. Via by- law amendment institute recycling Invite and facilitate small recyclers into program.	Having a time frame will help the municipality in pushing and making sure that community comply. On-going
The municipality to facilitate the establishment of Material Recovery Facilities (MRFs) where appropriate	Diversion of waste to the landfill site	Establish at least 8 buy back centres by partial conversion with the current garden refuse sites	First build by June 2018
Investigate waste-to-energy options	Gas-to-Energy Plant	Investigate feasibility and implement measures to build gas-to-energy facility at Vondeling Landfill site.	By June 2018
Recycle all garden waste	Established composting facilities	Encourage companies to establish composting facilities and make available waste for compost. Encourage people to refer their garden waste to composting facilities Practice zero garden refuse waste to Landfill site by 2020.	By June 2018

Facilitate the establishment of electronic waste (e-waste) recycling	15% per quarter	To propose e-waste recycling companies to start e-waste recycling in Makhado Area.	June 2018
Investigate waste-to-energy options	15% per quarter	Via council or the private sector or a partnership commence e-waste recycling	With effect from January 2018

Goal 2: Ensure the effective and efficient delivery of waste services			
Objectives	Targets	Activities	Timeframe
Increase waste collection from 13606 to 121283 households	121283 Households	Purchasing of additional refuse compactor trucks Development of more refuse drop off point in rural areas. Facilitate co-operatives to perform collection and recycling door-to-door once a week. Identify indigents that are not receiving waste collection services and extend service. Identify and compile a map or schedule of serviced and un-serviced areas within the municipality. Identify new developments in the municipal area.	July 2018
Review current equipment and identify equipment that needs maintenance and/or replacement.		Develop an equipment maintenance and replacement plan and acquire funding for the implementation of this replacement plan.	January 2018
Develop detailed organogram of waste management personnel in terms of the NEMWA requirements.		Fill vacant positions and establish positions required for proper waste management.	June 2018

Goal 3: Ensure that legislative tools are developed to deliver on the Waste Act and other applicable legislation			
Objectives	Targets	Activities	Timeframe
Report effectively onto South African Waste information System (SAWIS)	Submission of monthly reports.	Collect, sort, collate, analyse, interpret and report waste volumes to SAWIS. Keep proper records of waste quantities and types received at the waste management facilities. Provide information to LEDET.	July 2017
Review waste management by-laws	Ensure understanding of by-laws by all concerned	Ensure each customer has a printed copy of by-laws. Proposed amendments commenced January 2018	April 2018
Review waste management policy	Ensure understanding of by-laws by all concerned	Ensure each customer has a printed copy of by-laws. Proposed amendments commenced January 2018	April 2018

Goal 4: Sound budgeting and financing of waste management services			
Objectives	Targets	Activities	Timeframe
Develop and implement with DEA tariff model, one applicable to the municipality.	Cost reflective and volumetric tariffs	Develop and adopt DEA tariff model for municipalities	February 2018
Enhanced revenue collection	Ensure adequate and sustainable financing of waste services including cost recovery for waste services from user groups that are	Budget and financing model for waste management	June 2018

	able to pay		
Maximize other sources of funding such as DBSA, COGTA, EPIP, EPWP grant, DTI, Green Energy Efficiency Fund and Gro-e-scheme Fund etc.	Increase alternative funding year on year	Set up appropriate fund raising mechanisms	May 2018
Conduct a detail financial investigation for proper waste management budgeting in order to ring-fence the service.	In-house investigation for proper waste management budgeting in order to ring-fence the service	Identify shortages in the budget and identify possible funding sources for these shortages and amend budget accordingly. Implement revised budget.	June 2018
Review tariffs for waste collection and disposal and identify shortcomings.	Ensure alignment of current waste tariffs with DEA tariff model	Implement tariff model (As developed by DEA).	February 2018
Develop strategy for proper revenue collection.	Conduct revenue collection study and come up with strategy for proper revenue collection	Implement revenue collection strategy.	June 2018

Goal 5: Ensure the safe and proper disposal of waste			
Objectives	Targets	Activities	Timeframe
Stabilize quantity and investigate the reduction of pollution potential of waste disposed of to landfill and reduce this volume	1 gas-to-energy plant by 2020 1 Composting Facility by end of 2019 1 MRF by 2019	Gas-to-energy Composting facility MRFs	2017-2020
Investigate the conversion of waste to energy and clean	Gas-to-Energy Plant	Investigate feasibility and implement gas-to-energy	June 2019

development mechanisms.		options	
<p>Conduct a study to determine whether the following are feasible:</p> <ul style="list-style-type: none"> Establishment of composting facilities Establishment of building Rubble Crusher facilities 	<p>Feasibility report for establishment of composting and building rubble crusher facilities</p>	<p>If feasible, apply for funding through available funding mechanisms for the establishment of infrastructure. If feasible, develop a composting strategy to divert green waste from waste disposal site.</p>	<p>June 2018</p>

Goal 6: Education and awareness			
Objectives	Targets	Activities	Timeframe
<p>Conduct household awareness and education campaign on waste management</p>	<p>Every household to be informed on waste management matters</p>	<p>Door-to-door education and awareness commencing June 2017</p> <p>By-law distributions</p> <p>Pamphlet with waste information in every household</p>	<p>Commenced by 2017 (Done)</p>
<p>Development of educational and awareness strategic plan</p>	<p>Educational and awareness strategic plan</p>	<p>Development of training materials to roll out education and awareness campaigns.</p> <p>Establishment of a recycling competition at school level as part of Nakisani Vhupo Hashu programme.</p> <p>Recruit environmental/ waste</p>	<p>December 2017</p>

		education personnel.	
Establishment of local waste recycling forums	To discuss waste recycling challenges and possible solutions, coordinate waste minimisation, encourage growth on recycling, discuss possible initiatives for, or by, entrepreneurs, and dissemination of relevant new information with stakeholders.	Establishment of local recycling forum committee Hosting quarterly forums meeting and workshops.	Commenced by 2017 (Done)

Goal 7: Compliance and enforcement			
Objectives	Targets	Activities	Timeframe
Reduce the level of dumping and littering	Reduction in illegal dumping and littering. Increase in numbers of prosecution for littering and dumping	Review the by-laws and enforce the By-laws Put signs at the open spaces with fine and toll free number for illegal dumping. Implement fining procedures. Use of designated whistle blowing facilities. Develop an Illegal Dumping Management Strategy (for example, place mass containers at identified dumping hot spots and establish community watch and incentive Schemes). Develop a system for residents to report waste transgressions, for example illegal	Continuously

		dumping.	
Ensure that all industrial and medical waste are disposed of in a responsible manner.	To have database of all industries, private waste disposal sites and medical facilities	Compile a list or database of all industries, private waste disposal sites and medical facilities in the municipal area.	June 2018

4. Identify, evaluate and select alternatives

4.1. STRATEGIC GOALS, TARGETS, TIMEFRAME, BUDGET

Goal 1: Promote recycling and recovery of waste			
Objectives	Targets	Alternatives	Budget
Reduce the quantity of recyclable material going to landfill by encouraging community to venture into recycling activities.	0% of recyclable waste material at the landfill site	At least 10% of recyclable material should go to the landfill site.	R 600 000.00
The municipality to facilitate the establishment of Material Recovery Facilities (MRFs) where appropriate	Material Recovery Facilities	Recovering waste materials from the existing refuse drop-off-points and regional refuse transfer stations.	R 800 000.00
Investigate waste-to-energy options	Gas-to-Energy Plant	No alternatives	R 300 000.00
Recycle all garden waste	Municipal composting plan	Encouraging landfill users to refer their waste to an existing private composting facility.	Internal
Facilitate the establishment of electronic (e-waste) recycling	10% per quarter		R 100 000.00
Investigate waste-to-energy options	10% per quarter	Explore different technologies	R 600 000.00

Goal 2: Ensure the effective and efficient delivery of waste services			
Objectives	Targets	Alternatives	Budget
Increase waste collection from 13606 to 121283 households	121283 Households	Using an appointed private company to do waste collection from other household.	R1000 000.00

Goal 3: Ensure that legislative tools are developed to deliver on the Waste Act and other applicable legislation			
Objectives	Targets	Alternatives	Budget
Report effectively onto South African Waste information System (SAWIS)	By December 2017	Electronically submission of data to SAWIC system administrator.	Internal
Review waste management by-laws	Ensure understanding of by-laws by all concerned	Using private company to review and make the existing waste management by-laws known by all concerned.	R 600 000.00
Review waste management policy	Ensure understanding of by-laws by all concerned	Using private company to review and make the existing waste management policy known by all concerned.	R 450 000.00

Goal 4: Sound budgeting and financing of waste management services			
Objectives	Targets	Alternatives	Budget
Develop and implement with DEA tariff model, one applicable to the municipality.	Cost reflective and volumetric tariffs	No alternative	Internal
Enhanced revenue collection	Ensure adequate and sustainable financing of waste services including cost recovery for waste services from user groups that are able to pay		Internal
Maximize other sources of funding such as DBSA, COGTA, EPIP, EPWP grant, DTI, Green Energy Efficiency Fund and Gro-e-scheme Fund etc.	Increase alternative funding year on year	Using of a maximized municipal income fund to fund waste management programme.	Internal

Goal 5: Ensure the safe and proper disposal of waste			
Objectives	Targets	Alternatives	Budget
Stabilize quantity and investigate the reduction of pollution potential of waste disposed to landfill and reduce this volume	1 gas-to-energy plant by 2020 1 Composting Facility by end of 2019 1 MRF by 2019	Encouraging landfill users to divert their waste to existing composting facilities and MRF's.	Internal
Investigate the conversion of	Gas-to-Energy Plant	Establishment of landfill gas	R 300 000.00

waste to energy and clean development mechanisms.		extraction for flaring instead of electrification can be used as an alternative.	
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Goal 6: Education and awareness			
Objectives	Targets	Alternatives	Budget
Conduct household awareness and education campaign on waste management	Every household to be advised on waste management matters	Using cooperatives or private service provider for the implementation of this program.	R 700 000.00
Establishment of local waste recycling forums	To discuss waste recycling matters and dissemination of relevant information	Using the existing Nakisani Vhupo Hashu programme.	R 100 000.00

Goal 7: Compliance and enforcement			
Objectives	Targets	Alternatives	Budget
Reduce the level of dumping and littering	Reduction in illegal dumping and littering. Increase in numbers of prosecution for littering and dumping	Cleaning of illegal dump as and when it occurs.	Internal

Communication and Stakeholder Participation

4.2. CONSULTATION PROCESS SUMMARY

8.5.2. PLEASE ADD THE REQUIRED INFORMATION AND REMOVE THIS RED BOX WHEN YOU ARE DONE.

Stakeholder	Issues raised/ Concerns	Municipality's response	General comments

5. Implementation Instruments

5.1. PARTNERSHIPS

The licensing process of a newly developed Makhado New Landfill site, three refuse transfer stations and closure and rehabilitation licensing process for an existing Vondeling dumping site was funded by Limpopo Department of Economic Development, Tourism and Environment (LEDET) with the assistance from the National Department of Environmental affairs (DEA). The municipality managed to reduce its service delivery backlog by 60% through Youth Jobs in Waste program. The Youth Jobs in Waste program provided the municipality with 16 beneficiaries who worked as landfill assistance, waste collection administrators, environmental awareness and educators and were deployed in all Makhado three regions. The program also provided the municipality with landfill site office and mobile/portable site entrance weigh-pad.

Through Expanded Public Works Program (EPWP), the National Department of Public Works is giving the municipality an incentive grant to sustain Makhado Litter Picking project which employed 120 EPWP beneficiaries on an annual basis since 2011 till to date.

The municipality has partnered with Dzanani Waste recyclers and Matongoni trading project that is assisting the municipality by recovering all recyclable material from all municipal waste management facilities and in the CBD area.

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

6.2.1 THE IWMP

The IWMP is the designated and legislated waste management planning tool. This plan has to identify and accommodate interested and affected parties with regards to waste management issues. Some of these parties are, but are not limited to: Ward Councilors and Committees, Business, Recyclers, Environmental institutions, and Municipal officials. The plan looks at waste management with an integrated point of view.

The designated WMO for the municipality is the Process Manager for Community Development, who oversees all things that are waste management related. The monitoring and oversees is being done, in the present of appointments in terms of the structure by Assistant Manager: Waste Management in the Makhado Local Municipality aided by Environmental Engineer: Waste Technician and three foremen especially in terms of illegal dumping. The Environmental Health section within the municipality assists in their own right by monitoring and prosecuting where necessary. Business compliance is monitored by a Law Enforcement Unit within Makhado Local Municipality well by Environmental Health section.

6.2.2 INFORMATION

The National Environmental Management: Waste Act (NEMWA) via its South African Waste Information System (SAWIS) (www.sawis.org.za) compels municipalities to establish waste information systems for the recording, collection, management and analysis of waste information. The main objectives of the WIS is to store, analyze, verify information with a view to planning, educating the public as well as assessing the status of waste generation, collection, recycling, transportation, treatment and disposal of all waste stream. The information will also be used to assess the impact of the Waste Act in minimizing waste.

This issue of waste information is taken seriously enough by the municipality judging by the appointment of support staff. This enhanced structure that will comply with the WIS as well as the enhancement of revenue.

6.2.3 WASTE MANAGEMENT MEASURES

The NEMWA in chapter 4 requires that certain waste management measures be given consideration and acted upon. As discussed earlier the Makhado Local Municipality has overcome this problem somewhat by taking temporary steps to partial compliance.

6.2.4 WASTE MANAGEMENT PLANS

This IWMP covers this aspect.

6.2.5 THE PROHIBITION OF THE GENERATION OF PRIORITY WASTE

Priority waste is defined as waste types which by nature, quantity, quality, toxicity, risk or interaction with other elements of the environment are very dangerous to humans, poses a threat to the environment and are persistent or difficult to manage. The handling of this issue will be done in conjunction with the minister or with the aid of the Provincial authority on waste.

6.2.6 GENERAL DUTY IN RESPECT OF WASTE

This section in the Act involves the duty or obligation of anyone who generates waste to take steps within his or her power to avoid the generation of waste, reduce, recycle, and only treat and dispose of waste as a last resort. The municipality is playing its part by implementing this IWMP. This means that the implementation of the waste hierarchy becomes paramount.

6.2.7 EXTENDED PRODUCER RESPONSIBILITY (EPR)

The minister can identify products where the extended producer responsibility can apply. This means that customers can hold the manufacturer or source of the product responsible for its recycling or disposal, e.g. tyres, cans and electronic equipment, amongst other products. The municipality needs to be aware of such avenues and create communication channels to help solve problems within the municipality. This would be one of the duties of the WMO.

6.2.8 WASTE MANAGEMENT BY-LAWS

The major weakness of the by-laws is the lack of resources to enforce them. Environmental Engineer, Foremen, traffic and security officers will play major roles in the communication and application of the by-laws to a logical conclusion: viz, prosecution of the perpetrators and the eradication of waste management offences.

6.2.9 COMPLIANCE AND ENFORCEMENT

Powers have been given to the environment management inspector (green scorpions) as well as the WMO to act if they have reason to believe that any provisions of the NEMWA were contravened or violated. The NEMWA provides for a maximum penalty of R10 000 or 10 years imprisonment or both.

5.3. FUNDING MECHANISMS

Funding for the waste management department can take the form of numerous options, all of which will serve to facilitate the effective and efficient operation of the department.

CURRENT FUNDING MECHANISMS

6.3.1 BUDGET ALLOCATED BY COUNCIL

Firstly, the budget allocated by council to the waste management section forms a large part of its funding sources. Tariffs (such as those charged by the landfill site in order to use its facility for dumping) form the basis of the council-allocated budget. Where a tariff shortfall is experienced, rates are then fed into the section. These rates come from some of the customers of the Makhado Local municipality who benefit from waste management service.

6.3.2 EQUITABLE SHARE

Equitable share funding is that which comes from government to municipalities in a district and is shared among these municipalities. This funding originates from taxes paid by working citizens in South Africa. This type of funding, as reflected in the budget, reaches the Makhado Local Municipality via the municipality Treasury.

6.3.3 OTHER GOVERNMENT FUNDING

The National Departments of Public Works co-funds through EPWP programme and DEA funds through Youth Jobs in Waste. Some funding of the landfill site is via MIG.

6.4 IMPLEMENTATION PLAN (SUMMARY OF AN IWMP PLANNING PROCESS)

Implementation plan for goal 1: Promote recycling and recovery of waste												
Situation Analysis	Desired end state (Goals)	Targets	Action	Y1 (2017)	Y2 (2018)	Y3 (2019)	Y4 (2020)	Y5 (2021)	Alternatives	(Implementation mechanisms) Resources		
										Human Resource (HR)	Equipment (EQP)	Finance (HR+EQP)
A large quantity of recyclable material are going to the landfill site which is cost effective (i.e. transportation cost of the material to and from the landfill to the recycling/recovering Centre)	Goal 1: Promote recycling and recovery of waste	Diversion of waste to the landfill site	Establish at least 8 buy back centres by partial conversion with the current garden refuse sites		x	x	x			Existing staff		
			Implement sorting and collection of recyclables at source, e.g. kerbside recycling programmes. Via by-law amendment institute recycling Invite and facilitate small recyclers into program.		x	x	X			Existing staff		
		Established composting facilities	Encourage companies to establish composting facilities and make available waste for compost. Discourage people to refer garden waste at landfill site. Practice zero garden refuse waste to Landfill site by 2020.	x	x	x	x	X	Utilisation of private composting facilities	Existing staff		

		establishment of electronic (e-waste) recycling	Facilitate the establishment of electronic (e-waste) recycling		x	x	X			Existing staff		
		Investigate waste-to-energy options	the private sector or a partnership commence e-waste recycling		x	x	x	x		Existing staff		

Implementation plan for goal 2: Ensure the effective and efficient delivery of waste services

Situation Analysis	Desired end state (Goals)	Action	Targets	Y1 (2017)	Y2 (2018)	Y3 (2019)	Y4 (2020)	Y5 (2021)	Alternatives	(Implementation mechanisms) Resources		
										Human Resource (HR)	Equipment (EQP)	Finance (HR+EQP)
The Municipality should include new developments	Goal 2: Provide effective	Provide new service delivery to	Target 2: Effectively plan to extend service delivery to any new developments	x	x	x	x	x	Privatised waste collection for new	Existing staff	Skip Loader truck , Refuse compact	R

for the provision of a waste collection and disposal service.		residential areas as it develops	within the Municipality						developments		or truck	
A transportation study needs to be conducted to optimise waste collection.		Amend and optimise collection route	Target 3: Conduct a transportation study to identify and optimise collection routes and number of service points	X	X				Alternative vehicle and transport options	Existing staff		R
Optimise receptacle usage within the municipal area.		Phase in receptacles to existing development.	Target 4: Establish receptacle requirements within the Municipality and supply the receptacles to residents in order to optimise collection efforts		X	X				Existing staff		None, To be negotiated by the Municipality
shortages of personnel for waste collection and for the proper management of		Fill current vacant positions .	Effective structure and extension of human resources	X	X					Existing staff		None, To be negotiated by the Municipality

the disposal facilities.		Employ additional staff to service new areas and to manage management facilities.	Effective structure and extension of human resources		X	X					Existing staff	2 x Truck driver 3 x Waste Transfer Station Caretaker 1 x EPWP Coordinator/ data capture. 1 x TLB operator 1 x Tipper truck driver	None, To be negotiated by the Municipality
Municipalities have few waste management vehicles and is in severe shortages of equipment for collection and waste		Compile and maintain Equipment replacement plan.	Extend and maintain waste collection fleet for service delivery	X	X	X	X	X			Existing staff		None, To be negotiated by the Municipality
		Purchase required	Extend and maintain waste collection fleet	X	X	X	X	X			Existing staff		None, To be negotiated

disposal operation. The vehicle fleets will have to be extended once waste collection services are extended to new areas when they develop. Vehicle replacement plans should be developed.	equipment and replace equipment as and when required.	for service delivery										ted by the Municipality
	Maintain equipment.	Extend and maintain waste collection fleet for service delivery	X	X	X	X	X		Existing staff		None, To be negotiated by the Municipality	

Implementation plan for Goal 3: Ensure that legislative tools are developed to deliver on the Waste Act and other applicable legislation

Situation Analysis	Desired end state (Goals)	Targets	Action	Y1 (2017)	Y2 (2018)	Y3 (2019)	Y4 (2020)	Y5 (2021)	Alternatives	(Implementation mechanisms) Resources		
										Human Resource (HR)	Equipment (EQP)	Finance (HR+EQP)

The municipality has got a good legislations (such as Municipal Waste Management By-Law and Waste Management Policy) in place but they are not known by all concerned/ the citizens of Makhado Local Municipality.	Goal 3: Ensure that legislative tools are developed to deliver on the Waste Act and other applicable legislation	Ensure understanding of by-laws by all concerned	Ensure each customer has a printed copy of by-laws. Proposed amendments commenced January 2018	x	x	x	x	x	Use private company	Existing staff		
		Ensure understanding of by-laws by all concerned	Ensure each customer has a printed copy of by-laws. Proposed amendments commenced January 2018	x	x	x	x	x	Use private company	EPWP staff		
		Report effectively onto South African Waste Information System (SAWIS)	Collect, sort, collate, analyse, interpret and report waste volumes to SAWIS. Keep proper records of waste quantities and types received at the waste management facilities. Provide information to LEDET.	x	x	x	x	x	Manual reporting	Existing staff		

Implementation plan for Goal 4: Sound budgeting and financing of waste management services

Situation	Desired	Targets	Action	>	>	>	>	>	Alternativ	(Implementation mechanisms)
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Analysis	end state (Goals)								es	Resources		
										Human Resource (HR)	Equipment (EQP)	Finance (HR+EQP)
Improper budgeting and financing of waste management services.	Goal 4: Sound budgeting and financing of waste management services	Cost reflective and volumetric tariffs	Develop and implement tariff model (As developed by DEA).		x	x	x	x		Existing staff		
		Enhanced revenue collection	Set up appropriate fund raising mechanisms		x	x				Existing staff		
			Identify shortages in the budget and identify possible funding sources for these shortages and amend budget accordingly. Implement revised budget.		x	x	x	x		Existing staff		
			Conduct a detail financial investigation for proper waste management budgeting in order to ring-fence the service.		x	x			Appoint service provider	Existing staff		
Implementation plan for Goal 5: Ensure the safe and proper disposal of waste												

Situation Analysis	Desired end state (Goals)	Targets	Action	Y1 (2017)	Y2 (2018)	Y3 (2019)	Y4 (2020)	Y5 (2021)	Alternatives	(Implementation mechanisms) Resources		
										Human Resource (HR)	Equipment (EQP)	Finance (HR+EQP)
Waste diversion from landfill site is not practiced and the existing Vondeling dumping site is full to its capacity.	Goal 5: Ensure the safe and proper disposal of waste	1 gas-to-energy plant by 2020	Investigate the conversion of waste to energy and clean development mechanisms.	x	x					Existing staff		
		1 Composting Facility by end of 2019	Conduct a study to determine whether the following are feasible: <ul style="list-style-type: none"> Establishment of composting facilities Establishment of building Rubble Crusher facilities 	x	x					Existing staff		
		1 MRF by 2019	Stabilize quantity and investigate the reduction of pollution potential of waste disposed of to landfill and reduce this volume	x	x	x	x				Existing staff	
Implementation plan for Goal 6: Education and awareness												

Situation Analysis	Desired end state (Goals)	Targets	Action	Y1 (2017)	Y2 (2018)	Y3 (2019)	Y4 (2020)	Y5 (2021)	Alternatives	(Implementation mechanisms) Resources		
										Human Resource (HR)	Equipment (EQP)	Finance (HR+EQP)
Illegal waste disposal and littering is a challenge.	Goal 6: Education and awareness	Every household to be informed on waste management matters	Door-to-door education and awareness commencing June 2017 Clean-ups campaigns Distributions of By-law and Pamphlet with waste information in every household	x	x	x	x	x		EPWP and Municipal staff		
		Educational and awareness strategic plan	Develop educational and awareness strategic plan Develop training materials to roll out education and awareness campaigns. Establish recycling competition at school level as part of Nakisani Vhupo Hashu programme. Recruit environmental/ waste education personnel.	x	x	x	x	X	Using of Local waste management cooperatives	New staff/ EPWP and Existing staff		
		Discuss waste recycling challenge	Establishment of local recycling forum committee Hosting quarterly forums meeting and workshops.	x	x	x	x	x		Existing staff and Local forum		

		<p>es and possible solutions , coordinate waste minimisation, encourage growth on recycling , discuss possible initiatives for, or by, entrepreneurs, and dissemination of relevant new information with stakeholders.</p>									committee members.		
<p>Implementation plan for Goal 7: Compliance and enforcement</p>													

Situation Analysis	Desired end state (Goals)	Targets	Action	Y1 (2017)	Y2 (2018)	Y3 (2019)	Y4 (2020)	Y5 (2021)	Alternatives	(Implementation mechanisms) Resources		
										Human Resource (HR)	Equipment (EQP)	Finance (HR+EQP)
The level of illegal dumping site is high	Goal 7: Compliance and enforcement	Reduction in illegal dumping and littering.	<p>Review the by-laws and enforce the By-laws</p> <p>Put signs at the open spaces with fine and toll free number for illegal dumping.</p> <p>Implement fining procedures.</p> <p>Use of designated whistle blowing facilities.</p> <p>Develop an Illegal Dumping Management Strategy (for example, place mass containers at identified dumping hot spots and establish community watch and incentive Schemes).</p> <p>Develop a system for residents to report waste transgressions, for example illegal dumping.</p>	x	x	x	x	X		EPWP/ Municipal staff		
		Increase in numbers	Train the existing relevant waste management personnel as peace	x	x	x	x	x		New and existing municipal		

		of prosecution for littering and dumping	officer practice enforcement.								staff		
lack of information about the generation, collection and disposal of hazardous waste (includes medical and industrial waste) within the Municipality		Development of Industrial and medical waste database .	list or database of all industries and medical waste facilities (including old age homes and other private institutions) in their area of jurisdiction, with a contact person and an indication of what is being done with their medical/industrial waste not collected by the Municipality, i.e. who collects the waste, how much and where is it being disposed of.	x	x	x	x	x			EPWP/ existing municipal staff		

10.5.2.

Reporting on Monitoring Implementation plan for Goal 7: Compliance and enforcement

Situation Analysis	Desired end state (Goals)	Targets	Action	Y1 (2017)	Y2 (2018)	Y3 (2019)	Y4 (2020)	Y5 (2021)	Alternatives	(Implementation mechanisms) Resources		
										Human Resource (HR)	Equipment (EQP)	Finance (HR+EQP)
The level of illegal dumping site is high	Goal 7: Compliance and enforcement	Reduction in illegal dumping and littering.	Review the by-laws and enforce the By-laws Put signs at the open spaces with fine and toll free number for illegal dumping. Implement fining procedures. Use of designated whistle blowing facilities. Develop an Illegal Dumping Management Strategy (for example, place mass containers at identified dumping hot spots and establish community watch and incentive Schemes). Develop a system for residents to report waste transgressions, for example illegal dumping.	x	x	x	x	X		EPWP/ Municipal staff		
		Increase	Train the existing relevant waste	x	x	x	x	x		New and		

		in numbers of prosecution for littering and dumping	management personnel as peace officer practice enforcement.								existing municipal staff		
lack of information about the generation, collection and disposal of hazardous waste (includes medical and industrial waste) within the Municipality		Development of Industrial and medical waste database .	list or database of all industries and medical waste facilities (including old age homes and other private institutions) in their area of jurisdiction, with a contact person and an indication of what is being done with their medical/industrial waste not collected by the Municipality, i.e. who collects the waste, how much and where is it being disposed of.	x	x	x	x	x			EPWP/ existing municipal staff		

10.5.3.

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HELP TEXT FOR THIS SECTION

A framework by which the plan will be monitored should be developed. This should identify the tasks/ targets and roles and responsibilities in order to ensure implementation. This could comprise the following:

- **Strategic issues:** delivery on the goals and objectives; measuring delivery with regards to attaining the short-medium and long term goals and objectives
- **Performance:** how the municipality is doing in relation to the implementation of the entire IWMP including financial matters?
- **Public accountability:** Are the stakeholders kept abreast on the development of the plan? (Has there been awareness on the IWMP, awareness campaigns, information transfer and public participation?).

An institutional and organisational plan should be formulated; this is intended to guide institutional transformation and re-organisation of support structures for carrying out the IWMP and delivering on the waste management strategic objectives. This plan should include the following:

Make provision for human resource development, and the additional staff required.

The **communication and public participation plan** should detail the communication and public participation process to ensure that the necessary arrangements are in place for stakeholders to be informed about progress and to feedback into the process for the implementation of the IWMP.

The **financial plan** should reflect the waste management priorities identified in the development of the IWMP. The annual budget should be based on the medium-term financial and institutional plans in order to direct and manage resources in a focused way, to achieve the goals of the planning process. A plan for raising the revenue to support the implementation should be developed.

The **waste management implementation programme** should detail the activities to be undertaken, delivery targets and delivery milestones. It will also provide information on project management, responsibilities of officials responsible for the implementation of the IWMP and schedules for project implementation.

[Click here to read more in the IWMP guideline online.](#)

ANNEXURE OR REFERENCES (OPTIONAL)