



BREEDE VALLEY

MUNICIPALITY - MUNISIPALITEIT - UMASIPALA

**DRAFT INTEGRATED WASTE
MANAGEMENT PLAN
(4th GENERATION)**

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MAY 2020

EXECUTIVE SUMMARY

An Integrated Waste Management Plan (IWMP) is a statutory requirement of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) which came into effect on 1 July 2009. Its goal is the transformation of the historic methodology of waste management, i.e. collection and disposal, to a sustainable practice focusing on waste avoidance and environmental sustainability. The development of an IWMP is necessary as it is an integral tool to identify current needs related to a municipality's waste management service and acts as a guide towards sustainable waste management in a municipality.

This Integrated Waste Management Plan (IWMP) is the fourth generation IWMP of the Breede Valley Local Municipality (BVM). The third generation IWMP was updated with primary objective being to ensure that waste management practices in the BVM comply with the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008). Implementation of this IWMP will be facilitated through municipal by-laws and in accordance with an implementation schedule.

LEGAL FRAMEWORK

The fourth generation IWMP was developed in line with all of the legislation and policies (including amendments) listed below.

- The South African Constitution (Act No. 108 of 1996);
- The National Environmental Management Act (Act No. 107 of 1998);
- The National Environmental Management: Waste Act (Act No. 59 of 2008);
- The National Water Act (Act No. 36 of 1998);
- The Hazardous Substances Act (Act No. 15 of 1973);
- The Municipal Systems Act (Act No. 32 of 2000);
- The Local Government: Municipal Structures Act (Act No. 117 of 1998);
- The Local Government: Municipal Finance Management Act (Act No. 56 of 2003);
- The National Health Act (Act No. 61 of 2003);
- The National Health Act (Act No. 61 of 2003). Regulations relating to Health Care Waste Management in Health Establishments (R. 375 May 2014);
- The Draft National Waste Management Strategy (NWMS) (3 December 2019);
- The National Domestic Waste Collection Standards (21 January 2011);
- The National Policy for the Provision of Basic Refuse Removal Services to Indigent Households (22 June 2011);
- The National Environmental Management: Waste Act: Waste Classification & Management Regulations (R. 634 August 2013);
- The National Environmental Management: Waste Act: National Standard for Assessment of Waste August 2013 (R. 635 August 2013);
- The National Environmental Management: Waste Act: National Norms and Standards for Disposal of Waste to Landfill (R. 636 August 2013);
- National Environmental Management: Waste Act: National Waste Information Regulations (January 2013);
- National Environmental Management: Waste Act (59/2008): Waste Tyre Regulations (29 September 2019);

- National Environmental Management Act: NEMA, EIA Regulations (2014) as amended in 2017;
- National Organic Waste Composting Strategy: Draft Strategy Report and Guideline (February 2013);
- The National Environmental Management: Waste Act: Draft National Norms and Standards for Organic Waste Composting (4 September 2019);
- The White Paper on Integrated Pollution and Waste Management for South Africa: A Policy on Pollution Prevention, Waste Minimisation, Impact Management and Remediation (17 March 2000); and
- The Western Cape Health Care Waste Management Amendment Act, 2007 (No. 6 of 2010).

SITUATIONAL ANALYSIS

The Breede Valley Local Municipality is a Category B municipality located within the Cape Winelands District Municipality in the Western Cape. The BVM consists of 21 wards. The categories of waste generated and the treatment/disposal methods used in BVM are shown in the table below.

CATEGORIES OF WASTE	DESCRIPTION	TREATMENT/DISPOSAL
Domestic waste	General domestic waste	<p>Touws Rivier: the waste is collected by the BVM and taken to a transfer station. The BVM collects the waste from the transfer station and disposes it at the Worcester landfill site.</p> <p>De Doorns: the waste is collected by the BVM at the De Doorns Transfer station and disposed of at the Worcester landfill site.</p> <p>Worcester: the waste is collected by the BVM and disposed of at the Worcester landfill. The recyclables from the households that separate at source are transported to recycling companies (refer to Section 3.2.8.1).</p> <p>Rawsonville: the waste is collected by the BVM and disposed of at the Worcester landfill site.</p>
Organic waste	Garden refuse and food waste	Collected by BVM and disposed of at the Worcester and De Doorns landfill sites respectively.
Commercial waste	Commercial waste includes all waste produced by supermarkets and businesses that is safe for disposal at landfills	Collected by the BVM and disposed of at the Worcester landfill site.

Construction and demolition waste	Concrete, cement, wood, insulation materials, gypsum, etc.	Disposed of at the Worcester and De Doorns landfill sites.
Health care risk waste (HCRW)	Discarded blood and human tissue, sharps, infectious gloves, expired pharmaceuticals, etc.	BVM does not collect or accept HCRW at the municipal landfill sites. The health care facilities and practitioners (hospitals, clinics, doctors, etc.) within the BVM municipal area are responsible for the treatment and disposal of HCRW and have contracts with HCRW companies to treat and dispose of their HCRW.
Hazardous waste	Used mineral oils, solvent residues, paint and resin waste, organic chemical residues, putrescible waste (slaughterhouse), sewage sludge and used agricultural chemicals	Hazardous waste is not collected by the municipality, the generators arrange for collection where the waste is generated and it is then disposed at either the municipal (CoCT) or private Vissershok landfills.
Other waste types	Agricultural waste, abattoir waste and tyres	Waste falling in these waste categories is currently disposed at the municipal landfills, although the disposal of tyres is reportedly prohibited.

The BVM has three landfills, located in Worcester, De Doorns and Touws Rivier. Currently (2020), the BVM only uses the Worcester and De Doorns landfill sites to dispose of general waste, garden refuse and builder's rubble. The BVM has supplied 240 litre wheelie bins to all middle and high-income groups in Worcester and De Doorns. Rawsonville is on a wheelie bin system. The bins are placed outside the households for weekly collection as per the collection schedule. The middle and high-income groups take part in a separation at source initiative, where the BVM supply clear bags to the households to be used for recyclable materials. The bags are issued to the residents on a quarterly basis. The clear recycling bags are collected by the BVM weekly and transported to recycling companies. Touws Rivier, and surrounding areas make use of a black bag system. The black bags are placed outside the households and collected by the BVM on a weekly basis as per the collection schedule. The informal settlements make use of skips for waste collection. The BVM collects the skips and transports them to the Worcester landfill site, where the waste is disposed. There is currently (2020) no collection service to farmers and rural households due to long transporting distances and limited accessibility. Farmers reportedly offload their waste at the disposal sites free of charge. The BVM currently (2020) provides basic refuse removal services to Worcester, De Doorns, Touws Rivier, Rawsonville and surrounding areas. The BVM has identified multiple illegal dumping sites, especially in rural areas and informal settlements and plans to establish drop-off points in these areas to reduce the occurrence of illegal dumping.

A waste categorisation study was conducted over a five-day period to identify the waste categories generated within the municipality. The waste categorisation study was conducted in the town of Worcester. Waste generation is affected greatly by seasonal variation and therefore, ideally, waste analysis should be carried out over a year at three-month intervals. It should be noted that due to cost, time and resource constraints the waste categorisation

study for BVM was only conducted in one season of the year. The need for a quarterly waste categorisation study for BVM will be proposed as a future project in the updated IWMP, to be implemented by the BVM before the next five-yearly revision of the IWMP. The results from the waste categorisation study illustrated that the low income's waste stream consisted of the highest percentage of organic waste (27%). The high-income group has the highest percentage of recyclables (53%) in their waste stream.

DESIRED END STATE

A needs analysis was conducted to identify deficiencies, needs and requirements in terms of the waste management system of the BVM. From the needs analysis, seven goals were identified in line with the Draft National Waste Management Strategy (NWMS) (3 December 2019) goals. The seven identified goals are:

- Goal 1: Promote waste minimisation and public awareness;
- Goal 2: Ensure effective solid waste service delivery;
- Goal 3: Reduce illegal dumping;
- Goal 4: Improve waste information management;
- Goal 5: Ensure sound budgeting for integrated waste management;
- Goal 6: Improve regulatory compliance; and
- Goal 7: Ensure safe integrated management of hazardous waste.

OPTIONS GENERATION AND IMPLEMENTATION PLAN

Alternatives were identified for the implementation of the goals identified during the needs analysis. Based on the preferred alternatives selected, an implementation plan was generated for the BVM that includes an estimated cost for each of the alternatives identified to achieve the waste management targets. The implementation plan is shown in the table overleaf.

IWMP MONITORING AND REVIEW

Regular and ongoing monitoring of the Implementation Plan is required to ensure that the goals, objectives and targets of the IWMP are accomplished within the allocated timeframes. According to Section 13(2) of The National Environmental Management Waste Act (Act 59 of 2008), performance reports on the implementation of the integrated waste management plan must be prepared in terms of Section 46 of the Municipal Systems Act and must contain information such as the extent to which the plan has been implemented during the period, the level of compliance with the plan and the measures that have been taken to make any necessary amendments to the plan. The designated Waste Management Officer (WMO) is responsible for preparing the performance reports on the implementation of the IWMP on an annual basis.

REVISION OF THE IWMP

As this IWMP forms part of the Integrated Development Plan required in terms of Chapter 5 of the Municipal Systems Act, this IWMP must be comprehensively reviewed after 5 years. Therefore, the next comprehensive revision of the IWMP should occur in 2025.

Objective	Target	Project description	Timeframe					Estimated budget required
			2021	2022	2023	2024	2025	
GOAL 1: PROMOTE WASTE MINIMISATION AND PUBLIC AWARENESS	The separation at source programme needs to be rolled out across the rest of the BVM to ensure enough source separated materials to be delivered to new MRF for that to be run as a clean MRF.	BVM needs to provide recycling bags to the identified areas that are not yet participating in the waste separation at source program. The BVM needs to procure an additional two cage trucks and each will require a team of three staff. The additional trucks will allow the BVM to roll out the programme to additional areas.						R500 000.00 per cage truck The salary of the six employees (2 driver/ supervisor and 4 general workers) will be dependent on the BVM recruitment policy.
	Install recycling notice boards in De Doorns, Rawsonville and Touws Rivier to boost public awareness. Continue distribution of the recycling newsletter.	Use a service provider to supply and install notice boards. Use the Municipality marketing team to design public awareness advertisements for the board. Ensure that the newsletter is distributed on a monthly basis.						R20,000 per noticeboard

Objective	Target	Project description	Timeframe					Estimated budget required
			2021	2022	2023	2024	2025	
	Implement waste awareness programmes at rural areas and farms to separate general waste for recycling and composting at source. The BVM can collect recyclables at these areas.	Conduct waste awareness campaigns on a regular basis to keep residence informed. Waste awareness campaigns will cover the following topics: <ul style="list-style-type: none"> • Waste minimisation; • Recycling; and • Prevention of illegal dumping and littering. 						R15,000 per annum for awareness materials. The Superintendent of Solid Waste salaries will be dependent on the BVM recruitment policy.
	Implement Youth Jobs in Waste Programme (Department of Environmental Affairs) with part of the programme to be focused on waste education and training.	Developing hands-on skills development programmes to educate and fill vacancies in landfill operations, waste collection planning and administration, separation at source and refuse collection.						Nil, funded through DEFF
	The BVM to provide stock for the Zwelethemba swop shop where recyclables can be traded.	The Municipality should make funds available to assist swop shops in the community and appoint a Marshall to ensure that the area is not vandalised.						R15 000 for stock per annum. The Superintendent of Solid Waste salaries will be dependent on the BVM recruitment policy.
	Establish swop shops in in Avianpark, De Doorns and Touws River.	Secure a partner to support the swop shop going forward.						R28 000 per swop shop establishment

Objective	Target	Project description	Timeframe					Estimated budget required
			2021	2022	2023	2024	2025	
	Initiate community-based waste management training and awareness programmes for rural councillors and communities.	Initiating hands-on community clean-up projects on a quarterly basis. The purpose and the social and environmental benefits of the clean-up projects must be conveyed.						R1000 per quarter for bags and cleaning equipment
GOAL 2: EFFECTIVE SOLID WASTE SERVICE DELIVERY	Determine the exact number of households not receiving a collection service.	Appoint a service provider to conduct a community survey to identify the number of households not receiving waste collection services						R1 500 000,00
	Communal collection points or mini-drop off facilities to be put in place along major roads to collect waste from currently unserviced households.	Construct mini-drop off facilities in rural and informal household areas. Waste Marshall to be appointed to provide awareness of what materials can go into skips.						R200 000 per drop off location. The Superintendent of Solid Waste salaries will be dependent on the BVM recruitment policy.
	The municipality currently (2020) keeps no records of complaints. The complaints registry must be reviewed to ensure that all complaints are being recorded for future use.	Buy software which enables the community to make online complaints and ensure that the complaints are stored on a server for future use. Keep a complaint register book at the landfills and municipality offices to						R100 000 for software and Nil for inhouse bookkeeping

Objective	Target	Project description	Timeframe					Estimated budget required
			2021	2022	2023	2024	2025	
		ensure for easy access by the residents.						
	Provide receptacles for Touws Rivier area.	Provide 240 l wheelie bins.						R800 per wheelie bin
	Develop a waste infrastructure masterplan and then investigate funding applications.	Appoint a service provider to develop a waste infrastructure masterplan and then investigate funding applications.						R250 000
	Determine available airspace at all landfill sites.	Appoint external consultant to conduct remaining airspace calculations.						R75 000 per landfill for survey and calculations of remaining airspace
GOAL 3: REDUCE ILLEGAL DUMPING	Promote awareness concerning waste management, recycling and prevention of illegal dumping and littering in rural areas.	Community should be educated on the adverse environmental and social impacts of illegal dumping. WMO to visit schools and engage community on other community platforms.						R15,000 per annum for awareness materials.
	Implementation of anti-littering by-laws.	Review the by-laws and include anti-littering by-laws.						Nil, if undertaken inhouse or consultant fees of R 100 000

Objective	Target	Project description	Timeframe					Estimated budget required
			2021	2022	2023	2024	2025	
	Identify the underlying causes of illegal dumping (site-specific reasons).	<p>The waste management officer should assess potential reasons causing the prevalence of illegal dumping by way of:</p> <ul style="list-style-type: none"> Identify illegal dumping hotspot; Making key observations; Conducting brief community surveys and interviews; and Identifying the stream of waste that is predominant at the illegal dumping sites. 						Nil, to be undertaken inhouse
	Identify illegal dumping hotspots.	Conduct an investigation to identify the illegal dumping hotspot.						Nil, to be undertaken inhouse
	Rehabilitate illegal dumping sites which have been identified and mapped thus far.	Clear illegal dumping sites of all waste using EPWP workers.						Nil, use EPWP programme

Objective	Target	Project description	Timeframe					Estimated budget required
			2021	2022	2023	2024	2025	
GOAL 4: IMPROVE WASTE INFORMATION MANAGEMENT	Registering of waste generators, transporters and recyclers and enforcing reporting to the Municipality.	Implement effective communication system: • Place an advert in the local paper instructing organisations to register; • Make registration forms available on the website; and • Develop a database of companies operating in the BVM and track the registration and reporting status. Issue written notifications to the organisations which are not registered or reporting						R15 000 per annum for advertising materials. WMO to manage database, salary will be dependent on the BVM recruitment policy
	Improve waste information record keeping at landfills.	Ensure that gate controllers are stationed at all landfill sites and that records are uploaded onto the Integrated Population and Waste Information System (IPWIS).						Nil, use inhouse staff
	Installation of weighbridges at the waste management facilities.	Install and maintain weighbridges at the De Doorns landfill, Touws Rivier landfill and transfer stations.						R1 200 000 per weighbridge

Objective	Target	Project description	Timeframe					Estimated budget required
			2021	2022	2023	2024	2025	
	Conduct a waste characterisation study which takes seasonal variation into account.	The waste management officers should ensure that a WCS is conducted in each season of the year to account for seasonal variations. This should be done every five years.						Nil, to be undertaken inhouse
GOAL 5: ENSURE SOUND BUDGETING FOR INTEGRATED WASTE MANAGEMENT	The Municipality must ensure that there is sufficient provision in the budget for upcoming projects and action items.	Develop an asset budget replacement plan and ensure its inclusion in the annual IDP budgeting process. This can be done with the annual IWMP implementation programme review and project evaluation.						Nil, review budget inhouse
	Develop a detailed financial planning model.	Ensure that upcoming implementation actions are in the budget. Explore sources of funding. BVM to undertake a full cost accounting exercise to determine the true cost of waste management services.						Nil, review budget inhouse

Objective	Target	Project description	Timeframe					Estimated budget required
			2021	2022	2023	2024	2025	
	Review vacancies in the organogram and fill as required.	The funded vacancies must be reviewed. The BVM have to appoint personnel to fill the funded vacancies. The funded vacant positions should be revised in line with the BVM budget for 2021/2022.						The cost to fill the vacancies will be dependant of the BVM remuneration policy.
GOAL 6: IMPROVE REGULATORY COMPLIANCE	Conduct annual internal and external audits for waste management facilities.	Appoint an external consultant to conduct external audits at all waste management facilities. The waste management officer should conduct internal audits on a quarterly basis.						R75 000 per landfill for external audit per annum
	Revise the by-laws in general to include national and provincial policies, and norms and standards where applicable.	By-laws should be revised to include the national and provincial policies, and norms and standards.						Nil, to be undertaken inhouse
	Improve security and fencing at the landfill sites to ensure that waste is 'safely disposed'.	Improve security and enforce regular monitoring of activities undertaken at the landfills. Provide fencing at the Touws Rivier Landfill site.						R400 per meter to repair and replace the fence

Objective	Target	Project description	Timeframe					Estimated budget required
			2021	2022	2023	2024	2025	
	Prevent tyres to be disposed at the landfills.	Improve security and enforce regular monitoring of activities undertaken at the landfills.						Nil, to be undertaken inhouse
	Provide stormwater infrastructure as per landfill licence at all landfills.	Provide stormwater drains at all landfill sites to channel, collect and store contaminated run-off.						R1 300 000 for Worcester landfill, R400 000 for De Doorns Landfill, R200 000 for Touws Rivier landfill
	Ensure compliance of the landfill containment barriers with R. 636 (National norm for disposal of waste at a landfill).	Appoint consultant to assist with closure and rehabilitation of existing unlined cells and development of new lined cells.						To be determined by consultants
GOAL 7: ENSURE SAFE INTEGRATED MANAGEMENT OF HAZARDOUS WASTE	Educate the public about household hazardous waste and the avoidance, reduction and disposal options available to them regarding these wastes.	Educational awareness campaigns to educate the public on hazardous waste should be driven through: <ul style="list-style-type: none"> • Local radio stations; • Community open days/fairs; • The establishment of environmental youth clubs; and • Information sessions at community meetings and parent evenings. 						R15 000 per annum for advertising material

Objective	Target	Project description	Timeframe					Estimated budget required
			2021	2022	2023	2024	2025	
	Ensure legal compliance by hazardous waste generators and transporters.	Registration and reporting of hazardous waste generators at the Municipality will allow the Municipality as the service authority to ensure that the waste is stored, transported, treated or disposed as is legally required. The by-laws should be reviewed to include that all hazardous waste generators (generating more than 20 kg per day) should register at the municipality and record all hazardous waste generated.						Nil, if by-laws are reviewed and enforced
	Educate the waste employees on the latest legislation regarding hazardous waste, the identification thereof and the disposal options that are legal.	Send waste management officer to training programme regarding hazardous waste. Waste management officer to train waste management employees at landfill sites to identify hazardous waste.						R7 500 per course

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GLOSSARY OF TERMS AND ABBREVIATIONS

BVM	Breede Valley Local Municipality
CoCT	City of Cape Town
HCRW	Health Care Risk Waste
IDP	Integrated Development Plan
IWMP	Integrated Waste Management Plan
MRF	Material Recovery Facility
NEMA	National Environmental Management Act (Act No. 107 of 1998)
NEMWA	The National Environmental Management: Waste Act (Act No. 59 of 2008)
REL	Rear End Loader
SAWIC	South African Waste Information Centre

1 INTRODUCTION

1.1 BACKGROUND

The IWMP is a statutory requirement of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) that has been promulgated and came into effect on 1 July 2009. Its goal is the transformation of the historic methodology of waste management, i.e. collection and disposal, to a sustainable practice focusing on waste avoidance and environmental sustainability. Implementation of this IWMP will be facilitated through municipal by-laws and in accordance with an implementation schedule.

The development of the IWMP is necessary as it is an integral tool to identify current needs and acts as a guide towards sustainable waste management. The IWMP also shows alignment of its goals to achieve an effective waste management system.

The role of the Breede Valley Local Municipality (BVM) in relation to environmental management is enhanced in Section 152 of the Constitution, which requires municipalities, among other things, to ensure the provision of services to communities in a suitable manner and to promote a safe and healthy environment. Section 156 (1) (a) of the Constitution, read with Schedule 5, assigns responsibility for refuse removal, refuse dumps, solid waste disposal and cleansing to local government.

In an effort to ensure that the Municipality provides an efficient and cost-effective waste management service, the BVM appointed Delta Built Environment Consultants (Delta BEC) to assist with the review of the third generation BVM IWMP (2015) and development the fourth generation IWMP for the BVM.

1.2 PURPOSE OF REPORT

This Integrated Waste Management Plan (IWMP) in the fourth generation IWMP of the Breede Valley Local Municipality (BVM). The third generation IWMP was updated with primary objective being to ensure that waste management practices in the BVM comply with the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008).

1.3 STRUCTURE OF REPORT

The report comprises the following sections:

- Section 2: Legal Framework;
- Section 3: Situational Analysis;
- Section 4: Desired End State;
- Section 5: Development of Alternatives, Evaluation of Alternatives and Selection of the Preferred Alternative;
- Section 6: Implementation plan
- Section 7: IWMP review and monitoring
- Section 8: Public participation
- Section 9: Conclusion; and
- Section 10: References.

2 LEGAL FRAMEWORK

The fourth generation IWMP for the Breede Valley Local Municipality was developed in line with all of the legislation and policies (including amendments) listed below, forming the legal framework to which the IWMP is aligned. Each is discussed in more detail below.

- The South African Constitution (Act No. 108 of 1996);
- The National Environmental Management Act (Act No. 107 of 1998);
- The National Environmental Management: Waste Act (Act No. 59 of 2008);
- The National Water Act (Act No. 36 of 1998);
- The Hazardous Substances Act (Act No. 15 of 1973);
- The Municipal Systems Act (Act No. 32 of 2000);
- The Local Government: Municipal Structures Act (Act No. 117 of 1998);
- The Local Government: Municipal Finance Management Act (Act No. 56 of 2003);
- The National Health Act (Act No. 61 of 2003);
- The National Health Act (Act No. 61 of 2003). Regulations relating to Health Care Waste Management in Health Establishments (R. 375 May 2014);
- The Draft National Waste Management Strategy (NWMS) (3 December 2019);
- The National Domestic Waste Collection Standards (21 January 2011);
- The National Policy for the Provision of Basic Refuse Removal Services to Indigent Households (22 June 2011);
- The National Environmental Management: Waste Act: Waste Classification & Management Regulations (R. 634 August 2013);
- The National Environmental Management: Waste Act: National Standard for Assessment of Waste August 2013 (R. 635 August 2013);
- The National Environmental Management: Waste Act: National Norms and Standards for Disposal of Waste to Landfill (R. 636 August 2013);
- National Environmental Management: Waste Act: National Waste Information Regulations (January 2013);
- National Environmental Management: Waste Act (59/2008): Waste Tyre Regulations (29 September 2019);
- National Environmental Management Act: NEMA, EIA Regulations (2014) as amended in 2017;
- National Organic Waste Composting Strategy: Draft Strategy Report and Guideline (February 2013);
- The National Environmental Management: Waste Act: Draft National Norms and Standards for Organic Waste Composting (4 September 2019);
- The White Paper on Integrated Pollution and Waste Management for South Africa: A Policy on Pollution Prevention, Waste Minimisation, Impact Management and Remediation (17 March 2000); and
- The Western Cape Health Care Waste Management Amendment Act, 2007 (No. 6 of 2010).

THE SOUTH AFRICAN CONSTITUTION (ACT NO. 108 OF 1996):

Section 24 of the Bill of Rights of the Constitution of South Africa clearly states that everyone has the right to:

- a) An environment that is not harmful to their health or well-being;
- b) Should have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that:
 - i) Prevent pollution and ecological degradation;
 - ii) Promote conservation; and
 - iii) Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.

The Constitution places an emphasis on the need to have the environment protected for the benefit of present and future generations through reasonable legislative and other measures, e.g. IWMPs. It is within this provision that IWMPs must strive or come up with measures to uphold the rights of all citizens within the jurisdiction of the municipality and should enhance and promote environmental protection from any form of degradation as enshrined by the South African Constitution.

THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT (ACT NO. 107 OF 1998):

NEMA is the cornerstone of all environmental legislation in South Africa. The purpose of NEMA is to uphold the provisions of Section 24 of the Bill of Rights (The Constitution of the Republic of South Africa). It aims to promote and uphold the rights of South African citizens to live in an environment that is not harmful to its health or well-being.

NEMA places sustainable development at the centre of every development process that has the potential to have an impact on social, economic and environmental matters, whereby it requires the integration of social, economic and environmental factors in the planning, implementation and evaluation of decisions to ensure that development serves present and future generations.

THE NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT (ACT NO. 59 OF 2008):

Chapter 3, Section 11 of the Waste Act requires that all government spheres must develop Integrated Waste Management Plans (IWMPs). Section 12 of the Waste Act outlines what the contents of Integrated Waste Management Plans should be, whilst Section 13 stipulates the reporting mechanisms on the implementation of IWMPs.

In terms of Section 11 (4) (a) (ii) of the Waste Act, municipalities must incorporate the approved IWMP in their IDPs as called for by Chapter 5 of Municipal Systems Act, 2000 (Act 32 of 2000) MSA. Chapter 5, Sections 23-37, of MSA deals with the process of developing Integrated Development Plans. Section 36 of the MSA states that a municipality must give effect to its IDP and conduct its affairs in a manner which is consistent with its IDP. This means that the development and implementation of the IWMP must be aligned with the IDP.

THE NATIONAL WATER ACT (ACT NO. 36 OF 1998):

It provides for the protection of water sources. Section 19 states that an owner of land, a person in control of land or a person who occupies or uses the land on which any activity or process is or was performed or undertaken, or any other situation exists, which causes, has caused or is likely to cause pollution of a water resource, must take all reasonable measures

to prevent any such pollution from occurring, continuing or recurring including compliance with any prescribed waste standard or management practice.

THE HAZARDOUS SUBSTANCES ACT (ACT NO. 15 OF 1973):

This act and its regulations provide for the control of substances which may cause injury or ill-health to or death of human beings due to their toxic, corrosive, irritant, strongly sensitising or flammable nature, the division of such substances or products into groups in relation to the degree of danger, to provide for the prohibition and control of the importation, manufacture, sale, use, operation, application, modification and disposal of such substances and products.

THE MUNICIPAL SYSTEMS ACT (ACT NO. 32 OF 2000):

In terms of Section 25 of the MSA each municipal council must, within a prescribed period after the start of its elected term, adopt a single, inclusive and strategic plan (IDP) for the development of the municipality. The IDP is required to include sectoral environmental plans, which would be an IWMP for waste management. In their IDPs, municipalities are required to ensure proper resource allocation to achieve the targets set in the respective plans.

THE LOCAL GOVERNMENT: MUNICIPAL STRUCTURES ACT (ACT NO. 117 OF 1998):

It provides for an appropriate division of functions and powers between categories of municipality which include solid waste disposal sites, in so far as it relates to:

- a) The determination of a waste disposal strategy;
- b) The regulation of waste disposal; and
- c) The establishment, operation and control of waste disposal sites, bulk waste transfer facilities and waste disposal facilities for more than one local municipality in the district.

THE LOCAL GOVERNMENT MUNICIPAL FINANCE MANAGEMENT ACT (ACT NO. 56 OF 2003):

The objective is to ensure the sound and sustainable management of financial affairs within municipalities and other local government institutions.

THE NATIONAL HEALTH ACT (ACT NO. 61 OF 2003):

Section 20 of this act states that 'every local authority shall take all lawful, necessary and reasonably practicable measures to maintain its district at all times in a hygienic and clean condition' by ensuring the following:

- 1) To prevent occurrences within its district of:
 - d) Any nuisance;
 - e) Any unhygienic conditions;
 - f) Any offensive condition; and
 - g) Any other condition which will or could be harmful or dangerous to the health of any person within its district or the district of any other local authority or where nuisance or conditions referred to in sub-paragraph (a)-(d), inclusive has so occurred, to be abated, such nuisance or remedy or cause to be remedied, such as the case may be.

THE NATIONAL HEALTH ACT (ACT NO. 61 OF 2003). REGULATIONS RELATING TO HEALTH CARE WASTE MANAGEMENT IN HEALTH ESTABLISHMENTS (R. 375 MAY 2014):

The regulations are applicable to all private and public health establishments. The regulations regulate the handling, storage, collection, transportation, treatment and disposal of health care waste. This regulation does not apply to radioactive, electronic and animal wastes.

THE DRAFT NATIONAL WASTE MANAGEMENT STRATEGY (NWMS) (3 DECEMBER 2019):

The NWMS gives effect to the objectives of the Waste Act. Municipalities are required to align their IWMPs to the NWMS targets where possible in order to contribute to the attainment of the goals and targets set in the NWMS.

THE NATIONAL DOMESTIC WASTE COLLECTION STANDARDS (21 JANUARY 2011):

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

THE NATIONAL POLICY FOR THE PROVISION OF BASIC REFUSE REMOVAL SERVICES TO INDIGENT HOUSEHOLDS (22 JUNE 2011):

This policy provides for the provision of basic refuse removal for indigent households. The policy defines basic refuse removal service level as the most appropriate level of waste removal service that should be provided and this is based on site-specific circumstances. Such a basic level of service, be it in an urban or rural setup, is attained when a municipality provides the service or facilitates waste removal. The policy further outlines the appropriate levels of service for different settlement densities, frequency of collection and provision of waste receptacles amongst others.

THE NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT: WASTE CLASSIFICATION & MANAGEMENT REGULATIONS (R. 634 AUGUST 2013):

This regulation provides for the classification of waste by waste generators in accordance with SANS 10234:2008, within 180 days of generation. The GHS classifies waste in terms of its physical and health hazards as well as the hazards they present to the aquatic environment. Waste that was previously classified in terms of the Minimum Requirements for the Handling, Classification and Disposal of Hazardous Waste (1998) must now be classified in terms of SANS 10234:2008. Waste listed in Annexure 1 of the WCMR does not require classification in terms of SANS 10234:2008.

THE NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT: NATIONAL STANDARD FOR ASSESSMENT OF WASTE AUGUST 2013 (R. 635 AUGUST 2013):

The standards prescribe the requirements for the assessment of waste prior to disposal to landfill, as required by Regulation 8 (1) (b) and (c) of the Waste Classification and

Management Regulations of 2013. The standards classify waste into four categories based on its total concentration (TC) and leachable concentration (LC) in comparison with the acceptable limits.

THE NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT: NATIONAL STANDARD FOR DISPOSAL OF WASTE TO LANDFILL (R. 636 AUGUST 2013):

The standard provides for the new classification of landfill sites and requirements for containment and barrier designs. The new classifications are Class A, B, C and D. The standards prescribe types of waste (as per the classification of waste by R. 635) to be disposed at different classes of landfill sites. The standards also provide for waste disposal restrictions on certain types of waste such as tyres, asbestos, PCBs and POPs.

NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT: NATIONAL WASTE INFORMATION REGULATIONS (JANUARY 2013):

Waste generators are obliged to report waste quantities generated, diverted and treated. This is required in order to ensure efficient planning for waste management activities. In terms of the regulations, certain requirements must be complied with during reporting, such as the name of the facility, waste types and quantities generated percentage of waste diverted, etc.

NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT (59/2008): WASTE TYRE REGULATIONS (29 SEPTEMBER 2019):

The aim of this regulation is to provide guidelines for the safe management of tyre waste. It outlines the prohibitions, registration of waste generators, duties of tyre dealers, the waste tyre stockpile abatement plan and the storage of waste tyres.

NATIONAL ENVIRONMENTAL MANAGEMENT ACT: NEMA, EIA REGULATIONS (18 JUNE 2010):

Regulates the procedure and criteria relating to the preparation, evaluation, submission, processing and approval of applications for environmental authorisations for the commencement of activities, subjected to environmental impact assessment, in order to avoid or mitigate detrimental impacts on the environment, and to optimise positive environmental impacts. Waste activities which should be subjected to EIA are prescribed in GN. 921, NEMWA schedule.

NATIONAL ORGANIC WASTE COMPOSTING STRATEGY: DRAFT STRATEGY REPORT AND GUIDELINE (FEBRUARY 2013):

The draft strategy aims to ensure (where viable) that organic waste generated within South Africa is diverted from landfill sites for composting, as one alternative treatment method, through integrated and sustainable waste management planning.

THE NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT: DRAFT NATIONAL NORMS AND STANDARDS FOR ORGANIC WASTE COMPOSTING (4 September 2019):

The norms and standards are aimed at controlling the composting of organic waste at facilities falling within certain thresholds as described in Paragraph 3 of these norms and standards in

order to prevent or minimise potential negative impacts on the bio-physical and socio-economic environment.

THE WHITE PAPER ON INTEGRATED POLLUTION AND WASTE MANAGEMENT FOR SOUTH AFRICA (17 March 2000):

(Government Gazette 20978, 17 March 2000) – DEA National Waste Management Policy. It is focused on 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.

THE WESTERN CAPE HEALTH CARE WASTE MANAGEMENT AMENDMENT ACT, 2007 (NO. 6 OF 2010):

Act 7 of 2007 was amended in 2010 so as to align the terminology with that used in the National Environmental Management: Waste Act, 2008, define or redefine certain expressions, delete certain unnecessary definitions, provide for the issuing of compliance notices, amend the provisions relating to offences and penalties, make further provision regarding regulations, effect certain textual changes and provide for matters incidental thereto. The Health Care Management Act provides for the effective handling, storage, collection, transportation, treatment and disposal of health care waste by all persons in the province of the Western Cape; and provides for matters incidental thereto.

3 SITUATIONAL ANALYSIS

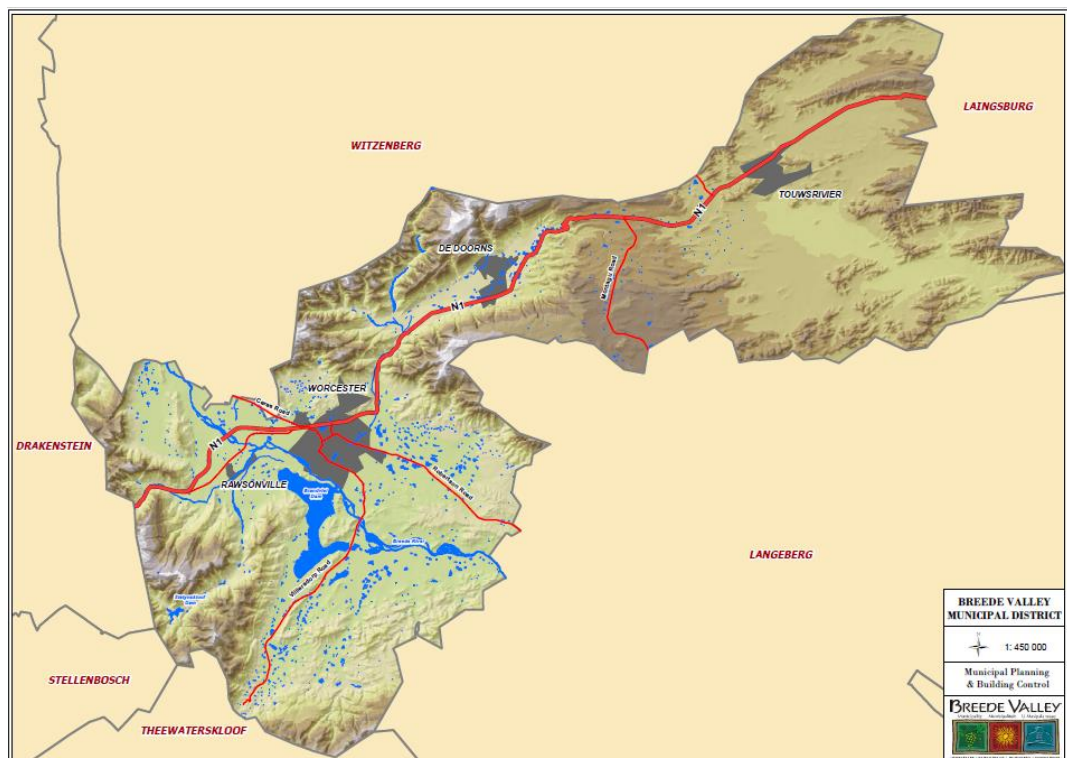
This chapter of the report will be discussed under the following headings:

- Geographical scope of BVM;
- Literature review;
- Waste categorisation study;
- Institutional management;
- Public awareness campaigns; and
- Finances of waste management service.

3.1 GEOGRAPHICAL SCOPE OF BVM

The Breede Valley Local Municipality is a Category B municipality located within the Cape Winelands District Municipality in the Western Cape. It is bordered by Witzenberg in the north, Langeberg in the south, the Central Karoo District in the east, and Drakenstein and Stellenbosch in the west. It is one of five local municipalities in the district municipality. The most striking feature of the Breede Valley is its scenic beauty consisting of majestic mountains, fertile valleys, vineyards and vast plains covered with indigenous semi-desert vegetation.

Map 3-1 provides an overview if the extent of BVM as well as the wards. The BVM consist of 21 wards.



Map 3-1: Extent of Breede Valley Local Municipality

Table 3-1 provides an overview of the main areas within the BVM and the wards in which these areas occur. The BVM is divided into five main areas, namely:

- Breede Valley rural areas;
- Touws Rivier;
- De Doorns;
- Worcester; and
- Rawsonville.

Table 3-1: BVM area and wards

BVM AREAS	WARDS
Breed Valley rural areas	1, 2, 3, 4, 5, 15, 18, 19, 20
Touws Rivier	1
De Doorns	2, 3, 4
Worcester	5, 6, 7, 10, 11, 12, 13, 14, 15, 16, 17, 18, 21
Rawsonville	19, 2

3.2 LITERATURE REVIEW

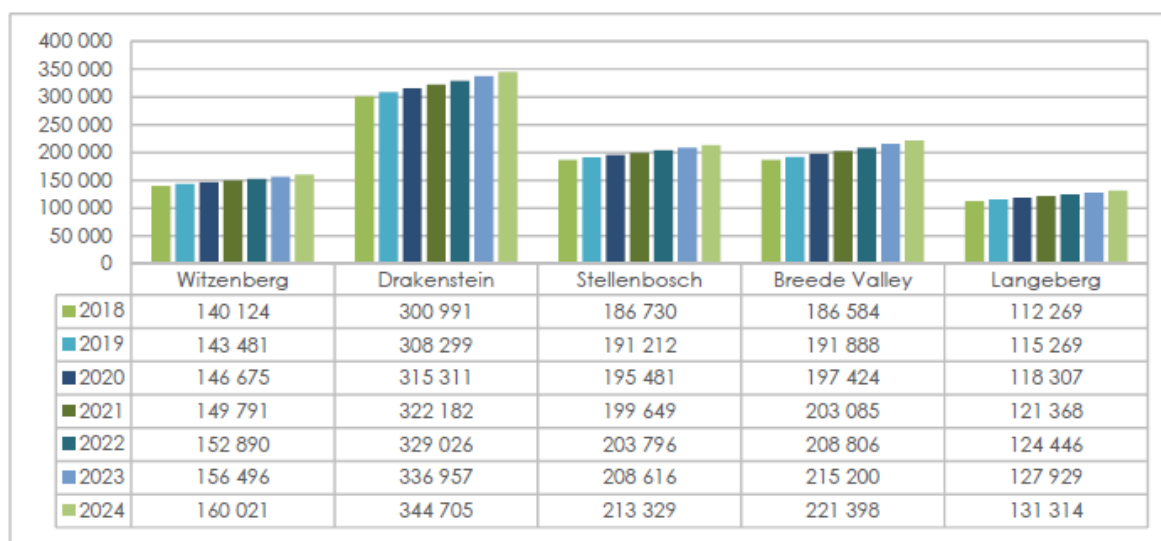
The literature review explores the following topics:

- Demographics of BVM;
- Socio-economic profile;
- Waste management information;
- Landfill and Disposal facilities
- Illegal dumping;
- Waste minimisation and recycling;
- Waste collection and transportation

3.2.1 DEMOGRAPHICS OF BVM

Demographics related to population and development profiles are important in terms of developing IWMPs as this data forms the basis from which projected current and future waste generation rates are calculated. This is in particular of importance where existing landfills are not equipped with functioning weighbridges from which historic waste disposal data can be extracted for extrapolation.

The current (2020) population was extracted from the Department of Social Development's projections (2018) for Breede Valley. According to the projections, BVM currently (2020) has a population of 197 424. Graph 3-1 illustrates the Department of Social Development's projections (2018 - 2022) for the Western Cape Winelands District Municipality.



Graph 3-1: Department of Social Development's 2018 projections

The number of households within BVM for 2020 was determined using household data from the STATS SA census data for 2011 and 2016. The assumption was made that the household growth and number of people per household remained unchanged. The following growth rates were used for the escalation:

- Actual household growth 2011 to 2016: 2.27%; and
- Actual number of people per household 2011 to 2016: 3.7.

Table 3-2: BVM number of households and population growth

BVM	2011 (CENSUS DATA)	2016 (CENSUS DATA)	2020 (PROJECTED)
Households	42 527	47 569	52 030
Formal Household	33 148	36 964	40430
Traditional Household	301	720	788
Informal Household	8 493	9 679	10587
Other Household	585	205	224

3.2.2 SOCIO-ECONOMIC PROFILE

The socio-economic profile for the BVM as provided in the BVM IDP (2019-2020) is illustrated in Table 3-3.

Table 3-3: Socio-economic profile for BVM

ANNUAL INCOME IN RAND FOR BVM (IDP 2019-2020)	2018
Low income (0 - 50 514)	53.8%
Middle income (50 515 - 404 111)	39.8%
High income (404 112 - 3 232 866+)	6.4%

Total	100%
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3.2.3 WASTE GENERATION

3.2.3.1 WASTE CATEGORIES GENERATED

The categories of waste generated and the treatment/disposal method used in BVM are shown in Table 3-4 below.

Table 3-4: Waste categories generated in BVM

CATEGORIES OF WASTE	DESCRIPTION	TREATMENT/DISPOSAL
Domestic waste	General domestic waste	<p>Touws Rivier: the waste is collected by the BVM and taken to a transfer station. The BVM collects the waste from the transfer station and dispose of it at the Worcester landfill site.</p> <p>De Doorns: the waste is collected by the BVM and disposed of at the De Doorns landfill site.</p> <p>Worcester: the waste is collected by the BVM and disposed of at the Worcester landfill. The recyclables from the households that separate at source are transported to recycling companies (refer to Section 3.2.8.1)</p> <p>Rawsonville: the waste is collected by the BVM and disposed of at the Worcester landfill site.</p>
Organic waste	Garden refuse and food waste	Collected by BVM and disposed of at the Worcester and De Doorns landfill sites respectively.
Commercial waste	Commercial waste includes all waste produced by supermarkets and businesses that is safe for disposal at landfills	Collected by the BVM and disposed of at the Worcester landfill site.
Construction and demolition waste	Concrete, cement, wood, insulation materials, gypsum, etc.	Disposed of at the Worcester and De Doorns landfill sites. The assumption is made that the construction and demolition waste is begin used as cover material,
Health care risk waste (HCRW)	Discarded blood and human tissue, sharps, infectious gloves,	BVM does not collect or accept HCRW at the landfill sites. The health care facilities and practitioners (hospitals, clinics, doctors, etc.) within the BVM municipal area are responsible for

	expired pharmaceuticals, etc.	the treatment and disposal, and have contracts with HCRW companies to treat and dispose of their HCRW.
Hazardous waste	Used mineral oils, solvent residues, paint and resin waste, organic chemical residues, putrescible waste (slaughterhouse), sewage sludge and used agricultural chemicals	Hazardous waste is not collected by the municipality, the generators arrange for collection where the waste is generated and it is then disposed of at either the municipal (CoCT) or private Vissershok landfills.
Other waste types	This includes agriculture, abattoirs and tyres	These waste categories are currently disposed at landfills by the generators and not treated by the BVM. The Worcester landfill is licenced with a Class B licence and thus the disposal of these waste categories is permitted.

3.2.3.2 DOMESTIC WASTE PROFILE

The current (2020) population was extrapolated from the Department of Social Development's projections (2018). The income group percentages as stated in the BVM IDP (2019-2020) were used to estimate the income groups of 2020. Table 3-5 provides an overview of the estimated number of people per income group in the BVM.

Table 3-5: Percentage people per income group

INCOME GROUPS FOR BVM (IDP 2019-2020)	2016	2016	2020
Low income (0 - 50 514)	53.8%	94 999	106 214
Middle income (50 515 - 404 111)	39.8%	70 278	78 575
High income (404 112 - 3 232 866+)	6.4%	11 301	12 635
Total	100%	176 578	197 424

Waste generation per income category in 2020 was then calculated using the percentage of the population per income group. Waste generation rates per person per year (r), according to the Guidelines for the development of Integrated Waste Management Plans (IWMPs), assumed to be for domestic waste only (Department of Environmental Affairs, 2006):

Low income = 149.65 kg/person/year = 0.14 tonnes/person/year

Middle income = 270.1 kg/person/year = 0.27 tonnes/person/year

High income = 470.85 kg/person/year = 0.47 tonnes/person/year

The contribution of each income group was calculated as follows:

$$Waste\ generation_i = p \times r$$

where i = income group

p = percentage of population in income group

r = waste generation rates per person per year.

The estimated current (2020) domestic waste generation per income group is shown in Table 3-6 below.

Table 3-6: Estimated current (2020) annual domestic waste generation rate per income group in tonnes

INCOME GROUP	PERCENTAGE OF POPULATION PER INCOME GROUP	NUMBER OF PEOPLE PER INCOME GROUP	WASTE GENERATION/PERSON -YEAR	WASTE GENERATED ANNUALLY IN 2020 (TONNES)
Low income	53.8%	106 214	0.47	49 921
Middle income	39.8%	78 575	0.27	21 215
High income	6.4%	12 635	0.14	1 769
Total	100%	197 424		72 905

3.2.3.3 LANDFILL TONNAGES FOR 2017 TO 2019

The BVM currently estimates the mass of waste disposed at the landfill sites by using the form illustrated in Figure 3-1. This form is used at the Worcester landfill and De Doorns landfill. The gate controller ensures that the form is signed upon arrival of the disposer. The gatekeeper notes the type of vehicle, the fraction of the full load as well as the waste category. Based on these variables, the estimated mass of waste is determined.

Figure 3-1: Illustration of the landfill access form

3.2.3.3.1 WORCESTER LANDFILL SITE

The waste volume disposed of at the Worcester landfill site, as provided by the BVM for 2017 to 2019, is illustrated in the Figure 3-2 below.

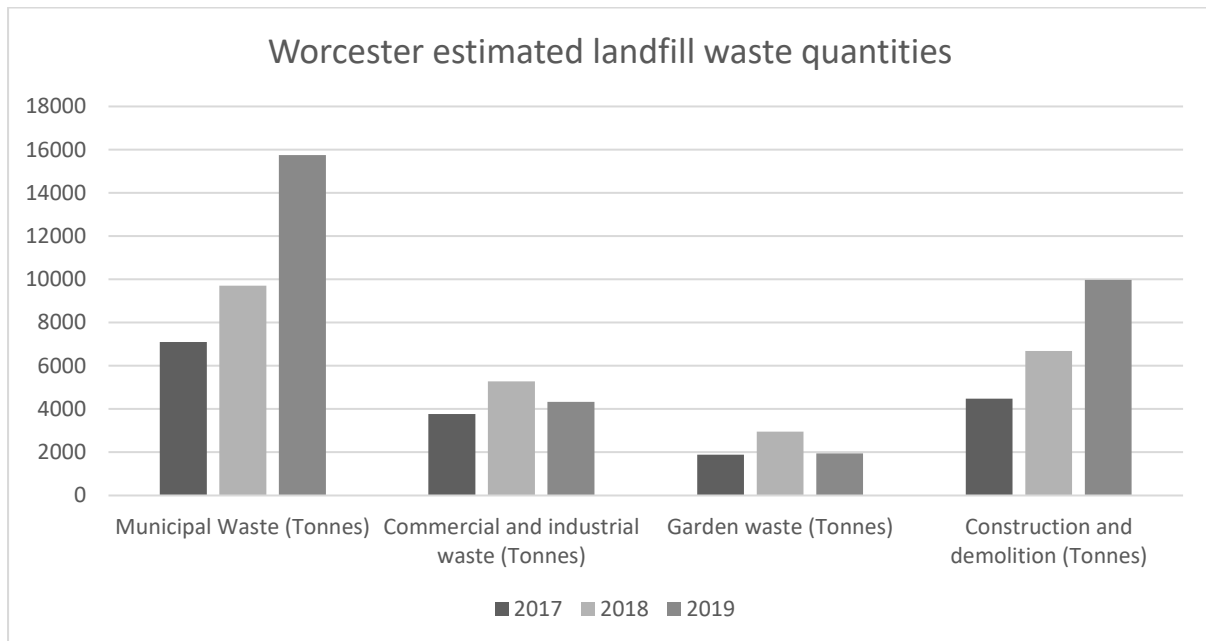


Figure 3-2: Worcester estimated landfill waste quantities

3.2.3.3.2 DE DOORNS LANDFILL SITE

The waste tonnages disposed of, as provided by the BVM for 2017 to 2019 for the De Doorns landfill site, are illustrated in the Figure 3-3 below.

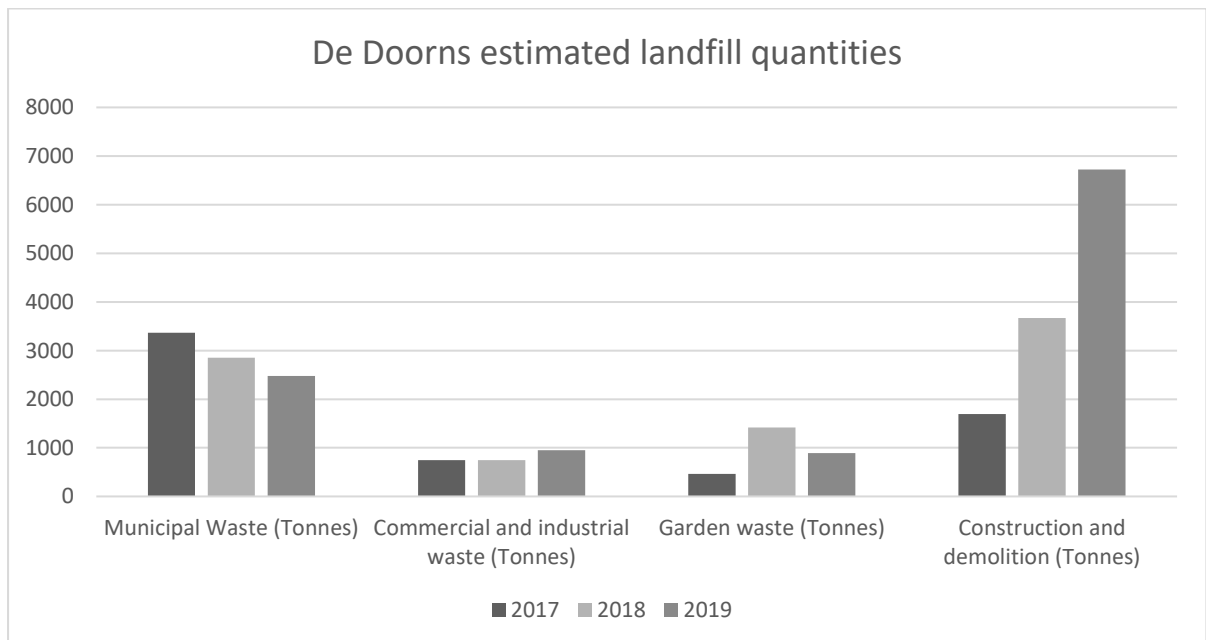


Figure 3-3: De Doorns estimated landfill quantities

3.2.4 HEALTH CARE RISK WASTE (HCRW)

BVM does not collect or accept HCRW at the landfill sites. The health care facilities within the BVM are responsible for the safe treatment and disposal of HCRW generated. The health care facilities and practitioners (Doctor's rooms, hospitals, clinics, etc.) therefore have contracts with HCRW companies to treat and dispose of HCRW generated. The HCRW generators are required to be registered and report to the provincial iPWIS, this data is then exported to the national system, SAWIS.

HCRW is either treated through incineration or through non-burn technologies like autoclaving, or Electro Thermal Deactivation (ETD). The residues from the treatment process is subsequently disposed of on an appropriately licensed and operated landfill. According to a status quo study conducted by the DEA&DP in the Western Cape (2017), there are three companies that treat HCRW by incineration and dispose of HCRW within the province, namely BCL Medical Waste, Averda in Cape Town and Optimum Waste in George. The residues are then disposed of at the Vissershok Waste Hazardous Management Facility.

HCRW in the BVM is currently (2020) collected from generators by Compass Medical Waste Services, from there it is then transported to the Compass Western Cape transfer station. From the Western Cape transfer facility, the HCRW is transported over long distances to be treated in any of their autoclave facilities located in East London, Durban or Ekurhuleni (Olifantsfontein). The residues are disposed at the CoCT Vissershok Waste Facility.

Compass Medical Waste Services started collecting HCRW in BVM in October 2019. Table 3-7 provide the quantities collected from the BVM registered HCRW generators during October 2019 to January 2020.

Table 3-7: HCRW mass collected by Compass Medical Waste Services

BVM HCRW GENERATOR	OCT-19 (KG)	NOV-19 (KG)	DEC-19 (KG)	JAN-20 (KG)
Avbob Funeral Services - Worcester	7	3	3	4
Brewelskloof Hospital		299	401	338
Dentist - De Manielle and Du Toit inc t/a Dentalwize	20	12	16	15
Clinic - Breede Valley ICF		106	4	101
Clinic - CDC Worcester		615	584	551
Clinic - De Doorns		108	58	85
Clinic - De Wet		9	54	11
Clinic - Empilisweni		83	23	90
Clinic - MPK		88	7	31
Clinic - Orchard		16	16	6
Clinic - Rawsonville		105	37	2
Clinic - Sandhills		48	13	61

Clinic - Touwsrivier		101	37	37
Doctor - A Bawoodien	7	8	10	32
Ambulance - De Doorns EMS Station		12	105	68
Narotam Pharmacy	2	1		
Clinic - People's Health Care		2		5
Worcester Hospital	1 716	7 611	8 151	7 345
Doctor - Jakoda Trust	5		5	5
Doctor - Gilfillan CW Dr			21	
Doctor - De Kock Karen Dr			8	
Doctor - Truter JAH Dr			19	7
Total HCRW generated for the month	1 757	9 226	9 573	8 793

3.2.4.1 HAZARDOUS WASTE

The CoCT Vissershok waste management facility in the Western Cape is mainly used for hazardous waste disposal. There are currently (2020) no hazardous waste generators registered within the Municipality and no tonnages are reported to the Municipality. It is expected that the BVM generates hazardous waste such as oils and grease from vehicle maintenance, expired pesticides, etc.

3.2.4.2 OTHER WASTE CATEGORIES (I.E. AGRICULTURE, SEWAGE SLUDGE, ABATTOIRS, TYRES)

Accurate data on the waste quantities are not readily available and further investigation into the different waste streams is required. Apart from contaminated water from abattoirs, the solid waste generated mainly consists of animal parts which cannot be used for human consumption or other purposes like gelatine recovery from hooves. Abattoir waste must be properly handled and disposed of at approved licensed landfill sites. The landfill staff must be trained to ensure that abattoir waste is disposed correctly. For example, the waste must be pre-treated with lime, trenched and immediately covered.

The disposal of infectious animal carcasses to landfill is not allowed. Non-infectious animal waste and carcasses are allowed to be disposed at licensed landfill sites as per R. 636: National Norms and Standards of Waste Disposal to Landfill, August 2013.

Sewage sludge: If the classification of the sludge from a wastewater treatment plant is not known, it must be determined. The classification (which indicates the microbiological, stability and pollutant class) will allow the different management options to be identified for that particular sludge. In the Breede Valley Municipality, it is not likely that the sludge from the wastewater treatment plants would contain high amounts of heavy metals. This must be verified in each case, but if the classification then allows, the sludge can be managed for

beneficial use such as composting. It must be ensured that a license is acquired for this purpose.

3.2.5 WASTE MANAGEMENT INFORMATION

The BVM consist of four main areas, the municipality provides waste management services to these areas:

- Worcester;
- De Doorns;
- Touws Rivier; and
- Rawsonville and surrounding areas.

The BVM has three landfills, located in Worcester, De Doorns and Touws Rivier. Currently (2020) the BVM only uses the Worcester and De Doorns landfill sites to dispose of waste.

The BVM supplied 240 l wheelie bins to all middle and high-income groups in Worcester, De Doorns and Rawsonville. The bins are placed outside the households for weekly collection as per the collection schedule shown in Section 3.2.9. The middle and high-income groups take part in the separation at source initiative where the BVM supply clear bags to the households. The clear bags are used for recycling purposes. The bags are issued to the residence on a “1-on-1 basis”, this implies that the resident receive a bag if they provide a bag for recycling. The clear recycling bags are collected by the BVM and transported to the recycling companies. Figure 3-4 illustrates the recyclables collected from the middle-and high-income groups.



Figure 3-4: Clear recycling bags collected from middle and high-income groups

Touws Rivier, and surrounding areas make use of a black bag system. The black bags are placed outside the households and collected by the BVM on a weekly basis as per collection schedule in Section 3.2.9. The black waste bags are transported to the Worcester landfill site for disposal.

Black bags are distributed to the informal settlements on a quarterly basis. The BVM collect the bags from skips and transport the skips to the Worcester landfill site where the waste is disposed.

There is currently (2020) no collection service to farmers and rural households due to long transporting distances and limited accessibility. Reportedly, the farmers offload their waste at the disposal sites free of charge. The BVM currently (2020) provides basic refuse removal services to Worcester, De Doorns, Touws Rivier, Rawsonville and surrounding areas.

3.2.6 LANDFILL AND DISPOSAL FACILITIES

It is the intention of Cape Winelands District Municipality to provide and/or to obtain funding for the construction and operation of one regional landfill site. The landfill information was extracted from the annual performance report conducted by GIBB in 2019 along with additional information added from site inspections.

The BVM owns three landfill sites, namely:

- Worcester landfill (operational);
- De Doorns landfill (operational); and
- Touws River landfill (operational).

3.2.6.1 WORCESTER LANDFILL SITE

The Worcester landfill site is a licensed facility owned and operated by the BVM. The BVM received a WML (License No.: 19/2/5/4/B2/32/WL0126/18) for the continued operation of the Worcester landfill facility in August 2018. The BVM is in the process of applying for a 5 m height increase in 2020.



Map 3-2: Worcester landfill site showing permitted boundary of the site in white (data source: Google Earth (2020))

Table 3-8 provides an overview of the current (2020) situation at the Worcester landfill site.

Table 3-8: Worcester landfill site description

DESCRIPTION	
Location	Located off the R43 route south-east of Worcester
Co-ordinates (entrance of site)	Latitude: 33°40'49.37"S Longitude: 19°28'10.85"E
Site classification	Class B – no information provided if liners of landfill are in place
Estimated size of site	173 063 m ² (licensed site boundary)
License status/type	Licensed for continued operation

License number	19/2/5/4/B2/32/WL0126/18
Site status	Operational
Access	Easy access from the main road
Surrounding land use	Materials recovery facility (MRF – under construction), agriculture, open space
Facilities	A brick building, container office, portable toilets and storage shed. There is no weighbridge installed at the landfill site.
Access control and signage	<ul style="list-style-type: none"> • Signage at the entrance of the site that states the operating times of the facility and the type of waste accepted at the facility; • Concrete palisade fencing surrounding the landfill site that is in line with the licence requirement of 1.8 m for a Class B landfill site; and • Swing steel gates at the main entrance to the site as stated in the licence requirements.
Personnel on site	Gate controllers, bulldozer operator, security guards (total of five employees on site)
Plant used on site	1 x operational bulldozer
Description of waste management	Waste that enters the site is inspected by the gate controller. The gate controller records the type and volume of the waste received, and directs the vehicles with the waste to the working face where the waste is offloaded. A bulldozer spreads the waste and covers it.
Waste accepted on site	General waste (domestic, commercial, industrial, construction and garden waste).
Use and availability of cover material	Reportedly, the cover material is periodically applied.
Stormwater management	External stormwater channels exist around the site. The control of stormwater channels require maintenance.
Contaminated runoff/leachate management	There is a leachate pond located on the South side of the landfill.
Recycling (material recovery)	No recycling is undertaken at the landfill. The MRF is estimated to open in the new financial year. Informal recyclers are not allowed at the landfill site, but they seem to enter illegally.
Operating hours	Monday – Friday: 08:00 – 18:00 Saturdays and Public holidays: 08:00 – 15:00 Sundays: Closed
Estimated remaining life of site	The BVM applied for a 5 m height extension. The BVM, currently, (2020) is still in the application phase.
Groundwater and surface water monitoring	Two functional groundwater monitoring boreholes are located within the perimeter fence.

Methane gas monitoring	The DEA&DP undertook a gas detection exercise at the landfill in October 2018. No methane gas was detected during the exercise. The BVM is not currently (2020) monitoring the methane gas.
Waste information management	There is no weighbridge installed at the landfill and loads are estimated using the DEA&DP waste calculator. There will be a weighbridge installed at the MRF, but that will not be accessible to the landfill.



Figure 3-5: Worcester landfill site

3.2.6.2 DE DOORNS LANDFILL SITE

The De Doorns landfill site is a licensed facility owned and operated by the BVM. The BVM received a variation WML (License No.: 19/2/5/4/B2/3/WL0041/18) for the continued operation of the De Doorns landfill facility in July 2018.



Map 3-3: De Doorns landfill site showing permitted boundary of the site in white (data source: Google Earth (2020))

Table 3-9 provides an overview of the current (2020) situation at the De Doorns landfill site.

Table 3-9: De Doorns landfill site description

DESCRIPTION	
Location	Located off the N1 route east of De Doorns
Co-ordinates (entrance of site)	Latitude: 33°29'02.913"S Longitude: 19°41'42.786"E
Site classification	Class B -no information provided if liners of landfill are in place
Estimated size of site	21 730 m ² (licensed site boundary)
License status/type	Licensed for continued operation
License number	19/2/5/4/B2/3/WL0041/18
Site status	Licensed, Operational
Access	Gravel road access
Surrounding land use	Agriculture, open space
Facilities	1 x portable toilet 1 x mobile site office
Access control and signage	<ul style="list-style-type: none"> • Signage at the entrance of the site that states the operating times of the facility and the type of waste accepted at the facility; • Fencing surrounding the landfill site is not in line with the licence requirement of 1.8 m for a Class B landfill site; and • Swing steel gates at the main entrance to the site as stated in the licence requirements.
Personnel on site	1 x gate controller
Plant used on site	There was no plant on site at time of the site visit.
Description of waste management	Waste that enters the site is inspected by the gate controller. The gate controller records the type and volume of the waste received, and directs the vehicles with the waste to the working face where the waste is offloaded. Waste pickers are present on the site. The residents transport their waste to a landfill site where it is collected by the BVM and transported to the Worcester landfill.
Waste accepted on site	General waste (domestic, commercial, industrial, construction and garden waste).
Use of cover material	Reportedly, the cover material is periodically applied.
Stormwater management	No formal management of stormwater.
Contaminated runoff/leachate	No contaminated runoff/leachate management system or leachate pond.

Recycling	Informal recyclers salvage materials on site.
Operating hours	TBC
Estimated remaining life of site	The landfill audit conducted in 2019 indicated that the estimated maximum capacity will be reached by April 2048. This was calculated based on a monthly airspace usage of 163 m ³ and with an annual growth rate of 1.31%.
Groundwater monitoring	No monitoring of surface or groundwater is undertaken.
Methane gas monitoring	The DEA&DP undertook a gas detection exercise at the landfill in October 2018. No methane gas was detected during the exercise undertaken by DEA&DP. Currently (2020) no monitoring of methane gas is taking place.
Waste information management	There is no weighbridge installed at the landfill and loads are estimated using the DEA&DP waste calculator.



Figure 3-6: De Doorns landfill Site

3.2.6.3 TOUWS RIVER LANDFILL SITE

The Touws River landfill site is a licensed facility owned and operated by the BVM. The BVM received a variation WML (License No.: 19/2/5/4/B2/29/WL0040/18) for the continued operation of the Touws River landfill site in August 2018. The Touws River landfill site is currently (2020) only used by the BVM for builder's rubble and garden refuse. There is a transfer station in Touws River, where the public can drop-off general waste. The waste is then transported to the Worcester landfill site.



Map 3-4: Touws River landfill site showing permitted boundary of the site in red (data source: Google Earth 2020))

Table 3-8 provides an overview of the current (2020) situation at the Worcester landfill site.

Table 3-10: Touws River landfill site description

DESCRIPTION	
Location	Located off Fredrick Street, Touws River
Co-ordinates (entrance of site)	Latitude: 33°21'2.09"S Longitude: 20°01'28.51"E
Site classification	Class B - no information provided if liners of landfill are in place
Estimated size of site	4 830 m ² (licensed site boundary)
License status/type	Licensed for continued operation, license date 01 August 2018.
License number	19/2/5/4/B2/29/WL0040/18

Site status	Operational – the municipality currently (202) only use this landfill for builder's rubble and garden refuse.
Access	Accessed using gravel road
Surrounding land use	Residential, open spaces
Facilities	None
Access control and signage	No signage, fence or gate. Access to the site is not controlled
Personnel on site	No personnel were on site during the inspection.
Plant used on site	No plant is used on site.
Description of waste management	No waste is recorded when disposed of at the site. This can cause the site to become an illegal dumpsite for hazardous waste with it being uncontrolled.
Waste accepted on site	Builder's rubble and garden waste.
Use of cover material	No use of cover material.
Stormwater management	No formal management of stormwater.
Contaminated runoff and leachate management	No contaminated runoff/leachate management system or leachate pond.
Recycling	Informal recyclers enter the site and salvage recyclables. The recyclables are retrieved from the dumping of household waste by some of the residences. This is considered illegal dumping on the landfill as it is not controlled by the municipality.
Operating hours	N/A, there is no access control so the site is accessible 24 hours a day.
Estimated remaining life of site	Unknown.
Groundwater and surface water monitoring	No monitoring of surface and groundwater.
Methane gas monitoring	No monitoring of methane gas is undertaken.
Waste information management	The waste that enters the landfill is not recorded and reported.



Figure 3-7: Touws River landfill site

3.2.7 ILLEGAL DUMPING

The BVM identified multiple illegal dumping sites, especially in rural areas and informal settlements. The BVM plans to establish drop-off points to reduce the occurrence of illegal dumping.

Figure 3-8 indicates the illegal dumping sites in the Worcester area as identified by the BVM. There are approximately 70 illegal dumping sites in Worcester.

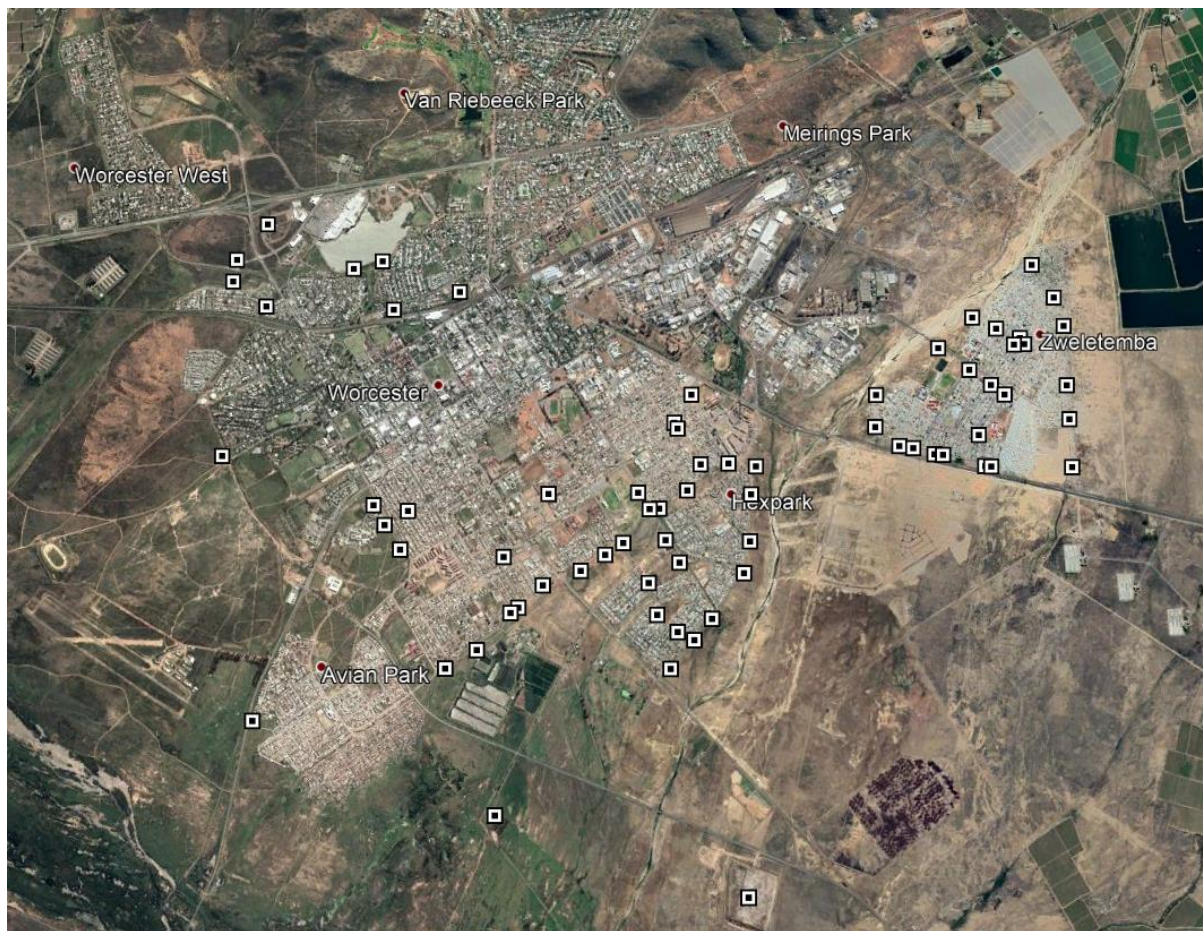


Figure 3-8: Worcester illegal dumping sites

Figure 3-9 indicates the illegal dumping sites in the De Doorns area as identified by the BVM. There are approximately three illegal dumping sites in De Doorns.



Figure 3-9: De Doorns illegal dumping sites

Figure 3-10 indicates the illegal dumping sites in the Touws Rivier area as identified by the BVM. There are approximately two illegal dumping sites in Touws Rivier.



Figure 3-10: Touws Rivier illegal dumping sites

Figure 3-11 illustrates the illegal dumping sites in the Rawsonville area as identified by the BVM. There is approximately one illegal dumping site in Rawsonville.



Figure 3-11: Rawsonville illegal dumping sites

3.2.8 WASTE MINIMISATION AND RECYCLING

3.2.8.1 SEPARATION AT SOURCE

The BVM encourages households to engage in separation at source activities. The middle and high-income areas (as provided in Table 3-11) are participating in the separation at source system. The recyclable from the households are collected by the municipality and transported to private recycling companies. Four organisations are currently registered as waste management companies with the BVM. All four of the waste management companies report waste information to the BVM. The four companies are:

- Beirowplas Recycling;
- Association for People with Disabilities (APD);
- Green Valley Global Recyclers; and
- Rewin Waste.

Table 3-11 provides a list of the current (2020) wards within the BVM where the separation at source initiative have been implemented.

Table 3-11: Wards currently (2020) participating in separation at source

WARD	AREAS IN WARD PARTICIPATING IN SEPARATION AT SOURCE
Ward 3	De Doorns East

Ward 5	Panorama
Ward 6	Hospital Heuwel Bergsig Fairy Glen Van Riebeeck Park Bloekombos Fairway Heights
Ward 7	Meiringspark Rouxpark Paglande Re-unie Park
Ward 11	Florian Park
Ward 13	Johnsons Park
Ward 15	Worcester West Langerug Somerset Park
Ward 20	Rawsonville

The BVM plans to extend separation at source to Wards 1, 4, 9, 10, 14 and 19 by the end of the 2020/2021 financial year.

3.2.8.2 MATERIALS RECOVERY FACILITY (MRF)

The BVM is planning to open the new dirty materials recovery facility (MRF) at the end of June 2020. Figure 3-12 illustrates the new building next to the Worcester landfill site. The BVM plans to weigh all incoming waste at the MRF (Figure 3-13), where it will be sorted into the different waste streams to ensure that all recyclables are extracted and not sent to landfills. The BVM plans to enhance job creation through the MRF.



Figure 3-12: New MRF building



Figure 3-13: New weighbridge at the MRF



Figure 3-14: Conveyor belt for incoming waste



Figure 3-15: Different sorting boxes for each recyclable material category

3.2.9 WASTE COLLECTION AND TRANSPORTATION

3.2.9.1 COLLECTION SCHEDULE

The current (2020) collection schedule used by the BVM is illustrated in Figure 3-16.

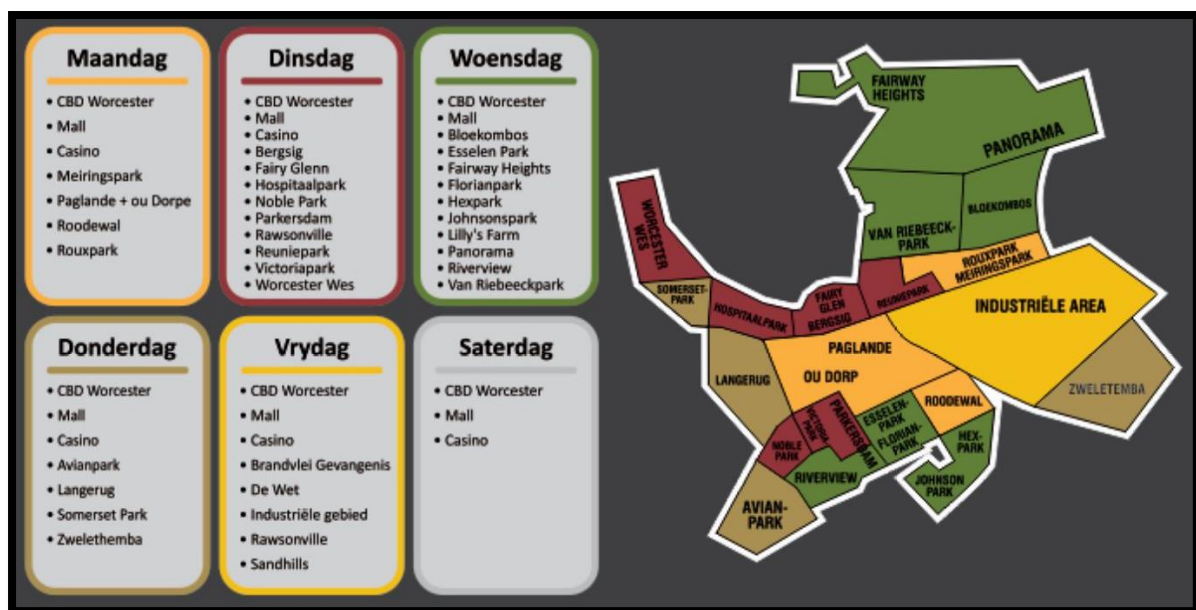


Figure 3-16: BVM collection schedule

3.2.9.2 BVM FLEET LIST

Table 3-12 provides the list of the vehicles in the fleet that is currently (2020) used for waste management in the BVM.

Table 3-12: BVM fleet list

REGISTRATION	VEHICLE DESCRIPTION	CLIENT VEHICLE DESCRIPTION	TYPE	VEHICLE BRAND
CW12890	Nissan - 2010 - White	BVM 29	REL Compactor	UD 90

CW15557	Asset Track - 2015 - White	BVM 1031	Digger Loader	Case
CW17467	Nissan - 2007 - White	BVM 588	REL Compactor	UD 90
CW21923	Nissan - 2015 - Weber Vinyl Wrap (Black/ Yellow/ White)	BVM 971	REL Compactor	UD
CW25461	Nissan - 2011 - White	BVM 940	LDV	NP 200
CW27025	Ford - 2008 - White	BVM 83	LDV	Ford Ranger
CW35181	Mercedes-Benz - 2003 - White	BVM 169	REL Compactor	Mercedes Benz
CW38523	Nissan - 2007 - White	BVM 95	REL Compactor	UD 90
CW41109	Nissan - 2007 - White	BVM 94	REL Compactor	UD 90
CW46140	Nissan - 2007 - White	BVM 501	Truck	UD 440
CW 46091	Trailer – 2007 White	BVM 502	Trailer	
CW48439	Isuzu - 2015 - White	BVM 1043	Tipper Truck	Isuzu
CW54401	Nissan - 2010 - White	BVM 13	LDV	NP 200
CW66417	Nissan - 2015 - White	BVM 1036	LDV	NP 200
CW67263	UD Trucks - 2016 - White	BVM 1068	REL Compactor	Nissan Quan
CW 46560	Nissan – 2018 - White	BVM 1082	REL Compactor	Nissan Questor
CW 52056	Nissan – 2018 - White	BVM 1083	REL Compactor	Nissan Questor
CW 42640	Case 2004	BVM 324	Tractor	Case Tractor
CW 54388	Nissan – 2019 – White	BVM 1147	LDV	NP 200
	Hoffman Pressure Washer	BVM 4	Petrol Pressure Washer	Hoffman Pressure Washer

	Hoffman Pressure Washer		Diesel Pressure Washer	Hoffman Pressure Washer
CW67341	UD Trucks - 2016 - White	BVM 1070	REL Compactor	Nissan Quan

3.2.10 OTHER SERVICES (STREET SWEEPING, LITTER PICKING, PUBLIC AWARENESS CAMPAIGNS)

Other services that the BVM provide involve the cleaning of streets (kerbs and gutters), cleaning of public open spaces (other than parks and storm water ditches) and cleaning up illegal dumping. The BVM makes use of the Expanded Public Works Programme (EPWP) to employ cleaners for these activities. The Worcester CBD areas receive street cleaning services by a contractor on a weekly basis or as required. The CBD consist of:

- Durban Street;
- Tulbagh Street;
- High Street;
- Drostdy High School – Somerset Street;
- Van Riebeeck Street;
- Trappes Street to the N1 (once a week);
- Van Riebeeck Street to the N1 (once a week);
- Robertson Road until the bridge at Roodewal Flats (once a week); and
- High Street, pass Cape Agri to N1 (once a week).

The EPWP workers clean the town entrance and the outside of the CBD areas. They have to sweep the roads, pavements, gutters, stormwater channels and empty all street refuse bins. The collected waste is separated into recyclable and non-recyclable materials. The BVM provides the required equipment to the workers. The Municipality plans to extend these services to Rawsonville, De Doorns and Touws River CBD, but it is dependent on the availability of funding. The BVM strives to, in the future, clean all illegal dumping with the use of trucks equipped with crane mechanisms. Illegal dumping is cleared as and when required.

3.3 WASTE CATEGORISATION STUDY

3.3.1 OVERVIEW OF STUDY

The study was conducted using a methodology based on the guideline produced by the Western Cape Government (WCG), namely Waste Characterization Guideline for Municipalities (WCG, March 2017).

The sample size for this study was determined using the following two steps:

- Step 1: Identification of the waste categories present in residual waste generated by households within the municipality.
- Step 2: Identification of areas and households that will be targeted in the study.

Residential waste generated by low, medium and high-income households was analysed as part of the study. Residual waste may contain organic waste (for example, from the kitchen and gardens), recyclable waste (for example, plastics, paper, cans, etc.), non-recyclable waste (that has no recycling value) and hazardous waste (batteries, some oils, etc.).

For the purpose of the categorisation study, the residual waste was sorted into 12 major waste categories for sampling. The 12 major waste categorisation categories included the following:

- Paper;
- Cardboard;
- Glass;
- Metal;
- Plastic;
- Textiles;
- Organic waste;
- Hazardous waste;
- E-waste;
- Nappies and sanitary waste;
- Other waste (ash, sand, builder's rubble, etc.); and
- Garden refuse.

The waste categorisation study was only conducted in the Worcester area. The study only considered waste collected in the Worcester area due to the following constraints:

- Cost constraints: to collect bags throughout the entire BVM would prove costly;
- Time constraints: this study had to be conducted within a five-day period. Long traveling distances to collect waste were thus not viable; and
- Lack of resources: waste collection in all areas within the Municipality would have increased the resource requirement (i.e. labour, vehicles, operations management, etc.).

A guideline published by the Environmental Protection Agency, Ireland (Crowe, 1996), for municipal waste categorisation was used to estimate the number of households to be targeted to achieve accurate results. For the purpose of this study, the number of households in Worcester was calculated using the STATS SA 2011 and the BVM IMWP (2015). The number of households in 2015, from the BVM IWMP (2015), was escalated to achieve the number of households for 2020 in Worcester (refer to Section 3.2.1). The assumption was made that the household growth, population growth and number of people per household remained unchanged. Table 3-13 provides the number of households for 2020 within Worcester as well as the number of households to be targeted according to the guideline of the Environmental Protection Agency, Ireland (Crowe, 1996).

Table 3-13: Total number of households to be targeted

NUMBER OF HOUSEHOLDS IN WORCESTER (2020)	NUMBER OF HOUSEHOLDS TO BE TARGETED
30 188	825

The households within Worcester were subsequently divided into low, medium, and high-income groups. The percentage of households in each income group was extracted from the BVM IWMP (2015) and was assumed to remain unchanged for 2020. The BVM IWMP (2015) states that approximately 52.6% of households within Worcester are high-income households, 15.8% are middle-income households and 31.6% are low-income households. These percentages were used to calculate the number of households to target in each of the income groups for this study. Table 3-14 illustrates the number of households that will be targeted in each of the income groups as well as the area identified in Worcester.

Table 3-14: Income groups to be targeted

ANNUAL INCOME GROUP	PARENTAGE HOUSEHOLDS/ INCOME GROUP	HOUSEHOLDS TO BE TARGETED	AREA IDENTIFIED
High income (R76 801 or more)	52.6%	434	Panorama
Middle income (R38 401 - R76 800)	15.8%	130	Fairy Glen
Low income (R0 - R38 400)	31.6%	261	Roodewal
Total	100%	825	

Table 3-15 provides the mass of waste to collect and sort in order to achieve a reliable result. This was calculated using the average mass of waste generated per person per income group per year (as stated in Section 3.2.3 of this report). STATS SA census data for 2011 and 2016 was used to estimate the number of people per household. Table 3-15 provides the total mass of waste that was to be collected over the five-day period. The required mass of waste to collect and sort was approximately 14 tonnes.

Table 3-15: Amount of waste required

INCOME GROUP	HOUSEHOLDS	AVERAGE NUMBER OF PEOPLE PER HOUSEHOLD	NUMBER OF PEOPLE	WASTE GENERATION /PERSON-DAY (kg) (Department of Environmental Affairs, 2006)	WASTE GENERATION PER DAY (TONNES)	WASTE GENERATION/WEEK (FIVE DAYS) (TONNES)
High income (R76 801 or more)	434	3.7	1 606	1.29	2.07	10.4
Middle income (R38 401 - R76 800)	130	3.7	482	0.74	0.36	1.8
Low income (R0 - R38 400)	261	3.7	964	0.41	0.40	2.0
Total	825		3 053		2.82	14.12

3.3.2 WASTE CATEGORISATION ACTIVITIES

The waste categorisation study was conducted over a five-day period in Worcester. The normal collection schedule that the BVM follows was used to generate a sorting schedule. The areas that were chosen for this study were Roodewal (low income), Fairy Glen (middle income) and Panorama (high income). According to the socio-economic distribution of Worcester, the bulk of the waste had to be collected from the high-income area, thus the high-income group's waste was sorted over three days.

Table 3-16: Waste sorting schedule

AREA	BVM COLLECTION SCHEDULE	SORTING SCHEDULE
Roodewal	Monday	Monday
Fairy Glen	Tuesday	Tuesday
Panorama	Wednesday	Wednesday, Thursday and Friday

The waste sorting activities took place at the BVM Truck Depot in Fairbairn Street, Worcester. The waste was collected each morning as per the usual collection schedule of the BVM. Once the waste arrived, the sorting activities commenced. The operation made use of the following equipment:

- Two sorting tables;
- Scale;
- Two bins for each waste category (the bins were clearly marked to ensure that the waste was separated into the correct bins); and
- Skip for disposal at the landfill.



Figure 3-17: Incoming unsorted waste



Figure 3-18: Sorting bins

The waste sorters each received waste sorting gloves and a face mask as PPE. The BVM employees assisting with the waste sorting received training on the following matters:

- Waste category posters were presented and provided to the waste sorters to ensure that they understand the different waste categories; and
- A physical demonstration was provided to demonstrate the sorting activities.

The sorting methodology was as follows for the sorting activities and data capturing:



The mass of the incoming and sorted waste was captured on a data recording system developed by Delta BEC, called Device Magic. The software allows Delta BEC to save substantial time during data verification, surveys and compiling of reports and databases. This results in faster turnaround times with a smaller risk of errors due to post-processing of site survey information.

The following information was captured:

- Incoming unsorted waste:
- Income group (high, middle, low-income);
- Mass of unsorted waste;
- Type of receptacle used to determine the waste mass;
- Sorted waste:
- Income group (high, middle, low-income);
- Waste category;
- Mass of sorted material; and
- Type of receptacle used to determine the sorted material.

3.3.3 RESULTS

Waste generation is affected greatly by seasonal variation. Therefore, ideally, waste analysis should be carried out at three-month intervals. It should be noted that due to cost, time and resource constraints, the waste categorisation study for BVM was only conducted in one season of the year. The waste categorisation study for BVM will be added as a future project, to be implemented by the BVM on a continuous basis in the updated IWMP.

The results for the waste categorisation study were analysed in the following two categories:

- Incoming unsorted waste; and
- Sorted waste.

3.3.3.1 INCOMING UNSORTED WASTE

Table 3-17 illustrates the targeted mass of waste versus the actual mass of waste that was received and sorted. The mass of waste received and sorted for the low and high-income groups was lower than the targeted mass. This variation was due to several aspects, namely:

- The low-income waste was sorted on the first day of the waste categorisation study. The EPWP employees were receiving training and thus sorting at a slower rate than anticipated; and

- The mass of waste collected from the high-income group was lower than mass required (Table 3-15). This could be due to slower sorting rates than anticipated.

Table 3-17: Targeted tonnes versus actual tonnes

INCOME GROUPS	TARGET (TONNES)	ACTUAL (TONNES)
Low-income (Roodewal)	2.0	1.2
Middle-income (Fairy Glen)	1.8	2.1
High-income (Panaorama)	10.4	4.3
Total unsorted waste	14.1	7.6

3.3.3.2 SORTED WASTE

The actual mass of waste sorted and weighed on the day of the waste categorisation study is illustrated in Table 3-18. The table provides the total mass weighed of each waste type as well as a percentage breakdown.

Table 3-18: Sorted waste

WASTE CATEGORIES	LOW INCOME GROUP		MIDDLE INCOME GROUP		HIGH INCOME GROUP	
	Tonnes	%	Tonnes	%	Tonnes	%
Paper	0.143	7.9%	0.123	6.8%	0.390	9.5%
Cardboard	0.068	3.7%	0.080	4.4%	0.433	10.5%
Glass	0.042	2,3%	0.111	6.1%	0.349	8.5%
Metal	0.027	1.5%	0.022	1.2%	0.075	1.8%
Plastic	0.251	13.8%	0.300	16.5%	0.897	21.8%
Textiles	0.073	4.0%	0.038	2.1%	0.046	1.1%
Organic waste	0.318	17.5%	0.394	21.7%	0.491	11.9%
Hazardous waste	0.019	1.0%	0	0%	0.0002	0.004%
E-waste	0.0005	0.028%	0,003	0.2%	0.009	0.2%
Diapers and sanitary waste	0.068	37.8%	0.047	2.6%	0.088	2.1%
Other waste	0.041	2.3%	0.197	10.8%	0.183	4.5%
Garden refuse	0.148	8.2%	0.503	27.7%	1.157	28.1%
Total sorted waste	1.198	100.0%	1.817	100.0%	4.116	100.0%

Chart 3-1, Chart 3-2 and Chart 3-3 illustrate the waste categories and the percentage breakdown of each waste category generated per income group.

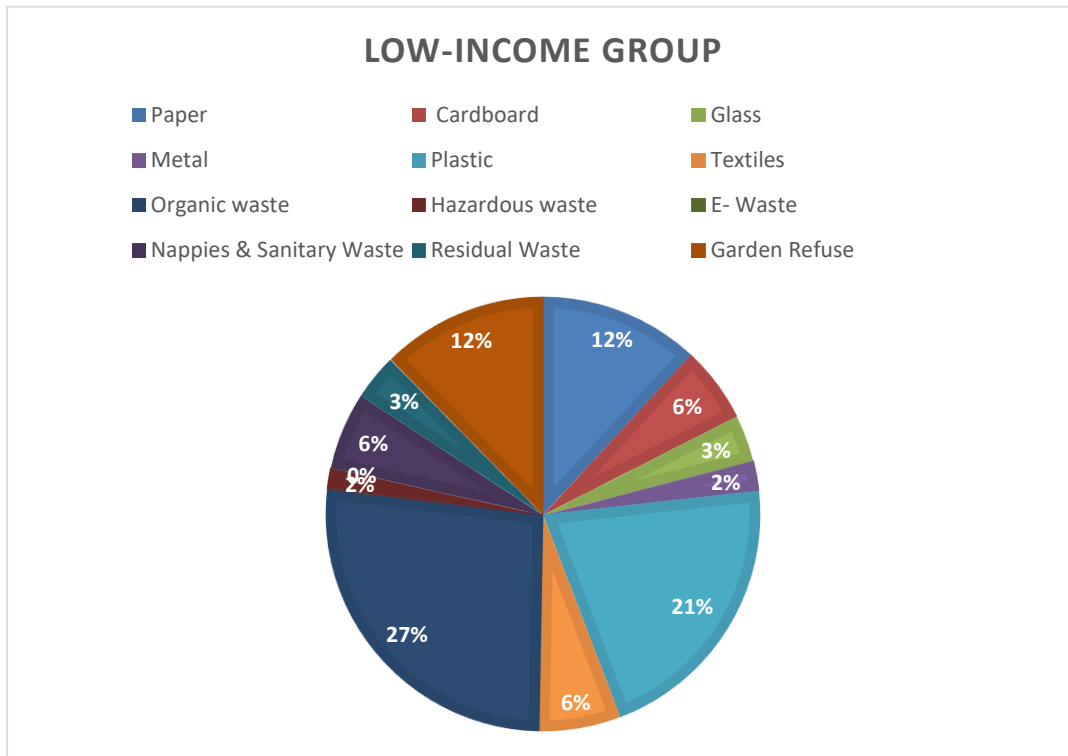


Chart 3-1: Low-income group waste type and percentage generated

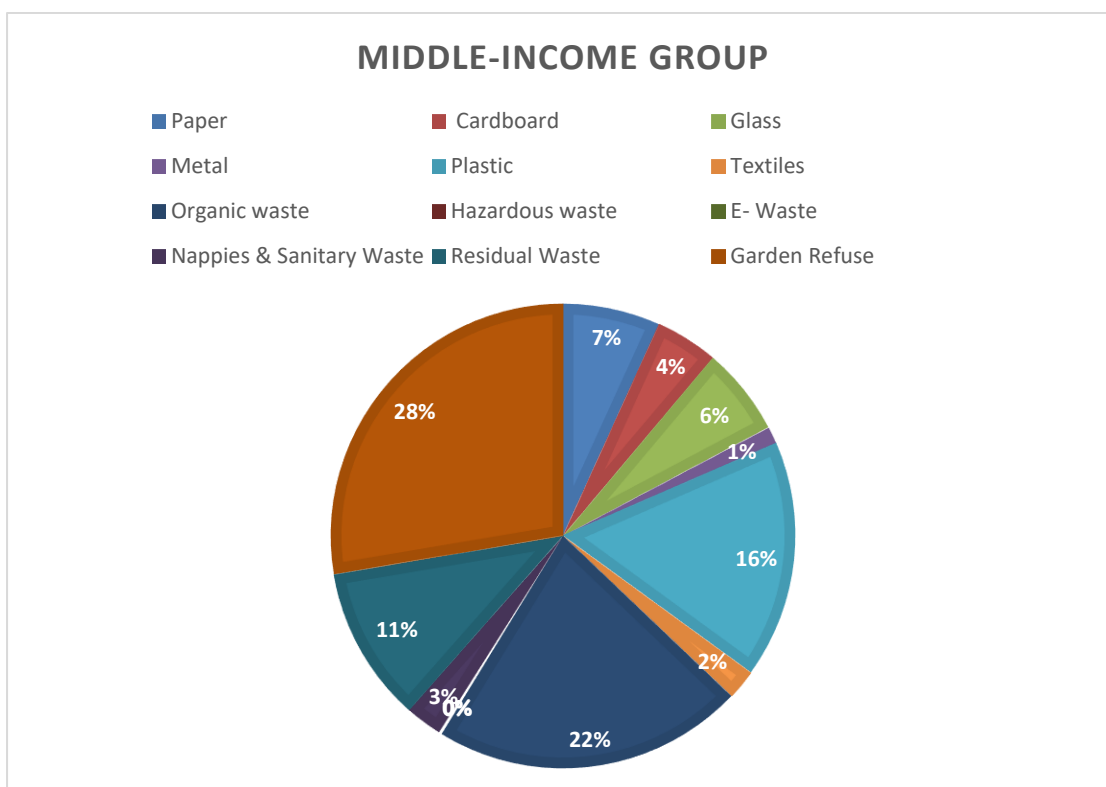


Chart 3-2: Middle-income group waste type and percentage generated

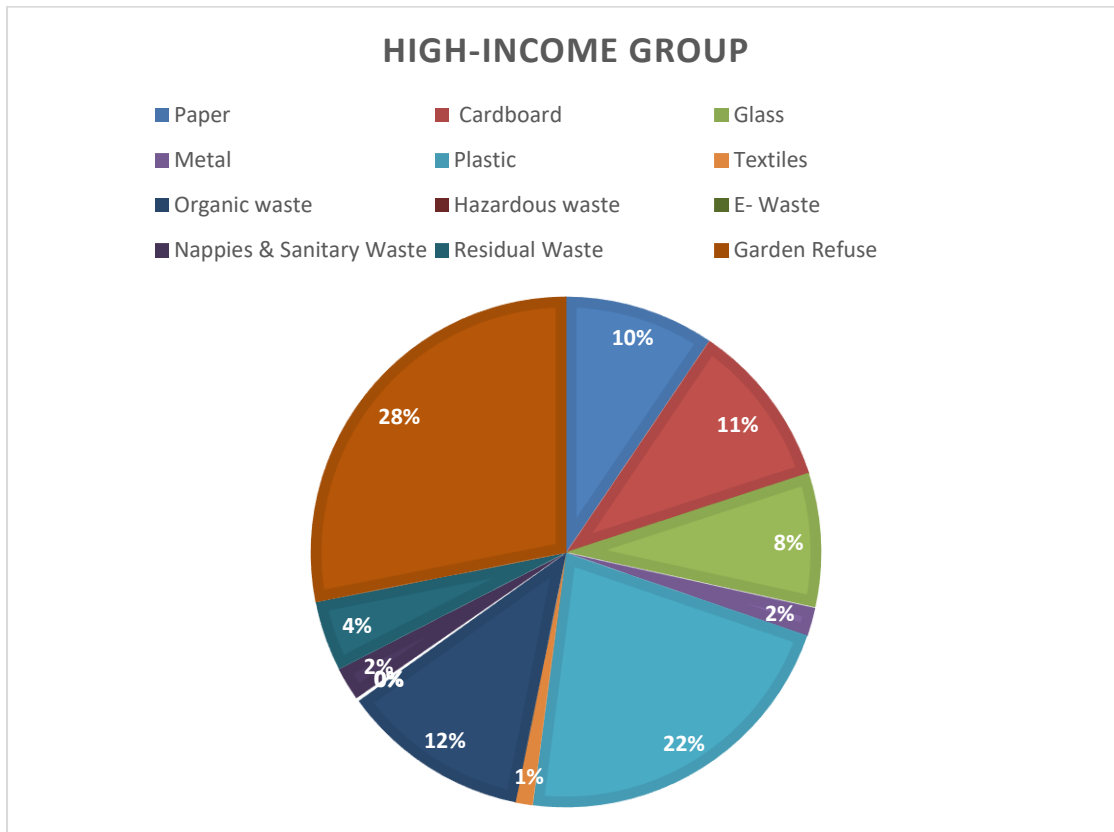


Chart 3-3: High-income group waste type and percentage generated

3.3.4 RECOMMENDATIONS

The recommendations for future waste categorisations studies are as follows:

- The training of the employees should be done the day before the waste sorting activities commence;
- The waste categorisation study should be conducted every three months to take seasonal variations into consideration; and
- The waste categorisation study should be conducted in all areas of the municipality.

3.4 INSTITUTIONAL MANAGEMENT

3.4.1 HUMAN RESOURCES

The following organogram details the structure of the BVM waste management system.

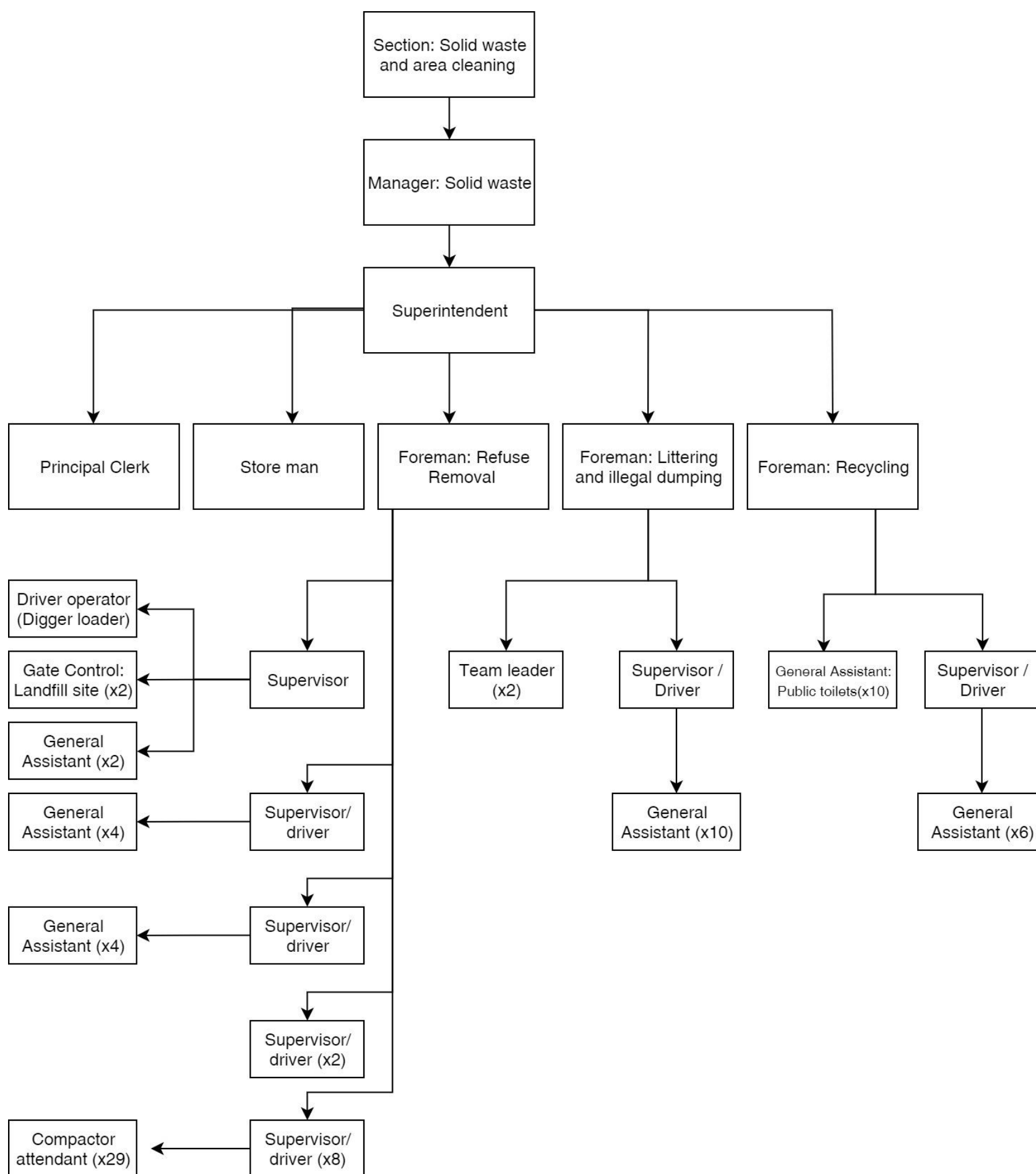


Figure 3-19: BVM Organogram

3.4.2 VACANCIES

Table 3-19 provides a list of funded vacancies within the waste management sector of BVM for 2018/2019 and 2019/2020:

Table 3-19: BVM funded vacancy list

TOWN OF POSITION AVAILABLE	POSITION TO BE FILLED
Worcester	Superintendent: Solid Waste
Worcester	Principal Clerk
Worcester	Storeman
Rawsonville	General Worker x 2
Worcester	Compactor Intendent
Worcester	Team Leader x 2
Worcester	Supervisor Landfill Site
Worcester	Foreman: Recycling
Worcester	General Worker
De Doorns	Tractor Driver
Worcester	Supervisor Drivers (X2)
Worcester	General Assistants (X6)
De Doorns	General Assistants (X4)
Touws Rivier	Team Leader
Touws Rivier	General Assistants (X5)

3.5 PUBLIC AWARENESS CAMPAIGNS

The BVM has the following active public awareness campaigns:

- Education and Swap Shop Project: The BVM established a swap shop in Zwelethemba for the purpose of educating the residents on the materials and their value. The BVM is planning to establish additional swap shops in Avianpark, De Doorns and Touws River; and
- Youth Jobs in Waste Programmes: The BVM plans to appoint a foreman responsible for implementing waste education at school level.

3.6 FINANCES OF WASTE MANAGEMENT SERVICE

This section of the report will be discussed under the following headings:

- Current and draft budget 2019/2020; and
- Solid Waste Tariff Structure 2019/2020.

3.6.1 CURRENT BUDGET 2019/2020

The BVM budget for waste management services for the year 2019/2020 is shown in the table below.

Table 3-20: Solid waste management budget 2019/2020

Solid waste management budget		2019/2020
Revenue		
Default:		
Additonal		R5,692,697.00
Non-exchange Revenue:		
Transfers and Subsidies:Capital:Monetary Allocations:National Government:Municipal Infrastructure Grant		R8,331,095.00
Transfers and Subsidies:Operational:Monetary Allocations:National Governments:Expanded Public Works Programme Integrated Grant		R373,300.00
Transfers and Subsidies:Operational:Monetary Allocations:National Revenue Fund:Equitable Share		R16,076,915.00
Operational Revenue:		
Merchandising, Jobbing and Contracts:		R511,500.00
Sales of Goods and Rendering of Services:		R27,600.00
Scrap, Waste & Other Goods:Recycling of Waste		R27,600.00
Service Charges:		
Waste Management:Availability Charges		R1,304,600.00
Waste Management:Carrier Bags		R0.00
Waste Management:Disposal Facilities		R0.00
Waste Management:Refuse Bags		R0.00
Waste Management:Refuse Removal		R38,783,000.00
Waste Management:Skip		R0.00
Waste Management:Waste Bins		R0.00
Expenditure		
Contracted Services:		
Consultants and Professional Services:Business and Advisory:Accounting and Auditing		R2,500,000.00
Contractors:Employee Wellness:		R0.00
Contractors:Maintenance of Equipment:		R68,971.00
Contractors:Maintenance of Unspecified Assets:		R103,680.00
Outsourced Services:Litter Picking and Street Cleaning:		R1,884,741.00
Outsourced Services:Personnel and Labour:		R556,728.00
Outsourced Services:Refuse Removal:		R1,305,080.00
Default:		
(blank)		R17,082,206.00
Employee Related Cost:		

Solid waste management budget	2019/2020
Municipal Staff:Salaries, Wages and Allowances:Allowances:Cellular and Telephone:	R5,400.00
Municipal Staff:Salaries, Wages and Allowances:Allowances:Housing Benefits and Inc	R30,734.00
Municipal Staff:Salaries, Wages and Allowances:Allowances:Housing Benefits and Incidental:Housing Benefits	R82,462.00
Municipal Staff:Salaries, Wages and Allowances:Allowances:In-kind Benefits - Cost	R8,413.00
Municipal Staff:Salaries, Wages and Allowances:Allowances:Service Related Benefits	R97,099.00
Municipal Staff:Salaries, Wages and Allowances:Allowances:Service Related Benefits:Acting and Post Related Allowances	R0.00
Municipal Staff:Salaries, Wages and Allowances:Allowances:Service Related Benefits:Overtime:Structured:	R0.00
Municipal Staff:Salaries, Wages and Allowances:Allowances:Service Related Benefits:Uniform/Special/Protective Clothing	R0.00
Municipal Staff:Salaries, Wages and Allowances:Basic Salary and Wages	R2,961,353.00
Municipal Staff:Salaries, Wages and Allowances:Bonuses	R246,788.00
Municipal Staff:Social Contributions:Group Life Insurance	R49,764.00
Municipal Staff:Social Contributions:Medical	R335,583.00
Municipal Staff:Social Contributions:Pension	R533,057.00
Municipal Staff:Social Contributions:Unemployment Insurance	R32,367.00
Employee Related Cost:Municipal Staff:	
Salaries, Wages and Allowances:Allowances:Cellular and Telephone:	R19,080.00
Salaries, Wages and Allowances:Allowances:Housing Benefits and Inc	R250,705.00
Salaries, Wages and Allowances:Allowances:Service Related Benefits	R1,144,457.00
Salaries, Wages and Allowances:Allowances:Travel or Motor Vehicle:	R126,558.00
Salaries, Wages and Allowances:Basic Salary and Wages	R9,038,841.00
Salaries, Wages and Allowances:Bonuses	R753,252.00
Social Contributions:Group Life Insurance	R151,887.00
Social Contributions:Medical	R890,590.00
Social Contributions:Pension	R1,627,024.00
Social Contributions:Unemployment Insurance	R92,354.00
Inventory Consumed:	
Materials and Supplies	R251,991.00
Operating Leases:	
Furniture and Office Equipment	R24,311.00
Operational Cost:	
Bargaining Council	R0.00
Communication:Telephone, Fax, Telegraph and Telex:	R46,403.00
Drivers Licences and Permits	R4,334.00

Solid waste management budget	2019/2020
Entertainment:Senior Management:	R0.00
Hire Charges	R2,216,382.00
Insurance Underwriting:Premiums:	R1,893.00
Registration Fees:Seminars, Conferences, Workshops and Events:National	R6,871.00
Skills Development Fund Levy	R0.00
Travel and Subsistence:Domestic:Accommodation	R1,600.00
Travel and Subsistence:Domestic:Daily Allowance	R3,300.00
Travel and Subsistence:Domestic:Incidental Cost	R3,525.00
Travel and Subsistence:Domestic:Transport with Operator:Public Transport:Air Transport	R0.00
Travel and Subsistence:Domestic:Transport without Operator:Car Rental:	R0.00
Travel and Subsistence:Domestic:Transport without Operator:Own Transport:	R5,000.00
Uniform and Protective Clothing	R206,708.00
Workmen's Compensation Fund	R134,604.00

3.6.2 SOLID WASTE TARIFF STRUCTURE 2019/2020

3.6.2.1 REFUSE REMOVAL

Table 3-21 provides the current (2019/2020) tariff structure for refuse removal from the BVM.

Table 3-21: Refuse removal tariff structure

DESCRIPTION	2019/2020 EXCL. VAT	2019/2020 VAT	2019/2020 INCL. VAT
1. Residential Per household/Flat Per month Annual	R175.13 R2 101.57	R26.27 R315.23	R201.40 R2 416.80
2. Hostels Per month Annual	R222.14 R2 665.67	R33.32 R399.85	R255.46 R3 065.52
3. Residential homes used for home industries/businesses or career practices Per month Annual	R222.14 R2 665.67	R33.32 R399.85	R255.46 R3 065.52
4. Commercial 1 (Annual) Monday to Friday One removal per weekday per bin Two removals per weekday per bin	R3 207.65 R6 415.30	R481.15 R962.30	R3 688.80 R7 377.60

Three removals per weekday per bin	R9 622.96	R1 443.44	R11 066.40
Four removals per weekday per bin	R12 830.61	R1 924.59	R14 755.20
Five removals per weekday per bin	R16 038.26	R2 405.74	R18 444.00
Saturday			
Removal per bin	R4 770.00	R715.50	R5 485.50
Sundays			
Removal per bin	R6 360.00	R954.00	R7 314.00
5. Commercial 2			
Home industries and businesses operated from a home.			
The zoning of these stands remains unchanged, but consent use is granted.			
Only one removal per week (annually).	R2 709.91	R406.49	R3 116.40
6. Special removals on weekends			
Per wheelie bin			
Per 240 l	R419.39	R62.91	R482.30
Minimum (6 wheelie bins)	R2 510.82	R376.62	R2 887.44
Per 770 l	R1 256.33	R188.45	R1 444.78
Minimum (2 wheelie bins)	R2 510.82	R376.62	R2 887.44
7. Sport clubs, educational (creches, schools and colleges), institutions and old age homes, churches			
Mondays to Fridays			
One removal per weekday per bin	R1 179.83	R176.97	R1 356.80
Two removals per weekday per bin	R2 359.65	R353.95	R2 713.60
Three removals per weekday per bin	R3 539.48	R530.92	R4 070.40
Four removals per weekday per bin	R4 719.30	R707.90	R5 427.20
Five removals per weekday per bin	R5 899.13	R884.87	R6 784.00
Saturday			
Removal per bin	R1 751.30	R262.70	R2 014.00
Sundays			
Removal per bin	R2 341.22	R351.18	R2 692.40
8. Municipal (departmental) Annually	R2 115.39	R317.31	2R 432.70
9. Availability charges (Per month)			
Residential	R82.96	R12.44	R95.40
Commercial	R184.35	R27.65	R212.00
10. Garden and special waste			
Special Events solid waste			

Per collection per bin:(240 l)	R262.70	R39.40	R302.10
Per collection per bin: (770 l)	R788.09	R118.21	R906.30
35 m³ container			
Rent per day	R193.57	R29.03	R222.60
Per collection	R1 036.96	R155.54	R1 192.50
11. Garden refuse			
Loading and removal			
Truck per load or part of 4 tonne truck	R429.53	R64.43	R493.96

3.6.2.2 GENERAL WASTE DELIVERED TO LANDFILL SITE AND TRANSFER STATIONS WITHIN BVM

Table 3-22 provides the current (2019/2020) tariff structure for general waste delivered to the landfill sites and transfer stations in BVM.

Table 3-22: General waste to landfill sites and transfer station tariff structure

DESCRIPTION	2019/2020 EXC. VAT	2019/2020 VAT	2019/2020 INCL. VAT
1. RESIDENTS OF RESIDENTIAL PROPERTIES			
DISPOSAL OF GENERAL WASTE	FREE		
1 X 1 M ³ (BAKKIE/TRAILER) LOAD PER MONTH			
2. ANY MIXED LOADS OF WASTE BASED ON THE TONNAGE OF VEHICLE			
0-0.5T OR VENTER TRAILER	R94.02	R14.10	R108.12
0.5 - 1T	R188.03	R28.21	R216.24
1 - 3T	R552.12	R82.82	R634.94
3 - 5T	R917.13	R137.57	R1 054.70
5 - 7T	R1 282.14	R192.32	R1 474.46
7 - 10T	R1 828.73	R274.31	R2 103.04

4 DESIRED END STATE

A needs analysis aims to identifying waste management deficiencies, needs and requirements in the BVM. The goals and targets will be determined based on the needs identified. This is done to ensure the IWMP is comprehensive and that meaningful objectives can be developed for the forthcoming horizon of waste management planning in the local municipality.

4.1 NEEDS ANALYSIS

4.1.1 KEY ISSUES IDENTIFIED BY GIBB IN ANNUAL REVIEW OF IWMP

The key projects that were identified by GIBB during the review of the BVM IWMP (2015) are as follows:

- Providing support and financial assistance to the Zwelethemba swap shop to ensure it is relaunched successfully;
- Revision of the 2008 Solid Waste By-Laws;
- Determining the remaining airspaces of the De Doorns landfill site;
- Conducting internal audits of all waste facilities;
- Undertaking public awareness campaigns on household hazardous waste; and
- Training of gate controllers to recognise hazardous waste.

4.1.2 KEY ISSUES IDENTIFIED BY SITUATION ANALYSIS

4.1.2.1 INSTITUTIONAL ISSUES

4.1.2.1.1 WASTE MANAGEMENT BY-LAWS

The current waste management by-laws need to be revised.

- The BVM has Solid Waste Disposal By-Laws dated 2008;
- The by-laws do not require that waste generators, transporters and recyclers should register with the Municipality or report information to the municipality; and
- BVM does not have any dedicated staff to enforce the waste management by-laws.

The Municipality must update the by-laws to ensure that all waste generators (especially hazardous waste generators in excess of 20 kg per day) are registered with the municipality as waste generators. Since 2008, various new waste regulations (and amendments) were issued so the by-laws are to be aligned with all of those.

The Municipality have no person currently (2020) to enforce these by-laws. The Municipality have to appoint a person to enforce the by-laws once.

4.1.2.1.2 WASTE COLLECTION AND DISPOSAL DATA

- The Municipality only reports general waste collected by the BVM on the iWPIS website. The recycling tonnages and hazardous waste tonnages are not recorded;
- The Municipality should implement a waste categorisation study in each season of the year and report on the type of waste generated in each income group; and
- Continuous maintenance of refuse removal vehicles is required.

4.1.2.1.3 LANDFILLS AND WASTE MANAGEMENT FACILITIES

- The Touws Rivier landfill is only being used for garden refuse and builder's rubble. There is no access control or security at the site, thus the residents dispose waste at the landfill illegally. The municipality collects the waste in Touws Rivier and transport it to the Worcester Landfill. The long hauling distance from Touws Rivier transfer station to Worcester landfill (+/- 75 km) causes damage to roads and vehicles; the Municipality can upgrade the Touws Rivier landfill and dispose general waste at the landfill;
- Access control should be implemented at the drop-off facilities in order to prevent illegal dumping;
- Upgrading of security at landfills and waste management facilities is required;
- Upgrade access control and information board at De Doorns landfill site;
- Ensure that tyre disposal on landfill sites is done in accordance with the National Environmental Management: Waste Act (59/2008): Waste Tyre Regulations (29 September 2019);
- Update all operational and rehabilitation plans for landfill sites;
- Conduct routine maintenance on stormwater channels; and
- Upgrade boreholes and take groundwater samples.

4.1.2.1.4 VACANT POSITIONS.

- Vacant positions need to be revised in line with the budget for 2020/2021; and
- A number of waste management personnel positions are vacant and need to be filled with competent persons.

4.1.2.2 SERVICES ISSUES

- Rural and low-income areas require drop-off areas in order to decrease illegal dumping in those areas; and
- The BVM should conduct a survey to establish the number of households that do not receive collection. Once the survey is conducted, the BVM should take action in extending the collection services in a cost-effective manner.

4.1.2.2.1 WASTE COLLECTION AREAS

- Additional skips should be provided in low-income and rural areas to avoid illegal dumping;
- The collection schedules should be reviewed continuously to ensure for effective waste collection; and
- Appoint waste marshals that can implement waste management awareness on the type of materials that are disposed in skips and inform the Municipality when skips are to be emptied.

4.1.2.3 PUBLIC AWARENESS ISSUES

4.1.2.3.1 EDUCATE, STRENGTHEN CAPACITY AND RAISE AWARENESS

- The Municipality have to educate the public on waste management practises, with emphasis on waste minimisation, recycling, eliminating illegal dumping and litter;

- Waste awareness campaigns must be implemented on a continuous basis. The campaigns must be implemented at schools and residences;
- A high level of illegal dumping occurs in the BVM due to lack of waste awareness information. The Municipality have to educate the residents on illegal dumping and implement drop-off facilities in low-income areas;
- The public must be informed about hazardous waste. The Municipality should inform the public on the types of domestic hazardous waste (e.g. batteries, fluorescent tubes, paint, motor oil, etc.); and
- The public must be made aware the disposal methods for hazardous waste. The Municipality have to ensure that there are drop off facilities for hazardous waste and that such waste is ultimately safely transported and disposed of at appropriate landfills.

4.1.2.3.2 IMPLEMENT WASTE MANAGEMENT INITIATIVES

- Start with employment process of the new MRF at the Worcester landfill;
- Enrol separation at source in all areas of BVM;
- Waste minimisation and recycling should be implemented at all schools in the Municipality;
- The Municipality should involve the communities in waste initiatives in order to educate them on waste minimisation and recycling;
- Establish and manage of swop shops in low-income areas. The Municipality established a swop shop in Zwelethemba but it was poorly managed and lead to the closure of the facility;
- The municipality should implement buy-back centres at the landfills; and
- Assist entrepreneurs in setting up buy-back businesses (facilitate donation of balers, provide skills and business training, etc.)

4.2 GOALS AND TARGETS

4.2.1 REVIEW WASTE MANAGEMENT GOALS AND TARGETS OF THE 2015 IWMP

Table 4-1 provide the findings of the GIBB performance report (2019) of the BVM IMWP (2015) goals and targets. The table also provides the current (2020) status of the goal and target.

Table 4-1: GIBB 2019 Performance report findings of the BVM IMWP (2015) target implementations

OBJECTIVE/ TARGETS	TARGET	TIME PERIOD	COMPLIANCE STATUS	GIBB COMMENT	CURRENT (2020) STATUS
Goal 1: Public Awareness and Education					
Educate, strengthen capacity and raise awareness in integrated waste management. The public will be informed and continually made aware of the impacts of waste on the environment. Municipal staff will receive training and attend forums.	1.1 Appoint a new foreman in the created position. This person will be responsible for implementing waste education at school levels and in different communities. Make use of the developed mascot and continue to distribute the newsletter.	2014-ongoing.	In progress.	<p>A foreman has not yet been appointed. The position was advertised and an appointment will be finalised in November 2019.</p> <p>Waste awareness campaigns were previously undertaken by the Expanded Public Works Programme (EPWP) staff (six monthly appointments). No EPWP workers are currently employed, so waste awareness campaigns are on hold. A mascot (Bin Bin) was used as part of the awareness campaigns.</p> <p>Recycling newsletters are distributed; the latest newsletter was issued in February 2019.</p>	<p>Completed.</p> <p>The EPWP staff are currently employed for street cleaning campaigns.</p> <p>The mascot is not being used for these campaigns.</p> <p>In progress.</p>

	1.2 Make use of the Youth Jobs in Waste Programme with part of the programme to be focused on waste education and training.	2014-ongoing.	In progress.	<p>EPWP staff were previously used to undertake waste awareness campaigns. No EPWP staff are currently appointed.</p> <p>A resource from the Department of Environment, Forestry and Fisheries (DEFF) (previously known as the Department of Environmental Affairs) was appointed in June 2019 to undertake awareness campaigns within the municipality. Twenty employees will be appointed under the official to assist with the waste awareness campaigns.</p>	<p>EPWP staff are being used for waste awareness campaigns.</p> <p>In progress.</p>
	1.3 Education and Swop Shop Project in Disadvantaged Areas: The Municipality has agreed to assist in establishing the first swop shop in Zwelethemba by providing material such as toothpaste, towels, soap, etc. to the value of R15 000.00.	2014-ongoing	In progress.	A swop shop was established in Zwelethemba. The swop shop is not currently operational due to a lack of funds. The BVM is planning to establish additional swop shops in in Avianpark, De Doorns and Touws River.	In progress.
	1.4 Breede Valley Municipality Solid Waste employees to attend education seminars and waste forums. Capacity training and education	2014-ongoing	Complete.	The Manager of the Solid Waste Department is attending quarterly provincial waste officer forum meetings. Proof of capacity training and education provided to staff of the solid	Completed.

	conducted within the Municipality where needed.			waste department was available. Training needs have been identified for the staff of the solid waste department for the 2019/2020 financial year.	
Legislative/best practice requirement for waste education and awareness.	<i>80% of schools to be implementing waste awareness campaigns (National Waste Management Strategy, 2011, hereafter NWMS, 2011)</i> <i>The service provider/ municipality must provide guidelines to households on how to separate waste (National Domestic Waste Collection Standards, 2011)</i> <i>Municipalities must implement education and awareness training regarding the basic refuse removal in relevant areas (National Domestic Waste Collection Standards, 2011)</i>				
Goal 2: Improve Waste Information Management					
Ensure the reporting of all waste management facilities to iPWIS. Waste quantification systems to be in place. Registration of hazardous waste generators (industry and medical) and service providers (e.g. transporters).	2.1 Registering of waste generators, transporters and recyclers and reporting to the Municipality.	2014-ongoing.	In progress.	Four organisations are currently registered as waste management companies with the BVM. Two of the waste management companies report waste information to the BVM.	In progress.
	2.2 Provision must be made in the by-law revision (waste generators, transporters and recyclers).		Not commenced.	The BVM has a solid waste disposal by-law dated 2008. The by-law does not require that waste generators, transporters and recyclers should register with the municipality or report information to the municipality.	Not commenced.
	2.3 Conduct the waste categorisation study with EPWP workers. Worker training can be done in-house.	2015/16	Not commenced.	A waste categorisation study has not been undertaken. It is part of the scope of work for the review of the 2015 IWMP. A service provider has been appointed to	Partially completed. A waste categorisation study was conducted only in Worcester. The study needs to

				assist BVM with the revision of the 2015 IWMP.	be rolled out for the entire Municipality.
	2.4 Installation of weighbridges at the proposed waste management facilities under Goal 3 (costs included under Goal 3).	2015/16	In progress.	<p>A weighbridge was installed at the Worcester landfill site but it was vandalised and is no longer in operation. A new weighbridge will be installed at the Worcester landfill.</p> <p>No weighbridges are installed at the Touws River and De Doorns landfill sites.</p>	In progress.
	2.5 Continual recording of weighbridge readings and reporting to the waste information system.	2016-ongoing.	In progress.	<p>A weighbridge was installed at the Worcester landfill site, but it is not in operation anymore as it was vandalised.</p> <p>No weighbridges are installed at the Touws River and De Doorns landfill sites.</p> <p>The recording of waste types and volumes is undertaken manually at the Worcester and De Doorns landfills and at the Touws River transfer station. A new weighbridge will be installed at the Worcester landfill site. During the site inspection at Touws River landfill site, there was no employee on site to record waste entering the site.</p>	<p>In progress.</p> <p>Not commenced.</p> <p>In progress.</p>

Legislative/best practice requirement for waste information management	Western Cape municipalities are required to report waste data on the Integrated Pollution and Waste Information System (IPWIS) in terms of the National Waste Information Regulations (GN 625 of 2012)				
Goal 3: Effective Solid Waste Service Delivery					
Ensure that waste services are provided in an effective and environmentally responsible manner to all residents of the Breede Valley Municipality.	3.1 Collection Service Review: The BVM must ensure that all residents receive an affordable waste service at an acceptable level. Current service levels are good and it needs to be ensured that this remains the case. Waste collection planning must be reviewed in order to provide services to new developments. The town engineers must liaise with the town planning department to stay up to	2014-ongoing.	In progress.	The 2015 IWMP states that all formal and informal households receive a collection service. However, no service is available to rural areas. There has been a slight increase in the percentage of households receiving a weekly collection service between 2011 (75.3%) and 2016 (77.7%). The number of households receiving no refuse service also increased over the same period, from 2.9% in 2011 to 3.7% in 2016 (Stats SA 2018 & web reference 1). Updated information of waste service provision has been requested from the BVM and is pending. The Technical Services Department consider and provide comments on applications for new developments and provide input	In progress.

	<p>date with new areas that require or will require service.</p> <p>The complaints registry and service requests must be reviewed by the Waste Management Officer at least weekly to ensure that these are properly addressed.</p>			<p>in terms of the waste services required for such developments.</p> <p>A complaints service centre is in place at the Municipality. Complaints received at the service centre are directed to the relevant municipal department to be addressed. Complaints are also directly received at the reception of the Technical Services Department and sent to the relevant official to address. There is currently no system in place to track and monitor the response to complaints. The BVM indicated that a work order process will be implemented to record and track actions undertaken for all incoming complaints.</p>	In progress.
	3.2 Provide street refuse bins in Worcester, De Doorns and Touws River.	2015-2018	Complete.	Street bins have been provided in all towns. Street bins made from recycled plastic were observed during inspections within Worcester.	Completed.
	3.3 Provide wheelie bins in all towns.	2015-2018	Complete.	Wheelie bins have been provided in all formal residential areas except for Touws River. Wheelie bins are not provided in Touws River due to the use of a	Completed.

				transfer station. The collection of wheelie bins by a compactor truck in Touws River would not be practical as the waste needs to be loaded into waste containers at the transfer station.	
	3.4 Construct mini drop-off facilities in all informal settlements.	2015-2017	Complete.	<p>Mini drop-off facilities have been constructed in all informal settlements. During site inspections, it was observed that many of the facilities have been vandalised. Complaints have also been received by the Municipality regarding the facilities due to the poor management thereof and their current locations.</p> <p>The BVM should assess the suitability of these facilities going forward.</p> <p>The BVM needs to consider the construction of formal mini drop-off facilities with access control, signage, storage facilities and waste sorting facilities.</p>	<p>Completed.</p> <p>The mini drop of facilities is not operational due to vandalism and poor security control. The municipality plans to construct formal drop-off facilities with better access control and security.</p>
	3.5 Construct transfer station in Rawsonville.	2016/2017	Not commenced.	No transfer station has been constructed in Rawsonville. Waste collected in Rawsonville is	Not Commenced

				transported in refuse compactor trucks to Worcester for disposal.	
	3.6 Construct MRF and Transfer station Worcester.	2015-2018	Complete.	The construction of a material recovery facility (MRF) is currently underway at the Worcester landfill site and will be completed in June 2020. There is no need to construct a transfer station at Worcester as waste will be directly taken to either the MRF or landfilled at the Worcester landfill site.	In Progress The MRF is still in construction phase and will be operational by June 2020.
	3.7 Construct MRF and Transfer Station De Doorns.	2015/2016	In progress.	A public drop-off facility (transfer station) has been developed at the De Doorns landfill site. The development of the MRF has not yet been undertaken. The BVM indicated that an MRF at De Doorns is still planned.	In progress.
	3.8 Purchase tools & equipment for all areas.	2015 – 2018	Complete	The purchase of tools and small equipment by the Municipality is ongoing. The Municipality has two waste balers which are located at the Touws River transfer station and at the Green Valley recycling facility in Worcester. Note that the target is not specific as to what type of tools and equipment should be purchased.	Completed.

	<p>3.9 Collection Vehicles Review:</p> <p>The older Municipal collection vehicles currently in the Municipal fleet aged above 7 to 8 years, must be assessed in terms of running cost and effectivity. Where vehicles are operating beyond their effective economic lifetimes or are not the most efficient vehicles for their functions, they must be replaced. It must also be ensured that each vehicle's function is thoroughly assessed in order to replace the old vehicles with the most efficient and cost-effective ones. The Waste Management Officer will be responsible.</p>	2014 ongoing	- Complete	<p>The BVM has undertaken a review of the waste management fleet to determine which vehicles need to be replaced.</p> <p>The following new compactor trucks were purchased by the municipality:</p> <p>Two in the 2017/2018 financial year</p> <p>Two in the 2018/2019 financial year.</p> <p>One new waste compactor will be purchased in the current (2019/2020) financial year. It was noted that a new compactor truck is required at Touws River.</p>	<p>Completed.</p> <p>Completed.</p>
	3.10 Purchase new specialised vehicles for Worcester and De Doorns.	2015-2018	Complete.	New waste compactor trucks were purchased for Worcester and De Doorns.	Completed.
	3.11 Purchase front end loader for Worcester landfill.	2015/2016	Complete.	The BVM purchased a backhoe loader instead of a front-end loader for the Worcester landfill site. The vehicle is subject to	Completed.

				occasional breakdowns and, at the time of the performance review, was off-site for repairs.	
	3.12 Hopper System Worcester.	2015-2018	Could not be determined.	Could not be determined as the MRF design and equipment list was not available for review.	Completed. A hopper system is installed at the MRF.
	3.13 The review will determine the vehicles which require replacement and provision can be made in the capital budget.	2014-ongoing.	Complete.	A review of collection vehicles was undertaken by the Municipality and determined which vehicles require replacement. New waste compactor trucks were purchased in the 2017/2018 and 2018/2019 financial years. Provision was made in the budget to purchase a new compactor truck in the 2019/2020 financial year.	Completed.
	3.14 Vacant positions need to be filled. In order to provide an effective service, key vacant positions in the solid waste department need to be filled.	2014-ongoing.	Incomplete.	There are a number of funded vacancies at different levels of the BVM organogram. These include: Superintendent; Storeman; Principal clerk; Supervisor; Foreman: recycling; Driver/supervisor; and General workers.	Incomplete.

	3.15 The number of and type of position will determine the additional costs to the Municipality. Competent employees need to be appointed and training provided as necessary.	2014-ongoing.	Complete.	The BVM has budgeted to fill the above vacancies and existing employees have received training since 2015. The training undertaken by employees includes waste management courses, landfill operator, recycling at source, first aid, fire Marshall, health and safety, computer, skills training, supervisor training, law enforcement training, digger loafer training and chipper training.	In progress.
Legislative/best practice requirement for waste service provision	<i>The NWMS 2011 requires 95% of urban and 75% of rural households to have access to adequate levels of waste collection services. Non-recyclable waste must be collected weekly from households, as a minimum.</i> <i>The National Policy for Provision of Basic Refuse Removal Services to Indigent Households (GN 413 of 2011) requires municipalities to provide free receptacles for waste storage to indigent houses.</i> <i>The National Domestic Waste Collection Standards (GN 21 of 2011) requires that all vehicles in the waste management fleet are roadworthy and that waste is transported in closed vehicles.</i>				
Goal 4: Promote and Ensure Waste Minimisation					
Maximise waste minimisation in the Breede Valley Local Municipality. The aim is to consistently divert high percentages of waste from landfill.	4.1 Promote and implement a source separation system in the BVM. This ties in with Goal 1 and 3 above. Determining the costs is part of the collection service review.	2015-ongoing.	In progress.	A separation at source programme (two bag system) has only been rolled out by the Municipality in specific wards in Worcester and De Doorns.	In progress.
	4.2 Install recycling notice boards in all towns. Continue	2015-ongoing.	In progress.	Recycling notice boards were installed in Worcester. The new	In progress.

	distribution of the recycling newsletter.			compactor trucks are also branded with waste awareness messages. The latest recycling newsletter was issued in February 2019.	
Legislative/best practice requirement for waste minimisation.	<i>The NWMS, 2011 sets a target of 25% diversion rate of recyclables by 2016.</i> <i>The draft 2018 NMWS sets a target of 50% diversion of waste by 2023 and 80% diversion by 2028.</i> <i>Operation Phakisa sets a target of 50% diversion of municipal waste by 2023.</i> <i>The Western Cape Provincial IWMP sets a target of 20% diversion rate of recyclables by 2019. Note: this diversion target, although included in the Western Cape Provincial IWMP, is a national target as indicated in the National MTSF Outcome 10 target</i> <i>The draft 2018 NWMS requires all municipalities to include provisions for drop-off/buy-back centres in their IWMPs.</i> <i>The Waste Act requires municipalities to 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.</i> <i>The National Domestic Waste Collection Standards (2011) require municipalities to provide an enabling environment for recycling.</i>				
Goal 5: Improve Regulatory Compliance					
Ensure the licensing of all waste management facilities that require licensing. Rehabilitate all closed landfills. Ensure auditing of waste management facilities and compliance with license conditions.	5.1 Review and publish new Integrated Waste Management By-laws. Done in-house with no additional costs.	2015/2016	Not commenced.	The 2008 Solid Waste Disposal By-Laws have not been updated.	Not commenced.
	5.2 Enforce by-laws and review as is necessary alongside new national and provincial legislation.	2016-ongoing.	Not commenced.	The BVM does not have any dedicated staff to enforce the waste management by-laws. The only law enforcement is undertaken by the traffic department at the municipality. The Solid Waste Disposal By-laws have not been updated since 2008.	Not commenced.

	5.3 Acquire closure license and rehabilitate the De Doorns landfill.	2015-2017	Not applicable.	No closure license has been obtained for the De Doorns landfill site and rehabilitation has been undertaken as it is the intention of the BVM to still use the site for the disposal of garden refuse and builder's rubble. The last GRAP assessment to determine the financial provision for closure and rehabilitation of the De Doorns landfill site was undertaken in 2019.	Not applicable
	5.4 Acquire closure license and rehabilitate the Worcester landfill.	2016-2018	Not applicable.	No closure license has been obtained for the Worcester landfill site and no rehabilitation has been undertaken. The BVM has applied for an amendment to the existing license for this site to increase the height of the final waste body. The BVM intends to continue to use the Worcester landfill site.	In progress. Application is in progress for 5 m high extension.
	5.5 Conduct annual internal and external audits for waste management facilities (Worcester & De Doorns). External audit cost estimates indicated below. Costs to fix non-compliant items will be	2014 – ongoing	In progress.	No annual internal audits have been undertaken for the Worcester and De Doorns landfill facilities. The latest external audits for the Worcester, De Doorns and Touws River landfill sites were undertaken in December 2017. A	Completed. Latest landfill audits were conducted in 2019.

	determined by the audit findings.			service provider has been appointed to undertake the 2019 external audits.	
Legislative/best practice requirement for waste regulation and compliance	<i>All of the Breede Valley landfill sites have waste management licenses. These licenses specify operational and closure requirements. The BVM must adhere to the conditions of these licenses.</i> <i>Section 16(3) of the Waste Act requires waste to be disposed of in an environmentally sound manner that does not create nuisance or endanger health or the environment.</i>				
Goal 6: Ensure Safe and Integrated Management of Hazardous Waste					
Provide education and management options for hazardous wastes. Ensure legal compliance by hazardous waste generators and transporters. Ensure the monitoring of the incoming waste stream at disposal facilities.	6.1 The public must be informed about household hazardous waste and the avoidance, reduction and disposal options available to them regarding these wastes. This forms part of Goal 1 of this plan.	2014-ongoing.	Not commenced.	No evidence of awareness campaigns undertaken to inform the public about household hazardous waste was available.	Not commenced.
	6.2 As part of Goal 2 of this plan, the registration and reporting of hazardous waste generators at the Municipality will allow the Municipality as the service authority to ensure that the waste is stored, transported, treated or disposed as is legally required.	2014-ongoing.	Not commenced.	No hazardous waste generators are currently registered with the municipality or reporting any hazardous waste information.	Not commenced.
	6.3 Monitoring of waste: It must be ensured that waste management employees are familiar with the latest	2014-ongoing.	In progress.	Incoming waste is recorded at Worcester and De Doorns landfill sites.	In progress.

	legislation regarding hazardous waste, the identification thereof and the disposal options that are legal. Employees at waste management facilities must be able to identify the received waste loads and prohibit the disposal or offloading where required. The incoming waste loads at disposal and waste management facilities must be monitored.			Incoming waste at the Touws Rivier landfill site is not monitored or recorded and there is a lack of access control at the landfill site. No specific hazardous waste training has been provided to employees. Instances of hazardous waste items (i.e. oil containers, empty chemical containers, oil-contaminated hydraulic pipes) were observed during site inspections at landfill sites.	
Legislative/best practice requirement for hazardous waste management	<i>The National Domestic Waste Collection Standards (2011) require municipalities to provide communal collection points for non-mainstream recyclables, such as batteries and fluorescent tubes, for collection by a private service provider.</i>				
Goal 7: Ensure Sound Budgeting for Integrated Waste Management					
Ensure that upcoming implementation actions are in the budget. Explore sources of funding.	7.1 The Municipality will ensure that there is sufficient provision in the budget for upcoming projects and action items. This can be done with the annual IWMP implementation programme review and project evaluation.	2014-ongoing.	In progress.	As detailed in this report, some of the projects in the 2015 IWMP have not been implemented due to a lack of budget. This is the first annual performance review of the IWMP.	In progress.

	7.2 The Municipality will explore other sources of funding.	2014-ongoing.	In progress.	Municipal Infrastructure Grant (MIG) funding was obtained for the MRF at the Worcester landfill site. No other funding applications have been submitted.	Completed.
	7.3 The Municipality will, as part of Goal 3, ensure that the service delivered is cost efficient.	2014-ongoing.	In progress.	The following initiatives are undertaken by the BVM to ensure that the service delivered is cost efficient: Specific refuse removal vehicles are allocated in each ward; Compactor trucks have been fitted with tracking devices; and The BVM has not yet undertaken a full cost accounting exercise to determine if refuse tariffs are cost reflective.	Completed. In progress. In progress.
Legislative/best practice requirement for sound budgeting of waste management.	<p><i>The National Pricing Strategy for Waste Management (GN 904 of 2016) requires:</i></p> <p><i>Municipalities to be charging for waste management services (collection and disposal) by 2016.</i></p> <p><i>All charges for waste management services must be informed by a full-cost accounting exercise by 2018.</i></p>				

4.2.2 DEVELOPMENT OF NEW WASTE MANAGEMENT GOALS AND TARGETS BASED ON SITUATIONAL ANALYSIS AND GIBB REVIEW

The Draft National Waste Management Strategy (NWMS) (3 December 2019) provides eight goals and targets for municipalities to ensure that the waste management hierarchy is implemented. The NWMS strategies and goals are:

- Promote waste minimisation, re-use, recycling and recovery of waste;
- Ensure effective and efficient delivery of waste services;
- Grow the contribution of the waste sector to the green economy;
- Ensure that people are aware of the impact of waste on their health, well-being and the environment;
- Achieve integrated waste management planning;
- Ensure sound budgeting and financial management for waste services;
- Provide measures to remediate contaminated land; and
- Establish effective compliance with and enforcement of the Waste Act.

In order to align the BVM identified goals and targets with those of the NWMS, the following goals and targets were identified:

- Goal 1: Promote waste minimisation and public awareness;
- Goal 2: Effective solid waste service delivery;
- Goal 3: Reduce illegal dumping;
- Goal 4: Improve waste information management;
- Goal 5: Ensure sound budgeting for integrated waste management;
- Goal 6: Improve regulatory compliance; and
- Goal 7: Ensure safe integrated management of hazardous waste.

Table 4-2 provides the goals and targets for the BVM, as well as target dates for completion of the respective goals.

Table 4-2: Goals and Targets for BVM

GOAL	TARGET	TIME FRAME	
GOAL 1: PROMOTE WASTE MINIMISATION AND PUBLIC AWARENESS	The separation at source programme needs to be rolled out across the rest of the BVM to ensure enough source separated materials to be delivered to new MRF for that to be run as a clean MRF.	2020/2021	Short-term goal
	Install recycling notice boards in De Doorns, Rawsonville and Touws Rivier to boost public awareness. Continue distribution of the recycling newsletter.	2020	Short-term goal
	Implement waste awareness programmes at rural areas and farms to separate general waste for recycling and composting at source. The BVM can collect recyclables at these areas.	2020-onwards	Short-term goal
	Make use of the Youth Jobs in Waste Programme with part of the programme to be focused on waste education and training.	2020-2021	Short-term goal
	The BVM to provide stock for the Zwelethemba swap shop and assist in securing a partner to support the swap shop going forward. The BVM also intends to establish swap shops in in Avianpark, De Doorns and Touws River.	Zwelethemba: 2020-2025 Avianpark: 2022 De Doorns: 2023 Touws River: 2024	Short-term goal Medium-term goal
	Initiate community-based waste management training and awareness programmes for rural councillors and communities.	2021-onwards	Short-term goal
GOAL 2: EFFECTIVE SOLID WASTE SERVICE DELIVERY	Determine the exact number of households not receiving a collection service.	2022	Medium-term goal
	Communal collection points or mini-drop off facilities should be put in place along major roads to collect waste from currently unserved households.	2020-2021	Short-term goal

	The Municipality currently (2020) keeps no records of complaints. The complaints registry must be reviewed to ensure that all complaints are being recorded for future use.	2020-onwards	Short-term goal
	Provide receptacles for Touws Rivier area.	2022/2023	Medium-term goal
	The BVM is to identify future waste management needs such as a composting facility and mini-drop off facilities, develop a waste infrastructure masterplan and then investigate funding applications.	2021-onwards	Short-term goal
	Determine available airspace on all landfill sites.	2021	Short-term goal
GOAL 3: REDUCE ILLEGAL DUMPING	Promote awareness concerning waste management, recycling and prevention of illegal dumping and littering in rural areas.	2020-onwards	Short-term goal
	Implementation of anti-littering by-laws.	2022-onwards	Medium-term goal
	Identify the underlying causes of illegal dumping (site-specific reasons).	2021-onwards	Short-term goal
	Identify illegal dumping hotspots.	2021-onwards	Short-term goal
	Rehabilitate illegal dumping sites which have been identified and mapped thus far.	2022-onwards	Medium-term goal
GOAL 4: IMPROVE WASTE INFORMATION MANAGEMENT	Registering of waste generators, transporters and recyclers and reporting to the Municipality.	2020-2021	Short-term goal
	Improve waste information record keeping.	2020	Short-term goal
	Installation of weighbridges at the waste management facilities.	2022-2024	Medium-term goal
	Conduct a waste categorisation study which takes seasonal variation into account.	2022-2023	Medium-term goal
GOAL 5: ENSURE SOUND BUDGETING FOR	The Municipality must ensure that there is sufficient provision in the budget for upcoming projects and action items.	2021-onwards	Long-term goal
	Develop a detailed financial planning model.	2021-onwards	Long-term goal

INTEGRATED WASTE MANAGEMENT	<p>The BVM has the following funded vacancies in the organogram</p> <p>There are a number of funded vacancies at different levels of the BVM organogram. These include:</p> <p>Superintendent;</p> <p>Storeman;</p> <p>Principal clerk;</p> <p>Supervisor;</p> <p>Foreman: recycling;</p> <p>Driver/supervisor; and</p> <p>General workers.</p> <p>The funded vacancy positions should be revised and in line with the BVM budget for 2021/2022</p>	2020-2021	Short-term goal
GOAL 6: IMPROVE REGULATORY COMPLIANCE	Conduct annual internal and external audits for waste management facilities.	2021-onwards	Long-term goal
	Revise the by-laws in general to include national and provincial policies, and norms and standards where applicable.	2020-2021	Short-term goal
	Improve security and fencing at the landfill sites to ensure that waste is 'safe disposed'.	2020-2021	Short-term goal
	Prevent tyres to be disposed at the landfills as per landfill licence.	2020-2021	Short-term goal
	Prevent tyres to be disposed at the landfills.	2020-2021	Short-term goal
	Provide stormwater infrastructure as per the landfill licence.	2020-2021	Short-term goal
	Ensure compliance of the landfill containment barriers with R. 636 (National norms and standards for disposal of waste to landfill).	2020-2021	Short-term goal
GOAL 7: ENSURE SAFE INTEGRATED	Educate the public about household hazardous waste and the avoidance, reduction and disposal options available to them regarding these wastes.	2020-onwards	Long-term goal

MANAGEMENT HAZARDOUS WASTE	OF	Ensure legal compliance by hazardous waste generators and transporters.	2021/2022	Short-term goal
		Educate the waste employees on the latest legislation regarding hazardous waste, the identification thereof and the disposal options that are legal.	2021/2022	Short-term goal

5 **DEVELOPMENT OF ALTERNATIVES, EVALUATION OF ALTERNATIVES AND SELECTION OF THE PREFERRED ALTERNATIVE**

This section identifies and evaluates different alternatives (approaches) that can be employed by the Municipality to achieve the strategic targets of the desired end state (as outlined in Section 4).

5.1 **GOAL 1: PROMOTE WASTE MINIMISATION AND PUBLIC AWARENESS**

Table 5-1 provides the alternatives and preferred alternative for each of the targets identified for Goal 1 (promote waste minimisation and public awareness).

Table 5-1: Targets, alternative and preferred alternative for Goal 1

TARGETS	ALTERNATIVES	PREFERRED ALTERNATIVE
The separation at source programme needs to be rolled out across the rest of the BVM to ensure enough source separated materials to be delivered to new MRF for that to be run as a clean MRF.	Provide recycling bags to the identified areas that is not yet participating in the waste separation at source program. The BVM needs to procure an additional two cage trucks and each will require a team of three staff. The additional trucks will allow the BVM to roll out the programme to additional areas.	BVM needs to provide recycling bags to the identified areas that are not yet participating in the waste separation at source program. The BVM needs to procure an additional two cage trucks and each will require a team of three staff. The additional trucks will allow the BVM to roll out the programme to additional areas.
	Appoint a service provider to provide recycling bags to the identified areas that is not yet participating in the waste separation at source program. The service provider will collect the bags and report quantities to the BVM.	
Install recycling notice boards in De Doorns, Rawsonville and Touws Rivier to boost public awareness. Continue distribution of the recycling newsletter.	Use a service provider to supply and install notice boards. Use the Municipality marketing team to design public awareness advertisements for the board. Ensure that the newsletter is distributed on a monthly basis.	Use a service provider to supply and install notice boards. Use the Municipality marketing team to design public awareness advertisements for the board. Ensure that the newsletter is distributed on a monthly basis.

Implement waste awareness programmes at rural areas and farms to separate general waste for recycling and composting at source. The BVM can collect recyclables at these areas.	Conduct waste awareness campaigns on a regular basis to keep residents informed. Waste awareness campaigns such as: Waste minimisation; Recycling; and Prevention of illegal dumping and littering. Appoint a waste Marshall to conduct waste awareness campaigns	Conduct waste awareness campaigns on a regular basis to keep residence informed. Waste awareness campaigns such as: Waste minimisation; Recycling; and Prevention of illegal dumping and littering.
Implement Youth Jobs in Waste Programme (Dept. of Environmental affairs) with part of the programme to be focused on waste education and training.	Contact the DEA to enrol in this programme which entails that young people, upon completing the short course, will be based at the landfill operations and will assist with day to day management and administration related to the operations at the landfills.	Developing hands-on skills development programmes to educate and fill vacancies in landfill operations, waste collection planning and administration, separation at source and refuse collection.
The BVM to provide stock for the Zwelethemba swap shop.	Make funds available to improve security at the swap shops in the community and appoint a Marshall to ensure that the area is not vandalised.	The Municipality should make funds available to assist swap shops in the community and appoint a Marshall to ensure that the area is not vandalised.
Establish swap shops in in Avianpark, De Doorns and Touws River.	Secure a partner to support the swap shop going forward.	Secure a partner to support the swap shop going forward.
Initiate community-based waste management training and awareness programmes for rural councillors and communities.	Initiating hands-on community clean-up projects that are incentivised. The purpose and the social and environmental benefits of the clean-up projects must be conveyed.	Initiating hands-on community clean-up projects that are incentivised. The purpose and the social and environmental benefits of the clean-up projects must be conveyed.

5.2 GOAL 2: EFFECTIVE SOLID WASTE SERVICE DELIVERY

Table 5-2 provides the alternatives and preferred alternative for each of the targets identified for Goal 2.

Table 5-2: Targets, alternative and preferred alternative for Goal 2

TARGET	ALTERNATIVES	PREFERRED ALTERNATIVE
Determine the exact number of households not receiving a collection service.	Appoint a service provider to conduct a community survey to identify the number of households not receiving waste collection services	Appoint a service provider to conduct a community survey to identify the number of households not receiving waste collection services
	Conduct a community survey with Municipality staff to identify the number of households not receiving waste collection services.	
Communal collection points or mini-drop off facilities be put in place along major roads to collect waste from currently unserved households.	Construct mini-drop off facilities in rural and informal household areas. Waste Marshall to be appointed to provide awareness of what materials can go into skips.	Construct mini-drop off facilities in rural and informal household areas. Waste Marshall to be appointed to provide awareness of what materials can go into skips.
The municipality currently (2020) keep no records of complaints. The complaints registry must be reviewed to ensure that all complaints are being recorded for future use.	Buy software which enables the community to make online complaints and ensure that the complaints are stored on a server for future use.	Buy software which enables the community to make online complaints and ensure that the complaints are stored on a server for future use.
	Keep a complaint register book at the landfills and Municipality offices to ensure for easy access by the residents.	Keep a complaint register book at the landfills and municipality offices to ensure for easy access by the residents.
Investigate receptacles for Touws Rivier area.	Provide 240 l wheelie bins.	Provide 240 l wheelie bins.
Develop a waste infrastructure masterplan and then investigate funding applications.	BVM to use municipality staff to develop a waste infrastructure masterplan and then investigate funding applications.	Appoint a service provider to develop a waste infrastructure masterplan and then investigate funding applications.
	Appoint a service provider to develop a waste infrastructure masterplan and then investigate funding applications.	
Determine available airspace at all landfill sites.	Appoint external consultant so conduct remaining airspace calculations.	Appoint external consultant so conduct remaining airspace calculations.

5.3 GOAL 3: REDUCE ILLEGAL DUMPING

Table 5-3 provides the alternatives and preferred alternative for each of the targets identified for Goal 3.

Table 5-3: Targets, alternative and preferred alternative for Goal 3

TARGET	ALTERNATIVES	PREFERRED ALTERNATIVE
Promote awareness concerning waste management, recycling and prevention of illegal dumping and littering in rural areas.	Community clean-up initiatives should be incentivised through educating the community on the adverse environmental and social impacts of illegal dumping.	Community should be educated on the adverse environmental and social impacts of illegal dumping. WMO to visit schools and other community platforms.
	Information notices placed at the illegal dumping sites and the areas surrounding the illegal dumping sites.	
Implementation of anti-littering by-laws.	Review the by-laws and include anti-littering by-laws. Appoint marshal to enforce by-laws.	Review the by-laws and include anti-littering by-laws. Appoint marshal to enforce by-laws.
Identify the underlying causes of illegal dumping (site-specific reasons).	<p>The waste management officer should assess potential reasons causing the prevalence of illegal dumping by way of:</p> <ul style="list-style-type: none"> • Identify illegal dumping hotspot; • Making key observations; • Conducting brief community surveys and interviews; and • Identifying the stream of waste that is predominant at the illegal dumping sites. 	<p>The waste management officer should assess potential reasons causing the prevalence of illegal dumping by way of:</p> <ul style="list-style-type: none"> • Identify illegal dumping hotspot; • Making key observations; • Conducting brief community surveys and interviews; and • Identifying the stream of waste that is predominant at the illegal dumping sites.
Identify illegal dumping hotspots.	Conduct an investigation to identify the illegal dumping hotspot.	Conduct an investigation to identify the illegal dumping hotspot.
Rehabilitate illegal dumping sites which have been identified and mapped thus far.	Clear illegal dumping sites of all waste using EPWP's workers.	Clear illegal dumping sites of all waste using EPWP's workers.

5.4 GOAL 4: IMPROVE WASTE INFORMATION MANAGEMENT

Table 5-4 provides the alternatives and preferred alternative for each of the targets identified for Goal 4.

Table 5-4: Targets, alternative and preferred alternative for Goal 4

TARGET	ALTERNATIVES	PREFERRED ALTERNATIVE
Registering of waste generators, transporters and recyclers and reporting to the Municipality.	Implement effective communication system: <ul style="list-style-type: none"> Place an advert in the local paper instructing organisations to register; Make registration forms available on the website; and Develop a database of companies operating in the BVM and track the registration and reporting status. Issue written notifications to the organisations which are not registered or reporting. 	Implement effective communication system: <ul style="list-style-type: none"> Place an advert in the local paper instructing organisations to register; Make registration forms available on the website; and <ul style="list-style-type: none"> Develop a database of companies operating in the BVM and track the registration and reporting status. Issue written notifications to the organisations which are not registered or reporting.
Improve waste information record keeping.	The BVM needs to ensure gate controllers are stationed at all landfill sites and that records are uploaded onto the Integrated Population and Waste Information System (IPWIS).	The BVM needs to ensure gate controllers are stationed at all landfill sites and that records are uploaded onto the Integrated Population and Waste Information System (IPWIS).
Installation of weighbridges at the waste management facilities.	Install and maintain weighbridges at the De Doorns landfill, Touws Rivier landfill and transfer stations.	Install and maintain weighbridges at the De Doorns landfill, Touws Rivier landfill and transfer stations.
Conduct a waste characterisation study which takes seasonal variation into account.	The waste municipal officers should ensure that a WCS is conducted in each season of the year to account for seasonal variations. This should be done every five years.	The waste municipal officers should ensure that a WCS is conducted in each season of the year to account for seasonal variations. This should be done every five years.

5.5 GOAL 5: ENSURE SOUND BUDGETING FOR INTEGRATED WASTE MANAGEMENT

Table 5-5 provides the alternatives and preferred alternative for each of the targets identified for Goal 5.

Table 5-5: Targets, alternative and preferred alternative for Goal 5

TARGET	ALTERNATIVE	PREFERRED ALTERNATIVE
The Municipality must ensure that there is sufficient provision in the budget for upcoming projects and action items.	Develop an asset budget replacement plan and ensure its inclusion in the annual IDP budgeting process. This can be done with the annual IWMP implementation programme review and project evaluation.	Develop an asset budget replacement plan and ensure its inclusion in the annual IDP budgeting process. This can be done with the annual IWMP implementation programme review and project evaluation.
Develop a detailed financial planning model.	Ensure that upcoming implementation actions are in the budget. Explore sources of funding.	Ensure that upcoming implementation actions are in the budget. Explore sources of funding.
	BVM to undertake a full cost accounting exercise to determine the true cost of waste management services.	BVM to undertake a full cost accounting exercise to determine the true cost of waste management services.
Review vacancies in the organogram and fill as required.	The funded vacancies must be reviewed. The BVM have to appoint personnel to fill the funded vacancies. The funded vacancy positions should be revised and in line with the BVM budget for 2021/2022.	The funded vacancies must be reviewed. The BVM have to appoint personnel to fill the funded vacancies. The funded vacancy positions should be revised and in line with the BVM budget for 2021/2022.

5.6 GOAL 6: IMPROVE REGULATORY COMPLIANCE

Table 5-6 provides the alternatives and preferred alternative for each of the targets identified for Goal 6.

Table 5-6: Targets, alternative and preferred alternative for Goal 6

TARGET	ALTERNATIVE	PREFERRED ALTERNATIVE
Conduct annual internal and external audits for waste management facilities.	Appoint an external consultant to conduct external audits at all waste management facilities. The waste management officer should conduct internal audits on a quarterly basis.	Appoint an external consultant to conduct external audits at all waste management facilities. The waste management officer should conduct internal audits on a quarterly basis.
Revise the by-laws in general to include national and provincial policies, and norms and standards where applicable.	By-laws should be revised to include the national and provincial policies, and norms and standards.	By-laws should be revised to include the national and provincial policies, and norms and standards.
Improve security and fencing at the landfill sites to ensure that waste is 'safe disposed'.	Improve security and enforce regular monitoring of activities undertaken at the landfills.	Improve security and enforce regular monitoring of activities undertaken at the landfills. Repair fencing where broken at Touws Rivier Landfill site.
	Repair fencing where broken at Touws Rivier Landfill site.	
Prevent tyres to be disposed at the landfills.	Improve security and enforce regular monitoring of activities undertaken at the landfills.	Improve security and enforce regular monitoring of activities undertaken at the landfills.
Provide stormwater infrastructure as per the landfill licence.	Provide stormwater drains at all landfill sites to channel, collect and store contaminated run-off.	Provide stormwater drains at all landfill sites to channel, collect and store contaminated run-off.
Ensure compliance of the landfill containment barriers with R. 636 (National norm for disposal of waste at a landfill).	Appoint consultant to assist with closure and rehabilitation of existing unlined cells. And develop new lined cells.	Close and rehabilitate existing unlined cells. Develop new lined cells.

5.7 GOAL 7: ENSURE SAFE INTEGRATED MANAGEMENT OF HAZARDOUS WASTE

Table 5-7 provides the alternatives and preferred alternative for each of the targets identified for Goal 7.

Table 5-7: Targets, alternative and preferred alternative for Goal 7

TARGET	ALTERNATIVE	PREFERRED ALTERNATIVE
Educate the public about household hazardous waste and the avoidance, reduction and disposal options available to them regarding these wastes.	<p>Educational awareness campaigns to educate the public on hazardous waste should be driven through:</p> <ul style="list-style-type: none"> Local radio stations; Community open days/fairs; The establishment of environmental youth clubs; and Information sessions at community meetings and parent evenings. 	<p>Educational awareness campaigns to educate the public on hazardous waste should be driven through:</p> <ul style="list-style-type: none"> Local radio stations; Community open days/fairs; The establishment of environmental youth clubs; and <ul style="list-style-type: none"> Information sessions at community meetings and parent evenings.
Ensure legal compliance by hazardous waste generators and transporters.	Registration and reporting of hazardous waste generators at the Municipality will allow the Municipality as the service authority to ensure that the waste is stored, transported, treated or disposed as is legally required.	Registration and reporting of hazardous waste generators at the Municipality will allow the Municipality as the service authority to ensure that the waste is stored, transported, treated or disposed as is legally required.
	The by-laws should be reviewed to include that all hazardous waste generators (generating more than 20 kg per day) should register at the municipality and record all hazardous waste generated.	The by-laws should be reviewed to include that all hazardous waste generators (generating more than 20 kg per day) should register at the municipality and record all hazardous waste generated.
Educate the waste employees on the latest legislation regarding hazardous waste, the identification thereof and the disposal options that are legal.	Send waste management officer to training programme regarding hazardous waste.	Send waste management officer to training programme regarding hazardous waste. Waste management officer to train waste management employees at landfill sites to identify hazardous waste.
	Waste management officer to train waste management employees at landfill sites to identify hazardous waste.	

6 IMPLEMENTATION PLAN

The following section presents an implementation plan to assist the BVM in meeting the objectives and targets outlined in the Options Generation section. The implementation plan contains a number of projects and respective actions which, if properly executed, should enable the BVM to achieve its objectives and targets. The identified projects have been prioritised and span a period of 5 years. Table 6-1 below outlines the implementation plan.

Table 6-1: Implementation plan

Objective	Target	Project description	Timeframe					Estimated budget required
			2021	2022	2023	2024	2025	
GOAL 1: PROMOTE WASTE MINIMISATION AND PUBLIC AWARENESS	The separation at source programme needs to be rolled out across the rest of the BVM to ensure enough source separated materials to be delivered to new MRF for that to be run as a clean MRF.	BVM needs to provide recycling bags to the identified areas that are not yet participating in the waste separation at source program. The BVM needs to procure an additional two cage trucks and each will require a team of three staff. The additional trucks will allow the BVM to roll out the programme to additional areas.						R500 000.00 per cage truck The salary of the six employees (2 driver/supervisor and 4 general workers) will be dependent on the BVM recruitment policy.
	Install recycling notice boards in De Doorns, Rawsonville and Touws Rivier to boost public awareness. Continue distribution of the recycling newsletter.	Use a service provider to supply and install notice boards. Use the Municipality marketing team to design public awareness advertisements for the board.						R20,000 per noticeboard

Objective	Target	Project description	Timeframe					Estimated budget required
			2021	2022	2023	2024	2025	
		Ensure that the newsletter is distributed on a monthly basis.						
	Implement waste awareness programmes at rural areas and farms to separate general waste for recycling and composting at source. The BVM can collect recyclables at these areas.	Conduct waste awareness campaigns on a regular basis to keep residence informed. Waste awareness campaigns will cover the following topics: <ul style="list-style-type: none"> • Waste minimisation; • Recycling; and • Prevention of illegal dumping and littering. 						R15,000 per annum for awareness materials. The Superintendent of Solid Waste salaries will be dependent on the BVM recruitment policy.
	Implement Youth Jobs in Waste Programme (Department of Environmental Affairs) with part of the programme to be focused on waste education and training.	Developing hands-on skills development programmes to educate and fill vacancies in landfill operations, waste collection planning and administration, separation at source and refuse collection.						Nil, funded through DEFF

Objective	Target	Project description	Timeframe					Estimated budget required
			2021	2022	2023	2024	2025	
	The BVM to provide stock for the Zwelethemba swop shop where recyclables can be traded.	The Municipality should make funds available to assist swop shops in the community and appoint a Marshall to ensure that the area is not vandalised.						R15 000 for stock per annum. The Superintendent of Solid Waste salaries will be dependent on the BVM recruitment policy.
	Establish swop shops in in Avianpark, De Doorns and Touws River.	Secure a partner to support the swop shop going forward.						R28 000 per swop shop establishment
	Initiate community-based waste management training and awareness programmes for rural councillors and communities.	Initiating hands-on community clean-up projects on a quarterly basis. The purpose and the social and environmental benefits of the clean-up projects must be conveyed.						R1000 per quarter for bags and cleaning equipment
GOAL 2: EFFECTIVE SOLID WASTE SERVICE DELIVERY	Determine the exact number of households not receiving a collection service.	Appoint a service provider to conduct a community survey to identify the number of households not receiving waste collection services						R1 500 000,00
	Communal collection points or mini-drop off facilities to be put in place along major roads to collect waste from	Construct mini-drop off facilities in rural and informal household areas. Waste Marshall to be						R200 000 per drop off location. The Superintendent of Solid Waste salaries

Objective	Target	Project description	Timeframe					Estimated budget required
			2021	2022	2023	2024	2025	
	currently unserved households.	appointed to provide awareness of what materials can go into skips.						will be dependent on the BVM recruitment policy.
	The municipality currently (2020) keeps no records of complaints. The complaints registry must be reviewed to ensure that all complaints are being recorded for future use.	Buy software which enables the community to make online complaints and ensure that the complaints are stored on a server for future use. Keep a complaint register book at the landfills and municipality offices to ensure for easy access by the residents.						R100 000 for software and Nil for inhouse bookkeeping
	Provide receptacles for Touws Rivier area.	Provide 240 l wheelie bins.						R800 per wheelie bin
	Develop a waste infrastructure masterplan and then investigate funding applications.	Appoint a service provider to develop a waste infrastructure masterplan and then investigate funding applications.						R250 000
	Determine available airspace at all landfill sites.	Appoint external consultant to conduct remaining airspace calculations.						R75 000 per landfill for survey and calculations of remaining airspace

Objective	Target	Project description	Timeframe					Estimated budget required
			2021	2022	2023	2024	2025	
GOAL 3: REDUCE ILLEGAL DUMPING	Promote awareness concerning waste management, recycling and prevention of illegal dumping and littering in rural areas.	Community should be educated on the adverse environmental and social impacts of illegal dumping. WMO to visit schools and engage community on other community platforms.						R15,000 per annum for awareness materials.
	Implementation of anti-littering by-laws.	Review the by-laws and include anti-littering by-laws.						Nil, if undertaken inhouse or consultant fees of R 100 000
	Identify the underlying causes of illegal dumping (site-specific reasons).	<p>The waste management officer should assess potential reasons causing the prevalence of illegal dumping by way of:</p> <ul style="list-style-type: none"> Identify illegal dumping hotspot; Making key observations; Conducting brief community surveys and interviews; and Identifying the stream of waste that is predominant at the illegal dumping sites. 						Nil, to be undertaken inhouse

Objective	Target	Project description	Timeframe					Estimated budget required
			2021	2022	2023	2024	2025	
	Identify illegal dumping hotspots.	Conduct an investigation to identify the illegal dumping hotspot.						Nil, to be undertaken inhouse
	Rehabilitate illegal dumping sites which have been identified and mapped thus far.	Clear illegal dumping sites of all waste using EPWP workers.						Nil, use EPWP programme
GOAL 4: IMPROVE WASTE INFORMATION MANAGEMENT	Registering of waste generators, transporters and recyclers and enforcing reporting to the Municipality.	Implement effective communication system: <ul style="list-style-type: none"> • Place an advert in the local paper instructing organisations to register; • Make registration forms available on the website; and • Develop a database of companies operating in the BVM and track the registration and reporting status. Issue written notifications to the organisations which are not registered or reporting 						R15 000 per annum for advertising materials. WMO to manage database, salary will be dependent on the BVM recruitment policy
	Improve waste information record keeping at landfills.	Ensure that gate controllers are stationed at all landfill sites and that records are uploaded onto the Integrated Population and						Nil, use inhouse staff

Objective	Target	Project description	Timeframe					Estimated budget required
			2021	2022	2023	2024	2025	
		Waste Information System (IPWIS).						
	Installation of weighbridges at the waste management facilities.	Install and maintain weighbridges at the De Doorns landfill, Touws Rivier landfill and transfer stations.						R1 200 000 per weighbridge
	Conduct a waste characterisation study which takes seasonal variation into account.	The waste municipal officers should ensure that a WCS is conducted in each season of the year to account for seasonal variations. This should be done every five years.						Nil, to be undertaken inhouse
GOAL 5: ENSURE SOUND BUDGETING FOR INTEGRATED WASTE MANAGEMENT	The Municipality must ensure that there is sufficient provision in the budget for upcoming projects and action items.	Develop an asset budget replacement plan and ensure its inclusion in the annual IDP budgeting process. This can be done with the annual IWMP implementation programme review and project evaluation.						Nil, review budget inhouse

Objective	Target	Project description	Timeframe					Estimated budget required
			2021	2022	2023	2024	2025	
	Develop a detailed financial planning model.	Ensure that upcoming implementation actions are in the budget. Explore sources of funding. BVM to undertake a full cost accounting exercise to determine the true cost of waste management services.						Nil, review budget inhouse
	Review vacancies in the organogram and fill as required.	The funded vacancies must be reviewed. The BVM have to appoint personnel to fill the funded vacancies. The funded vacancy positions should be revised in line with the BVM budget for 2021/2022.						The cost to fill the vacancies will be dependant of the BVM remuneration policy.
GOAL 6: IMPROVE REGULATORY COMPLIANCE	Conduct annual internal and external audits for waste management facilities.	Appoint an external consultant to conduct external audits at all waste management facilities. The waste management officer should conduct internal audits on a quarterly basis.						R75 000 per landfill for external audit per annum
	Revise the by-laws in general to include national and provincial policies, and norms	By-laws should be revised to include the national and provincial policies, and norms and standards.						Nil, to be undertaken inhouse

Objective	Target	Project description	Timeframe					Estimated budget required
			2021	2022	2023	2024	2025	
	and standards where applicable.							
	Improve security and fencing at the landfill sites to ensure that waste is 'safely disposed'.	Improve security and enforce regular monitoring of activities undertaken at the landfills. Provide fencing at the Touws Rivier Landfill site.						R400 per meter to repair and replace the fence
	Prevent tyres to be disposed at the landfills.	Improve security and enforce regular monitoring of activities undertaken at the landfills.						Nil, to be undertaken inhouse
	Provide stormwater infrastructure as per landfill licence at all landfills.	Provide stormwater drains at all landfill sites to channel, collect and store contaminated run-off.						R1 300 000 for Worcester landfill, R400 000 for De Doorns Landfill, R200 000 for Touws Rivier landfill
	Ensure compliance of the landfill containment barriers with R. 636 (National norm for disposal of waste at a landfill).	Appoint consultant to assist with closure and rehabilitation of existing unlined cells and development of new lined cells.						To be determined by consultants

Objective	Target	Project description	Timeframe					Estimated budget required
			2021	2022	2023	2024	2025	
GOAL 7: ENSURE SAFE INTEGRATED MANAGEMENT OF HAZARDOUS WASTE	Educate the public about household hazardous waste and the avoidance, reduction and disposal options available to them regarding these wastes.	Educational awareness campaigns to educate the public on hazardous waste should be driven through: <ul style="list-style-type: none"> • Local radio stations; • Community open days/fairs; • The establishment of environmental youth clubs; and • Information sessions at community meetings and parent evenings. 						R15 000 per annum for advertising material
	Ensure legal compliance by hazardous waste generators and transporters.	Registration and reporting of hazardous waste generators at the Municipality will allow the Municipality as the service authority to ensure that the waste is stored, transported, treated or disposed as is legally required. The by-laws should be reviewed to include that all hazardous waste generators (generating more than 20 kg per day) should register at the municipality and record						Nil, if by-laws are reviewed and enforced

Objective	Target	Project description	Timeframe					Estimated budget required
			2021	2022	2023	2024	2025	
		all hazardous waste generated.						
	Educate the waste employees on the latest legislation regarding hazardous waste, the identification thereof and the disposal options that are legal.	Send waste management officer to training programme regarding hazardous waste. Waste management officer to train waste management employees at landfill sites to identify hazardous waste.						R7 500 per course

7 IWMP MONITORING AND REVIEW

Regular and ongoing monitoring of the Implementation Plan (outlined in Section 6) is required to ensure the goals, objectives and targets of the IWMP are accomplished within designated timeframes.

7.1 REPORTING

According to Section 13(2) of The National Environmental Management Waste Act (Act 59 of 2008), performance reports on the implementation of the integrated waste management plan must be prepared in terms of Section 46 of the Municipal Systems Act and must contain the following information:

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

7.2 MONITORING AND REVIEW

The designated Waste Management Officer (WMO) is responsible for preparing the performance reports on the implementation of the IWMP (as discussed in Section 6) on an annual basis.

The Annual Performance Report must summarise the municipality's progress towards meeting the goals, targets and objectives outlined in the Implementation Plan of the IWMP. More specifically, the Report should comprise of the following:

- **Strategic Issues:** The BVM's performance and progress on meeting the short, medium- and long-term goals, objectives and targets;
- **Financial Issues:** Reporting on budget forecasting, obtaining sufficient budgets and budgeting constraints with respect to both existing waste management operations and the implementation of this IWMP;
- **IWMP Amendments:** Amendments to the IWMP necessitated by the outcomes of feasibility studies, financial constraints etc; and
- **Communication:** Keeping councillors, key stakeholders and the residents informed on the progress in meeting the IWMP.

7.3 REVISION OF THE IWMP

As this IWMP forms part of the Integrated Development Plan required in terms of Chapter 5 of the Municipal Systems Act, this IWMP must be comprehensively reviewed after 5 years. Therefore, the next comprehensive revision of the IWMP should occur in 2025.

The comprehensive review will update the status quo, evaluate overall progress against the goals, objectives and targets outlined in this IWMP, review gaps and needs and reformulate the goals and objectives as required to continue to improve waste management services in the Breede Valley Local Municipality.

8 PUBLIC PARTICIPATION PROCESS

As part of the development of the IWMP, the consultants engaged with stakeholders and members of the community. Stakeholders and Interested and Affected Parties (I&AP's) were notified that the draft IMWP was out for commenting on the Breedee Valley website for the period of 11 – 22 May 2020. The advertisement was placed in the Standard newspaper and on social media platforms. This section will be updated to include comment from I&AP's received during this period.

9 **CONCLUSION**

The Breede Valley Local Municipality (BVM) appointed Delta Built Environment Consultants (Delta BEC) to update the BVM Integrated Waste Management Plan (IWMP). The primary objective of the review and updating of BVM's IWMP was to ensure that waste management practices in the BVM comply with the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008).

The analysis of the current waste management system has shown the following:

- The Breede Valley Local Municipality is a Category B municipality located within the Cape Winelands District Municipality in the Western Cape. The BVM consist of 21 wards.
- The BVM has three landfills, located in Worcester, De Doorns and Touws Rivier. Currently (2020) the BVM only uses the Worcester and De Doorns landfill sites to dispose of general waste, garden refuse and builder's rubble.
- The BVM supplied 240 l wheelie bins to all middle- and high-income groups in Worcester and De Doorns. The bins are placed outside the households for weekly collection as per the collection schedule. The middle and high-income groups take part in the separation at source initiative, where the BVM supplies clear bags to the households. The clear bags are used for recycling purposes. The bags are issued to the residents on a quarterly basis. The clear recycling bags are collected by the BVM and transported to the recycling companies.
- Touws Rivier, Rawsonville and surrounding areas make use of a black bag system. The black bags are placed outside the households and collected by the BVM on a weekly basis as per collection schedule.
- The informal settlements make use of skips for waste collection. The BVM collects the skips and transports them to the Worcester landfill site, where the waste is disposed.
- There is currently (2020) no collection service to farmers and rural households due to long transporting distances and limited accessibility. Reportedly, the farmers offload their waste at the disposal sites free of charge.
- The BVM currently (2020) provides basic refuse removal services to Worcester, De Doorns, Touws Rivier, Rawsonville and surrounding areas.
- The BVM identified multiple illegal dumping sites, especially in rural areas and informal settlements. The BVM plans to establish drop-off points to reduce the occurrence of illegal dumping.

A waste categorisation study was conducted over a five-day period to identify the waste categories generated within the Municipality. The waste categorisation study was conducted in the Worcester area. Waste generation is affected greatly by seasonal variation. Therefore, ideally, waste analysis should be carried out at three-month intervals. It should be noted that due to cost, time and resource constraints, the waste categorisation study for BVM was only conducted in one season of the year. The need for a quarterly waste categorisation study for BVM will be proposed as a future project in the updated IWMP to be implemented by the BVM before the next five-yearly revision of the IWMP. The results from the waste categorisation study illustrated that the low-income group's waste stream consisted of the

highest percentage of organic waste (27%). The high-income group has the highest percentage of recyclables (53%) in their waste stream.

A needs analysis was conducted to identify the waste management deficiencies, needs and requirements in the BVM. From the needs analysis, seven goals were identified for the BVM in line with the Draft National Waste Management Strategy (NWMS) (3 December 2019) goals. The seven identified goals are:

- Goal 1: Promote waste minimisation and public awareness;
- Goal 2: Effective solid waste service delivery;
- Goal 3: Reduce illegal dumping;
- Goal 4: Improve waste information management;
- Goal 5: Ensure sound budgeting for integrated waste management;
- Goal 6: Improve regulatory compliance; and
- Goal 7: Ensure safe integrated management of hazardous waste.

Alternatives were identified for the implementation of the goals identified during the need's analysis. Based on the preferred alternatives selected, an implementation plan was generated for the BVM.


A comprehensive analysis and assessment of solid waste management in the BVM has been done and key strategies have been determined to aim the municipality towards sustainable and integrated waste management.

It is therefore recommended that the next stage of the process of implementing the IWMP be proceeded with, that entails the consultation process with the public and the development of detail action plans and key performance indicators for future monitoring of the municipality's successes in waste management service delivery.

10 REFERENCES

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APPENDIX A: PUBLIC PARTICIPATION ADVERT

 <p>BREEDE VALLEY MUNICIPALITY - MUNISIPALITEIT - UMASIPALA</p>	<p>NOTICE OF THE REVIEW AND UPDATE OF THE 2015 BREEDE VALLEY LOCAL MUNICIPALITY (BVLM) INTEGRATED WASTE MANAGEMENT PLAN (IWMP) FOR THE BVLM IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT, 2008 (ACT NO. 59 OF 2008).</p>
<p>Notice is hereby given in terms of the National Environmental Management: Waste Act (Act No. 59 of 2008) that the Breede Valley Local Municipality is reviewing the 2015 BVLM Integrated Waste Management Plan (IWMP).</p>	
<p>Municipality:</p>	<p>Breede Valley Local Municipality</p>
<p>Lead Consultant:</p>	<p>Delta Built Environment Consultants (Delta BEC)</p>
<p>Competent Authority:</p>	<p>Western Cape Department of Environmental Affairs and Development Planning</p>
<p>Project Nature and Location:</p>	<p>The project's primary objective of the review and updating of BVLM's IWMP is to ensure that waste management practices in the BVLM comply with the National Environmental Management: Waste Act, 2008 (Act No.59 of 2008).</p>
<p>Opportunity to Participate:</p>	<p>As part of the Public Participation process, the public is invited to comment on the IWMP. The draft IWMP will be available on the Breede Valley Local Municipality website from 11/05/2020.</p> <p>Comments on the draft IWMP can be forwarded to:</p> <p>Mrs Chanté Stander Tel: 012 368 1850 Email: chante.stander@deltabec.com</p>