BERGRIVIER MUNICIPALITY

INTEGRATED WASTE MANAGEMENT PLAN
(5th Generation)

DRAFT REPORT

COMPILED BY:

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REPORT: BERGRIVIER MUNICIPALITY – INTEGRATED WASTE MANAGEMENT PLAN (5th GENERATION)

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BERGRIVIER MUNICIPALITY

INTEGRATED WASTE MANAGEMENT PLAN
(5th Generation)

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ABBREVIATIONS

CBD	Central Business District
D:EA&DP	the Department: Environmental Affairs and Development Planning
HCGW	Health Care General Waste
HCRW	Health Care Risk Waste
HDPE	High Density Polyethylene
IDP	Integrated Development Plan
IPWIS	Integrated Pollutant and Waste Information System
IWMP	Integrated Waste Management Plan
IWMSA	Institute of Waste Management of South Africa
KPI	Key Performance Indicator
LDPE	Low Density Polyethylene
LM	Local Municipality
MEC	Member of the Executive Council
MRF	Material Recovery Facility
NDP	National Development Plan
NWMS	National Waste Management Strategy
NU	Non-urban
PET	Polyethylene terephthalate
PVC	Polyvinyl Chloride
RTS	Refuse Transfer Station
SAWIS	South African Waste Information System
SDF	Spatial Development Framework
SP	Sub-place
WCDM	West Coast District Municipality
WCIWMP	Western Cape Integrated Waste Management Plan
WCPSDF	Western Cape Provincial Spatial Development Framework
WMO	Waste Management Officer
WWTW	Waste Water Treatment Works

BERGRIVIER MUNICIPALITY

INTEGRATED WASTE MANAGEMENT PLAN

FIFTH GENERATION

EXECUTIVE SUMMARY

INTRODUCTION AND GENERAL DESCRIPTION

JPCE (Pty) Ltd has been appointed by the Bergrivier Municipality in the West Coast District of the Western Cape Province to assist in developing their fifth generation Integrated Waste Management Plan (IWMP). The fourth generation Bergrivier IWMP was developed in 2020. This fifth generation IWMP will be developed during 2025 and will replace the fourth generation IWMP after obtaining Council approval.

The development of the IWMP is necessary as it is an integral tool to identify current needs and act as a guide towards sustainable waste management. With regular updates of this document the changing needs as well as progress in the waste management field can be tracked and strategies adapted accordingly. It also provides a framework for budgeting purposes. The IWMP must be incorporated as part of each Municipality's Integrated Development Plan (IDP), but is submitted as a separate document. The IWMP also shows alignment of its goals with the Western Cape IWMP, the District Municipality IWMP and the National Waste Management Strategy (NWMS).

The primary objective of integrated waste management (IWM) planning is to integrate and optimise waste management, in order to maximise efficiency and minimise the associated environmental impacts and financial costs, and to improve the quality of life of all residents within the Bergrivier Municipality.

The Plan takes particular note of importance of local authority waste management planning. This document underlines the following principles of the National Waste Management Strategy:

- The prevention of waste generation;
- The recovery of waste of which the generation cannot be prevented, and
- The safe disposal of waste that cannot be recovered

The general topography, geology and hydrogeology of the area is discussed in section 1.6 and the demographic details in section 3.2. The current population estimate of the Bergrivier Municipality is 72,752 people, based on the Census 2022 population and a growth rate of 1.16%.

POLICY AND LEGISLATION

All applicable waste management legislation is listed and discussed under section 3.1 of the IWMP. The latest published legislation have been added in the IWMP update, which mainly consists of National Norms & Standards published under the Waste Act since the 2020 IWMP.

WASTE QUANTITIES, TYPES & TREATMENT

The Bergrivier Municipality does not make use of local landfill sites for disposal anymore. The waste generated within the municipality gets collected and sent to either the Velddrif or Piketberg transfer stations from where it is taken to Vredenburg (from Velddrif) and Malmesbury (from Piketberg) Landfills.

The Bergrivier Municipality has a three bag collection system which is very unique as most Municipalities have either a one bag or two bags system. A full waste characterisation study of the black bag (general), green bag (garden) and clear bag (recyclable) waste was undertaken by Aquila Environmental during early March 2025 with 290 black bags, 176 green bags and 275 clear bags sampled in the process. The waste was divided into a number of categories and recorded by weight. The results of the study are described under heading 3.3.3 and indicate that the combined municipal waste consists mainly of organic waste (56%). The study also showed that the clear bag waste still contained some non-recyclables (16%) and that the black bag waste still contained some potentially recyclable material (36%). The green bags contained 98% garden waste.

The total waste volume for the Municipality for 2025 was estimated at 12,613 tonnes (19,559 including rural) with a future estimated total of 13,209 tonnes for 2029 (20,483 tonnes including rural). This equates to an average waste generation factor of 0.75 kg/person/day.

In the order of 3,100 tonnes of garden waste and 9,260 tonnes of building rubble get disposed of at the landfills and transfer station per year. The garden waste gets chipped and stored on site. Building rubble is disposed of on site at the closed landfills and at the Velddrif transfer station. The volume of building rubble at the Velddrif transfer station is creating a challenge since the waste is not removed from site and the facility is not licensed as a landfill. This waste stream can be used as cover material at the landfills and the municipality needs to implement a strategy to remove the building rubble and garden waste from the Velddrif transfer station site. This could be achieved by appointing a SMME contractor to chip and crush the waste and beneficiating it.

A survey was also undertaken on the hazardous waste generated within the Bergrivier Municipality. This survey was conducted by Aquila Environmental and provides information on the sources and types of hazardous waste within the Municipality. The principles of the NEMWA (Waste Act) were followed and a full description of the survey is given in Section 3.3.5 of the report.

EXISTING WASTE MANAGEMENT STRUCTURE, SYSTEMS AND PRACTICES

Solid waste management for the Bergrivier municipality falls under the Civil Engineering Services Department of which the manager position is currently vacant. Since the previous generation IWMP waste management functions of the Manager: Civil Engineering Services have been delegated to a newly appointed position. This was identified as a need during the previous IWMP and good progress has been made in this regard. The organisational structure is fully described in section 3.4 and there are currently only 2 vacant positions within the waste management organisational structure.

Bergrivier is divided into collection areas that have a fixed day per week when waste is collected. All formal residential households receive door-to-door waste collection services and in terms of free basic services there are 2,097 registered indigent households in the Bergrivier Municipal area who qualify for free basic services. The Municipality reports 100% service to these households, and this number is decreasing.

The Municipality operates two main recycling facilities in Piketberg and Velddrif. These facilities mainly focus on the recycling of Plastic, Cardboard (and paper), Metals and Glass. The Velddrif RTS recycles on average about 23 tonnes per month and the Piketberg RTS recycles in the order of 42 tonnes per month total.

The municipality has a system for the separate collection of garden waste from households and businesses through use of a green bag. Green bag waste is taken to either the old Piketberg landfill or the Velddrif transfer station where it is chipped and stored. Currently the chipped waste largely remains on site and plans need to be put in place for the chipped waste to be removed. The Municipality also needs to develop a system where chipped waste or compost that leaves the facilities are recorded and reported on IPWIS.

The Bergrivier Municipality is active in raising awareness and providing education on sustainable waste management within their jurisdiction. The Municipality distributes pamphlets pertaining to solid waste management information to its residents and these pamphlets also provide information on how the separate collection and recycling systems work. Information on waste collection and treatment is also available on the municipality's website. Education and awareness related to waste management has greatly improved since the previous generation IWMP mainly due to the appointment of Ms Jamie-Lee van Zyl as Waste Management Officer.

GAPS AND NEEDS ASSESSMENT

The main gaps and needs identified for waste management within the Bergrivier Municipality are discussed in Chapter 4. They are:

- Legislation – adherence to hazardous waste and landfill closure legislation;
- Waste generation quantities – Accurate recording of waste data and tonnages (especially organic waste);
- Collection needs – Maintain collection services to all households and optimize routes;
- Waste transfer and disposal needs – Maintain drop-offs and prioritise closure of landfills;
- Waste minimisation recycling and reuse initiatives – Continue to improve on recycling and waste avoidance, with a focus on organic waste and building rubble;
- Institutional and organisational needs – fill all vacant positions;
- Identification of alternatives – Continue to look for ways in which to reduce waste to landfill by beneficiation the waste in innovative ways, with a focus on organic waste and building rubble.
- Funding mechanisms – Improvements require funding and new funding mechanisms need to be explored continuously;
- Public awareness and education – improve on successful public awareness and education campaigns and develop new ones.

IMPLEMENTATION STRATEGY, MONITORING AND REVIEW

Based on the gaps and needs identified, aligned goals of the IWMP and planned projects by the municipality, an implementation strategy was developed that contains the objectives, timeline and required resources for implementation of the IMWP. These gaps and needs are linked to the main goals contained in the Western Cape Provincial IWMP.

To ensure that the IWMP remains up to date as far as practically possible and stays relevant, it must go through a review process. This process will be initiated and followed by the IWMP advisory committee.

The implementation of the fifth generation IWMP will start following Council approval. Apart from the continuous project implementation and goal tracking, which must be done by each individual project team as and when each project is running and report to the designated Waste Management Officer or currently vacant technical services manager position, an annual IWMP report must be submitted along with the other Municipal annual reports and a copy sent to D:EA&DP as well.

BERGRIVIER MUNICIPALITY

INTEGRATED WASTE MANAGEMENT PLAN

FIFTH GENERATION

1. INTRODUCTION

1.1 TERMS OF REFERENCE

JPCE (Pty) Ltd has been appointed by the Bergrivier Municipality (BM) in the West Coast District of the Western Cape Province to assist in developing their fifth generation Integrated Waste Management Plan (IWMP). The fourth generation Bergrivier IWMP was developed in 2019 and endorsed in 2020. This fifth generation IWMP will be developed during 2025 and will replace the fourth generation IWMP after obtaining Council approval.

The terms of reference for this development are to source the required information, interpret the relevant data and plan accordingly in order to complete the IWMP in terms of the requirements as set out in the National Environment Management: Waste Act (Act no. 59 of 2008) and the contents listed below as required by the Western Cape Department of Environmental Affairs and Development Planning (D:EA&DP).

Chapter 3, Section 11 (4) of the Waste Act states that each Municipality must submit its IWMP to the Member of the Executive Council of a province (MEC) for approval and include the approved IWMP in its Integrated Development Plan (IDP) contemplated in Chapter 5 of the Municipal Systems Act.

Chapter 3, Section 12 of the Waste Act further states that the contents of an IWMP must be at least the following:

(a) A situation analysis that includes
   i. A description of the population and development profiles of the area to which the plan relates;
   ii. An assessment of the quantities and types of waste that are generated in the area;
   iii. A description of the services that are provided, or that are available, for the collection, minimisation, reuse, recycling and recovery, treatment and disposal of waste; and
   iv. The number of persons in the area who are not receiving waste collection services;

(b) Within the domain of the Department, provincial department or municipality, set out how that Department, provincial department or municipality intends –
   i. To give effect, in respect of waste management, to Chapter 3 of the National Environmental Management Act;
   ii. To give effect to the objects of this Act;
   iii. To identify and address the negative impact of poor waste management practices on health and the environment;
   iv. To provide for the implementation of waste minimisation, reuse, recycling and recovery targets and initiatives;
   v. In the case of a municipal IWMP, to address the delivery of waste management services to residential premises;
   vi. To implement the Republic's obligations in respect of any relevant international agreements;
   vii. To give effect to best environmental practice in respect of waste management;

(c) Within the domain of the Department or provincial department, set out how the Department or provincial department intends to identify the measures that are required and that are to be implemented to support municipalities to give effect to the objects of this Act;

(d) Set out the priorities and objectives of the Department, provincial department or municipality in respect of waste management;

(e) Establish targets for the collection, minimisation, re-use and recycling of waste;

(f) Set out the approach of the Department, provincial department or municipality to the planning of any new facilities for disposal and decommissioning of existing waste disposal facilities;

(g) Indicate the financial resources that are required to give effect to the plan;

(h) Describe how the Department, provincial department or municipality intends to give effect to its IWMP; and

(i) Comply with the requirements prescribed by the Minister.

The IWMP content requirements further detailed by the D:EA&DP IWMP guideline table of contents are as follows. Only the main headings are shown here. This IWMP was developed to contain all the required information, but does not follow the layout of the guideline exactly:

- Introduction and background information to the IWMP
- Status Quo:
  - Legislation
  - Demographic profile
  - Waste management cost and financing
  - Services and delivery
  - Compliance and enforcement
  - Waste generation and composition
  - Waste avoidance, reduction and recycling
  - Operational structure and staff capacity
  - Waste awareness and education
  - Waste information management
- Gaps and needs analysis
- Objectives and targets
- IWMP implementation
- Monitoring and review

The fourth generation draft Bergrivier 2019 IWMP by JPCE (Pty) Ltd was reviewed by D:EA&DP in 2019 and received a rating of 83%. The D:EA&DP conclusions and recommendations were included in the amended report and the IWMP was adopted by Council on 30 July 2019. The IWMP was subsequently endorsed by the MEC: Local Government, Environmental Affairs and Development Planning on 20 March 2020.

1.2 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 and has as its goal the transformation of the outdated methodology of waste management, i.e. mostly collection and disposal, to a sustainable practice focussing on waste avoidance and environmental sustainability. Implementation of this IWMP will be 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 act as a guide towards sustainable waste management. With regular updates of this document the changing needs as well as progress in the waste management field can be tracked and strategies adapted accordingly. It also provides a framework for budgeting purposes. The IWMP must be incorporated as part of each Municipality's Integrated Development Plan (IDP) but is submitted as a separate document. The IWMP also shows alignment of its goals with the Western Cape IWMP, the District Municipality IWMP and the National Waste Management Strategy (NWMS). This 5th generation IWMP improved upon the previous generation document in that progress has been made with shortcomings identified in the previous plan.

There is increasing pressure on government, the public and industry to be more environmentally responsible especially in terms of solid waste generation and management. Making waste disposal priority can be seen as archaic planning and is not sustainable as disposal airspace is becoming limited and the establishment of new disposal facilities are becoming increasingly difficult due to the unavailability of suitable land. Establishing new disposal facilities are also increasingly expensive due to the design and construction requirements in order to safely dispose the waste to land. Although the eradication of the practice of waste disposal is currently not possible, the IWMP aims to identify ways on how to decrease disposal and move towards being an environmentally responsible society.

Since the previous generation IWMP, greater focus has been placed on the identification, handling, treatment and disposal of the organic waste stream and also receives bigger focus in the National Waste Management Strategy 2020. Municipalities are required to develop Organic Waste Diversion Plans (OWDPs) to implement and achieve diversion targets for organic waste. The BM's OWDP was developed in 2021 and updated as part of this IWMP. The amended report is included **Annexure C**.

1.3 SCOPE OF THE IWMP

The scope of this local municipal IWMP includes an investigation into the current state of the solid waste management system of the BM and provides the overview thereof. This investigation aims to include all the various aspects of the solid waste management system which ranges from legislation, waste types and generation, waste facilities and infrastructure to financing and all other details as listed under the terms of reference above.

The status quo is evaluated in order to determine the gaps and needs of the system. The scope also includes goals and objectives to improve the system where required, but is limited to implementation on the local authority level. The implementation items in order to improve the waste management system and to achieve goals are coupled with a monitoring and review programme to ensure that the IWMP is up to date and is implemented.

The waste types measured and discussed are the following:

- Domestic waste
- Garden waste
- Building (construction) waste
- Household hazardous waste
- Hazardous waste (including health care risk waste)

The sources of the above waste types are also discussed and include the following:

- Residential areas
- Businesses
- Industry
- Farms
- Waste as a result of illegal dumping
- Street cleansing waste

1.4 METHODOLOGY AND APPROACH TO THE IWMP

The planning phase of the 5th generation IWMP included the following:

JPCE has successfully developed a number of IWMP documents for municipalities within the Western Cape. This creates an opportunity to be in regular contact with D:EA&DP on what the IWMP requirements are through evaluation reports on other IWMP documents etc. Planning thus included addressing the standard D:EA&DP requirements as well as recently received comments on other municipal IWMP documents in the Western Cape. JPCE also developed the 4th generation IWMP for BM as well as their OWDP.

Aquila Environmental (Pty) Ltd was appointed as sub-consultant to JPCE in order to conduct the hazardous waste survey in the BM Area. All the generators of these waste types were identified and interviewed in order to obtain the quantities generated and the treatment and/or disposal methods.

The first step in the hazardous waste survey was a confirmation of the database of possible hazardous waste producing industries as compiled during the last IWMP cycle. A list was compiled based on the physical survey for each town. All the possible industries were listed but not all businesses, as some were regarded as non-hazardous waste producers due to their nature of business, size, physical structure, etc. Each business listed in the hazardous waste survey list was contacted, telephonically and/or via e-mail.

Aquila Environmental were also appointed to undertake a general waste characterisation study (WCS) with the assistance from the municipality. The methodology and results are described under heading 3.3.3 of this IWMP report. Officials from the BM provided additional information and references required to inform the IWMP. The municipality also coordinated and provided some of the workers for the (WCS) as well as provided the premises.

Extensive input and information were provided by the BM and the plan development included lengthy discussions with, and guidance received from municipal staff within the waste management directorate. The long serving Waste Manager of the BM, Mr Jaco Breunissen retired at the end of March 2025 and the position is currently vacant. All the acquired information was reworked into the format presented in this report in order to reflect the status quo, draw conclusions and to make recommendations.

Public input into the final report will be obtained by making this draft report available to the public through ward council meetings and by making the document available on the website of the BM and JPCE. Hard copies of the document will also be available for review at public libraries of the towns in the BM. Notice for public comment on the IWMP will also be placed in the local newspaper.

The final IWMP, including responses to all public and authority comments, will be submitted to the BM Council and the Department for final approval and endorsement.

1.5 OVERALL AIMS AND GOALS OF THE IWMP

The primary objective of integrated waste management (IWM) planning is to integrate and optimise waste management, in order to maximise efficiency and minimise the associated environmental impacts and financial costs and to improve the quality of life of all residents within the BM.

The plan takes particular note of importance of local authority waste management planning. This document underlines the following principles of the National Waste Management Strategy (NWMS):

- The prevention of waste generation;
- The recovery of waste of which the generation cannot prevented, and
- The safe disposal of waste that cannot be recovered.

The Plan will address all areas of waste management – from waste prevention and minimisation (Waste avoidance) to its collection, storage, transport, treatment, recovery and final disposal. It will not only address the practicalities of waste management in context of this Municipality, but also the issues of public education and changing concepts, as these are vital to a successful management system.

The main goals of the BM IWMP are aligned with the goals of the Western Cape Provincial IWMP, the 2020 NWMS outcomes (which is a consolidation of the 8 goals of the 2011 NWMS), the Municipal Spatial Development Framework (SDF), the municipal Integrated Development Plan (IDP), the National Development Plan (NDP) and the Provincial Spatial Development Framework (SDF). These are shown in Table 1-1. and these main goals are shown in further detail and sub-goals and implementation items in Section 5: Implementation and Strategy Plan of the report.

The alignment of the Western Cape IWMP, National Waste Management Strategy 2011 and the National Development Plan 2030 are as follows:

Table 1-1: Goals and Strategic Linkages

Western Cape IWMP (2022-2027)		NWMS 2020		NDP 2030	
Goal 1:	**Strengthened education, capacity and advocacy towards Integrated Waste Management**	Outcome 3:	Mainstreaming of waste awareness and a culture of compliance resulting in zero tolerance of pollution, litter and illegal dumping.	Chapter 9:	Improving education, training and innovation
Objective 1:	Create awareness and education of integrated waste management.				
Expected outcome:	Improved waste management and the prevention of pollution, litter and illegal dumping.				
Goal 2:	**Improved integrated waste management planning and implementation for efficient waste services, technologies and infrastructure**	Outcome 2:	All South Africans live in clean communities with waste services that are well managed and financially sustainable.	Chapter 3:	Develop proposals for an acceptable minimum standard of living and proposals on how to achieve this over time.
Objective 1:	Facilitate municipal integrated waste management planning				
Objective 2:	Promote industry waste management and the circular economy				
Objective 3:	Promote the establishment of integrated waste management infrastructure and services				
Objective 4:	Ensure timeous and reliable waste information reporting				
Expected Outcome:	All citizens of the Western Cape live in clean communities and have access to well managed and financially sustainable waste services.				

Western Cape IWMP (2022-2027)		NWMS 2020		NDP 2030	
Goal 3:	**Effective and efficient utilisation of resources**	Outcome 1:	Prevent waste, and where waste cannot be prevented ensure - 40% of waste from diverted from landfill within 5 years; 55% within 10 years; and at least 70% within 15 years leading to Zero-Waste going to landfill.	Chapter 5:	Environmental Sustainability and Resilience: Absolute reductions in the total volume of waste disposed to landfill each year.
Objective 1:	Minimise the consumption of natural resources and promote circular economy principles			Chapter 5:	Environmental Sustainability and Resilience: Put in place a regulatory framework for land use to ensure the conservation and restoration of protected areas.
Objective 2:	Stimulate job creation within the waste economy			Chapter 3:	Economy and Employment
Objective 3:	Increase waste diversion through reuse, recovery and recycling				
Expected outcome:	The reduction of waste to landfill through increased re-use, recovery, recycling, refurbishment and alternative waste treatment, leading to increased economic opportunities for all.				
Goal 4:	**Improved compliance with the environmental regulatory framework**	Outcome 1:	Prevent waste, and where waste cannot be prevented ensure - 40% of waste from diverted from landfill within 5 years; 55% within 10 years; and at least 70% within 15 years leading to Zero-Waste going to landfill.	Chapter 5:	Environmental Sustainability and Resilience: Put in place a regulatory framework for land use to ensure the conservation and restoration of protected areas.
Objective 1:	Strengthen compliance and enforcement				
Objective 2:	Facilitate the rehabilitation of Waste Management Facilities				
Expected outcome:	Creating a culture of compliance with zero tolerance towards pollution, littering and illegal dumping.				

The Bergrivier Municipality IWMP links with these national and provincial documents in that it will adopt the goals and strategic objectives of the (2023-2027) Western Cape Provincial Integrated Waste Management Plan.

The alignment of the latest Bergrivier IWMP, IDP and SDF are as follows:

Bergrivier 5th Generation IWMP (2025)		Bergrivier IDP (2022 – 2027)		Bergrivier SDF (2024 – 2029)	
Goal 1:	**Strengthened education, capacity and advocacy towards Integrated Waste Management**	**Goal 4:**	**Facilitate an enabling environment for economic growth to alleviate poverty**	**Strategic Objective 3:**	**Sustain material, physical and social well-being.**
Objective 1:	Create awareness and education of integrated waste management.	Strategic Objective 19:	Alleviate poverty through job creation in municipal driven projects and programmes.	Strategic Objective 3.2:	Protect fundamental community resources (air, water & energy).
Expected outcome:	Improved waste management and the prevention of pollution, litter and illegal dumping.	Strategic Objective 17:	To improve the regulatory environment for ease of doing business	Strategic Objective 3.3:	Provide (change) social infrastructure and services (as per norm) to facilitate smart growth.
		Strategic Objective 13:	Maintain existing bulk infrastructure and services.		
Goal 2:	**Improved integrated waste management planning and implementation for efficient waste services, technologies and infrastructure**	**Goal 3:**	**Sustainable service delivery**	**Strategic Objective 2:**	**Proximate, convenient and equal access**
Objective 1:	Facilitate municipal integrated waste management planning	Strategic Objective 14:	Develop, manage and regulate the built environment	Strategic Objective 2.2:	Provide (change) sustainable infrastructure and services (smart growth).
Objective 2:	Promote industry waste management and the circular economy	Strategic Objective 21:	Attract investment through catalytic infrastructure.		
Objective 3:	Promote the establishment of integrated waste management infrastructure and services	Strategic Objective 7:	Create an efficient, effective, economic and accountable administration.	Strategic Objective 2.3:	Provide zoned land for residential and industrial development and education.
Objective 4:	Ensure timeous and reliable waste information reporting				
Expected Outcome:	All citizens of the Western Cape live in clean communities and have access to well managed and financially sustainable waste services.	Strategic Objective 24:	Promote a safe environment for all who live in Bergrivier Municipal Area.	Strategic Objective 2.1:	Protect economic vibrancy.

Bergrivier 5th Generation IWMP (2025)		Bergrivier IDP (2022 – 2027)		Bergrivier SDF (2024 – 2029)	
Goal 3:	**Effective and efficient utilisation of resources**	**Goal 2:**	**Ensure good governance**	**Strategic Objective 5:**	**Protect ecological and agricultural integrity**
Objective 1:	Minimise the consumption of natural resources and promote circular economy principles	Strategic Objective 22:	To promote healthy lifestyles through the provision of sport, recreational and other facilities and opportunities.	Strategic Objective 5.1:	Protect food & water security & apply bioregional classification.
Objective 2:	Stimulate job creation within the waste economy	Strategic Objective 20:	Ensure all policies and systems in Bergrivier Municipality support poverty alleviation.	Strategic Objective 5.2:	Grow conservation potential and formalise conservation of CBAs and apply river management.
Objective 3:	Increase waste diversion through reuse, recovery and recycling	Strategic Objective 21:	Alleviate poverty through job creation in municipal driven projects and programmes.		
Expected outcome:	The reduction of waste to landfill through increased re-use, recovery, recycling, refurbishment and alternative waste treatment, leading to increased economic opportunities for all.	Strategic Objective 16:	Conserve and manage the natural environment and mitigate the impacts of climate change.	Strategic Objective 5.3:	Protect and preserve sensitive habitats and enhance Ecosystem services.
Goal 4:	**Improved compliance with the environmental regulatory framework**	**Goal 5:**	**Empowering people through innovation.**	**Strategic Objective 1:**	**Grow (& unlock) economic sectors and prosperity**
Objective 1:	Strengthen compliance and enforcement	Strategic Objective 23:	Promote continued partnerships for youth development.	Strategic Objective 1.2:	Strengthen mobility and economic links (investor confidence).
Objective 2:	Facilitate the rehabilitation of Waste Management Facilities	Strategic Objective 21:	Attract investment through catalytic infrastructure.	Strategic Objective 1.1:	Grow economy & stimulate sector diversification & product development.
Expected outcome:	Creating a culture of compliance with zero tolerance towards pollution, littering and illegal dumping.	Strategic Objective 22:	To promote healthy lifestyles through the provision of sport, recreational and other facilities and opportunities.	Strategic Objective 1.3:	Develop product and trade advantages (export value chain & agri industry corridors) and competitive advantage.

1.6 GEOGRAPHIC AREA OF STUDY

BM is the northern neighbour of both Swartland and Saldanha Bay Municipalities with the Berg River forming the southern boundary of the Municipality. It is an area noted for its wheat farms in the central and eastern portion and its fishing industries in the western area.

The BM area hosts many industries, but the agriculture and fishing related industries appear to be the main economic drivers. Due to the colourful history of this area and the picturesque views, tourism is a fast-growing industry in Bergrivier.

Figure 1-1 shows the extent of the municipal area, major towns, roads and surface water features. The BM was established in December 2000 through the amalgamation of the former municipalities and towns of Piketberg, Porterville, Velddrif, Redelinghuys and Aurora.

1.6.1 Topography and climate

The municipal area is relatively flat, except for the area around Piketberg and the eastern edge of the municipality that consists of a mountain range (Olifantsrivierberg / Groot Winterhoek). The southern area slopes towards the Berg River while the northern area drains towards the Olifants River. The western area slopes towards the Atlantic Ocean.

The area has a Mediterranean type climate and is known for its hot summer days. Average annual rainfall is approximately 400 mm, with the southern portion receiving more than the northern portion. The evaporation is high, approximately 1600 mm per annum, which is four times the rainfall.

The sections below discuss the geology and geohydrology of the BM area.

1.6.2 Geology and Hydrogeology

1.6.2.1 Geology

Figure 1-2 is a simplified geological map adapted from the 1:500 000 scale hydrogeological maps for Cape Town 3318 and Clanwilliam 3218 Cape Town (Department of Water and Sanitation).

The municipality comprises an area of approximately 4,407 km^2 and is underlain by rocks of two geological formations, which are covered by superficial sandy deposits in the coastal plain area. From oldest to youngest these formations are the Malmesbury Group, Table Mountain Group and Quaternary deposits. These are discussed briefly below.

The Malmesbury Group comprises very old rocks, >600 million years old, which have been compacted and deformed over this long time period into mostly impermeable rocks. This Group comprises two subgroups in the study area, the Swartland and Boland Subgroups/terranes. These comprise mostly phyllitic and schistose rocks with limestone lenses and sandstone horizons. The rocks have been eroded into a low-lying, rolling topography. In terms of surface outcrop area, this Group occupies 42.4% of the study area.

Resistant quartzitic sandstones of the Table Mountain Group (TMG) form the Piketberg and the mountains to the east, the Olifantsrivierberg. These rocks occupy 22.4% of the study area. The Group comprises a number of formations of which the most important are;

- The basal Piekenierskloof Formation, comprising a conglomerate and sandstone, which is up to 390m thick;
- The overlying Peninsula Formation, a thick sequence of resistant quartzites and quartzitic sandstones with a maximum thickness of 1 800m;
- The Cedarberg Shale Formation, a marker horizon approximately 120m thick; and
- The Nardouw Subgroup comprising two sandstone formations in the study area and only present in the southern part of the study area.

The Quaternary deposits comprise sandy and loamy soils in the more inland areas changing to wind-blown sand and calcrete overlying coarser sand and gravel deposits of marine and fluviatile origin in the coastal areas. They reach their thickest development of approximately 70 m on the Farm Melkplaas. They occupy 35.2% of the study area.

There are a number of faults and fold structures in the area. The main fault is the De Hoek Fault which runs in a NW-SE direction along the western boundary of the Piketberg. There are also numerous parallel trending faults in the Piketberg and ENE-WSW trending faults on its eastern side. There is a synclinal fold structure running through the southern part of the Piketberg, and the Eendekuil Valley represents a broad anticlinal structure.

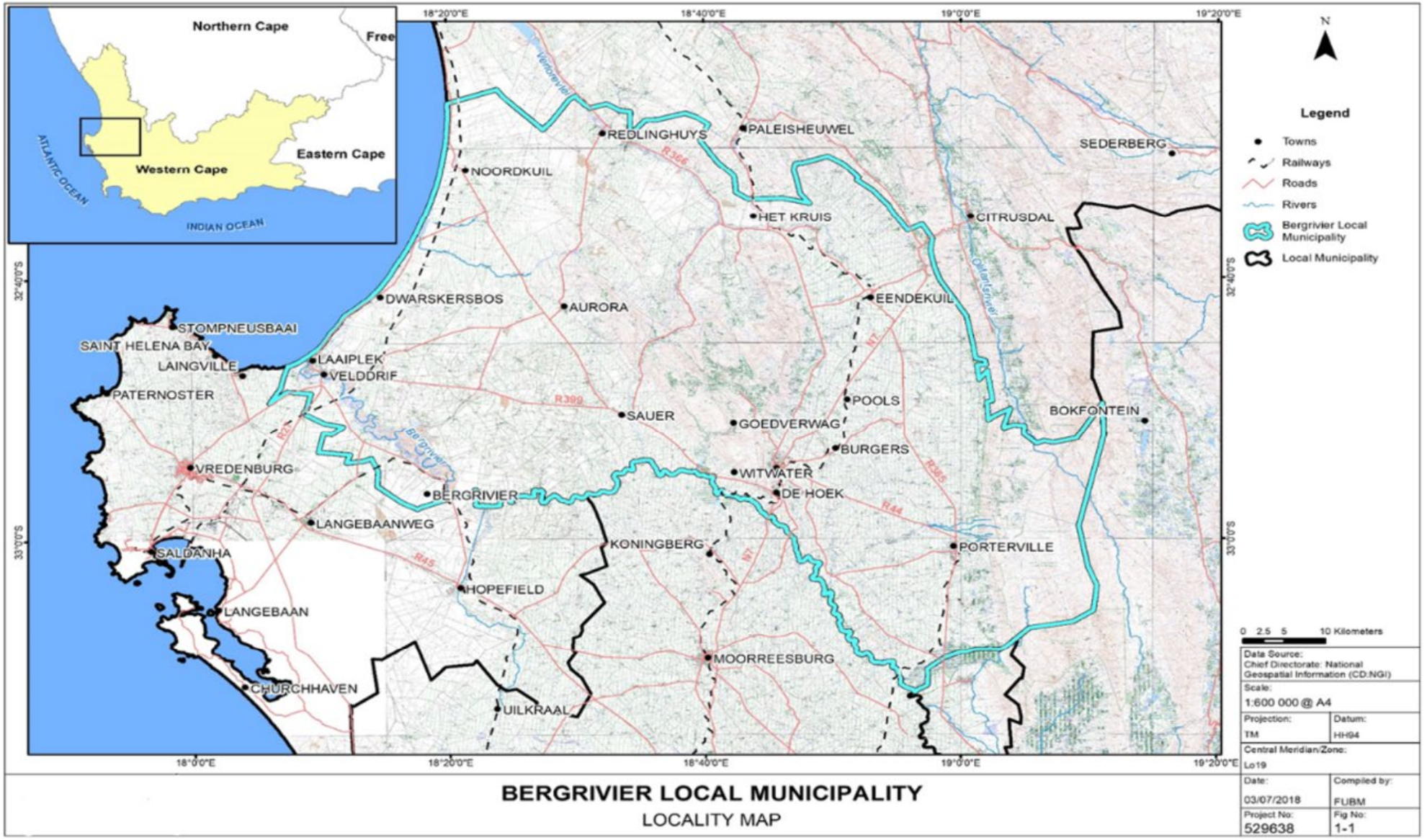


Figure 1-1: Study Area –Municipal Area

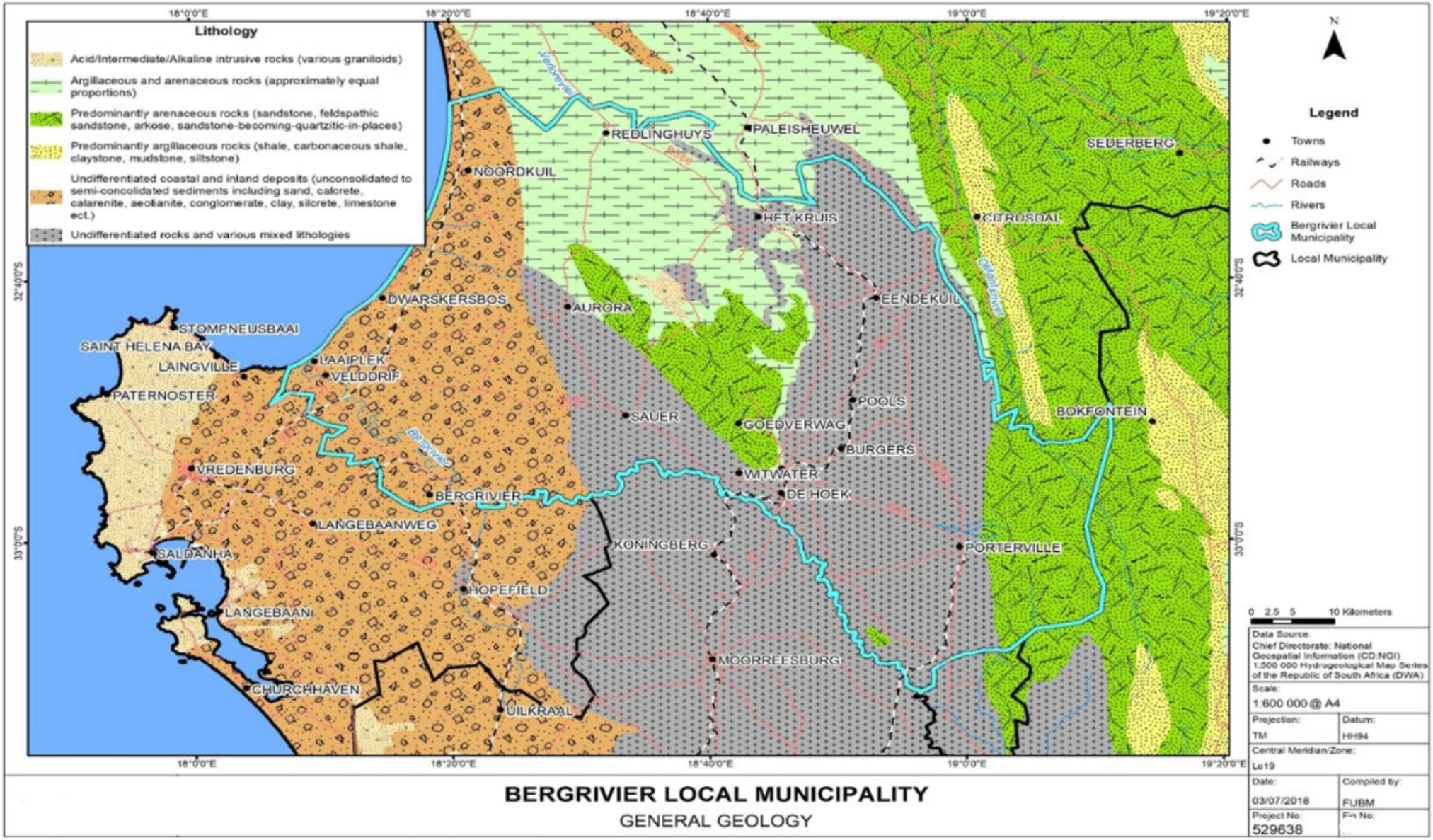


Figure 1-2: Geology of the Municipal Area

1.6.2.2 Groundwater and Hydrology

Figure 1-3 and **Figure 1-4** are adapted from the Cape Town hydrogeological map referred to above.

In broad terms, any aquifers developed in the rocks of the Malmesbury and Table Mountain Groups are of the fractured or secondary type (green coloured areas **Figure 1-3**. Aquifers developed in the Quaternary unconsolidated sediments are of the intergranular or primary type (violet-coloured areas on **Figure 1-3**).

Groundwater potential and quality in the Malmesbury Group is very variable. Close to the contact with the TMG Aquifer, in fault zones, sandstone horizons and where they are overlain by saturated Quaternary sediments, yields can be relatively high and groundwater quality moderate to good. However, away from such zones and in the lower rainfall areas of the central-northern areas, yields and quality are poor, generally <1 ℓ/s and >2000 mg/ℓ Total Dissolved Solids (TDS), respectively. This aquifer is important for widespread but generally small-scale groundwater use, e.g. stock watering and local domestic purposes.

The TMG aquifer has good groundwater potential but is often inaccessible for direct drilling. Targets are available in the De Hoek Fault zone, parts of the Piketberg, where faults connect the TMG to lower-lying accessible areas in the Malmesbury rocks and to the north-west of the Piketberg, where the rocks are covered by Quaternary deposits. There is fairly widespread borehole development in the accessible parts of the Piketberg, and median borehole yields are in the range 2 to 5 l/s. Municipal groundwater use by Piketberg (town) is approximately 540 000 m^3/a, of which approximately 158 000 is spring water. Groundwater flow and occurrence are generally deep seated in the TMG Aquifer, and the average depth of boreholes is >100 m. Some free-flowing artesian boreholes occur. Groundwater quality is generally good with TDS <150 mg/l.

Reasonable aquifer development is found in the Quaternary sand and gravel deposits of the coastal area in the so-called Adamboerskraal Aquifer. Borehole yields of >5 l/s are achievable in the thicker parts of this aquifer but yields of 0.1 to 0.5 l/s are more common. Groundwater quality is generally poor and within the range 150 to 1 300 mS/m, which limits the exploitation potential of this aquifer. Fairly large-scale groundwater abstraction (~100 000 m^3/a) occurs on the farms Februarieskraal and Palieskraal for the irrigation of potatoes. Water levels are relatively shallow in this aquifer at <10 m below ground level.

The Berg River forms the southern boundary of the Bergrivier municipal area and the southern area drains towards this river. The north-eastern area drains towards the Olifants River that flows in a northerly direction. Both these rivers are classified as sensitive rivers with regard to water quality, which poses a restriction on land-uses in their catchment areas.

The presence of these two water bodies results in virtually the whole of Bergrivier being located in a sensitive catchment area and as such increases the importance of proper waste management within Bergrivier.

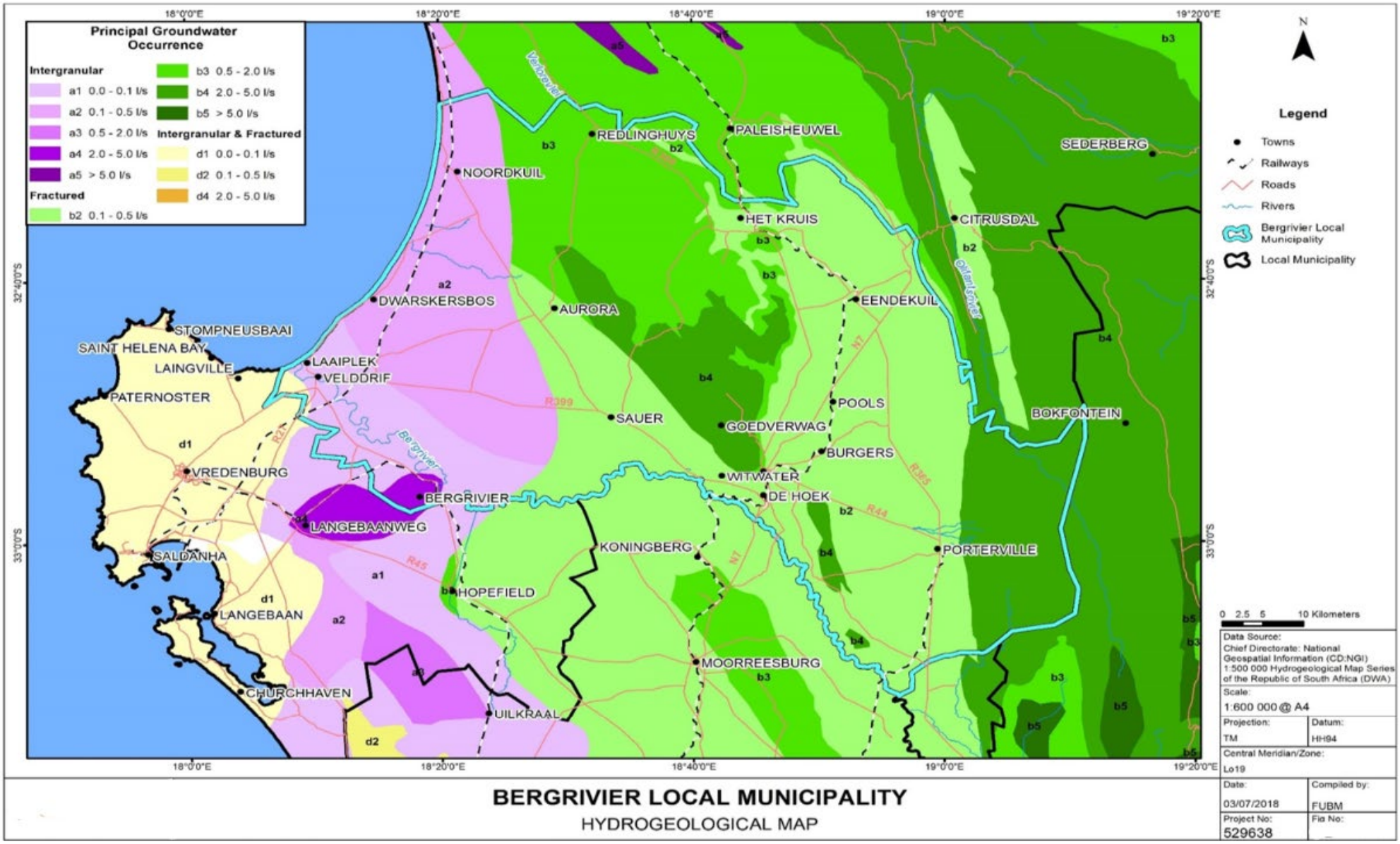


Figure 1-3: Hydrogeology of the Municipal Area

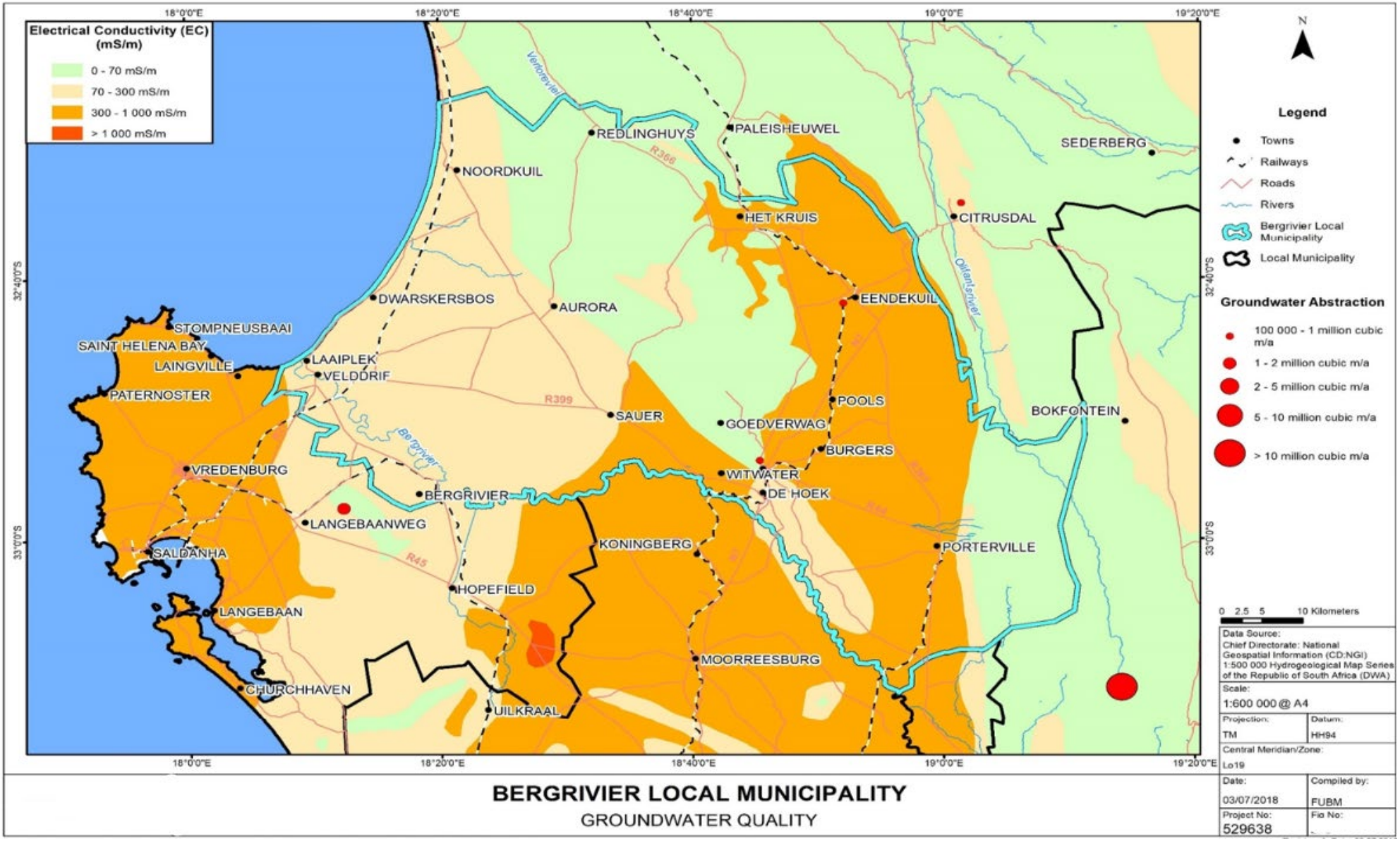


Figure 1-4: Groundwater Quality the Municipal Area

1.7 DISTRICT MUNICIPALITY

The BM is located in the West Coast District Municipality (WCDM). This District is comprised of the Bergrivier, Cederberg, Matzikama, Saldanha Bay and Swartland local municipalities.

The role of the District Municipality does not affect the solid waste functions of the local Municipalities. Only when waste crosses a municipal border such as for the use of a regional disposal site, does it become a District function.

The West Coast District does not have a District Solid Waste Forum at this stage. It is recommended that such a Forum is established as it allows for the municipalities in the District to work and plan together and achieve the solid waste goals and targets as a District. Further opportunities and solutions can also be further explored between Forums of different Districts. This was also a recommendation in the previous IWMP so the WCDM needs to prioritize the establishment of such a forum.

The WCDM's purpose is stated on their website as follows:

> ***The purpose of the WCDM and the five affiliates (local municipalities), is to share the responsibility for the local government in their areas, and to ensure that all communities, particularly disadvantaged communities, have equal access to resources and services. WCDM assist local municipalities, who don't have the capacity in finances, facilities, staff or knowledge to provide them with services to enhance their communities.***

The following Key Functions of the WCDM are listed:

- Develop the district as a whole
- Municipal health services for the area
- Bulk supply of water, electricity, sewerage purification and disposal, as well as
- Fire-fighting services for the whole region
- Promoting local tourism in the district; and
- Providing good infrastructure

The WCDM's vision and mission are as follows:

> ***VISION: A quality destination of choice through an open opportunity society***

> ***MISSION: To ensure outstanding service delivery on the West Coast by pursuing the following objectives:***
>
> 1. ***Ensuring environmental integrity for the West Coast***
> 2. ***Pursuing economic growth and facilitation of jobs opportunities***
> 3. ***Promoting social wellbeing of the community***
> 4. ***Promoting bulk infrastructure development services***
> 5. ***Ensuring good governance and financial viability***

The WCDM's IDP explains their core values as follows:

- Integrity: accountability and ethics to the citizens
- Transparency: to be transparent and open in our business
- Loyalty: putting the organisation first
- Respect: will treat public and colleagues with fairness, respect and consideration
- Quality: achieving or exceeding measurable standards
- Ownership: taking pride in our work
- Teamwork: working together to achieve our goals

1.7.1 District Municipality IWMP

The WCDM adopted their 2nd generation IWMP document in 2012 and a draft 3rd generation report developed in June 2022 is awaiting approval. The 2nd generation WCDM IWMP states the following strategic objective of waste management within the district.

To ensure that Waste Management in the West Coast District Municipal Area complies with South African and International environmental standards so that it is beneficial to industrial and agricultural growth and the public's right to a clean and healthy environment.

The above strategic objective is to be implemented through adoption of the waste hierarchy and the effective management of waste to ensure minimal waste to landfill. The Bergrivier Municipality's IWMP will tie into this overarching objective of the District Municipality.

1.8 LOCAL MUNICIPALITY

The BM has the following policies, vision and mission:

1.8.1 Vision and Mission

The Bergrivier 5th generation IDP (2022 – 2027) explains the vision, mission, strategic goals and strategic objectives of Bergrivier Municipality and it also sets out the development priorities. Bergrivier's strategy remains a high-level strategy that links IDP strategic goals and strategic objectives to functional development priorities. Development priorities derive from community needs, institutional needs and the Municipal Frameworks and Sector Plans. Key Performance Indicators have been developed to measure the extent to which we have achieved our strategic objectives and game changers.

The vision and mission of Bergrivier Municipality have been redrafted given the new situational analysis and mandate of Council. They are as follows:

VISION :
"Bergrivier: a prosperous community where all want to live, work, learn and play in a dignified manner."

MISSION :
"Commitment to sustainable development and the delivery of services that are responsive to the developmental needs of all communities in Bergrivier Municipality."

1.8.2 Connection with other Local Municipalities

The Bergrivier local municipality has agreements with the Saldanha Bay and Swartland local municipalities on use of landfill airspace. All municipal waste generated in the BM is transported to the Velddrif or Piketberg solid waste transfer stations. Waste from Piketberg transfer station is then taken to the Highlands landfill in Malmesbury (Swartland Municipality) for final disposal, and waste from the Velddrif transfer station is taken to the Vredenburg landfill in Saldanha Bay Municipality for final disposal.

2. STAKEHOLDER PARTICIPATION

2.1 CONSULTATION WITH AUTHORITIES

The Assessment Report of the previous, 4th Generation, IWMP formed the first consultation with authorities as it was issued by the D:EA&DP. It served as the first identifier of the issues that needed to be addressed during the IWMP update process to the 5th generation plan.

JPCE (Pty) Ltd have had meetings with D:EA&DP on the compilation of municipal IWMP documents and have been informed by D:EA&DP of what their requirements for these plans are based on previous reports done.

The D:EA&DP will also review and evaluate the IWMP as per the previous generation report in order to indicate whether it conforms to the required standards.

2.2 CONSULTATION WITH THE PUBLIC AND OTHER INTERESTED AND AFFECTED PARTIES

For solicitation of maximum public comments on the draft IWMP, it will be made available in more than one way. A soft copy will be available on the website of the Municipality, and/or from direct request to JPCE. Hard copies will be available at the libraries of the main towns in the Municipality, from the office of the waste manager, and an advertisement on the request for comments will be placed in the local newspaper. Waste and landfill matters are also regularly discussed at ward committee meetings within the BM.

The draft IWMP will also be sent to D:EA&DP for review and once comments are received from all the relevant parties, the IMWP will be amended to address these comments and a revised version sent to D:EA&DP for approval before sending the report to BM for council approval and endorsement.

3. STATUS QUO

This section of the IWMP entails the situational analysis of the BM, which includes amongst others, the applicable legislation, population description, waste types and quantities generated and waste management services overview.

3.1 LEGISLATION

The applicable legislation is listed here and includes the BM waste management by-laws. The legislation is discussed in no particular order, grouping similar laws together where applicable.

3.1.1 Environment Conservation Act, 1989 (Act NO. 73 of 1989)

On 1 July 2009 the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) ("the Waste Act") came into effect. The Waste Act repealed Section 20 of the Environment Conservation Act, 1989 (Act No. 73 of 1989) ("ECA") and introduces new provisions regarding the licensing of waste management activities.

3.1.2 White Paper on Education and Training (1995)

The 1995 *White Paper on Education and Training* states that "environmental education, involving an interdisciplinary, integrated and active approach to learning, must be a vital element of **all levels and programmes of the education and training system**, in order to create environmentally literate and active citizens and ensure that all South Africans, present and future, enjoy a decent quality of life through the sustainable use of resources".

The White Paper advocates environmental education and training **at all levels**. This would include the local government sphere, particularly when it comes to the environmental education & training of government officials and workers.

The education of the youth is the responsibility of national and provincial government. However, the Constitution does state that where the capacity exists, functions can be delegated to local government, and that the spheres of government, while distinctive, are interdependent and interrelated. Local government should support the other spheres of government (such as the national Department of Education, DoE) in areas of its own focus, such as environmental management and sustainable development.

3.1.3 Constitution of the Republic of South Africa (1996)

In 1996 the new Constitution created the right to the environment as a fundamental right. This fundamental right to the environment ensures everyone's right to an environment that is not harmful to their health or well-being. South African law, the environment and all South Africans have a constitutional right to have the environment protected for present and future generations. This means that there must be reasonable legal and other measures to prevent ecological degradation, promote conservation and secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.

All legislation has to fall within the stipulations of the Constitution. The following sections are of particular relevance where waste is concerned:

- **Section 24(a)**

  Provides everyone the right to an environment that is not harmful to a person's health and well-being.

- **Section 24(b)**

  Provides everyone the right to have the environment protected through reasonable legislative and other measures. The implementation of section 21, 22 and 26 of the Environment Conservation Act, 1989 is such a legislative measure to protect the environment.

- **Section 25**

  Provides for property rights. The Constitution makes provision for both property rights and the right to a healthy environment. A situation may arise in extreme cases where there is a conflict due to rejecting an application for a listed activity from taking place. In such cases it will be up to the court to decide whether the interest of the community (right to a healthy environment) weights heavier than the right to the individual.

- **Section 32**

  Provides the right to access to information. The lack of information is one of the major obstacles in environmental impact management. Provision has been made in the regulations in terms of section 26 of the Environment Conservation Act, 1989, that any report submitted becomes a public document.

- **Section 38**

  Provides *locus standi* or the "right to get involved" to any member of the public. This means that any member of the public has the right to take appropriate action to prevent environmental damage. This may include taking action against the relevant authority for failing to perform its duties in preventing environmental damage or any individual or authority who is in the process of undertaking listed activities in terms of section 21 of the Environment Conservation Act, 1989, without the necessary authorisation to undertake such activities.

- **Section 41**

  Provides principles for co-operative governance and intergovernmental relations. The Constitution allocates legislative authority as well as executive and administrative powers to all three levels of government. Schedules 4 and 5 determine the functional areas of government. The environment is a cross-sectorial matter and it is therefore important that co-operation between government on all levels is necessary. Furthermore, Chapter 7 of the Constitution of South Africa (Act 108 of 1996) describes the role and responsibilities of Local Government, which include the objectives in Section 152:

"The objects of local government are:

- to promote social and economic development.
- to promote a safe and healthy environment…".

These principles are further developed in the National Environmental Management Act 1998 (Act 107 of 1998).

The Constitution (Act No. 108 of 1996) is relevant to pollution and waste management for two reasons. Firstly, the Bill of Rights (Chapter Two of the Constitution) contains a number of rights relevant to integrated pollution and waste management, to the extent that an Act or particular statutory provision that does not uphold these rights, is unconstitutional. Secondly, the Constitution provides the legal basis for allocating powers to different spheres of government, and is thus relevant to the institutional regulation of integrated pollution and waste management.

Sovereign

The Constitution states that South Africa is a sovereign, democratic state. In terms of environmental management, it is important to recognize that sovereignty includes the ability to limit sovereign powers by entering into international agreements where the need arises.

The Bill of Rights

The most pertinent fundamental right in the context of integrated pollution and waste Management is the Environmental Right (Section 24), which provides that:

"Everyone has the right

(a) to an environment that is not harmful to their health or well-being; and
(b) to have the environment protected, for the benefit of present and future generation through reasonable legislative and other measures that –

(i) prevent pollution and ecological degradation;
(ii) promote conservation; and
(iii) Secure ecologically sustainable development and the use of natural resources while promoting sustainable economic and social development."

The section of the Bill of Rights specifically imposes a duty on the State to promulgate legislation and take other steps to ensure that the right is upheld and that, other things, pollution and ecological degradation are prevented.

3.1.4 National Water Act (Act no. 36 of 1998)

The purpose of the Act is to ensure that the Municipality's water resources are protected, used, developed and conserved in ways which take into account the protection of aquatic and associated ecosystems; that addresses basic human needs; that ensures the reduction and prevention of pollution; and that meets international obligations.

Section 19 of the NWA deals with landowners and users involved in any activity or process which causes, has caused or is likely to cause pollution of water resources. Such landowners and users are obliged to take all reasonable measures to prevent any such pollution from occurring, continuing or recurring. This includes measures to comply with any prescribed waste standard or management practice.

Furthermore, the NWA requires anyone who intends undertaking a water use, as defined, to obtain a licence. The water uses that may be relevant to waste management activities are:

- discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduit; and
- Disposing of waste in a manner which may detrimentally impact on a water resource.

The applications for permits, licences and exemptions made before the promulgation of this Act could still be dealt with in terms of the Water Act 1956 (Act No. 54 of 1956).

3.1.5 National Environmental Management Act (1998)

The NEMA (Act 107 of 1998) provides for co-operative environmental governance by establishing principles for decision making on matters affecting the environment, institutions that will promote co-operative governance and procedures for co-ordinating environmental functions exercised by organs of state; and to provide for matters connected therewith.

As the principal framework act for environmental issues, it has direct relevance to the implementation of the National Waste Management Strategy, one of the key implications being the designation of the DEAT as lead agent for the environment. Chapter 7 of NEMA has important direct implications for the achievement of the NWMS initiative.

The environment as defined in NEMA is the natural environment along with its physical chemical, aesthetic and cultural properties that influence human health and well-being.

NEMA contains the following environmental principles:

- Environmental management must put people and their needs at the forefront, and must serve their interest fairly.
- Development must be socially, environmentally and economically sustainable. This means that the following things must be considered before there is development:
  a) Disturbance of ecosystems and loss of biodiversity
  b) Pollution and degradation of the environment
  c) Disturbance of landscapes and sites where the nation's cultural heritage is found
  d) Non-renewable resources must be used responsibly
  e) The precautionary principle must be applied
  f) Negative impacts must be anticipated and prevented and if they can't be prevented they must be minimized or remedied.
- Environmental management must be integrated. The best practical environmental option must be pursued.
- Environmental justice must be pursued so that there is not unfair discrimination in the way that negative environmental impacts are distributed.
- There should be equitable access to environmental resources, benefits and services to meet basic human needs. Special measures may be taken to ensure access for persons disadvantaged by unfair discrimination.
- Responsibility for environmental health and safety of any policy, programme or project must continue throughout the life cycle of a project
- Public participation in environmental decision-making must be promoted. The participation of vulnerable and disadvantaged groups must be ensured
- Decisions must take into account the interests, needs and values of all interested and affected parties. This includes recognizing all forms of knowledge including traditional and ordinary knowledge
- Community well-being and empowerment must be promoted through environmental education
- The social, economic and environmental impacts of the activities must be assessed
- The rights of workers to refuse to do work that is harmful to human health or the environment and to be informed of dangers must be respected
- Decisions must be taken in an open and transparent manner and access to information provided in accordance with the law
- There must be inter government co-ordination and harmonization of policies and laws
- Actual or potential conflicts of interest between organs of state must be resolved through conflict resolution procedures
- Global and international responsibilities relating to the environment must be discharged in the national interest
- The environment is held in a public trust for the people and the use of environmental resources must serve the public interest, and be protected as the people's common heritage
- The polluter must pay for the costs of remedying pollution, environmental degradation and adverse health impacts

- The vital role of youth and women in environmental management must be recognized and their full participation promoted
- Sensitive or stressed ecosystems must receive special attention in planning which might affect them especially when they are subject to significant resource usage and development pressure.

NEMA also stipulates in Section 24 that there must be an environmental impact assessment before any activity or development that needs permission by law and which may significantly affect the environment.

Section 28 places a specific duty of care on every person to prevent, or mitigate and remediate, environmental damage and pollution. Any person, who was responsible for, or directly or indirectly contributed to the pollution, can be held liable. This includes the owner of the land at the time the pollution occurred or their successor in title, a person in control of the land at that time, or any person who negligently failed to prevent the situation.

The public can use NEMA to exercise their rights when they believe that the right procedures were not followed. Therefore it is extremely important to make sure that when there is a proposed development where the municipality is involved e.g. change of land-use – to make sure that the consultant and/or developers follow the right procedures.

The NEMA Environmental Impact Assessment Regulations

Sections 24 and 44 of NEMA make provision for the promulgation of regulations that identify activities that may not commence without environmental authorisation or existing activities in respect of which an application for environmental authorisation is required. In this context, EIA Regulations contained in three General Notices in terms of NEMA (GN R385, 386 and 387) (came into force on 3 July 2006).

The 2006 Regulations were repealed by the June 2010 EIA Regulations (GN R543), and the June 2010 EIA Regulations were repealed and replaced by the 2014 EIA Regulation (GNR 982, GNR 983, GNR 984 and GNR 985.) The 2014 regulations were amened in 2017 through GN 326 in Government Gazette 40772 with notable changes being adjustments to timeframes and procedural requirements to enhance efficiency.

The purpose of the Regulations is to regulate the procedure and criteria as contemplated in Chapter 5 of the Act relating to the submission, processing and consideration of, and decision on, applications for environmental authorisations for the commencement of activities in order to avoid detrimental impacts on the environment, or where it can con be avoided, ensure mitigation and management of impacts to acceptable levels, and to optimise positive environmental impacts, and for matters pertaining thereto.

In August 2023, the Minister of Forestry, Fisheries, and the Environment proposed further amendments to the EIA Regulations and Listing Notices. These changes aim to refine the assessment processes for specific activities, such as seismic surveys, mining, and infrastructure development.

3.1.6 National Environmental Management Act: Fees for consideration and processing of applications for environmental authorisations and amendments thereto (Government Notice 28 February 2014)

These regulations apply to the above applications excluding community-based projects funded by government grants or applications made by organs of state. The commencement date is 1 April 2014. Payment details are discussed regarding the different applicable fees which are listed as follows:

Application	Fee
Application for an environmental authorisation for which basic assessment is required in terms of the Environmental Impact Assessment Regulations.	R2 000.00
Application for an environmental authorisation, for which a S&EIR is required in terms of the Environmental Impact Assessment Regulations.	R10 000.00
Application dealt with in terms of section 24L of the Act.	(a) 100% of the most expensive application, namely, R10 000 (Ten Thousand Rand) if S&EIR is triggered and R2000 (Two Thousand Rand) if the basic assessment is triggered;
	(b) 50% of the other application, namely, R5 000 (Five Thousand Rand) if the S&EIR is triggered or R1 000 (One Thousand Rand) if the basic assessment is triggered).
Amendment of an environmental authorisation on application by the holder of an environmental authorisation.	R2 000.00

3.1.7 The Municipal Structures Act, 1998 (Act no. 117 of 1998)

This act makes provision for the establishment of municipalities in accordance with the requirements relating to categories and types of municipality. It establishes criteria for determining the category of municipality to be established in an area and defines the types of municipality that may be established within each category.

The Act furthermore provides for an appropriate division of functions and powers between categories of Municipality and regulates the internal systems, structures and office-bearers of the municipalities. It also provides for appropriate electoral systems for matters in connection therewith.

3.1.8 White paper: policy on pollution prevention, waste minimisation, impact management and remediation (March 2000)

In line with international trends and our national objectives of efficient and effective management of our nation's resources, priority is given to prevention of waste. Unlike previous policies that focused predominantly on so called "end of pipe" treatment, this White Paper underscores the importance of preventing pollution and waste and avoiding environment degradation.

Effective mechanisms to deal with unavoidable waste will remain necessary, but much greater attention must be directed to the introduction of preventative strategies aimed at waste minimisation and pollution prevention. Ever increasing urban and industrial development throughout the world is leading to levels of pollution, which seriously threaten the natural resources upon which humankind depends for its survival.

Although South Africa has extensive environment, pollution and waste management legislation, responsibility for its implementation is scattered over a number of departments and institutions.

The fragmented and uncoordinated way pollution and waste is currently being dealt with, as well as the insufficient resources to implement and monitor existing legislation, contributes largely to the unacceptably high levels of pollution and waste in South Africa.

The White Paper on Integrated Pollution and Waste Management will result in a review of the existing legislation and the preparation of a single piece of legislation dealing with waste and pollution matters.

Pollution and waste management is not the exclusive preserve of government. The private sector and civil society have crucial roles to play. The fostering of partnerships between government and the private sector is a prerequisite for sustainable and effective pollution and waste management to take place. Similarly, the spirit of partnerships and co-operative governance between organs of state is equally important due to the crosscutting nature of pollution and waste management.

Monitoring and collection of information on pollution and waste generation are crucial for the implementation of pollution and waste reduction measures. Moreover, the sharing of such information and creating awareness about the issues will enable all stakeholders, including communities, to gain a better understanding of the relation between pollution, waste management and the quality of life.

The White Paper proposes a number of tools to implement the objectives of the policy it sets out. The most significant of these is a legislative programme that will culminate in new pollution and waste legislation. This proposed legislation, amongst other things, will address current legislative gaps, and clarify and allocate responsibilities within government for pollution and waste management.

The policy presents seven strategic goals, which are as follows:

Goal 1: Effective Institutional Framework and Legislation
Goal 2: Pollution Prevention, Waste Minimisation, Impact Management and Remediation
Goal 3: Holistic and Integrated Planning
Goal 4: Participation and Partnerships Governance in Integrated Pollution and Waste Management
Goal *5:* Empowerment and Education in Integrated Pollution and waste Management
Goal 6: Information Management
Goal 7: International Cooperation

The role of Local Government

Municipalities will be responsible for providing waste management services, and managing waste disposal facilities. Specific functions to be carried out by municipalities will include:

- compiling and implementing general waste management plans, with assistance from provincial government;
- implementing public awareness campaigns;
- collecting data for the Waste Information System;
- providing general waste collection services and managing waste disposal facilities within their areas of jurisdiction;
- implementing and enforcing appropriate waste minimisation and recycling initiatives, such as promoting the development of voluntary partnerships with industry, including the introduction of waste minimisation clubs where possible, regional planning, establishment and management of landfill sites, especially for regionally based general waste landfills.

3.1.9 The Municipal Systems Act (Act 32 of 2000)

This policy outlines the role and responsibilities of local governments as to:

- Provide democratic and **accountable** government for local communities;
- Ensure the provision of services to communities in a **sustainable** manner;
- Promote **social** and economic development;
- Promote a safe and healthy **environment**;
- Encourage the **involvement** of communities and community organisation in the matters of local government; and
- Strive, within its financial and administrative capacity, to achieve the objectives above.

These responsibilities indicate a need for an environmentally educated work force (accountable) as well as an environmentally educated public (involvement). The municipal Systems Act (32 of 2000) requires municipalities to promote public participation and to build the capacity of residents, councillors and municipal officials to engage in participatory processes. As a means of tracking progress in this area, the executive of a municipality is obliged to report annually on the level of public participation in municipal matter.

Each Municipality must include in its integrated development plan contemplated in Chapter 5 of the Municipal Systems Act, an integrated waste management plan that is consistent with the relevant provincial integrated waste management plan. The annual performance report which must be prepared in terms of section 46 of the Municipal Systems Act must contain information on the implementation of the municipal integrated waste management plan.

3.1.10 National Environment Management: Air Quality Act 2004 (Act no. 39 of 2004)

This Act has been promulgated in order to reform the law regulating air quality in order to protect the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development while promoting justifiable economic and social development. It also provides for national norms and standards regulating air quality monitoring, management and control by all spheres of government; for specific air quality measures; and for matters incidental thereto.

The object of this Act is:

a) to protect the environment by providing reasonable measures for-

   (i) The protection and enhancement of the quality of air in the Republic;
   (ii) The prevention of air pollution and ecological degradation; and
   (iii) Securing ecologically sustainable development while promoting justifiable economic and social development; and

b) Generally to give effect to section 24(b) of the Constitution in order to enhance the quality of ambient air for the sake of securing an environment that is not harmful to the health and well-being of people.

3.1.11 National Environmental Management: Waste Act, 2008 (Act no. 59 of 2008) ("The Waste Act")

On 1 July 2009 the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) ("the Waste Act") came into effect. The Waste Act repealed Section 20 of the Environment Conservation Act, 1989 (Act No. 73 of 1989) ("ECA") and introduces new provisions regarding the licensing of waste management activities.

Provision has been made in the form of legislative and regulatory tools to facilitate and ensure implementation of the Act by all spheres of government.

The Waste Act was published to reform the law regulating waste management in order to protect the health of the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development.

The purpose of this Act is to protect health, well-being and the environment by providing reasonable measures for –

- the minimisation of the consumption of natural resources;
- the avoidance and minimisation of the generation of waste;
- the recovery, re-use and recycling of waste;
- the treatment and safe disposal of waste as a last resort;
- the prevention of pollution and ecological degradation;
- securing ecologically sustainable development while promoting justifiable economic and social development;
- promoting and ensuring the effective delivery of waste services;
- remediating land where contamination presents, or may present, a significant risk of harm;
- achieving integrated waste management reporting and planning;
- to ensure that people are aware of the impacts of waste on health and the environment;
- to provide for compliance and generally to give effect to section 24 of the Constitution in order to secure an environment that is not harmful to the health and well-being of people.

The interpretation and application of this Act must be guided by the national environmental management principles set out in section 2 of the National Environmental Management Act.

The Waste Act allows for the compilation of a Waste Management Strategy, national, provincial and local standards.

Municipalities must in terms of their by-laws:

- establish service standards and levels of service for the collection of waste;
- may identify requirements in respect of the separation, compacting and storage of waste;
- may identify requirements for the management of waste, including requirements in respect of the avoidance of the generation of waste and the recovery, reuse and recycling of waste;
- the requirements in respect of the directing of waste to specific treatment and disposal facilities.

Each Municipality must include in its integrated development plan contemplated in Chapter 5 of the Municipal Systems Act, an integrated waste management plan that is consistent with the relevant provincial integrated waste management plan.

The annual performance report which must be prepared in terms of section 46 of the Municipal Systems Act must contain information on the implementation of the municipal integrated waste management plan.

Municipalities must also in terms of the Act:

- conduct municipal activities in accordance with the National Waste Management Strategy and any national or provincial norms and standards;
- compile an integrated waste management plan;
- ensure that waste management services are provided within the municipality in a manner which prioritises the recovery, re-use or recycling of waste and provides for the treatment and safe disposal of waste as a last resort;
- designate a waste management officer;
- ensure that provision is made for the management and collection of litter;
- secure compliance with the objects of this Act that are in the domain of the municipality; and
- Implement any other measures that are necessary for securing the objects of this Act that are within the domain of the municipality.

Duty to provide collection services - Every municipality has an obligation to progressively ensure that efficient, effective and affordable waste collection services are provided in its area.

A municipality may, by notice, require any person making use of the municipal collection service to separate specified types of waste from the general waste for the purposes of recovery, re-use or recycling.

In terms of Section 19(1) of the Waste Act, the Minister may publish a list of waste management activities that have, or are likely to have, a detrimental effect on the environment. In terms of Section 20 of the Waste Act no person may commence, undertake or conduct a waste management activity except in accordance with the following:

- the requirements or standards determined in terms of Section 19(3) of the Waste Act for that activity; or
- a waste management licence issued in respect of that activity, if a license is required.

On 3 July 2009 a list of waste management activities were published. These activities were published in Government Notice 178 in Government Gazette No. 32368 of 3 July 2009. No person may commence with, undertake or conduct these activities unless a waste management licence is issued in respect of the activity.

A person who wishes to commence, undertake or conduct an activity listed under Category A must conduct a Basic Assessment process whilst activities listed under Category B requires a Scoping and EIA process to be undertaken.

In terms of Section 49(2) of the Waste Act a decision to grant a waste management licence in respect of a waste disposal facility is subject to the concurrence of the Minister responsible for Water Affairs. The Waste Act further specifies that the issuing of a waste management licence for a waste disposal facility is subject of the inclusion in the licence of any conditions contained in a Record of Decision issued by the Minister responsible for Water Affairs regarding any measures that the Minister responsible for Water Affairs considers necessary to protect a water resource as defined in the National Water Act, 1998 (Act No. 36 of 1998).

As far as hazardous waste goes, the National Department of Environment, Forestry and Fisheries (DFFE) is the regulatory body for the licensing of Hazardous Waste Facilities, according to NEM:WA's Chapter 5. In addition, the management of hazardous waste is included in the concurrent legislative competence of both National and Provincial Government assigned by the South African Constitution with respect to environment and pollution control.

3.1.12 National Environmental Management: Waste Act, 2008 (Act no. 59 of 2008): List of waste management activities that has, or is likely to have a detrimental effect on the environment. Government Notice 1757, 11 February 2022.

The notice replaces the amended 2017 list of activities that trigger a waste licence requirement and because of its impact on financial budgets and budget scheduling, all the activities, quoted verbatim (except where grammatically corrected) from the notice, are listed below:

"GENERAL

No person may commence, undertake or conduct a waste management activity listed in this schedule unless a licence is issued in respect of that activity.

CATEGORY A

3. A person who wishes to commence, undertake or conduct an activity listed under this Category, must conduct a basic assessment process, as stipulated in the environmental impact assessment regulations made under section 24(5) of the National Environmental management Act, 1998 (Act No. 107 of 1998) as part of a waste management licence application.

Storage of waste

(1) The storage of general waste in lagoons.

Recycling or recovery of waste

(2) The sorting, shredding, grinding, crushing, screening or bailing of general waste at a facility that has an operational area in excess of 1000m2.
(3) The recycling of general waste at a facility that has an operational area in excess of 500m2, excluding recycling that takes place as an integral part of an internal manufacturing process within the same premises.
(4) The recycling of hazardous waste in excess of 500kg but less than 1 ton per day calculated as a monthly average, excluding recycling that takes place as an integral part of an internal manufacturing process within the same premises.
(5) The recovery of waste including the refining, utilisation, or co- processing of waste in excess of 10 tons but less than 100 tons of general waste per day or in excess of 500kg but less than 1 ton of hazardous waste per day, excluding recovery that takes place as an integral part of an internal manufacturing process within the same premises.

Treatment of waste

(6) The treatment of general waste using any form of treatment at a facility that has the capacity to process in excess of 10 tons but less than 100 tons per day calculated as a monthly

average, excluding the treatment of organic waste using composting and any other organic waste treatment.

(7) The treatment of hazardous waste using any form of treatment at a facility that has the capacity to process in excess of 500kg but less than 1 ton per day calculated as a monthly average, excluding the treatment of effluent, wastewater, sewage or organic waste using composting or any other organic waste treatment.

(8) The remediation of contaminated land.

Disposal of waste

(9) The disposal of inert waste in excess of 25 tonnes and with a total capacity of 25 000 tonnes, excluding the disposal of such waste for the purposes of levelling and building which has been authorised by or under other legislation.

(10) The disposal of general waste to land covering an area of more than 50m^2 but less than 200m^2 and with a total capacity not exceeding 25 000 tonnes.

(11) The disposal of domestic waste generated on premises in areas not services by the municipal service where the waste disposed exceeds 500kg per month.

Construction, expansion or decommissioning of facilities and associated structures and infrastructure

(12) The construction of facilities for waste management schedule activity listed in Category A of this Schedule (not in isolation to associated activity)

(13) The expansion of waste management activity listed in Category A or B of this Schedule which does not trigger an addition waste management activity of this Schedule

(14) The decommissioning of facility for a waste management activity listed in Category A or B of this Schedule.

CATEGORY B

4. A person who wishes to commence, undertake or conduct a waste management activity listed under this Category, must conduct a scoping and environmental impact reporting process, set out in the Environmental Impact Assessment Regulations made under section 24(5) of the National Environmental Management Act, 1998 (Act No. 107 of 1998) as part of a waste management licence application contemplated in section 45 read with section 20(b) of this Act.

Storage of hazardous waste

(1) The storage of hazardous waste in lagoons excluding storage of effluent, wastewater or sewage.

Reuse, recycling and recovery of waste

(2) The reuse and recycling of hazardous waste in excess of 1 ton per day, excluding reuse or. Recycling that takes place as an integral part of an internal manufacturing process within the same premises.

(3) The recovery of waste including the refining, utilisation or co-processing of waste at a facility with a facility that processes in excess of 100 tons of general waste per day or in excess of 1 ton of hazardous waste per day, excluding recovery that takes place as an integral part of an internal manufacturing process within the same premises.

Treatment of waste

(4) The treatment of hazardous waste using any form of treatment at a facility that processes in excess of 1 ton per day calculated as a monthly average, excluding the treatment of effluent, wastewater, sewage or organic waste using composting or any other organic waste treatment.

(5) The treatment of hazardous waste in lagoons, excluding the treatment of effluent, wastewater or sewage.

(6) The treatment of general waste using any form of treatment at a facility that has a capacity to process in excess of 100 tons per day calculated as a monthly average, excluding the treatment of organic waste using composting or any other organic waste treatment.

Disposal of waste on land

(7) The disposal of any quantity of hazardous waste to land.
(8) The disposal of general waste to land covering an area in excess of 200m^2 and with a total capacity exceeding 25 000 tonnes.
(9) The disposal of inert waste to land in excess of 25 000 tonnes, excluding the disposal of such waste for the purposes of levelling and building which has been authorised by or under other legislation.

Construction of facilities and associated structures and infrastructure

(10) The construction of facilities for a waste management activity listed in Category B of this this Schedule (not in isolation to associated waste management activity).

Residue stockpiles or residue deposits

(11) The establishment or reclamation of a residue stockpile or residue deposit resulting from activities which require a mining right, exploration right or production right in terms of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).

CATEGORY C

5. A person who wishes to commence, undertake or conduct a waste management activity listed under this Category, must comply with the relevant norms or standards determined by the Minister listed below-

(a) Norms and Standards for Storage of Waste, published under Government Notice R.926 in Government Gazette 37088 of 29 November 2013, or
(b) Standards for Extraction, Flaring or recovery of Landfill Gas, published under Government Notice R.924 in Government Gazette 37086 of 29 November 2012, or
(c) Standards for Scrapping or Recovery of Motor Vehicles, published under Government Notice R.925 in Government Gazette 37087 of 29 November 2013, or
(d) Norms and Standards for the Sorting, Shredding, Crushing, Screening or Bailing of General Waste, published under Government Notice R.1094 in Government Gazette 41175 of 11 October 2017, or
(e) National Norms and Standards for organic waste composting, published under Government Notice R.561 in Government Gazette 44762 of 25 June 2021.

Storage of waste

(1) The storage of general waste at a facility that has the capacity to store in excess of 100m^3 of general waste at any one time, excluding the storage of waste in lagoons or temporary storage of such waste.
(2) The storage of hazardous waste at a facility that has the capacity to store in excess of 80m^3 of hazardous waste at any one time, excluding the storage of hazardous waste in lagoons or temporary storage of such waste.
(3) The storage of waste tyres in a storage area exceeding 500m^2.

Treatment, Recycling or Recovery of waste

(4) The scrapping or recovery of motor vehicles at a facility that has an operational rea in excess of 500m^2.
(5) The extraction, recovery or flaring of landfill gas.
(6) The sorting, shredding, grinding, crushing, screening or bailing of general waste at a waste facility that has an operational area that is 1000m^2 and more.
(7) The treatment of organic waste using composting and any other organic waste treatment.

3.1.13 National Environmental Management: Waste Act, 2008 (Act no. 59 of 2008): National Domestic Waste Collection Standards, Government Notice 33935, 21 January 2011.

The purpose of this publication is to redress past imbalances in the provision of waste collection services. The provision of waste collection services improves the quality of life of the entire community and ensures a clean and more acceptable place to live and work in. The lack of or poor quality waste collection services can however result in a number of environmental and human health problems.

It is recognised that South Africa is a developing country and the purpose of the setting of standards is to ensure a service to all while complying with health and safety regulations without unnecessarily changing current creative collection processes as long as they function well and deliver a service of acceptable standard to all households. These National Domestic Waste Collection Standards are therefore applicable to all domestic waste collection services throughout the country.

This notice distinguishes between the levels of service relating to waste collection. It further states that equitable waste collection services must be provided to all households within the jurisdiction of the municipality. In areas where travelling distances and the resulting costs may render regular waste collection services impractical, the municipality, through by-laws, must allow for more feasible alternative ways of waste handling, such as on-site disposal.

From here regulations and guidelines on separation at source, collection of recyclable waste, receptacles, bulk containers, communal collection points, and frequency of collection, drop-off centres and collection vehicles are given.

Existing Occupational Health and Safety legislation must be adhered to and the general health of waste collection workers must be addressed by ensuring they receive:

(i) regular medical check-ups to ensure their health and well-being;
(ii) appropriate personal protective equipment e.g. gloves, masks, overalls and raincoats, gumboots; and
(iii) on-going training on health and safety issues.

The role of the Waste Management Officer regarding waste awareness and the handling of complaints are prescribed. The municipality must create awareness amongst households about the following:

(i) the types of waste collection services provided;
(ii) Separation at source - the removal of recyclables and re-usable waste from the general household waste;
(iii) The potential of composting of some of the household waste and the benefit of such to the household;
(iv) The unacceptability of illegal dumping and littering;
(v) Measures to be taken against individuals that litter and dump waste illegally;
(vi) The cost of cleaning up illegal dumping and littering, and the implications on household waste collection rates; and
(vii) The advantages of reporting illegal dumping activities.

The municipality must provide clear guidelines to households about the following:

(i) The different types of waste generated in households;
(ij) separation of non-recyclable and non-reusable household waste from compostable waste and recyclable waste;
(iii) Appropriate containers for each type of waste;
(iv) Removal schedules for each type of waste; and
(v) What to do with waste other than those waste forming part of the regular schedule of waste collection services.

Awareness raising and guideline communications must be done at regular intervals to ensure that all households are well informed about the issues listed above.

The Waste Collection customer service standards for Kerbside collection are described with respect to collection schedule, interruptions, the replacement of bins, collection during holidays and general points.

3.1.14 National Environmental Management: Waste Act, 2008 (Act no. 59 of 2008): National Waste Information Regulations, Government Notice 35583, 13 August 2012.

The purpose of the Regulations is to regulate the collection of data and information to fulfil the objectives of the national waste information system set out in section 61 of the Act.

The Regulations apply uniformly to all persons conducting an activity listed in Annexure A of the Regulations. A person who conducts an activity in a province that has an established waste information system in terms of section 62 of the Act and collects the minimum information required by the Regulations must submit the information to the provincial waste information system.

Where a province has developed waste information regulations that are compatible with the Regulations, a person who conducts an activity contemplated in Annexure A to the Regulations must comply with the provincial waste information regulations.

3.1.15 National Environmental Management: Waste Act, 2008 (Act no. 59 of 2008): Waste Classification and Management Regulations, Government Notice 36784, 23 August 2013.

The purpose of the Regulations is to regulate the classification and management of waste in a manner which supports and implements the provisions of the Act; to establish a mechanism and procedure for the listing of waste management activities that do not require a Waste Management Licence; to prescribe requirements for the disposal of waste to landfill; to prescribe requirements and timeframes for the management of certain wastes and to prescribe general duties of waste generators, transporters and managers. It is stated in the Regulations that waste transporters and waste managers must not accept waste that has not been classified in terms of regulation 4 unless such a waste is listed in Annexure A of the Regulations.

Chapter 2 of the Notice covers Waste Classification and Safety Data Sheets. This regulation imposes an obligation on waste generators to prepare safety data sheets for all hazardous waste.

Chapter 3 covers Waste Management in General, Waste Treatment and Waste Disposal to Landfill. Waste Transporters and Waste managers must NOT accept waste that has not been classified in terms of Section 4 unless such waste is listed in Annexure A of the Regulations.

Chapter 4 covers Waste Management Activities that do not require a Waste Management Licence. With reference to section 4: Waste classification: Wastes which were not previously classified in terms of the Minimum Requirements for the Handling, Classification and Disposal of Hazardous Waste, 2nd Edition 1998 must be classified in terms of SANS 10234 within 18 months from the publication of the regulations, thus on or before 23 February 2015. Wastes which were previously classified in terms of the Minimum Requirements for the Handling, Classification and Disposal of Hazardous Waste, 1998 must be classified in terms of SANS 10234 within 3 years from the publication of the regulations of 23 August 2013 (thus on or before 23 August 2016).

The safety data sheets for wastes listed in item 2(b)(i) of Chapter 7: Annexure A must be prepared (in accordance with SANS 10234) for the product the waste originates from. The safety data sheets for hazardous waste, must be prepared (in accordance with SANS 10234) reflecting the details of the specific hazardous wastes or hazardous chemicals in the waste.

Chapter 5 covers the Record Keeping and Waste Manifest System:

10(1) the waste **generators** must keep accurate and up to date records of the management of the waste generated, the records must reflect:-
- (a) The classification of the waste
- (b) The quantity of each waste generated in tonnes or cubic metres per month;
- (c) The quantity of each waste that has been re-used, recycled, recovered, treated or disposed of, and
- (d) By whom the waste was managed

10(2) the sub regulation does not apply to item 2(a) of Annexure A *(general waste*)

11(4) Waste Transporters must NOT accept waste that has not been classified in terms of Section 4(2) or waste that has been listed in 2(b) of Annexure A of the Regulations for Transport unless the Waste Manifest Document accompanies the Waste

11(5) All transporters of hazardous waste in terms of Regulation 4(2) or waste that is listed in item 2(b) of Annexure A to the Regulations must:-
(a) Complete a waste manifest for each consignment of waste transported
(b) Provide information to the generator before the waste is transported from the premises
(c) Provide the information to the facility waste manager at the time of delivery.

11(8) all waste generators, transporters and managers subjected to the requirements of sub-regulation 1, 2, 4, 5, 6 and 7 must-
(a) Retain copies or be able access copies/records, of the waste manifest document for at least (5) years.

Chapter 6 covers General Matters which includes Implementation and Transitional Provisions and Offences and Penalties.

Chapter 7 contains the following Annexures:

Annexure A: Wastes that do not require Classification or Assessment

(2) General waste.
(i) Domestic Waste;
(ii) Business waste not containing hazardous waste or hazardous chemicals;
(iv) Non-infectious animal carcasses;
(iv) Garden waste;
(v) Waste packaging;
(vi) Waste tyres;
(vii) Building and demolition waste not containing hazardous waste or hazardous chemicals; and
(viii) Excavated earth material not containing hazardous waste or hazardous chemicals.

(3) Hazardous waste
(i) Waste Products;
Asbestos
PCB or PCB containing waste
Expired, spoiled or unusable hazardous products
(ii) Mixed waste
General waste excluding domestic- that may contain hazardous waste or hazardous chemicals.
Mixed hazardous chemical wastes from analytical laboratories and laboratories from academic institutions less than 100 litre.
(iii) Other:
Health Care Risk Waste (HCRW)

Annexure B: Waste Manifest System Information Requirements

(1) The information required in (2) must be reflected in the Waste Manifest Document required in terms of Regulation 11.
(2) (a) Information supplied by the waste generator(consignor):
(i) Unique consignment identification number
(ii) South African Waste Information Number (SAWIS), if applicable
(iii) Generator's contact details
(iv) Physical address of site where the waste was generated
(v) Contact number
(vi) Origin/source of the waste. (process or activity)
(vii) Classification of the waste (*SANS 10234*) and Safety Data Sheet (SDS)
(viii) Quantity of waste by volume or tonne
(ix) Date of collection/dispatch
(x) Intended receiver (waste Manager)

(xi) Declaration (content of the assignment is fully and accurately described, classified, packed, marked and labelled, and in all respects in a proper condition for transportation in accordance with the applicable by-laws and applications

(b) Information to be supplied to the waste Transporter:
(i) Name of transporter
(ii) Address and telephone number
(iii) Declaration acknowledging receipt of the waste.

(c) Information supplied by the waste manager (consignee):
(i) Name, address and contact details
(ii) Receiving facility details
(iii) Waste management facility licence number
(iv) Date of receipt
(v) Quantity of waste received
(vi) Type of waste management applied
(vii) Any discrepancies in information between the different holders of waste
(viii) Waste management reporting description and code in terms of the National Waste Information Regulations 2012
(ix) Details on any waste diverted to another facility
(x) Certification and declaration of receipt and final management of waste.

3.1.16 National Environmental Management: Waste Act, 2008 (Act no. 59 of 2008): National Norms and Standards for the Assessment of Waste for Landfill Disposal, Government Notice 5522, Government Gazette 51520, 7 November 2024.

The purpose of the Norms and Standards is to prescribe the requirements for the assessment of waste prior to disposal to landfill in terms of Regulation 8(1) (a) of the Regulations.

The Standard Assessment methodology to assess waste for the purpose of disposal to landfill the following are required:

- Identification of chemical substances present in the waste
- Sampling and analysis to determine the total concentrations (TC) and leachable concentrations (LC) of the elements and chemical substances that have been identified in the waste and that are specified in section 6 of the Norms and Standards.

Within 3 years of the date of commencement of the Regulations, all analyses of the TC and LC must be conducted by labs accredited by SANAS. The TC and LC limits must be compared to the threshold limits specified in section 6 of these Norms and Standards. Based on the TC and LC limits the specific type of waste for disposal to landfill must be determined in terms of section 7.

The 2024 norms and standards amended the 2013 norms and standards by:

- adding the following after subparagraph 3(1)(b): - “(c) sampling and analysis must be done in accordance with the Guideline for Sampling and Analysis of Wastewaters, Soils and Wastes which can be accessed on http://sawic@environment.gov.za/”.
- Substitution of paragraph 7(6) with: - “Notwithstanding section 7(2) of these Norms and Standards, waste with elements or chemical substance leachable concentration levels for metal ions and inorganic anions below or equal to the LCT0 limits are considered to be Type 4 waste, irrespective of the total concentration of elements or chemical substance in the waste, provided that-“

3.1.17 National Environmental Management: Waste Act, 2008 (Act no. 59 of 2008): National Norms and Standards for Disposal of Waste to Landfill, Government Gazette no. 51521, 7 November 2024

The purpose of the Norms and Standards are to determine the requirements for the disposal of waste to landfill as contemplated in regulation 8(1)(b) and (c) of the Regulations.

Chapter 2 describes and illustrates the Landfill Classification and corresponding minimum engineering design requirements for the Containment Barriers which were slightly amended from the 2013 norms and standards. These are for Class A to Class D landfills and the main amendment to this part of the norms and standards from the 2013 version was the inclusion and description of best practice related to adding a pioneering layer of soil or waste above the liner before waste disposal commences. Some other technical aspects of barrier design minimum requirements were also updated in the latest version of the norms and standards. The requirements that are to be included in an application for a waste management license are also stipulated.

The waste acceptance criteria for disposal to landfill are summarised as follows:

Waste assess in terms of the Norms and Standards for Assessment of Waste for Landfill Disposal set in terms of section 7(1) of the Act must be disposed to a licensed landfill as follows:

Waste Type	Landfill Disposal Requirements
Type 0	Disposal to landfill not allowed
Type 1	Disposed at Class A landfill or H:h/H:H landfill as specified
Type 2	Disposed at Class B landfill or G:L:B+ landfill as specified
Type 3	Disposed at Class C landfill or G:L:B+ landfill as specified
Type 4	Disposed at Class D landfill or G:L:B- landfill as specified

Waste listed in section 2(a) of Annexure A to the Regulations must be disposed as follows:

Listed Waste	Landfill Disposal Requirements
Domestic waste. Business waste not containing hazardous waste or hazardous chemicals. Non-infectious animal carcasses. Garden waste. Waste packaging not containing hazardous waste or hazardous chemicals. Expired, spoilt or unusable consumer products.	Disposed at Class B landfill or G:L:B+ landfill as specified and described in the Norms & Standards.
Post-consumer packaging. Waste tyres.	Disposed at Class C landfill or G:L:B+ landfill as specified.
Building and demolition waste not containing hazardous waste or hazardous chemicals. Excavated earth material not containing hazardous waste or hazardous chemicals.	Disposed at Class D landfill or G:L:B- landfill as specified.

Unless assessed in terms of the Norms and Standards for Assessment of Waste for Landfill Disposal set in terms of Section 7(1) of the Act and disposed of in terms of section 4(1) of these Norms and Standards, the following waste included in section 2(b) of Annexure A to the Regulations must be disposed as follows:

Listed Waste	Landfill Disposal Requirements
Asbestos waste;	Disposed at Class B landfill or G:L:B+ landfill as specified and dependant on approval from the relevant competent authority based on considerations on how the site is managed.
Expired, spoilt or unstable hazardous products; PCBs (or rather PCB containing waste (>50pp)); General waste, excluding domestic waste, which contains hazardous waste or hazardous chemicals; Mixed, hazardous chemical wastes from analytical labs and labs from academic institutions in containers less than 100 litres.	Disposed at Class A landfill or H:h/H:H landfill as specified.

Waste that has been classified in terms of the Minimum Requirements for the Handling, Classification and Disposal of Hazardous Waste (2nd Edition, 1998; DWAF) prior to the Regulations coming into operation, may be accepted and disposed of as set out below for a period not exceeding 3 years after the date of coming into operation of the Regulations:

Waste	Landfill Disposal Requirements
Hazardous Waste - Hazard Rating 1 or 2	Disposed at Class A landfill or H:H landfill as specified
Hazardous Waste - Hazard Rating 3 or 4	Disposed at Class A landfill or H:h landfill as specified
Hazardous Waste - Delisted	Disposed at Class B landfill or G:L:B+ landfill as specified
General Waste	Disposed at Class B landfill or G:S/M/L:B-/B+ landfill as specified

The Norms and Standards lists prohibitions and restrictions on the disposal of waste to landfill which comes into effect after the timeframes indicated for each waste and activities from the date of the Regulations coming into operation.

Waste Prohibited or Restricted in terms of Disposal	Compliance Timeframe
a. Waste which, in the conditions of a landfill, is explosive, corrosive, oxidising (according to GHS).	Immediate
b. Waste with a pH value of <6 or >12.	Immediate
c. Flammable waste with a closed cup flashpoint lower than 61°Celsius.	Immediate
d. Reactive waste that may react with water, air, acids or components of the waste, or that could generate unacceptable amounts of toxic gases within the landfill.	Immediate
e. Waste compressed gases (according to GHS)	Immediate
f. Untreated Healthcare Risk Waste (HCRW).	Immediate
g. (i) POPs pesticides listed under the Stockholm Convention. (ii) Other waste pesticides.	Eight (8) years Four (4) years
h. Lead acid batteries.	Immediate
i. Other batteries.	Eight (8) years
j. Re-usable, recoverable or recyclable used lubricating mineral oils, as well as oil filters, but excluding other oil containing wastes.	Four (4) years
k. Re-usable, recoverable or recyclable used or spent solvents.	Five (5) years
l. PCB containing waste (>50 mg/kg or 50 ppm).	Five (5) years
m. Hazardous waste Electric and Electronic Equipment (WEEE) – Lamps.	Three (3) years
n. Hazardous waste Electric and Electronic Equipment (WEEE) – Other.	Eight (8) years
o. Waste tyres: Whole.	Immediate
p. Waste tyres: Quartered.	Five (5) years
q. Liquid waste – Waste which has an angle of repose of <5 degrees and has a moisture content of >40%	Six (6) years
r. Hazardous waste with a calorific value of: i > 25MJ/kg ii > 20MJ/kg iii> 10MJ/kg iv > 6% TOC CV determination be undertaken on waste as received	 Four (4) years Six (6) years Twelve (12) years Twenty-Five (25) years
s. Brine or waste with a high salt content (TDS > 5%), and a leachable concentration for TDS of more than 100 000 mg/l.	Eight (8) years

Waste Prohibited or Restricted in terms of Disposal	Compliance Timeframe
t. Disposal of garden waste: (i) 25% diversion from the baseline at a particular landfill of separated garden waste. (ii) 50% diversion from the baseline at a particular landfill of separated garden waste	Five (5) years Ten (10) years
u. Infectious animal carcasses and animal waste.	Immediate
v. Mercury and mercury containing waste: (i) Must undergo treatment and conversion prior to being disposed of (ii) Where intended to be disposed of in above-ground facilities, must undergo treatment and conversion and solidification prior to being disposed of	Two (2) years
w. Co-disposal of flue gas desulphurization waste with dry wall/gypsum waste	Immediate
x. General waste with a calorific value of: (i) >25MJ/kg (ii) >20MJ/kg (iii) >10 MJ/kg (iv) >6% TOC	 Four (4) years Six (6) years Twelve (12) years Fifteen (15) years

Restrictions on activities related to the disposal of waste to landfill:

Waste Prohibited or Restricted in terms of Disposal	Compliance Timeframe
(a) Disposal of- (j) Type 1 Waste that has been treated, with waste listed in paragraph (2)(a) of Annexure 1 to the Regulations (ii) Waste classified as hazardous in terms of regulation 4(1), or waste listed in paragraph (2)(b) of Annexure 1 to the Regulations, with waste listed in paragraph (2)(a) of Annexure 1 to the Regulations; and (iii) Type 4 waste with any waste other than Type 4, unless part of treatment.	 Five (5) years Five (5) years Five (5) years
(b) Macro-encapsulation of waste, meaning the isolation (or long-term storage) of waste through containment in containers within a sealed or reinforced cell in a specifically prepared and engineered area within a permitted hazardous waste landfill.	Eight (8) years

3.1.18 National Environmental Management: Waste Act, 2008 (Act no. 59 of 2008): Fee Structure for Consideration and Processing of Applications for Waste Management Licences, Transfer and Renewal thereof, Government Gazette No. 37383, 28 February 2014

These regulations apply to the above application excluding community-based projects funded by government grants or applications made by organs of state. The commencement date is 1 April 2014. Payment details are discussed regarding the different applicable fees which are listed as follows:

Application	Fee
Application for a waste management license for which basic assessment is required in terms of the Act.	R200.00
Application for a waste management license for which S&EIR is required in terms of the Act.	R10 000.00
Application for a transfer of a waste management license in terms of section 52(2) or for the renewal of a waste management license in terms of section 55(2) of the Act.	R2 000.00

3.1.19 National Environmental Management: Waste Act, 2008 (Act no. 59 of 2008): National Norms and standards for the Extraction Flaring or Recovery of Landfill Gas, Government Gazette No. 37086, 29 November 2013

The purpose of these Norms and Standards is to aim at controlling the flaring, extraction or recovery of landfill gas at facilities in order to prevent or minimise the potential negative impacts on the bio-physical and socio-economic environments. It describes how these facilities must be designed, operated, monitored and decommissioned.

3.1.20 National Environmental Management: Waste Act, 2008 (Act no. 59 of 2008): National Norms and Standards for the Scrapping or Recovery of Motor Vehicles, Government Gazette No. 37087, 29 November 2013

These Norms and Standards are applicable to a vehicle scrapping or recovery facility with an operational area exceeding 500m^2 and describes how such a facility must be designed, operated, monitored and decommissioned.

3.1.21 National Environmental Management: Waste Act, 2008 (Act no. 59 of 2008): National Norms and Standards for the Storage of Waste, Government Gazette No. 37088, 29 November 2013

The purpose of these Norms and Standards is to provide a uniform national approach to the management of waste storage facilities, ensure best practice and to provide minimum standards for the design and operation of new and existing facilities. These Norms and Standards are applicable to waste storage facilities that have the capacity to store in excess of 100m^3 general waste continuously or 80m^3 of hazardous waste continuously.

3.1.22 National Environmental Management: Waste Act, 2008 (Act no. 59 of 2008): National Norms and Standards for the Remediation of Contaminated Land and Soil Quality, Government Gazette No 37603, 2 May 2014

The purpose of these Norms and Standards is provide a uniform national approach to determine the contamination status of an area and to limit uncertainties about the most appropriate criteria and method to apply in such an assessment. Also provide minimum standards for assessing necessary environmental protection measures for remediation activities.

3.1.23 National Environmental Management: Waste Act, 2008 (Act no. 59 of 2008): National Norms and Standards for the sorting, shredding, grinding, crushing, screening or baling of general waste, Government Gazette No. 41175, 11 October 2017

The purpose of these norms and standards is to provide a uniform national approach relating to the management of waste facilities that sort, shred, grind, crush, screen, chip or bale general waste and applies to a waste facility that has an operational area that is 1000m^2 and more.

It requires any new facility to register with the competent authority within 90 days prior to construction taking place and it allows for any existing facilities that undertake these activities, and which are already registered in terms of the National Norms and Standards for Storage of waste, to comply with the norms and standards without having to re-register.

A waste facility that is less than 1000m^2 must register with the competent authority and comply with the principle of duty of care as contained in Section 28 of the National Environmental Management Act, 1998 (Act No. 107 of 1998) and Section 16(1) and 16(3) of the National Environmental Management: Waste Act, 2008 (Act 59 of 2008).

3.1.24 National Environmental Management: Waste Act, 2008 (Act no. 59 of 2008): National Norms and Standards for Organic Waste composting, Government Gazette No. 44762, 25 June 2021

These Norms and Standards are applicable to organic waste composting facilities that have the capacity to process in excess of 10 tonnes of compostable organic waste per day and describes how such a facility must be designed, operated, monitored and decommissioned.

3.1.25 National Environmental Management: Waste Act, 2008 (Act no. 59 of 2008): National Norms and Standards for the Treatment of Organic Waste, Government Gazette No. 46169, 1 April 2022

These Norms and Standards were developed to assist int eh diversion of organic waste from landfills and are applicable to any organic waste treatment facility that has the capacity to process in excess of 10 tonnes of organic waste per day and describes how such a facility must be designed, operated, monitored and decommissioned. These norms and standards are not applicable to composting as composting has its own norms and standards as described in the previous heading.

3.1.26 National Environmental Management: Waste Act, 2008 (Act no. 59 of 2008): Waste Tyre Regulations, Government Gazette No. 41157, 29 September 2017

The Waste Tyre Regulations (2017) which were published on 29 September 2017 makes provision for effective and integrated management of waste tyres in the country. It provides regulations for tyre producers, tyre dealers and waste tyre stockpile owners.

The regulations furthermore require the compilation of industry waste tyre management plans and waste tyre stockpile abatement plans and details the requirements for waste tyre storage areas.

3.1.27 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; to define or redefine certain expressions; to delete certain unnecessary definitions; to provide for the issuing of compliance notices; to amend the provisions relating to offences and penalties; to make further provision regarding regulations; to effect certain textual changes; and to provide for matters incidental thereto. The Health Care Management Bill 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.

The object of this Act is to promote integrated health care waste management and thereby—

(a) reduce the risks of health care waste to human health;
(b) prevent the degradation of the environment;
(c) prevent the illegal dumping of health care waste;
(d) promote sustainable development, and
(e) Ensure responsible management of health care waste within the Province.

Under this Act a Municipality must:

(a) enforce the relevant provisions of this Act within its area of jurisdiction;
(b) perform audits of generators, transporters, treaters or disposers of health care waste within its area of jurisdiction to ensure compliance with the provisions of this Act;
(c) report annually to the Provincial Minister on the number of incidents of illegal dumping of health care risk waste within its area of jurisdiction, the number of incidents of illegal dumping of health care risk waste pursued in a court of law, and the number of incidents of illegal dumping of health care risk waste successfully convicted in a court of law.

Health Care Waste is produced by hospitals, clinics, physicians, offices, dentists, funeral homes, veterinary clinics and medical- and research laboratories.

Currently only 10-15% of medical waste is considered infectious. The enormous volumes of health care waste requiring special handling and disposal for all infectious and pathological waste are responsible for the current re-evaluation of the terminology for health care waste.

The modern trend in infection control is dictated by the risk posed by the procedure and not by the diagnoses. Thus health care waste is divided into Health Care General Waste (HCGW) and Health Care Risk Waste (HCRW). HCRW generally indicates infectious waste, pathological waste, sharps, chemical and pharmaceutical waste, radioactive and cytotoxic waste.

3.1.28 The Western Cape Health Care Waste Management Amendment Act, 2007: Western Cape Health Care Risk Waste Management Regulations, 2013

These regulations were published in the Western Cape: Provincial Gazette Extraordinary 15 March 2013. These are the regulations set out in the Schedule under section 14 of the Western Cape Health Care Waste Management Act, 2007.

The regulations address the requirements for packaging, storage, internal transport, external transport, vehicles, drivers, treatment and disposal of health care risk waste. Furthermore the required training, registration of health care risk waste generators, transporters, treaters and disposers, reporting, auditing and record keeping is discussed. Health care waste management plans must be prepared by those who meet the criteria listed. The required actions regarding compliance notices are also listed.

All addressed forms in the regulations are given in the Annexures:

Annexure 1: Minimum Requirements for health care risk waste containers
Annexure 2: Minimum Requirements for storage of health care risk waste in terms of regulation 3
Annexure 3: Form 1, Minimum Requirements for a tracking document
Annexure 4: Minimum Requirements for information to be contained in a Health Care Waste Management Plan
Annexure 5: Form 2.1, IPWIS registration form for health care risk waste generators, transporters, treaters and disposers
Annexure 6: Form 2.2, Registration Certificate; Form 3.1, Monthly record keeping form for generators; Form 3.2 Monthly record keeping form for transporters, treaters and disposers
Annexure 7: Form 4.1, Compliance Notice; Form 4.2, Compliance certificate.

3.1.29 National Waste Management Strategy (2020)

The strategy is an update of the 2011 NWMS to be implemented under the Waste Act. It is updated in light of progress, challenges and lessons learned from implementing the 2011 strategy. It was based on a 4-phase approach, which consist of the following:

- The review of the 2011 NWMS
- A situational analysis
- Recommendations
- A Revised and Updated NWMS

The latest indications in the 2018 State of Waste Report are that as waste generation continues to grow in South Africa, no significant diversion from disposal is taking place, therefore the depletion of disposal airspace continue at unsustainable rates. Implementation of the waste management hierarchy informed the 2011 NWMS, but progress has been limited. The revised strategy needs to be more specific in terms of objectives, targets and actions in relation to the different levels of the waste management hierarchy and particular waste streams. Progress has been made in terms of recycling as compared to other developing countries. However, with the generated general waste stream consisting of approximately 47% organics (State of Waste Report), this waste stream needs to be prioritised and waste minimisation opportunities above and below recycling in the hierarchy need to be more actively addressed.

The concept of the circular economy is highlighted as being a useful way of understanding the implementation of the waste management hierarchy in terms of its contribution to the green economy and the decoupling of economic activity from harmful environmental impacts. The circular economy consists of closing the loop between resource extraction and waste disposal by the application of waste avoidance, reuse, repair, recycling and recovery throughout the economic cycle to minimise waste and reduce demand for virgin materials.

The table below lists the key principles underpinning the NWMS 2020:

Principle	Explanation
Waste Minimisation	This refers to avoiding the amount and toxicity of waste that is generated and, in the event that waste if generated, the reduction of the amount and toxicity of the waste that is disposed.
Waste Prevention	This refers to avoiding the generation of waste and avoiding toxicity in waste.
Waste as a Resource	This refers to beneficiating waste through re-use, recycling, treatment and recovery to reduce the amount and the toxicity of waste disposed of.
Sustainable Strategic Partnerships	This refers to government establishing and sustaining collaborative working relationships with non-government role-players involved in the management of waste, i.e. private sector, academia, civil society organisations and other development funding institutions.
Environmentally sound socio-economic growth and development	This refers to ensuring that the intent and commitments of the SDGs, NDP are continuously integrated and aligned to all environmental protection considerations, and that environmental protection programmes contribute to improving the socio-economic lives of people.

The following are the expected outcomes that will be achieved through effective and efficient implementation of the NWMS 2020 by all stakeholders from all sectors of society:

- *Prevent waste, and where waste cannot be prevented ensure –*
  40% of waste diverted from landfill within 5 years; 55% within 10 years; and at least 70% within 15 years leading to Zero-Waste going to landfill;
- All South Africans live in clean communities with *waste services that are well managed* and financially sustainable; and
- Mainstreaming of waste a*wareness and a culture of compliance* resulting in zero tolerance of pollution, litter and illegal dumping.

Furthermore, the strategic entry points in terms of the circular economy are:

- Waste prevention: This includes interventions around the design and packaging of products, cleaner production and industrial symbiosis by reducing the substances, materials and products that become waste. These interventions have the highest priority and should be the first applied to any waste stream.
- Waste as a resource: This includes interventions to stimulate secondary resources economy that take place after products or materials have become waste. Examples are recycling and recovery and generating energy from waste.

The 2011 NWMS revolved around 8 goals. This approach has been updated to focus on three overarching goals containing sets of strategic objectives which will be monitored in terms of performance indicators. The three strategic goals correspond to the following implementation themes:

- Waste Minimisation: the focus is on waste prevention and building a secondary resources economy. The role of government is to create an enabling environment for the private sector that supports extended producer responsibility and waste beneficiation.
- Effective and Sustainable Waste Services: the focus is on government, particularly local government, in ensuring that citizens receive appropriate waste services in a way that contributes to sustainable development.
- Compliance, enforcement and awareness: the focus is improving behaviour and attitude amongst citizens, businesses and government to lead to a culture of compliance to manage the environmental impact of waste and preventing pollution.

NWMS 2020 implementation plan:

Pillar 1: Waste Minimisation					
Outcome 1: 40% of waste diverted from landfill within 5 years; 55% within 10 years; and at least 70% within 15 years leading to Zero-Waste going to landfill.					
Key intervention	**Action/s**	**Performance indicators**	**Targets**	**Timeline**	**Implementing Agent/s**
Prevent waste generation through cleaner production, industrial symbiosis and extended producer responsibility	Develop and implement EPR schemes for priority wastes (i.e. WEEE, Paper and Packaging and Lighting) that includes measures for cleaner production, industrial symbiosis and extended producer responsibility.	(i) Number of EPR schemes finalised, adopted and implemented. (ii) Number of EPR meeting or exceeding performance targets within 5 years	(i) Three (3) x EPRs for WEEE, Paper and Packaging and lighting (ii) % Reduction of waste disposed to landfill (as per outcome 1); toxicity of waste streams; waste in manufacturing and across its value chain	(i) 2021 (ii) 2025	DFFE CSIR, Producers and Industry Associations
	Strengthen the capacity and national reach of the NCPC-SA through establishing waste symbiosis programmes in all provinces.	(i) Number of Provinces with well established Industrial Symbiosis Programmes (ii) Increase the training and technical support provided by NCPC-SA with a special focus on women, youth and people living with disabilities	(i) a. 5 x provinces – Gauteng, KZN, E.Cape, Mpumalanga, North West b. 3 x provinces – Free State, Limpopo, N.Cape (ii) 15 of training and technical support programmes implemented by the NCPC-SA	(i) a. 2021 b. 2022 (ii) 2025	NCPS-SA DFFE, DSI (TIA and Waste RDI Roadmap), provinces, industrial development zones, business chambers and industry associations
	Minimise the production and retail of single-use plastics for consumption within the country and replace the products with bio-degradable alternatives.	Single use plastics to be covered by generic reference to the National Pricing Strategy for Waste Management	80% reduction in production of single use plastics not covered by deposit scheme under the National Pricing Strategy	2025	DFFE DTIC, DSI (TIA and Waste RDI Roadmap), Producers and other affected industries
	Standardise design and packaging of sustainable products that reduces production of waste, maximises resource recovery for recycling or re-use and supports consumption of materials and products with a prolonged life.	(i) Waste Streams that utilise most resources with high potential for circularity identified (ii) Circular economy principles implemented across the waste management value chain	(i) and (ii) National Circular Economy Action Plan developed and implemented	(i) and (ii) 2023	DFFE DTIC, industry associations, research institutions,

Pillar 1: Waste Minimisation					
Outcome 1: 40% of waste diverted from landfill within 5 years; 55% within 10 years; and at least 70% within 15 years leading to Zero-Waste going to landfill.					
Key intervention	**Action/s**	**Performance indicators**	**Targets**	**Timeline**	**Implementing Agent/s**
Prevent Food Waste	Develop and implement a strategy for reducing food losses and waste prior to retail and that is associated with harvesting, processing and transport of food with food producers and retailers.	(i) Strategy developed (ii) Annual reporting on implementation of the strategy.	(i) 1 x adopted strategy ready for implementation (ii) 1 x annual report each financial year	(i) 2021 (ii) Annual (each financial year)	DALLRD, DFFE, food producers and retailers
	Improve consumer awareness and standards for labelling and marketing of perishable foodstuffs and “ugly” fruit and vegetables	(i) Marketing and labelling standards reviewed and revised (ii) Consumer Awareness Campaigned implemented	(i) 1 x set of revised standards adopted and implemented (ii) Launch of awareness campaign	(i) and (ii) 2021	SABS, DFFE, DoH, food retailers, DTIC, National Consumer Commission (NCC)
	Develop guidelines, norms and standards for redistributing surplus foods and composting of spoilt foods	(i) Guidelines / Norms and Standards developed and implemented Reduction in food losses prior to retail and food waste in the retail sector	(i) 1 x Guidelines / norms and standards adopted and implemented (ii) 30% reduction in food waste	(i) 2022 (ii) 2025	DFFE, DoH, food retailers, the hospitality sector and NPO’s
Increase re-use, recycling and recovery rates	Develop and implement a public procurement framework to support recycling, encompassing requirements for recycled content	Achievement of procurement targets for recycled content in the public sector	1 x Procurement targets gazetted	2021	DFFE, NT, COGTA, SALGA and Municipalities
	Establish MRFs and Recyclate processing plants as Public Private Partnerships based on regionally integrated waste management planning	Number of MRFs and recyclate processing plants established	All new and existing landfills with longer airspace/years to include MRFs	2021	DFFE, producers, Provinces, local government, SALGA, COGTA, NT
	Develop and implement industry standards that align technology requirements between primary producers and recyclers of all materials, by ensuring that the design and packaging of products maximise the value of the materials that circulate within the economy	(i) Number of Standards developed and implemented (ii) % increase in materials recovery and recycling rates	(i) 1 x Industry standards adopted and implemented (ii) 70% of paper recycled, 60% of plastic recycled, 90% of glass recycled, 90% of metals recycled and 40% of fly-ash recycled	(i) 2021 (ii) 2025	DFFE, Waste Bureau, DTIC, Research Institutions, NGOs, SABS, industry associations / partners, DSI, Innovation Hub, DoE, Eskom, Transnet and Producers
		(i) Number of Statutory and regulatory framework developed	(i) 1 x Strategy and Regulatory framework adopted and ready for implementation	(i) 2022	DFFE DMRE, DSI, DHSWAS, Biogas Association

Pillar 1: Waste Minimisation					
Outcome 1: 40% of waste diverted from landfill within 5 years; 55% within 10 years; and at least 70% within 15 years leading to Zero-Waste going to landfill.					
Key intervention	**Action/s**	**Performance indicators**	**Targets**	**Timeline**	**Implementing Agent/s**
Divert organic waste from landfill through composting and the recovery of energy	Develop and implement an enabling environment to produce biogas through anaerobic bio-digestion of organic waste treating sewage and organic domestic waste	(ii) Number of biogas projects involving organic waste (iii) Volume of biogas produced from waste	(ii) 5number of projects implemented (iii) 40% biogas produced from organic waste	(ii) 2023 (iii) 2025	
	Develop and implement biogas digester projects linked to the National School Nutrition Programme	(i) Number of MoU's signed (ii) Number of schools with biogas digesters	(i) 1 x MoU with DBE signed and implemented (ii) 50 schools have biogas digesters	(i) 2021 (ii) 2024	DFFE DBE, DMRE
	Include and implement organic waste technologies in local government IWMPs	(i) Number of metros implementing organic waste technologies (ii) Number of districts implementing organic waste technologies (iii) Number of municipalities implementing organics waste technologies (iv) Number of new composting projects identified and implemented	(i) All Metros (ii) All districts (iii) All municipalities (iv) 35 projects	(i) 2021 (ii) 2023 (iii) 2025 (iv) 2025	DFFE Provinces, local government, SALGA, COGTA, other stakeholders
Divert construction and demolition waste from landfill through beneficiation	Develop and implement best practice guidelines and standards for the re-use of C & D waste in roads and other building materials e.g. bricks	(i) C & D waste only disposed to landfill as cover (ii) Number of C & D Beneficiation	(i) Guidelines and Standards approved and implemented (ii) 20 C & D beneficiation programmes implemented	(i) 2021 (ii) 2024	DFFE SANRAL SABS Construction Industry Association
Increase technical capacity and innovation for the beneficiation of waste	Promote research and Innovation in the waste sector	(i) Number of MoU's signed (ii) Number of waste beneficiation projects supported by TIA (iii) Number of research reports published	(i) 1 x MoU with DSI signed and implemented (ii) 25 projects supported (iii) 2 research reports published annually	(i) 2021	DFFE DSI (TIA and the Waste RDI RoadMap)
	Review and update or developed new legislation/instruments to keep abreast of technical developments and remove unnecessary regulatory barriers to the uptake of new technologies	Number of instruments reviewed and/or developed	4 Instruments adopted and implemented	2022	DFFE DSI (TIA and the Waste RDI Roadmap), DPME

Pillar 1: Waste Minimisation					
Outcome 1: 40% of waste diverted from landfill within 5 years; 55% within 10 years; and at least 70% within 15 years leading to Zero-Waste going to landfill.					
Key intervention	**Action/s**	**Performance indicators**	**Targets**	**Timeline**	**Implementing Agent/s**
	Increase technical capacity and skills in the waste sector	(i) Number of waste management graduates prioritising women, youth and people living with disabilities	(i) 120 new graduates prioritising women, youth and people with disabilities	(i) 2023	DSI (TIA and the Waste RDI Roadmap) Tertiary institutions
		(ii) Number of waste management professionals in the public sector	(ii) 20 waste management professionals in public sector prioritising women, youth and people with disabilities	(ii) 2024	

Pillar 2: Effective and sustainable waste services					
Outcome 2: All South Africans live in clean communities with waste services that are well managed and financially sustainable					
Key action	**Sub-Action/s**	**Performance indicators**	**Targets**	**Timeline**	**Implementing Agent/s**
Separate Waste at Source	Integration of waste pickers into the waste management system	(i) Number of Integration guidelines developed (ii) Number of metros with integration programmes in place (iii) Number of secondary cities with integration programmes in place (iv) Number of sustainable jobs/decent livelihoods created in collecting recyclables	(i) 1 x Guidelines adopted and implemented (ii) All metros (iii) All secondary cities iv) 500 jobs created/decent livelihoods created prioritising women, youth and persons living with disabilities	(i) 2020 (ii) 2021 (iii) 2024 (iv) 2024	DFFE, Producers through EPR schemes, local government, SALGA, COGTA, Waste Pickers Association, African Reclaimers Association and
	Separate collection of post-consumer waste of products identified for EPR	(i) % of waste collected	(i) Aligned with the targets set in respective Notices	(i) 2021 (ii) 2022 (iii) 2023 (iv) 2024	Producers
	Public online and annually update guidelines, case studies and planning tools on separation at source for municipal managers	(ii) Number of downloads of annual updates (iii) Percentage of households separating at source	(ii) 100 downloads per update (iii) 50% of households in municipalities implementing services	(v) 2021 onwards (vi) 2024	Waste Bureau, Waste RDI Roadmap, COGTA, SALGA and municipalities
	National Awareness campaign on recycling and waste management	Number of Good Green Deeds programme activities implemented on an ongoing basis	20 of Good Green Deeds activities	2020 onwards	DFFE Provinces, municipalities, COGTA and SALGA

Pillar 2: Effective and sustainable waste services					
Outcome 2: All South Africans live in clean communities with waste services that are well managed and financially sustainable					
Key action	**Sub-Action/s**	**Performance indicators**	**Targets**	**Timeline**	**Implementing Agent/s**
Safe and environmentally sustainable disposal of hazardous household wastes	Develop and implement a strategy for the safe disposal of household hazardous waste that includes a communication and awareness plan and EPR as core components	(i) Strategy developed and implemented (ii) Percentage reduction of hazardous wastes in general landfill sites	(i) 1 x Strategy adopted and implemented (ii) 10% reduction of hazardous waste in general landfills	(i) 2021 onwards (ii) 2024	DFFE, DoH, DTIC, Industry Associations, Producers through EPR schemes
	Develop and implement a strategy and standards relating to the design and disposal of AHPs such as baby and adult diapers, feminine care products	(i) Strategy developed and implemented (ii) Percentage reduction in disposal of AHPs to landfill	(i) 1 x Strategy adopted and implemented (ii) 10% reduction of AHPs in landfills	(i) 2021 onwards	DFFE DoH, Private Sector, DTIC SABS
Effective integrated waste management planning	Development and implementation of 5-year provincial and municipal integrated waste management plans	(i) Number of provinces to have updated IWMPs ii) Number of municipalities with IWMPs reporting on SAWIS (iii) Number of guidelines and reporting standards for provincial and municipal IWMPS, updated (iv) Percentage of households receiving waste collection services in compliance with DWCS (v) Percentage of IWMPs reflected in municipal budgets (vi) Number of municipal IWMPs submitted to Provinces for approval	(i) All (9) updated provincial IWMPs adopted and implemented (ii) All municipalities (iii) 1 x Guidelines and reporting standards updated (iv) 95% of households (v) 80% of IWMPS in municipal budgets (vi) All municipal IWMPs submitted to provinces for approval	(i) 2022 (ii) 2022 (iii) 2021 (iv) 2024 (v) 2025	Provinces Municipalities DFFE SALGA COGTA
	Improve collection, reporting and dissemination of information on SAWIS	(i) Percentage improvement of reporting on SAWIS	(i) 60% improvement in reporting	(i) 2022	DFFE, Provinces, municipalities,
		(ii) Training and compliance to waste information regulations	(ii) 20 Training interventions per annum	(ii) 2022	SALGA, and COGTA

Pillar 2: Effective and sustainable waste services					
Outcome 2: All South Africans live in clean communities with waste services that are well managed and financially sustainable					
Key action	**Sub-Action/s**	**Performance indicators**	**Targets**	**Timeline**	**Implementing Agent/s**
	Build capacity in integrated waste management planning and provide revised IWMPs guidelines	(i) Number of revised guidelines on IWMPS developed (ii) Number of capacity building programmes implemented per annum	(i) 1 x revised IWMPS guidelines adopted and implemented (ii) 35 of capacity building programme implemented per annum	(i) 2022 (ii) 2025	DFFE Waste Bureau, Waste RDI Roadmap, SALGA, COGTA, Universities with waste management programmes, provinces and municipalities
	Municipalities include provisions for recycling drop-off/buy back/storage centres in their IWMPs, supported by fiscal mechanisms / EPR schemes	(i) Number of new recycling drop-off/buy-back/storage centres established	(i) 20 (number of centres established	(i) 2023	DFFE Waste Bureau, Waste RDI Roadmap, NT, SALGA, Provinces, Municipalities, SALGA, COGTA and Producers through EPR schemes

Pillar 3: Compliance, enforcement and awareness					
Outcome 3: Mainstreaming of waste awareness and a culture of compliance resulting in zero tolerance of pollution, litter and illegal dumping					
Key action	**Sub-Action/s**	**Performance indicators**	**Targets**	**Timeline**	**Implementing Agent/s**
Reduce Pollution, littering and illegal dumping	Develop and implement a national awareness campaign about litter and illegal dumping	(i) Rand value of media spend – print, tv, radio (ii) Social Media Campaign statistics	(i) 5 million (ii) 12 per annum	(i) 2024 (ii) 2024	DFFE Provinces, municipalities, COGTA, SALGA and private sector
	Establish a micro-grant facility training and purchasing of equipment for community-based clean-up operations	(i) Number of micro-grants issued with priority focus on women, youth and people living with disabilities (ii) Number of reports from micro-grant recipients	(i) 20 (iii) 20	(i) 2024 (ii) 2024	DFFE Waste Bureau, civil society, Cities Support Programme, NT
Enhance capacity to monitor compliance and enforce the Waste Act and International Agreements	Agreement between DEFF, SAPS and NPA on increasing enforcement of Waste Act and municipal by-laws relating to pollution, littering and illegal dumping	(i) Number of Agreements signed (ii) Number of reports on compliance and enforcement reports	(i) 1 x Agreement signed and implemented (ii) 1 x National Environmental Compliance and Enforcement Report (NECER) per annum	(i) 2021 (ii) 2024	DFFE SAPS, NPA
	Increase the number of EMIs dedicated to monitor compliance and enforce the Waste Act	Number of EMIs appointed	· At least 1 EMI per metro district · All districts · All national, provincial and local municipalities	(i) 2025	DFFE Provinces, local municipalities
	Proclamation on import and export of waste	Number of proclamations developed	1 x proclamation adopted and implemented	2021	DFFE

Pillar 3: Compliance, enforcement and awareness					
Outcome 3: Mainstreaming of waste awareness and a culture of compliance resulting in zero tolerance of pollution, litter and illegal dumping					
Key action	**Sub-Action/s**	**Performance indicators**	**Targets**	**Timeline**	**Implementing Agent/s**
Ensure municipal landfill sites and waste management facilities comply with licensing requirements	Develop financial mechanisms to enforce compliance to license conditions	(i) Number of policy recommendations on financial mechanisms developed and implemented	(i) 1 x financial mechanism adopted and implemented	(i) 2021	DFFE NT, Provinces, local municipalities
		(ii) Number of national action plan on landfill licensing compliance	(ii) 1 x National Action Plan	(ii) 2021	
		(iii) Number of municipal landfills complying with licensing conditions	(iii) All municipalities compliant	(iii) 2024	

3.1.30 National Policy for the Provision of Basic Refuse Removal Services to Indigent Households, Government Notice 34385, 22 June 2011

The main criterion for determining the qualifying recipients of Basic Refuse Removal (BRR) services is registration on a municipality's indigent register as provided for by the indigent policy of the municipality.

The following criteria can be used in the absence of or in addition to the main criterion to determine the qualifying recipients of the BRR services:

- Level of income: Monthly net household income of members of less than or equal to *two old age pensions (including children/individuals who may get state grants).*
- Residence status: Everybody residing in the municipality provided their indigent status have been verified.
- Special considerations: All child headed households, households headed by pensioners and people with disabilities.
- Value of property (need to note that inherited properties might give false income level status).
- Any other criteria as determined by the specific municipality

A municipality may for practical reasons, declare certain areas or clusters as qualifying recipients of BRR. Examples may include low-income areas and high density, urban informal areas.

- Such declarations have added advantages in terms of administrative feasibility (logistics and costs included) especially where rate collection is challenging.
- A municipality may declare certain low density rural areas as areas where on-site disposal is deemed to be an appropriate waste management option.

If the recipient does not fall under a qualifying indigent area, he/she may register as an indigent at his/her municipality. The municipality must set out certain dates/times for these registrations.

3.1.31 Planning documents

The Western Cape Provincial Spatial Development Framework (March 2014)

The Western Cape Provincial Spatial Development Framework (PSDF) states that if the increasing amounts of waste generated are not minimised, it will give rise to the need for more disposal sites which is not desirable. A mind set of "reduce, rethink, recycle" still needs to be mainstreamed and further challenges are created by illegal dumping, shortfalls in hazardous waste facilities, growing informal settlements and a lack of recyclables collection from homes. The following provincial spatial policies related to waste management are included:

Policy R4: Recycle and recover waste, deliver clean sources of energy to urban consumers, shift from private to public transport, and adapt to and mitigate against climate change.

1. Unlock economic opportunities and increase the lifecycle of current disposal sites and apply the principles of "reduce, reuse, and recycle".
2. Close down illegal sites and locate new regional waste sites adjacent to rail facilities to decrease operational costs and energy requirements associated with the need for road freight.

The OneCape 2040

OneCape 2040 was developed by the Western Cape Economic Development Partnership (EDP) for the Western Cape Government (WCG) and the City of Cape Town (CCT). The purpose is to encourage and provide a vision for a more inclusive and resilient economic future for the Western Cape. It does not replace any existing statutory plans required of province or municipalities, but is intended as a guideline for stakeholders in order to:

- Promote fresh thinking and critical engagement on the future;
- Provide a common agenda for private, public and civil society collaboration;
- Help align government action and investment decisions;
- Facilitate the necessary changes we need to make to adapt to our (rapidly) changing local and global context;
- Address our development, sustainability, inclusion and competitiveness imperatives.

Under the Ecological transition, the goal is that all people have access to water, energy and waste services that are delivered in a sustainable resource-efficient manner.

The Western Cape Provincial Strategic Plan (2014 – 2019)

The Plan is aligned with the NDP, PSDF and also the OneCape 2040. The following Provincial Strategic Goals are set out in the document:

- Strategic Goal 1: Create opportunities for growth and jobs.
- Strategic Goal 2: Improve education outcomes and opportunities for youth development.
- Strategic Goal 3: Increase wellness, safety and tackle social ills.
- Strategic Goal 4: Enable a resilient, sustainable, quality and inclusive living environment.
- Strategic Goal 5: Embed good governance and integrated service delivery through partnerships and spatial alignment.

The Western Cape Green Economy Strategy Framework

The Green Economy Strategy Framework is about achieving the double dividend of optimising green economic opportunities and enhancing our environmental performance. The framework is for the Western Cape to become the lowest carbon province and leading green economic hub of the African continent.

"Drivers" and "Enablers" are identified in the Framework as listed below:

Drivers:

- Smart living and working
- Smart mobility
- Smart eco-systems
- Smart agri-production
- Smart enterprise

Enablers:

- Finance
- Rules and Regulation
- Knowledge Management
- Capabilities
- Infrastructure

3.1.32 International treaties

This section lists the international agreements to which South Africa has acceded. The following is as described in section 4.10 of the National Waste Management Strategy 2011:

Various international agreements to which South Africa has acceded relate to waste management. A number of non-binding conventions and protocols are also relevant to waste management. This section summarises the main actions in the NWMS related to implementing international agreements.

3.1.32.1 The Basel Convention

The Basel Convention, adopted in 1989, has the greatest bearing on the Waste Act as it addresses the trans-boundary movement of hazardous wastes and their disposal, setting out the categorization of hazardous waste and the policies between member countries.

DEA is developing MOUs with the International Trade Administration Commission (ITAC) and the South African Revenue Service (SARS) that effectively address the provisions of the Basel Convention.

DEA is considering accession to the amendments to the Basel Convention that ban the import and export of hazardous wastes. DEA is also currently developing a policy on imports and exports of waste that will address this.

DEA and DTI are jointly addressing the import and export control aspects of the Basel Convention, together with the chemical conventions. Control will happen through ITAC permits and SARS tariff codes.

3.1.32.2 The Montreal Protocol

The Montreal Protocol Treaty, revised in 1999, protects the ozone layer by phasing out the production of several substances that contribute to ozone depletion, with the aim of ozone layer recovery by 2050. This has relevance for waste management in instances where such obsolete products enter the waste stream. DEA will finalise and publish the National Implementation Plan for the Montreal Protocol. The plan will include the development on an Ozone Depletion Substance (ODS) strategy and regulations will provide for the phasing out of specified substances and their safe disposal.

3.1.32.3 The Rotterdam Convention

The Rotterdam Convention promotes and enforces transparency in the importation of hazardous chemicals and whilst it explicitly excludes waste, its implementation may lead to bans on listed chemicals. Some of these chemicals may occur in stockpiles of obsolete chemicals such as pesticides that have been identified as a major waste management challenge. Extended producer responsibility schemes will be used to effectively manage obsolete chemicals.

A study to investigate the extent of manufacture, use, import and export of new chemicals listed in the Rotterdam Convention will determine whether South Africa should ratify the newly added chemicals. This document will be finalised in 2012. A process to identify and ban pesticides and industrial chemicals listed in Annex lll (that South Africa has not yet banned) has started.

3.1.32.4 The Stockholm Convention

The Stockholm Convention on Persistent Organic Pollutants (POPs), which entered into force in 2004, requires that member countries phase out POPs and prevent their import or export. Parties to the Convention are also required to undertake the following responsibilities:

- Develop and implement appropriate strategies to identify stockpiles, products and articles in use that contain or are contaminated with POPs.
- Manage stockpiles and wastes in an environmentally sound manner.
- Dispose of waste in a way that destroys or irreversibly transforms POPs content.
- Prohibit recycling, recovery, reclamation, direct re-use or alternative use of POPs.
- Endeavour to develop strategies to identify contaminated sites and perform eventual remediation in an environmentally sound manner.

3.1.33 Municipal By-laws

The BM solid waste by-laws were drafted in 2021 and published in the Western Cape Government Provincial Gazette No. 8579 on 1 April 2022. It is an update of the 2009 by-law and focuses on sustainable waste management and integrated cooperative waste services delivery to the people of the BM. This amended by-law is a comprehensive update of the previous version and is available for download on the open bylaws website at https://bergrivier.openbylaws.org.za/akn/za-wc013/act/by-law/2021/integrated-waste-management/eng@2022-04-01.

3.1.34 Discussion of legislation (effectiveness & implementation)

The above listed legislation (national, international and local by-law) provide comprehensive rule-sets by which the solid waste life-cycle and the management thereof are governed. Although there is always room for improvement, it can be argued that South African solid waste legislation is of a high standard and is comparable internationally. This is even more true with the publication of the NWMS 2020. We must therefore ask to what extent is solid waste legislation implemented and, if possible, how to ensure compliance by all and what are the stumbling blocks. Without compliance with the above legislation we will not be able to create a sustainable future for the stunning and diverse natural South African environment. The NWMS 2020 substantially expands on the different role players and how the aim is to move to a culture of compliance.

In South Africa's history the more comprehensive legislation and knowledge of better waste management practices are relatively "new" and therefore still in the stages of establishing a secure foothold in our society. Past waste management practices have in essence created a "back-log" of acceptable waste management practices and in many ways, the current generations are now required to address the complications created by old methods, poor management or uninformed decisions. A great number of instances of non-compliances to legislation are a direct result of pre-legislation practices that were not addressed, which can be due to various factors, and are still in some places the norm.

Legislation enforcement on a local level will almost definitely be lacking without the willing co-operation from the public and industry. In a rural Municipality such as Bergrivier with vast open spaces between towns and even within towns, the capacity of law enforcement is limited. There is simply not enough man-power to monitor all areas and prevent illegal practices. From the amount of illegally dumped waste that is collected and disposed in the Bergrivier Municipality compared to the total waste stream, it is clear that this is a concern, but it can be improved as it requires regular attention and a team to do clean-ups.

In terms of the hazardous waste compliance and implementation of relevant legislation, the following was observed during the survey (Hazardous waste further discussed later in the IWMP).

3.1.34.1 Compliance with Legislation

Apart from the heath care risk waste stream, the amount of hazardous waste in the Bergrivier Municipality is very limited. The data contained in this survey was obtained from owners/employees at the various places of business directly and it must be noted that there is a general lack of knowledge regarding the legislation surrounding waste generation or disposal throughout the entire spectrum of

Industrial Groups. The Healthcare Risk Waste group seemed to have more of an understanding of what is required from them and generally they are in compliance with the Western Cape Health Care Risk Waste Act (Act 7 of 2007).

The majority of hazardous waste generators are not fully aware of the NEMWA requirements and rely on the transporters of the waste to ensure compliance.

3.1.34.2 General

In general, the pressure on law enforcement will be lessened with the continued awareness and education of the public, industry and all generators of waste. All parties MUST realise their part in the waste management cycle and accept accountability, so that the response to legislation and waste management practices is not "why?", but "how?". The "how" will have to be continually addressed through education as new technologies, practices, waste types and opportunities emerge. The waste industry cannot afford to get comfortable and settle on "that is how it has always been done", but must be innovative, up-to-date and achieve co-operation between all spheres of society in order to ensure the sustainable future of our environment.

The legislation is therefore sufficient, but compliance must be improved through awareness and education and improved enforcement. The public must also assist the Municipality and report all instances where the law is not obeyed. Instances related to solid waste can be reported to the Municipality using the telephone numbers listed on their website (www.bergmun.gov.za) or directly through the relevant links on this website. The BM also has recently announced the launch of a citizen Collab App where members of the public can communicate with the BM. Details are available on their website.

Another aspect to consider is affordability. As mentioned, certain practices were the norm in previous years, but are drastically affected by recent legislation. The D:EA&DP conducted a project in order to estimate the costs of compliance for Western Cape municipalities relating to solid waste infrastructure alone. The estimates are considered unaffordable in the short to medium term. In these cases assistance is required or Municipalities must be given sufficient time in order to be compliant.

All of the Bergrivier Municipality's disposal facilities are licensed and therefore in that respect compliant with legislation. The extent of implementation of the licence requirements must be assessed via regular internal and external audits of the facilities. The audit results will determine the requirements for each facility and cost estimates can be made for budget purposes.

3.2 DEMOGRAPHICS

The demographics and related statistics were obtained from Statistics SA using the latest 2022 census data and comparing to the 2011 census information where applicable.

3.2.1 Current and projected population and density

The 2011 Census figures indicate that the Bergrivier Municipality had a total population of 61 896 people with a 2.85% annual population growth rate since the 2001 Census. The 2022 census data indicated that the BM had a population of 70,276 in 2022 which relates to an annual population growth rate of 1.16% between 2011 and 2022.

In 2014 the Western Cape Department of Social Development appointed PWC to develop a population projection report for the Western Cape Province, using a range of determining factors, and this report concluded that the BM would have a population growth rate of 1.11% between 2011 and 2040, which aligns well with the growth rate obtained from the latest census. A population growth rate of 1.16% was thus used for calculations and assumptions in this report.

The Census 2011 statistics are available in terms of sub-places into which the Municipality was divided for the study. This has not been done for the 2022 census data yet. The abovementioned PwC population projection study for the Western Cape also did not include data for sub-places, but did provide total projections per municipality up to the year 2040. A fixed growth rate per annum was not used in this study, but different factors such as fertility, mortality and migration were taken into account resulting in a different population growth rate for each year.

For this IWMP report the population and household totals per sub-place of the 2011 Census were reworked in order to align this IWMP with the population of the 2022 census, with the assumption that the sub-places would grow in proportion to the total population at a rate of 1.16% per annum.

The BM has the 3rd highest population within West Coast District with 14.1% of the total district population of 497,393 people using the latest census data.

The current and projected populations per sub-place based on the above assumptions are shown in **Table 3-1** below:

Table 3-1: Current and projected population of Bergrivier per sub-area

Sub-area	2022	2025	2026	2027	2028	2029
Redelinghuys SP	654	677	685	693	701	709
Bergrivier NU	27 692	28 668	29 001	29 337	29 678	30 023
Great Winterhoek Forest Reserve	123	127	128	130	131	133
Eendekuil SP	1 737	1 798	1 819	1 840	1 862	1 883
Dwarskersbos SP	760	786	795	805	814	823
Aurora SP	654	677	685	693	701	709
Noordhoek	8 104	8 390	8 487	8 586	8 686	8 786
Laaiplek	657	681	688	696	705	713
Velddrif SP	2 406	2 491	2 520	2 549	2 578	2 608
Admiral Island and Port Owen Estates	1 339	1 386	1 402	1 418	1 435	1 451
Goedverwacht SP	2 249	2 328	2 355	2 383	2 411	2 438
Beaverlac Nature Reserve	68	71	71	72	73	74
Piketberg SP	13 706	14 189	14 354	14 521	14 689	14 860
De Hoek Mine	375	388	392	397	402	406
Wittewater SP	967	1 001	1 013	1 025	1 037	1 049
Porterville SP	8 012	8 295	8 391	8 488	8 587	8 687
Voorberg Correctional Services	772	799	809	818	827	837
Total	**70 276**	**72 752**	**73 597**	**74 451**	**75 316**	**76 190**

-SP = Sub-place
-NU = Non-urban

From the above table, the population densities in Bergrivier can be graphically displayed as per **Figure 3-1.** The majority of the population resides in rural areas (39%), followed by Piketberg (20%) and the coastal areas of Velddrif, Noordhoek etc. The total average 2025 population density for the whole of Bergrivier is 16.5 persons per km^2.

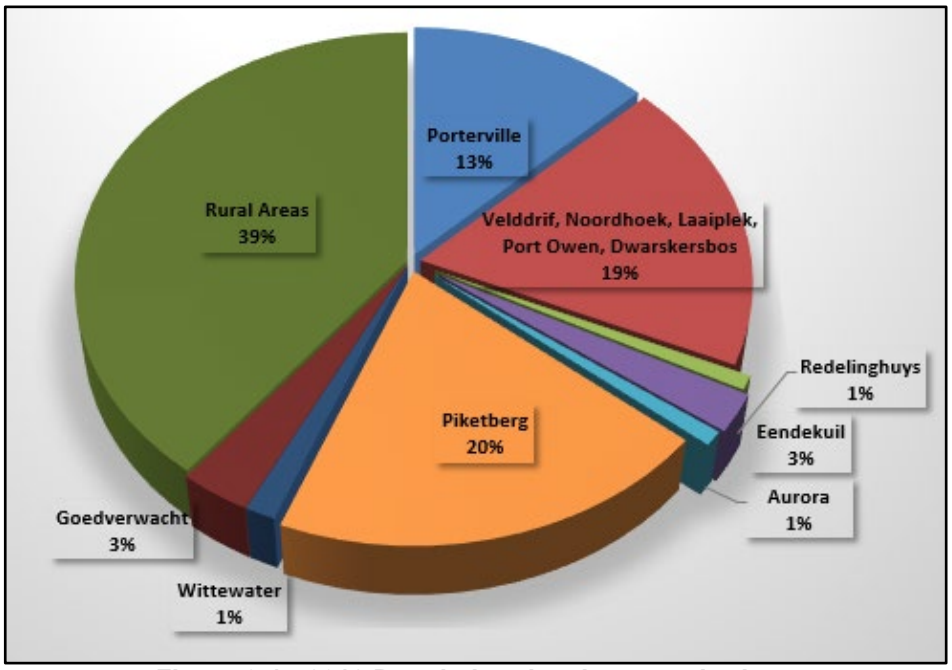


Figure 3-1: 2018 Population density per sub-place

3.2.2 Socio-economic profile and education

Table 3-2 shows the current socio-economic profile of the Bergrivier municipality according to annual household income obtained from the latest census data. In order to estimate the current number of households, the assumption was made that the average number of persons per household for each sub-area would remain constant. According to Census 2022 the level of education in the Bergrivier Municipality is as per the information in **Figure 3-2**.

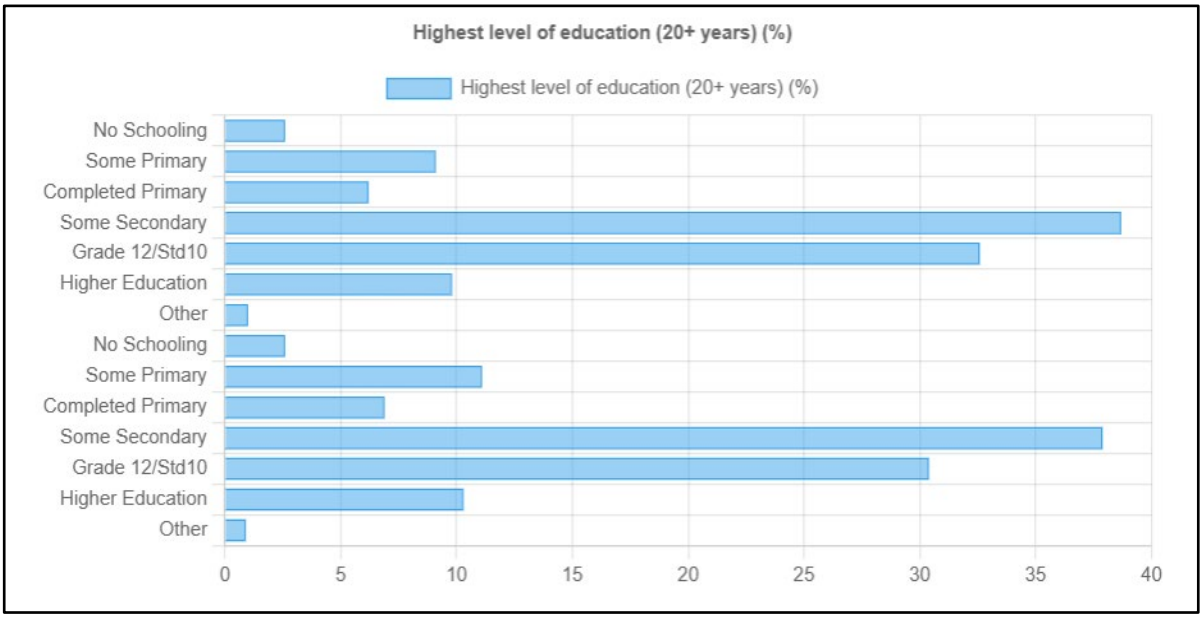


Figure 3-2: Education levels

In addition to the above the census data also indicates that 61.8% of the population aged 5-24 years have attended some form of educational institution with 38.2% of people aged 5-24 not having done so.

Table 3-2: Population Profile According to Household Income (2022 & Estimated 2025)

Sub-area	No of Households (2022)	Population (2022)	Persons per Household	Very Low and Low Income (R0 – R42000)	Middle Income (R42 001 - R72 000)	High and Very High Income (R72001 or more)	No of Households (2025)	Population (2025)
Redelinghuys SP	157	654	4.2	56.5%	23.9%	19.6%	163	677
Bergrivier NU	6 550	27 692	4.2	56.3%	24.3%	19.4%	6 781	28 668
Great Winterhoek Forest Reserve	27	123	4.5	0.0%	37.5%	62.5%	3	127
Eendekuil SP	426	1 737	4.1	39.2%	36.0%	24.8%	441	1 798
Dwarskersbos SP	235	760	3.2	42.0%	13.0%	44.9%	244	786
Aurora SP	218	654	3.0	56.3%	18.8%	25.0%	226	677
Noordhoek	2 337	8 104	3.5	62.1%	19.8%	18.1%	2 419	8 390
Laaiplek	296	657	2.2	40.2%	12.6%	47.1%	307	681
Velddrif SP	1 001	2 406	2.4	42.2%	16.0%	41.8%	1 037	2 491
Admiral Island and Port Owen Estates	477	1 339	2.8	27.9%	12.9%	59.3%	494	1 386
Goedverwacht SP	617	2 249	3.6	51.9%	21.5%	26.5%	639	2 328
Beaverlac Nature Reserve	20	68	3.3	83.3%	0.0%	16.7%	22	71
Piketberg SP	3 314	13 706	4.1	38.6%	24.0%	37.3%	3 431	14 189
De Hoek Mine	126	375	3.0	16.2%	16.2%	67.6%	131	388
Wittewater SP	215	967	4.5	44.4%	28.6%	27.0%	223	1 001
Porterville SP	2 207	8 012	3.6	41.4%	24.2%	34.4%	2 285	8 295
Voorberg Correctional Services	232	772	3.3	0.0%	4.4%	95.6%	240	799
Total	**18 455**	**70 276**	**3.8**	**48.41%**	**22.44%**	**29.14%**	**19 086**	**72 752**

NOTE: The above figures are extrapolated from the assumption that sub areas grow in line with total municipal population. The 2022 census data indicated that the total households in 2022 was 20,412 at 3.4 people per household.

3.2.3 Employment and Economic Performance

The 2024-25 Municipal Economic Review and Outlook report for the WCDM developed by the Western Cape Government provides information on the economic performance of the municipalities within the District. According to this report the BM played a crucial role in the WCDM Gross Domestic Product per Region (GDPR) and employment figures, contributing 14.5% to the total R29.4 billion GDPR, and 16.2% to the total 182,266 employed individuals within the WCDM. This contribution is largely attributed to the municipal area's diversified economy, which includes agriculture, retail, and tourism.

The economic contributions of the BM to GDPR and employment is also influenced by private sector participation. Of the 4,601 businesses within the District, Bergrivier contributes 11.7% of them.

3.2.4 Service Delivery

According to the Western Cape Government's Socio-Economic Profile 2023 for BM, the following is true regarding basic service delivery within the Municipality:

- 88.7% of people have access to piped water inside the dwelling compared to 86.3% for the WCDM.
- 97.7% of people have access to a flush/chemical toilet compared to 94.5% for the WCDM.
- 85.4% of people have access to a refuse removal service once a week compared to 84.0% for the WCDM. It is assumed that this includes all rural populations.

The BM also provide a package of free basic services to households who are financially vulnerable and struggle to pay for services. This includes a free waste collection service. The number of households receiving free basic services in the BM area has shown a generally consistent trend and is reported to be 2,097 in 2025. The stressed economic conditions are anticipated to exert pressure on household income levels, which is in turn likely to see the number of indigent households and the demand for free basic services increase.

3.2.5 Gender and age distribution

The 2022 Census population distribution according to gender and age is shown in **Table 3-3** below. The distribution is almost equal between males and females, with females slightly more in percentage than males.

Table 3-3: Gender and Age Distribution

Age	Male	Male (%)	Female	Female (%)
85+	93	0.1	233	0.3
80-84	201	0.3	347	0.5
75-79	416	0.6	593	0.8
70-74	731	1.0	941	1.3
65-69	1 121	1.6	1 352	1.9
60-64	1 412	2.0	1 756	2.5
55-59	1 732	2.5	2 241	3.2
50-54	1 957	2.8	2 271	3.2
45-49	2 043	2.9	2 248	3.2
40-44	2 322	3.3	2 438	3.5
35-39	2 805	4.0	2 824	4.0
30-34	2 719	3.9	2 911	4.1
25-29	2 964	4.2	3 019	4.3
20-24	2 930	4.2	2 865	4.1
15-19	2 551	3.6	2 558	3.6
10-14	2 662	3.8	2 651	3.8
5-9	2 532	3.6	2 453	3.5
0-4	2 732	3.9	2 648	3.8
Total	**33 923**	**48.3**	**36 349**	**51.6**

3.2.6 Development

The planned and potential development were obtained from the 2014 Western Cape Growth Potential Study of Towns by the D:EA&DP (there have been no updates of this report to date). This study determined the growth potential and socio-economic needs of settlements in the Western Cape outside of the Cape Town metropolitan area using quantitative data (e.g. factors relating to socio-economic, economic, physical-environmental, infrastructure and institutional aspects). The results of the quantitative analyses were combined with qualitative information (e.g. stakeholder engagements) to identify potential interventions that might unlock latent potential within settlements and regions.

Table 3-4: Growth Potential Study Results

Area	Composite Growth Potential	Socio-economic needs index	Human Capital index	Economic index	Physical index	Infra-structure index	Institu-tional index
Aurora	Low	Very Low	Medium	Very Low	Medium	Low	High
Goedverwacht	Low	Low	Medium	Low	Medium	Low	High
Redelinghuys	Low	Very Low	High	Very Low	Low	Low	High
Dwarskersbos	Medium	Very Low	High	Very Low	Medium	High	High
Eendekuil	Medium	Very Low	Medium	Very Low	High	Low	High
Piketberg	Medium	Medium	High	Medium	Medium	Medium	High
Velddrif	Medium	Low	High	Low	Medium	High	High
Porterville	High	Medium	Very High	Medium	Very High	High	High

These condensed results of the D:EA&DP study indicate that the BM has a medium growth potential.

The different indexes indicated in the table above are all based on many different factors that was part of the study to determine those indexes but are not discussed in detail here. The summary of what each index indicates are as follows:

Growth Potential: Determined by quantitative indicators relating to socio-economic needs, economic, physical-environmental, infrastructure, human capital and institutional aspects combined with qualitative information such as stakeholder engagements.

Socio-economic needs: Index determined by evaluating household services, education levels, housing needs and economic characteristics.

Human Capital index: Index determined by factors such as education and income.

Economic index: Index determined by factors such as per capita income, tourism, economically active population, etc.

Physical index: Index determined by factors such as annual rainfall, groundwater availability and quality, grazing capacity and growth of cultivated land, etc.

Infrastructure index: Index determined by factors such as household access to water, sanitation, electricity, waste removal and distances to airports and harbours, etc.

Institutional index: Index determined by factors such as crime rate, management capacity, qualified audits, etc.

The institutional index of BM referring the ability to govern and operate the municipality was ranked as high whilst the other indices differ from town to town. The latest (2024 – 2029) municipal spatial development framework report outlines the development proposals for each of the towns. This includes a focus on increased services delivery, infrastructure development and rehabilitation of closed landfill sites.

3.2.7 Housing Types

The latest information available is from the 2022 Census, which is shown in the table below.

Table 3-5: Housing Types

Housing Type	Number of dwellings	%
Formal Dwelling	18,699	91.6
Traditional Dwelling	282	1.4
Informal Dwelling	1,315	6.4
Other	117	0.6

3.2.8 Employment Levels

According to the 2023 Socio-Economic Profile of the BM the economic recovery has also brought some growth in employment, where 2,760 jobs were created in 2022, resulting in a decline in the unemployment rate of from 7.8 per cent in 2021 to 7.3 per cent in 2022. In 2022, the Bergrivier GDPR saw a modest 1.4 per cent increase, indicating a 4.0 percentage point deceleration from the previous year. This slowdown can be attributed to a 1.3 per cent contraction in the agriculture sector, adversely affected by factors such as load shedding and substantial increases in input costs. Nonetheless, the economy experienced resilience due to commendable performances in the finance and manufacturing sectors, despite challenges posed by load shedding. The finance sector's positive momentum is primarily attributed to the growth in local business services, resulting in the creation of 186 jobs in 2022. Additionally, the local production of canned fish products contributed to the overall economic buoyancy, highlighting the diversified nature of the region's economy.

The main employment sectors in the BM are:

- Growing of perennial crops – 8,276 FTE Jobs
- Motion picture, video and television programme activities – 1,265 FTE Jobs
- Mixed farming – 1,239 FTE Jobs
- Administration of the state and the economic and social policy of the community – 1,112 FTE Jobs
- Fishing – 863 FTE Jobs

3.3 WASTE CLASSIFICATION

The waste types and quantities generated in the Bergrivier Municipality are discussed in this section.

3.3.1 Waste types and classification

With reference to the Waste Act, *National Norms and Standards for Disposal of Waste to Landfill as well as Assessment of Waste for Landfill Disposal*, *7 November 2024,* the only types of waste allowed for disposal at Municipal disposal facilities are general or Type 2, 3 and 4 wastes. No BM facilities are allowed to accept hazardous or Type 1 wastes. Even though the waste from BM gets disposed of outside the borders of the municipality, the facilities accepting their waste are municipal general waste landfill sites and thus the transfer stations in BM need to adhere to the same regulations.

The above legislation divides waste in South Africa into two main categories, being Hazardous and General. The current legislated definitions being:

Hazardous Waste – *"means any waste that contains organic or inorganic elements or compounds that may, owing to the inherent physical, chemical or toxicological characteristics of that waste, have a detrimental impact on health and the environment and includes hazardous substances, materials or objects within business waste, residue deposits and residue stockpiles"*

Residue deposits and residue stockpiles refer to mining waste that does not form part of the municipal waste function. **Business waste** means "*waste that emanates from premises that are used wholly or mainly for commercial, retail, wholesale, entertainment or government administration purposes*".

General Waste – *"means waste that does not pose an immediate hazard or threat to health or to the environment, and includes –*

(a) Domestic waste;
(b) Building and demolition waste;
(c) Business waste;
(d) Inert waste; or
(e) Any waste classified as non-hazardous waste in terms of the regulations made under section 69, and includes non-hazardous substances, materials or objects within business, domestic, inert, building and demolition wastes"

Domestic Waste – *"means waste, excluding hazardous waste that emanates from premises that are used wholly or mainly for residential, educational, health care, sport or recreation purposes and includes:*

(a) Garden and park wastes;
(b) Municipal waste;
(c) Food waste".

Building and Demolition Waste – "*means waste, excluding hazardous waste, produced during the construction, alteration, repair or demolition of any structure, and includes rubble, earth, rock and wood displaced during that construction, alteration, repair or demolition*".

Inert Waste – "*means waste that (a) does not undergo any significant physical, chemical or biological transformation after disposal; (b) does not burn, react physically or chemically biodegrade or otherwise adversely affect any other matter or environment with which it may come into contact; and (c) does not impact negatively on the environment, because of its pollutant content and because the toxicity of its leachate is insignificant, and which include:*

(a) Discarded concrete, bricks, tiles and ceramics;
(b) Discarded glass
(c) *Discarded soil, stones and dredging spoil*".

3.3.2 Methodology

The BM do not make use of internal landfill sites for disposal anymore. The waste generated within the municipality gets collected and sent to either the Velddrif or Piketberg transfer stations from where it is taken to Vredenburg (from Velddrif) and Malmesbury (from Piketberg) Landfills.

The latest available waste quantities submitted to Vredenburg and Highlands (Malmesbury) Landfills were used. The data obtained from the operational weighbridges at the Piketberg and Velddrif Transfer Stations were used.

Aquila Environmental was appointed as sub-consultant and conducted the hazardous waste study throughout the BM area as well as the general waste characterisation study (WCS). Information was acquired as explained under 1.3 above.

3.3.3 General Waste Characterisation

A waste characterisation study (WCS) of the BM general waste stream was undertaken by Aquila Environmental. It took place over a one-week period, from Monday 3 March to Friday 7 March 2025 at the Velddrif Transfer Station.

BM supplied Aquila Environmental with the various areas within its jurisdiction that needed to be characterised, as well as with the approximate number of households in each. This information made it possible for the researchers to determine the ideal sampling size to be collected from each area. BM further indicated that both clear and black bags needed to be characterised for each area.

The sampling size was determined by making use of the below graph supplied by the Environmental Protection Agency (EPA, 1996). BM is home to approximately 20,412 households (StatsSA, 2022). The BM area includes 9 urban settlements and a large rural area. The required sample size according to the below is 660 samples.

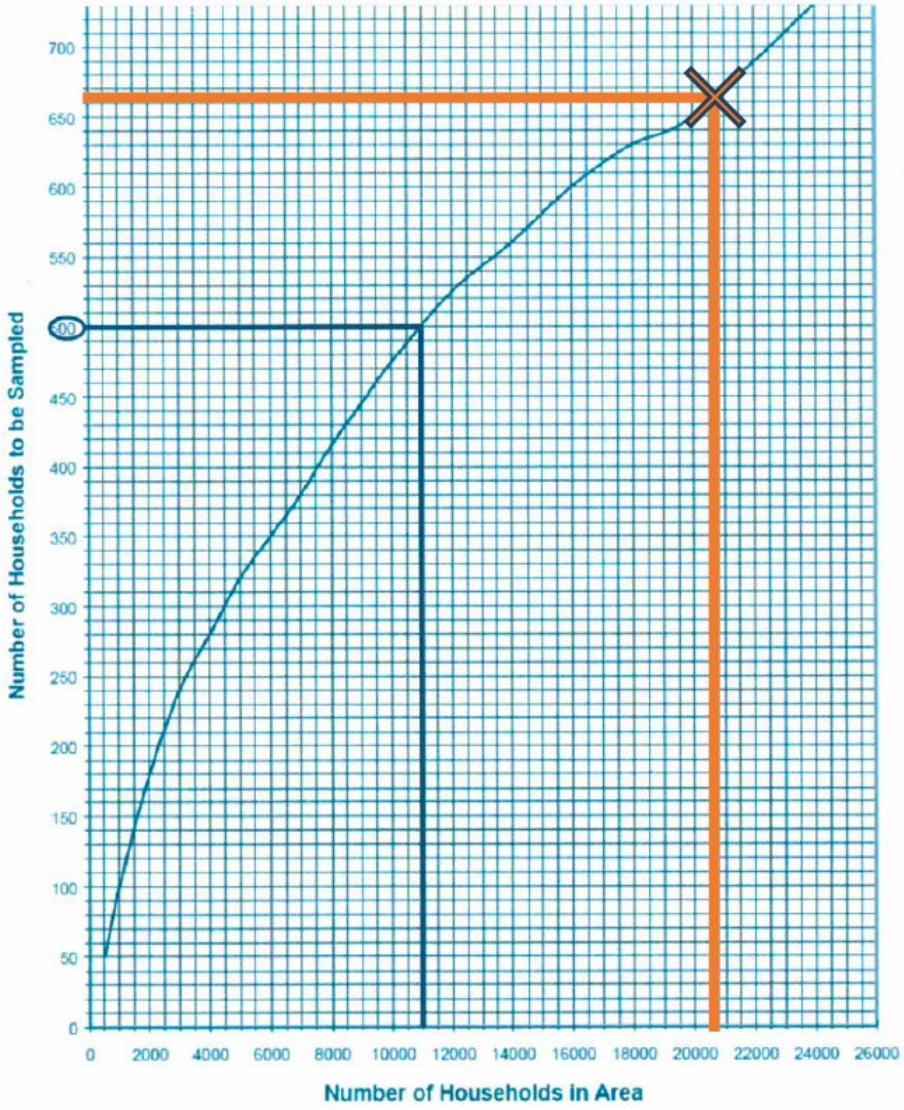


Figure 3-3: EPA Graph for Estimating Sampling Size for areas with more than 4,000, but less than 26,000 households

3.3.3.1 Waste Categories

Sampled waste was sorted in the following categories identified prior to the study and in accordance with the D:EA&DP guidelines.

Waste stream	Detailed information of waste stream	WIS classification
1. Plastic Film	• LDPE • LLDPE • This includes non-recyclable soft plastics like chips and chocolate wrappers	GW51.03 GW51.06
2. Dense Plastics	• PVC • HDPE • PP • PET • Video/CD/DVD cases	GW52.02 GW51.06 GW52.04 GW52.01 GW51.06
3. Expanded Polystyrene (Foamalite)	• PS (Extruded Polystyrene (EPS) only)	GW52.05

Waste stream	Detailed information of waste stream	WIS classification
4. Paper and Cardboard	• Office Paper • Newspaper • Magazines • Phonebooks • Books & Booklets • Tissue Paper • Photo Paper • Paper plates and cups • Cards • Envelopes • Receipts • Wrapping paper • Non-recyclable/Badly soiled paper • Paper/cardboard packaging • Cardboard (K4) (corrugated and non-corrugated) • Tetrapak • Egg cartons	GW50
5. Metals (ferrous and non-ferrous)	• Aluminium packaging eg. foil • Steel cans (eg. canned food tins) • Aluminium cans (eg. certain cooldrink cans) • Scrap metal (eg. steel offcuts) • Pieces of copper (will not separate copper contained in e-waste) • All aerosol cans • Pill sleeves if all metal	GW53
6. Glass	• Glass bottles (e.g. alcohol/drink bottles; all colours) • Table and kitchenware • Other/special glass (windowpanes etc)	GW52
7. Food Waste	• All kitchen waste – vegetable and animal derived	GW20.02
8. Medical (Sanitary) Waste / Healthcare Waste	• Human hygiene waste (nappies, condoms, sanitary items, tissues, wet wipes, colostomy bags, earbuds etc.). • Health Care Risk Waste (e.g. sharps, gloves) • Hair (synthetic and/or natural) • Animal carcases • Animal faeces	GW99
9. Garden Waste	• All garden waste (incl. soil, plant material, woody plant material, hay, flower bouquets, grass etc.) • Wood waste	GW20.01 and GW20.03

Waste stream	Detailed information of waste stream	WIS classification
10. E-Waste and Household Hazardous Waste	• Batteries (automotive, rechargeable, single use etc.) • Large and small household appliances • IT and telecommunications equipment • Lighting equipment (light bulbs etc.) • Electric and Electronic Tools • Electrical toys (e.g. battery operated) • Medical devices (e.g. monitoring equipment) • Monitoring and control instruments (e.g. thermometers, conductivity meters etc.) • Automatic dispensers (e.g. sanitiser) • Ink and toner cartridges • Paints and pesticides (only if container is not empty) • Gas bottles • Lighters	GW18
11. Clothing and Textile Waste	• Crockery/ceramics • Vacuum cleaner inners • Textiles, rubber, leather • Clothing and shoes • Orange and onion bags • CD's/DVD's • Maize meal bags	GW99
12. Others	• Fines • Ash • Cat litter • Cigarette butts • Toothpaste tubes (excluding cap) • "Papsak" • Pill sleeves with plastic and foil combination • Bars of soap • Jewellery • Hardboard	GW99

3.3.3.2 Sampling

Using the graph in **Figure 3-3** a sampling size was determined for each area and the following table indicates the number of bags and total kilograms sampled and sorted during the study at the Velddrif Refuse Transfer Station.

Staff from Aquila environmental was present during the full WCS to oversee the sampling process as well as train the EPWP workers sourced by the BM in undertaking the sorting of the waste. The BM separate their municipal waste into a three-bag system for collection. Recyclables are placed into clear bags for management at the recycling centres located in Piketberg and Velddrif, garden waste are placed waste into green bags for chipping and composting, and the rest of the municipal waste is placed into black bags for transport to the transfer stations at Piketberg and Velddrif. BM are one of the very few Municipalities in the country that has a three-bag collection system in place, and thus the municipal officials requested that the WCS cover all three.

Table 3-6: Bags Sorted per Area

Area	Black Bags		Clear Bags		Green Bags	
	No. of Bags	Total Sorted (kg)	No. of Bags	Total Sorted (kg)	No. of Bags	Total Sorted (kg)
Port Owen	21	93.25	16	77.93	13	73.6
Dwarskersbos	14	79.90	13	47.93	14	91.8
Piketberg Ward 4	44	206.59	39	104.47	23	167.27
Laaiplek	36	121.95	39	109.80	19	132.71
Noordhoek	42	193.68	42	98.26	19	153.41
Redelinghuys & Eendekuil	10	35.80	10	29.99	8	21.75
Piketberg Ward 3	19	80.61	27	21.75	4	21.75
Porterville Ward 1&2	81	289.59	60	118.30	57	454.22
Velddrif	21	74.28	21	49.52	11	75.74
Aurora	2	11.26	8	18.96	8	28.35
TOTAL	**290.00**	**1186.91**	**275.00**	**676.82**	**176.00**	**1220.60**

3.3.3.3 Results

The tables and charts on the following pages provide a breakdown of the results from the WCS undertaken at the Velddrif transfer station. The information is provided for the black bag waste, the clear bag waste, the green bag waste and a total of the combined waste stream, broken down into the categories discussed. Clear and green bags are available free of charge from the Municipal offices.

Table 3-7: Black Bag Waste Characterisation Results

CHARACTERISATION RESULTS PER SAMPLED AREA - BLACK BAG WASTE														
TOWN/ SETTLEMENT	NO. OF BLACK BAGS SAMPLED	PLASTIC FILM	DENSE PLASTIC	EXPANDED POLYSTYRENE	PAPER / CARDBOARD	METALS	GLASS	FOOD WASTE	GARDEN WASTE	SANITARY WASTE	E-WASTE / HOUSEHOLD HAZARDOUS	CLOTHING & TEXTILE WASTE	OTHER	TOTAL
		kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg
Port Owen	21	5.09	3.44	1.41	7.83	1.77	17.2	32.736	16.7	1.62	0.26	3.41	1.78	93.246
Dwarskersbos	14	5.7	8.2	1.35	18	1.6	13.25	23.2	2.15	3.7	0	1	1.75	79.9
Piketberg Ward 4	44	27.078	12.678	3.108	35.284	5.382	8.438	79.98	6.31	16.025	0.358	10.088	1.858	206.587
Laaiplek	36	9.906	8.812	1.399	15.19	3.06	9.704	32.748	17.074	11.332	0.05	1.122	11.552	121.949
Noordhoek	42	13.198	13.856	2.193	27.659	4.126	14.328	30.957	7.118	61.58	0.162	3.592	14.914	193.683
Redelinghuys & Eendekuil	10	4.474	4.096	0.462	5.068	0.978	2.918	9.934	0.19	2.108	0	5.574	0	35.802
Piketberg Ward 3	19	9.656	10.782	1.314	8.254	1.798	5.65	22.522	3.118	12.352	0.03	2.894	2.235	80.605
Porterville	81	27.588	34.708	3.417	31.306	7.6949	23.782	104.114	16.0405	26.856	0.32	11.132	1.722	289.5934
Velddrif	21	7.85	8	1.04	11.05	2.61	10.31	20.2	5.05	3.71	0	1.35	3.11	74.28
Aurora	2	0.45	0.55	0.01	0.8	0.15	0.55	4.55	0	2.55	0	0.05	1.6	11.26
TOTAL	**290.00**	**110.99**	**105.12**	**15.70**	**160.44**	**29.17**	**106.13**	**360.94**	**73.75**	**141.83**	**1.18**	**40.21**	**40.52**	**1186.91**
Percentage of Total		**9%**	**9%**	**1%**	**14%**	**2%**	**9%**	**30%**	**6%**	**12%**	**0%**	**3%**	**3%**	**100%**

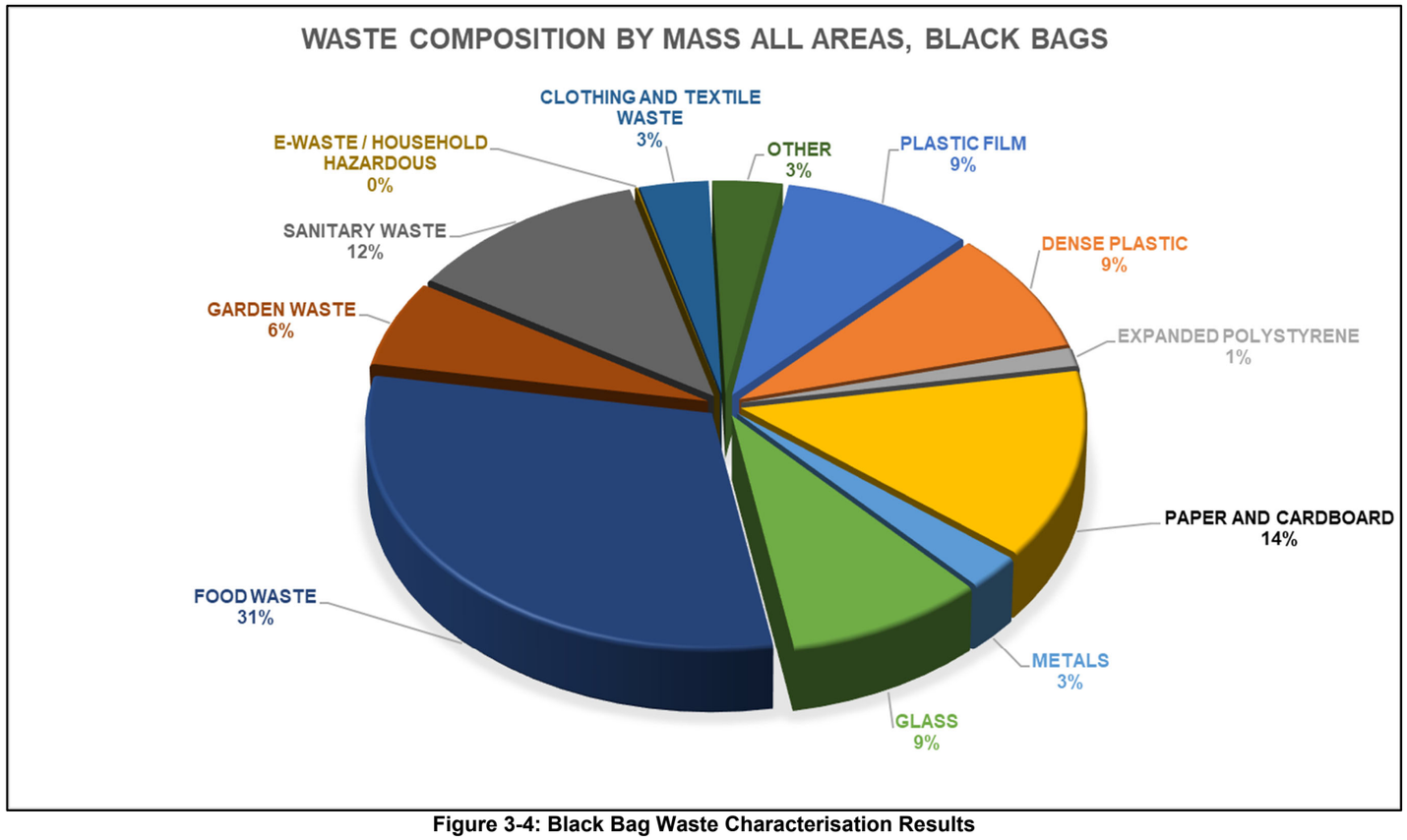


Figure 3-4: Black Bag Waste Characterisation Results

Table 3-8: Clear Bag Waste Characterisation Results

CHARACTERISATION RESULTS PER SAMPLED AREA - CLEAR BAG WASTE														
TOWN/ SETTLEMENT	NO. OF BLACK BAGS SAMPLED	PLASTIC FILM	DENSE PLASTIC	EXPANDED POLYSTYRENE	PAPER / CARDBOARD	METALS	GLASS	FOOD WASTE	GARDEN WASTE	SANITARY WASTE	E-WASTE / HOUSEHOLD HAZARDOUS	CLOTHING & TEXTILE WASTE	OTHER	TOTAL
		kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg
Port Owen	16	3.94	9.19	1.47	13.54	1.47	36.29	10.14	-	0.96	0.68	0.25	-	77.93
Dwarskersbos	13	3.50	5.93	0.40	6.20	1.15	18.80	4.05	2.00	1.05	-	1.75	3.10	47.93
Piketberg Ward 4	39	7.03	25.98	1.66	16.95	3.75	35.83	8.45	-	3.38	0.95	0.40	0.10	104.47
Laaiplek	39	11.88	14.80	2.58	28.44	4.86	14.59	14.22	4.04	0.57	0.51	5.07	8.24	109.80
Noordhoek	42	9.41	17.67	1.65	22.18	2.64	18.44	18.54	0.10	5.71	0.05	1.24	0.64	98.26
Redelinghuys & Eendekuil	10	2.50	7.16	1.23	2.69	1.24	11.76	2.41	-	0.85	-	0.15	-	29.99
Piketberg Ward 3	27	-	-	-	-	-	-	-	21.75	-	-	-	-	21.75
Porterville	60	11.99	29.44	2.57	36.94	5.65	23.11	3.73	-	0.64	-	1.75	2.48	118.30
Velddrif	21	6.11	10.15	0.48	12.05	2.77	12.20	3.30	-	0.20	0.06	0.40	1.80	49.52
Aurora	8	1.60	2.55	0.25	5.80	0.45	6.65	0.80	0.10	0.01	-	-	0.65	18.86
TOTAL	**275.00**	**57.96**	**122.87**	**12.29**	**144.79**	**23.97**	**177.68**	**65.63**	**27.99**	**13.36**	**2.25**	**11.02**	**17.01**	**676.82**
Percentage of Total		**9%**	**18%**	**2%**	**21%**	**4%**	**26%**	**10%**	**4%**	**2%**	**0%**	**2%**	**3%**	**9%**

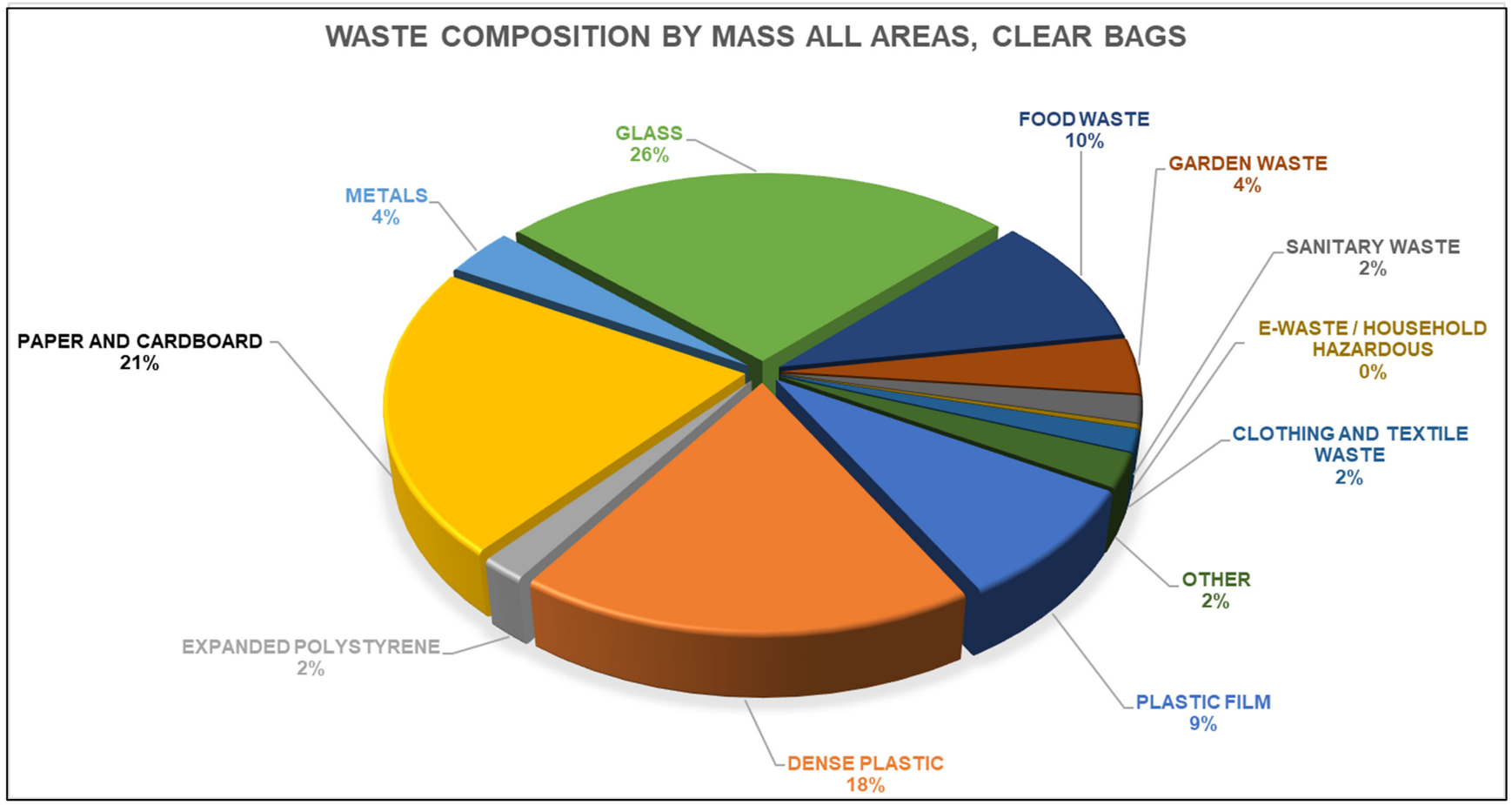


Figure 3-5: Clear Bag Waste Characterisation Results

Table 3-9: Green Bag Waste Characterisation Results

CHARACTERISATION RESULTS PER SAMPLED AREA - GREEN BAG WASTE														
TOWN/ SETTLEMENT	NO. OF BLACK BAGS SAMPLED	PLASTIC FILM	DENSE PLASTIC	EXPANDED POLYSTYRENE	PAPER / CARDBOARD	METALS	GLASS	FOOD WASTE	GARDEN WASTE	SANITARY WASTE	E-WASTE / HOUSEHOLD HAZARDOUS	CLOTHING & TEXTILE WASTE	OTHER	TOTAL
		kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg
Port Owen	13.00	-	-	-	-	-	2.93	1.73	68.94	-	-	-	-	73.60
Dwarskersbos	14.00	-	-	-	-	-	-	-	91.80	-	-	-	-	91.80
Piketberg Ward 4	23.00	0.01	0.01	0.10	0.05	-	-	-	167.10	-	-	-	-	167.27
Laaiplek	19.00	1.20	1.95	0.30	2.25	0.31	1.85	6.55	113.75	0.35	-	0.40	3.80	132.71
Noordhoek	19.00	0.44	0.56	-	0.88	-	-	-	151.15	-	-	0.39	-	153.41
Redelinghuys & Eendekuil	8.00	-	-	-	-	-	-	-	21.75	-	-	-	-	21.75
Piketberg Ward 3	4.00	-	-	-	-	-	-	-	21.75	-	-	-	-	21.75
Porterville	57.00	-	-	-	-	-	-	-	454.22	-	-	-	-	454.22
Velddrif	11.00	-	-	-	0.30	-	-	-	73.30	-	-	2.14	-	75.74
Aurora	8.00	-	-	-	-	-	-	-	28.35	-	-	-	-	28.35
TOTAL	**176.00**	**1.65**	**2.52**	**0.40**	**3.48**	**0.31**	**4.78**	**8.28**	**1 192.11**	**0.35**	**-**	**2.93**	**3.80**	**1 220.60**

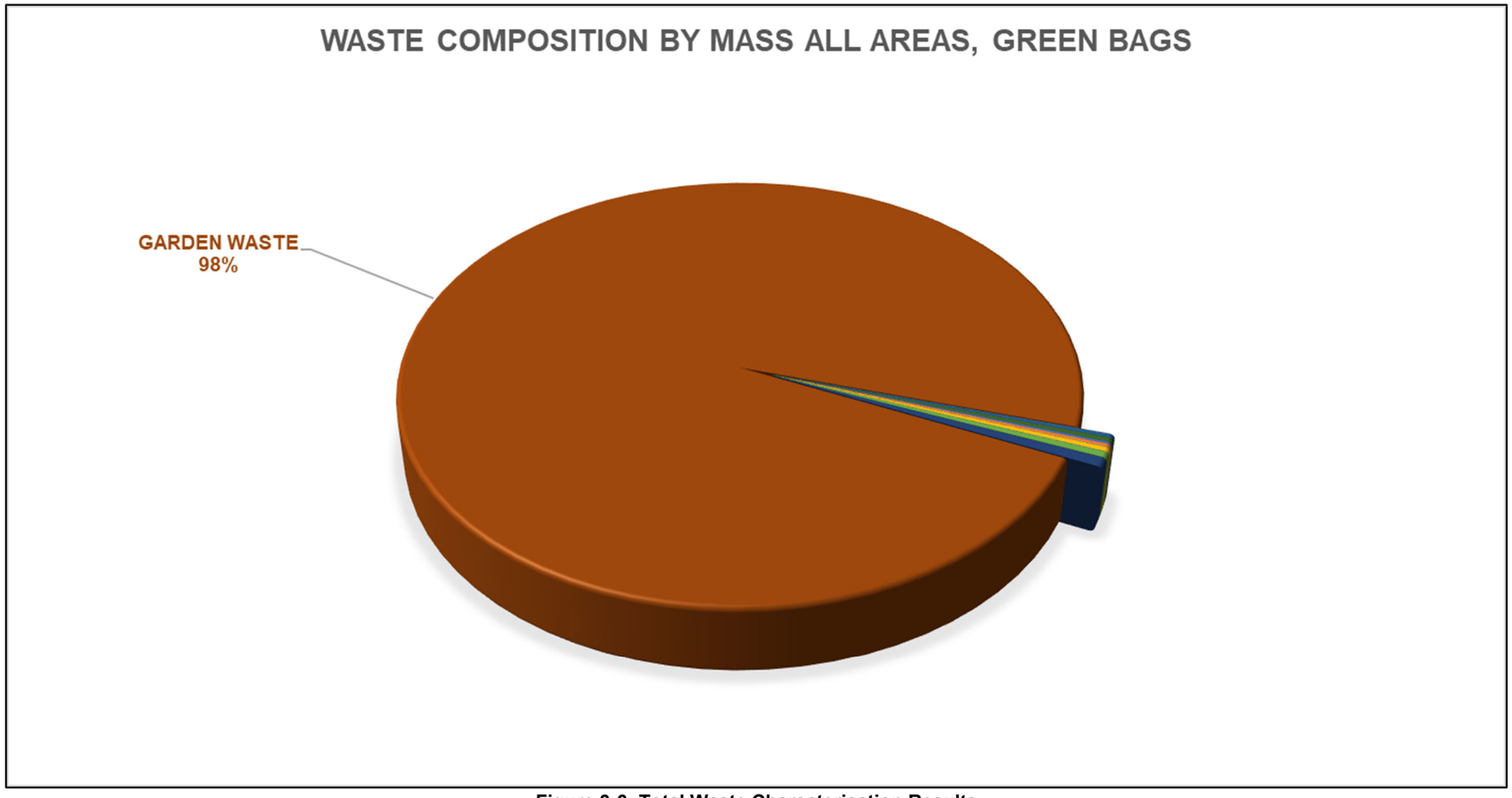


Figure 3-6: Total Waste Characterisation Results

Table 3-10: Total Waste Characterisation Results

CHARACTERISATION RESULTS PER SAMPLED AREA - TOTAL WASTE														
TOWN/ SETTLEMENT	NO. OF BLACK BAGS SAMPLED	PLASTIC FILM	DENSE PLASTIC	EXPANDED POLYSTYRENE	PAPER / CARDBOARD	METALS	GLASS	FOOD WASTE	GARDEN WASTE	SANITARY WASTE	E-WASTE / HOUSEHOLD HAZARDOUS	CLOTHING & TEXTILE WASTE	OTHER	TOTAL
		kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg
Port Owen	50	9.03	12.63	2.88	21.37	3.24	56.42	44.61	85.64	2.58	0.94	3.66	1.78	244.77
Dwarskersbos	41	9.20	14.13	1.75	24.20	2.75	32.05	27.25	95.95	4.75	-	2.75	4.85	219.63
Piketberg Ward 4	106	34.12	38.66	4.87	52.28	9.13	44.27	88.43	173.41	19.40	1.31	10.49	1.96	478.33
Laaiplek	94	22.98	25.56	4.28	45.88	8.23	26.15	53.52	134.86	12.25	0.56	6.59	23.60	364.46
Noordhoek	103	23.04	32.08	3.84	50.72	6.76	32.77	49.50	158.37	67.29	0.21	5.23	15.55	445.35
Redelinghuys & Eendekuil	28	6.974	11.26	1.69	7.76	2.21	14.68	12.34	21.94	2.95	-	5.73	-	87.544
Piketberg Ward 3	50	9.66	10.78	1.31	8.25	1.80	5.65	22.52	46.62	12.35	0.03	2.89	2.24	124.10
Porterville	198	39.58	64.14	5.98	68.25	13.34	46.89	107.85	470.26	27.50	0.32	12.89	4.20	862.11
Velddrif	53	13.96	18.15	1.52	23.40	5.38	22.51	23.50	78.35	3.91	0.06	3.89	4.91	199.54
Aurora	18	2.05	3.10	0.26	6.60	0.60	7.20	5.35	28.45	2.56	-	0.05	2.25	58.47
TOTAL	**741**	**170.60**	**230.50**	**28.39**	**308.72**	**53.45**	**288.59**	**434.86**	**1 293.85**	**155.54**	**3.43**	**54.16**	**61.33**	**3 084.32**
		6%	7%	1%	10%	2%	9%	14%	42%	5%	0%	2%	2%	6%

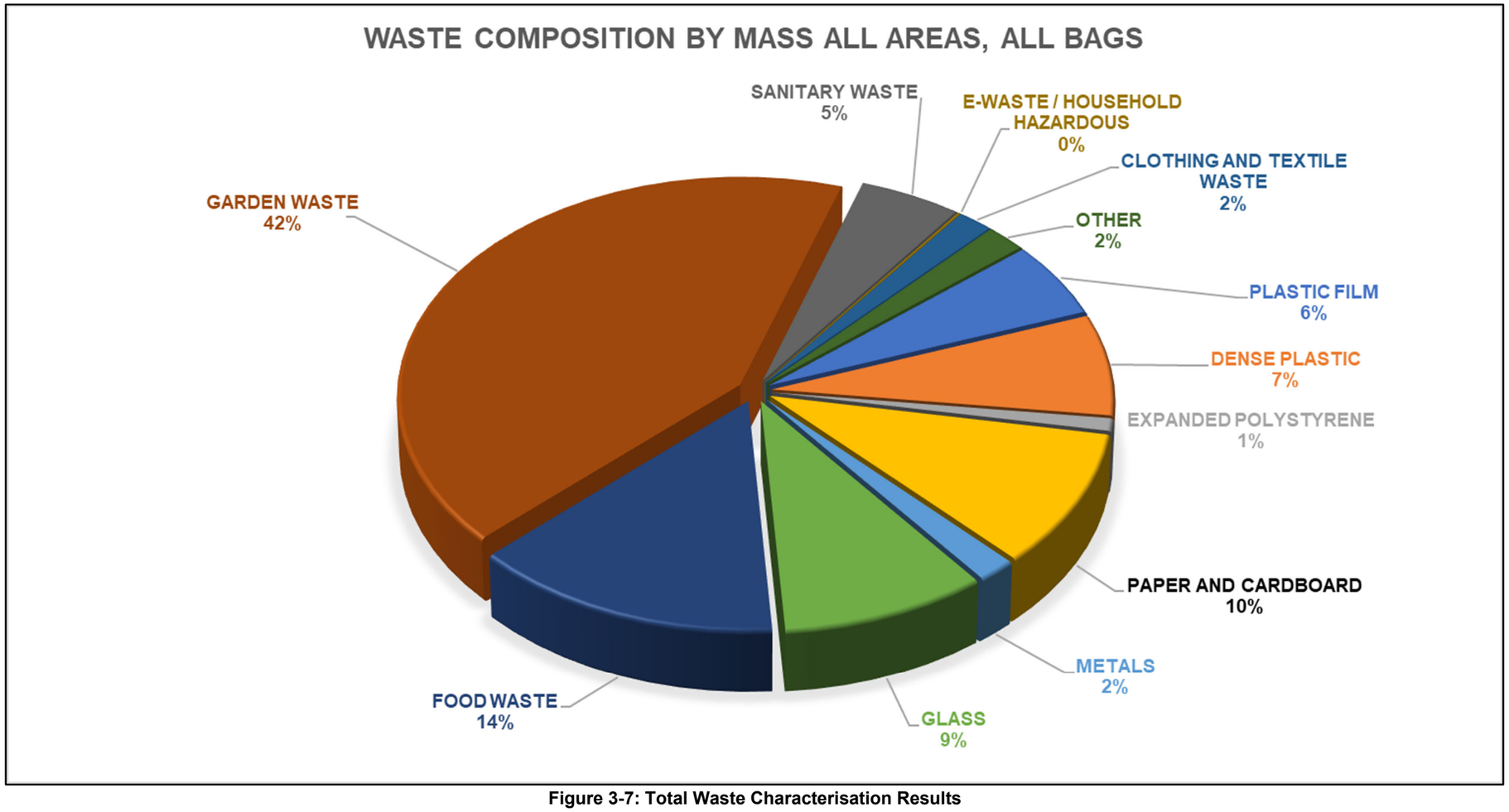


Figure 3-7: Total Waste Characterisation Results

3.3.3.4 Waste Characterisation Study Observations

There are several observations that can be made from the above WCS results. The most obvious among them is the apparent effectiveness of the green bag collection system since more than 98% of the waste in the green bags sampled was garden waste. This in turn resulted in significantly less garden waste being present in the clear or black bags, although there was still some present. Since about 5% of the waste in the black and clear bags were still garden waste it did, however, show that some people still do not use the green bags for their intended purpose. The WCS data capturers did, however, indicate that when municipal waste was present in the green bag, the bag contained very little garden waste showing that the particular resident used the bag as a general waste disposal bag.

In many cases where other waste was found in the green waste bag it was evident that it was placed there as an afterthought. This does indicate that residents are not aware of exactly why they need to fill green bags with garden waste only. Education and awareness about chipping and composting of the green waste is important to ensure the public stays engaged.

The Paper & Cardboard category included TetraPak, which according to the data capturers included a lot of milk cartons. Hard plastics was mostly made up of PET cold drink bottles and soft plastics was a mix of recyclable and non-recyclable mixed plastics. Metals was mostly made up of cans (steel and aluminium) and the sanitary waste category was dominated by mostly disposable baby diapers.

The glass was mostly from wine, beer and other alcoholic beverages and household hazardous waste was mostly made up of discarded medicines.

The clear bags contained some non-recyclable materials and about 18% of waste in the clear bag stream was obviously non-recyclable like food, garden waste and sanitary waste. The vast majority (82%) of the waste in the clear bags were “dry” waste that can be managed and further processed at the recycling facilities which does show that the public uses the clear bags for the intended purposes. Where a clear bag was contaminated with wet waste, it was almost always in significant portions which again shows that certain individual residents just use any bag for any waste, which is not uncommon.

There were a lot of 'obviously' recyclable materials in the black bags that should be placed in clear bags and more awareness can be done in this regard to ensure that the public understands the reason for separating wet and dry waste.

3.3.4 General Waste quantities

3.3.4.1 Municipal Waste

As indicated the Bergrivier Municipality do not make use of internal landfill sites for disposal. The waste from Bergrivier gets sent to either the Velddrif or Piketberg transfer stations from where it is taken to Vredenburg (from Velddrif) and Malmesbury (from Piketberg) Landfills. The waste quantities in **Table 3-11** were provided by the landfills from the start of 2023.

Table 3-11: Disposal quantities as reported by landfills

Municipal General Waste Tonnages			
Month	**From Velddrif to Vredenburg Landfill**	**From Piketberg RTS to Highlands Landfill**	**Municipal Total**
Jan-23	566.4	442	1 008.4
Feb-23	422.5	432	854.5
Mar-23	445.4	539	984.4
Apr-23	335.6	401	736.6
May-23	424.4	396	820.4
Jun-23	402.2	397	799.2
Jul-23	424.9	391	815.9
Aug-23	442.1	413	855.1
Sep-23	245.4	402	647.4
Oct-23	302.8	404	706.8

Municipal General Waste Tonnages			
Month	**From Velddrif to Vredenburg Landfill**	**From Piketberg RTS to Highlands Landfill**	**Municipal Total**
Nov-23	304.6	395	699.6
Dec-23	430.3	453	883.3
Jan-24	380.7	424	804.7
Feb-24	612.5	445	1 057.5
Mar-24	434.7	399	833.7
Apr-24	498.7	441	939.7
May-24	456.3	384	840.3
Jun-24	360.3	380	740.3
Jul-24	432.1	416	848.1
Aug-24	495.9	415	910.9
Sep-24	397.1	378	775.1
Oct-24	495.5	399	894.5
Nov-24	396.4	417	813.4
Dec-24	482.1	418	900.1
Jan-25	567.6	471	1 038.6
Monthly Avg.	**430.3**	**418.1**	**848.34**
Annual Avg.	**5 094.45**	**4 990.5**	**10 084.95**

The above information, represented graphically in **Figure 3-8**, indicates an average total annual disposal rate of just over 10,000 tonnes and an average monthly disposal rate of close to 850 tonnes. This is an increase from the annual 6,745 and monthly average of 562 reported in the previous IWMP five years ago. These values only include waste from residents that receive a waste collection service and thus excludes most of the rural population of the BM. These are the numbers recorded at the landfills and thus also excludes the waste that gets removed from the waste stream through recycling.

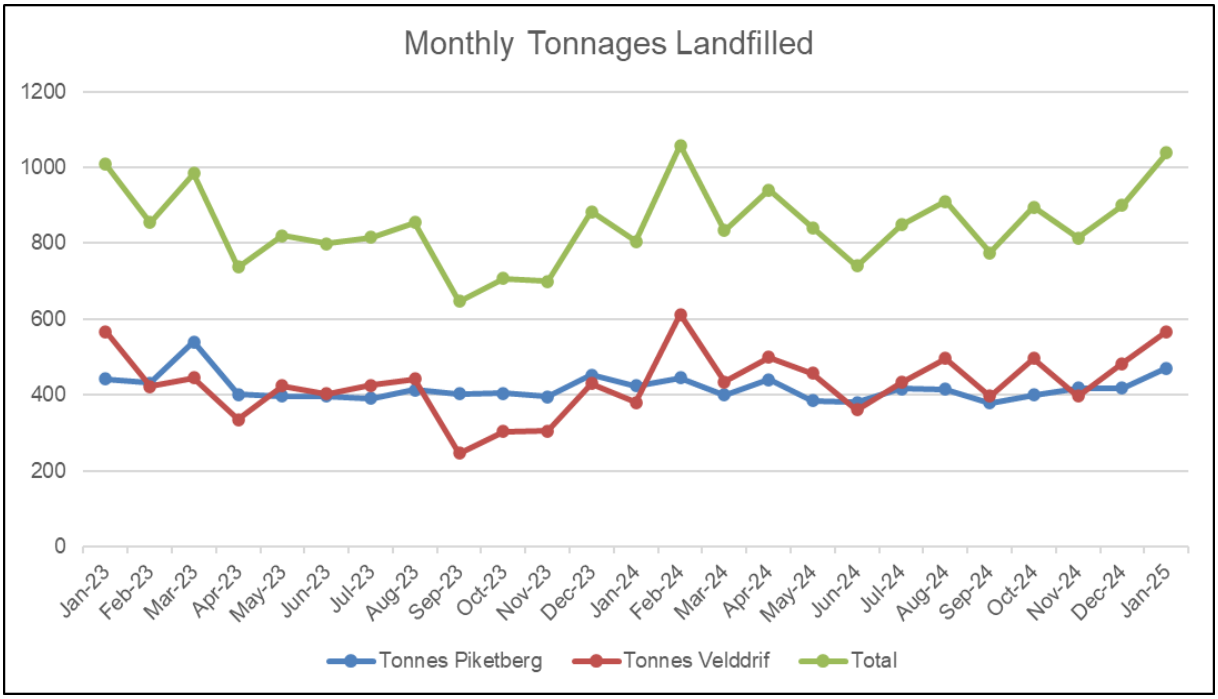


Figure 3-8: Bergrivier waste landfilled

Note that the quantities above do not include building rubble, garden waste nor rural area waste.

3.3.4.2 Building Rubble and Garden Waste

Building rubble quantities fluctuate monthly and is not dependent on population waste generation, but rather economy driven. Building rubble is offloaded at the closed disposal sites for use as capping material or taken to the transfer stations in Bergrivier.

Information in the below table was obtained from the BM and shows building rubble and garden waste volumes received at the different facilities in the last two year. There is also building rubble still accumulating at the Velddrif transfer station and needs to be removed since the facility is not licensed as a landfill. With the building rubble and garden waste not removed from the facility, the transfer station is operating under noncompliance with its waste license and this matter needs to be addressed.

The totals in **Table 3-12** are from the records at the gates of the various facilities in BM and do not include the recycled tonnages, as only the disposed portion of the waste stream is recorded at the landfills and transfer stations. The data is given in m^3 as measured at the gate and converted to tonnes in the final line of each section using 1.5 tonne/m^3 for building rubble and 0.3 tonnes /m^3 for garden waste.

Table 3-12: Garden waste and Building Rubble Disposal

Annual Building Rubble in m^3			
Town	**2023/24**	**2022/23**	**Avg.**
Piketberg	26	27	26.5
Aurora	17	40	28.5
Porterville	30	146	88.0
Velddrif	5 850	6 160	6 005.0
Eendekuil		32	16.0
Redelinghuys		20	10.0
Total (m^3)	**5 923.00**	**6 425.00**	**6 174.0**
Converted to Tonnage	**8 884.50 t**	**9 637.50 t**	**9 261 t**
Annual Garden Waste in m^3			
	2023/24	**2022/23**	**Avg.**
Piketberg	72	101	86.5
aurora	12	35	23.5
Porterville	932	476	704.0
Velddrif	7600	9430	8 515.0
Eendekuil	310	468	389.0
Redelinghuys	468	336	402.0
Total (m^3)	**9 394.00**	**10 846.00**	**10 120.0**
Converted to Tonnage	**2 818.20 t**	**3 253.80 t**	**3 036 t**

The reported annual waste generation tonnages in the above tables are shown graphically in **Figure 3-9** below. From the data the annual waste tonnages (excluding recycling and recovery) are 10,085 tonnes municipal waste, 3,036 tonnes garden waste and 9,261 tonnes building rubble.

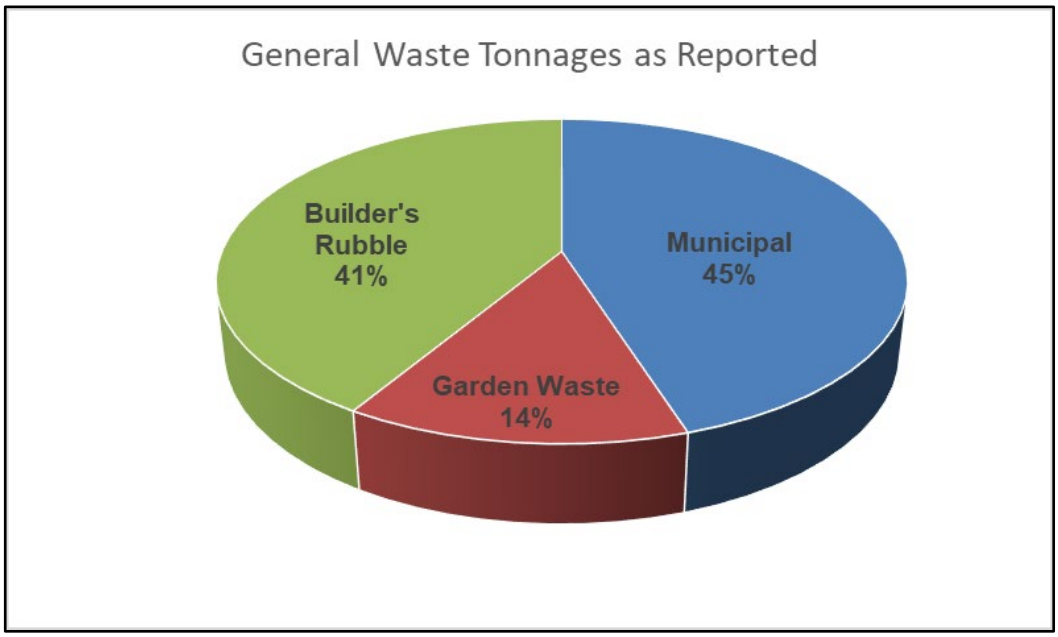


Figure 3-9: Reported General Waste

For comparison and planning the expected waste generation for the BM was also calculated based on the population figures and given in the table on the following page. Waste generation rates of 0.41kg per person per day was used for low-income groups, 0.71kg per person per day for middle income groups and 1.29kg per person per day for high income groups (Avg. 0.81kg/p/d). These are in line with findings from the latest DEA 2023 State of the Environmental Report. Using the available data from the population and income group statistics above, the estimated current and future quantities of waste for the BM was calculated as per **Table 3-13** below.

The reported 10,085 tonnes per year general municipal waste above corresponds well to the expected 12,613 tonnes per year from below when considering the below includes expected garden waste generation also.

Table 3-13: Current and Projected Waste Quantities for Bergrivier

Sub-area	Population (2025)	Waste Generated in Tonnes/ year (2025)	Population (2026)	Waste Generated in Tonnes/ year (2026)	Population (2027)	Waste Generated in Tonnes/ year (2027)	Population (2028)	Waste Generated in Tonnes/ year (2028)	Population (2029)	Waste Generated in Tonnes/year (2029)	Average Waste Generation Factor for Area in kg/p/d
Redelinghuys SP	677	164	685	166	693	168	701	170	709	172	0.66
Bergrivier NU	28 668	6 946	29 001	7 027	29 337	7 109	29 678	7 191	30 023	7 275	0.66
Great Winterhoek Forest Reserve	127	50	128	51	130	52	131	52	133	53	1.09
Eendekuil SP	1 798	492	1 819	498	1 840	504	1 862	509	1 883	515	0.75
Dwarskersbos SP	786	244	795	247	805	250	814	253	823	256	0.85
Aurora SP	677	172	685	174	693	176	701	178	709	180	0.69
Noordhoek	8 390	1 951	8 487	1 974	8 586	1 996	8 686	2 020	8 786	2 043	0.64
Laaiplek	681	216	688	218	696	221	705	223	713	226	0.87
Velddrif SP	2 491	758	2 520	767	2 549	775	2 578	784	2 608	794	0.83
Admiral Island and Port Owen Estates	1 386	494	1 402	500	1 418	506	1 435	511	1 451	517	0.98
Goedverwacht SP	2 328	609	2 355	616	2 383	624	2 411	631	2 438	638	0.72
Beaverlac Nature Reserve	71	14	71	15	72	15	73	15	74	15	0.56
Piketberg SP	14 189	4 248	14 354	4 297	14 521	4 347	14 689	4 398	14 860	4 449	0.82
De Hoek Mine	388	150	392	152	397	154	402	155	406	157	1.06
Wittewater SP	1 001	272	1 013	275	1 025	278	1 037	282	1 049	285	0.74
Porterville SP	8 295	2 408	8 391	2 436	8 488	2 464	8 587	2 493	8 687	2 522	0.80
Voorberg Correctional Services	799	370	809	374	818	379	827	383	837	387	1.27
Total	**72 752**	**19 559**	**73 597**	**19 786**	**74 451**	**20 016**	**75 316**	**20 248**	**76 190**	**20 483**	**0.74**
Excluding Rural	**44 084**	**12 613**	**44 596**	**12 759**	**45 114**	**12 907**	**45 638**	**13 057**	**46 168**	**13 209**	**0.78**

3.3.5 Hazardous waste

In terms of the gazetted Waste Classification and Management Regulations, SANS 10234 must be used. SANS 10234 is the South African National Standard Globally Harmonised System [GHS], for the Classification and Labelling of Chemicals, and must be used by the generator. It thus is a NEMWA requirement to classify the hazardous waste as per SANS 10234, based on the nature of its physical, health and environmental hazardous properties (hazard classes); and the degree of severity of hazard posed (hazard categories).

HCRW requires no special classification in terms of SANS 10234. It is pre-classified as 2b (iii). Refer to NEMWA (Regulation 634: Chapter 7: Annexure A of) stating that waste specified in condition 2 of the Annexure, does not require classification in terms of Regulation 4(1) or Assessment in Regulation 8 (a)(1). Condition 2b, Hazardous Waste: 2b (i) Hazardous waste, asbestos waste and 2b (iii) other: Health Care Risk Waste.

Importantly, if a particular chemical substance in a waste is not listed with corresponding thresholds limits in section 6 of the Norms and Standards, and the waste has been classified as hazardous in terms of SANS 10234, the waste must be considered a Type 1 waste, and the Department of Water Affairs must be informed within 30 days of the particular element or chemical substance being identified.

Not all hazardous waste generators in the Bergrivier Area have the waste classified per SANS 10234. Because the SANS 10234 classification was not used by all the generators of hazardous waste, it poses a challenge to the consultants as the IWMP format should include hazardous waste generated per SANS 10234 requirements. The hazardous waste survey conducted by Aquila Environmental is described in this section with a full copy of the survey attached as **Annexure B**.

3.3.5.1 Background and Methodology

The method of final disposal must be determined as it is indicative of the impact of such hazardous waste on the environment. Also, the hazardous waste's nature was determined as hazardous by observing the treatment and final Disposal at a H:h or H:H landfill, now referred to as Class A landfill.

The Regulation 635 in NEMWA for unclassified hazardous substances within waste is:

"If a particular chemical substance in a waste is not listed with corresponding thresholds limits in section 6 of the Norms and Standards, and the waste has been classified as hazardous in terms of SANS 10234, the waste must be considered a Type 1 waste or chemical substance being identified within 30 days"

If it is assumed that unclassified hazardous waste will be hazardous Type 1 waste, even if one particular chemical substance is not analysed and confirmed as hazardous according to Schedule 3: Defined Waste AND even if it constituent is not the most hazardous substance in the composition of hazardous chemicals, then all of our hazardous waste will Type 1. Thus, all waste will be high hazard waste that must have a final disposal in a Class A landfill, and we cannot apply this deduction. The Minimum Requirements, 1998 under ECA, provides a table for definition of hazardous waste per generator per industry. This Table was adapted and now forms the basis of the industrial sources for classified waste in Schedule 3 of NEMWA.

The industries identified are broadly defined as the following in this study based on Schedule 3 of NEMWA. Industrial Groups indicated by "NO" in column 3 of **Table 3-14** below are not present in the Bergrivier Municipal Area and were therefore omitted from the rest of the study for conciseness.

Table 3-14: Hazardous Waste Industries (NEMWA Schedule 3)

Industrial Group	Industrial Process	Potential generator identified in study area?	Hazardous waste actually generated at potential generator?
1. Wastes from agriculture, horticulture, aquaculture, forestry, hunting and fishing, food preparation and processing	(a) hazardous portion of wastes from agriculture, horticulture, aquaculture, forestry, hunting and fishing	YES	YES
2. Wastes from wood processing and the production of panels and furniture, pulp, paper and cardboard	(a) hazardous portion of wastes from wood processing and the production of panels and furniture (b) hazardous portion of wastes from wood preservation (c) hazardous portion of wastes from pulp, paper and cardboard production and processing	YES	NO
3. Wastes from the leather, fur and textile industries	(a) hazardous portion of wastes from the leather and fur industry (b) hazardous portion of wastes from the textile industry	YES	NO
4. Wastes from petroleum refining, natural gas purification and pyrolytic treatment of coal	(a) wastes from petroleum refining (b) wastes from the pyrolytic treatment of coal (c) wastes from natural gas purification and transportation	NO	N/A
5. Wastes from inorganic chemical processes	(a) wastes from the manufacture, formulation, supply and use (MFSU) of acids (b) wastes from the MFSU of bases (c) wastes from the MFSU of salts and their solutions and metallic oxides (d) metal-containing wastes (e) wastes from the MFSU of sulphur chemicals, sulphur chemical processes and desulphurisation processes (f) wastes from the MFSU of halogens and halogen chemical processes (g) wastes from the MFSU of silicon and silicon derivatives (h) wastes from the MSFU of phosphorous chemicals and phosphorous chemical processes (i) wastes from the MFSU of nitrogen chemicals, nitrogen chemical processes and fertiliser manufacture (j) wastes from the manufacture of inorganic pigments (k) other wastes from inorganic chemical processes	YES	NO

Industrial Group	Industrial Process	Potential generator identified in study area?	Hazardous waste actually generated at potential generator?
6. Wastes from organic chemical processes	(a) wastes from the manufacture, formulation, supply and use (MFSU) of basic organic chemicals (b) wastes from the MFSU of plastics, synthetic rubber and man-made fibres (c) wastes from the MFSU of organic dyes and pigments (d) wastes from the MFSU of organic plant protection products, wood preserving agents and other biocides (e) wastes from the MFSU of pharmaceuticals (f) wastes from the MFSU of fats, grease, soaps, detergents, disinfectants and cosmetics (g) other wastes from the MFSU of fine chemicals and chemical products	NO	N/A
7. Wastes from thermal processes	(a) hazardous portion of wastes from power stations and other combustion plants (b) hazardous portion of wastes from the iron and steel industry (c) wastes from aluminium thermal metallurgy (d) wastes from lead thermal metallurgy (e) wastes from zinc thermal metallurgy (f) wastes from copper thermal metallurgy (g) wastes from silver, gold and platinum thermal metallurgy (h) wastes from other non-ferrous thermal metallurgy (i) hazardous portion of wastes from casting of ferrous pieces (j) hazardous portion of wastes from casting of non-ferrous pieces (k) hazardous portion of wastes from manufacture of glass and glass products (l) hazardous portion of wastes from manufacture of ceramic goods, bricks, tiles and construction products (m) hazardous portion of wastes from manufacture of cement, lime and plaster and articles and products made from them	YES	YES
8. Waste from the photographic industry	(a) hazardous portion of waste from the photo- graphic industry	NO	N/A

Industrial Group	Industrial Process	Potential generator identified in study area?	Hazardous waste actually generated at potential generator?
9. Wastes from the manufacture, formulation, supply and use (MFSU) of coatings (paints, varnishes and vitreous enamels), adhesives, sealants and printing inks	(a) wastes from MFSU and removal of paint and varnish (b) wastes from MFSU of other coatings (including ceramic materials) (c) wastes from MFSU of printing inks (d) wastes from MFSU of adhesives and sealants (including waterproofing products)	YES	NO
10. Wastes from chemical surface treatment and coating of metals and other materials; non-ferrous hydrometallurgy	(a) wastes from chemical surface treatment and coating of metals and other materials (for example galvanic processes, zinc coating processes, pickling processes, etching, phosphating, alkaline degreasing, anodising) (b) wastes from non-ferrous hydrometallurgical processes (c) wastes from sludges and solids from tempering processes (d) wastes from hot galvanising processes	NO	N/A
11. Wastes from shaping and physical and mechanical sur-face treatment of metals and plastics	(a) hazardous portion of wastes from shaping and physical and mechanical surface treatment of metals and plastics (b) wastes from water and steam degreasing processes	YES	YES
12. Oil wastes and wastes of liquid fuels (except edible oils)	(a) waste hydraulic oils (b) waste engine, gear and lubricating oils (c) waste insulating and heat transmission oils (d) oil/water separator contents (e) wastes of liquid fuels (f) hazardous portion of other oil waste	YES	YES
13. Waste organic solvents, refrigerants and propellants	(a) waste organic solvents, refrigerants and foam/aerosol propellants	NO	N/A

Industrial Group	Industrial Process	Potential generator identified in study area?	Hazardous waste actually generated at potential generator?
14. Other wastes not specified in the list	(a) hazardous portion of wastes from end-of-life vehicles from different means of transport (including off-road machinery) and wastes from dismantling of end-of-life vehicles and vehicle maintenance (b) hazardous portion of wastes from electrical and electronic equipment (c) hazardous portion of wastes from off-specification batches and unused products (d) wastes from discarded gases in pressure containers and discarded chemicals (e) wastes from discarded batteries and accumulators (f) wastes from transport tank, storage tank and barrel cleaning (g) spent catalysts wastes (h) oxidising substances wastes (i) aqueous liquid wastes destined for off-site treatment (j) waste linings and refractories	YES	NO
15. Construction wastes	(a) wastes from bituminous mixtures, coal tar and tarred products (b) discarded metals (including their alloys) (c) waste soil (including excavated soil from contaminated sites), stonnees and dredging spoil (d) wastes from insulation materials and asbestos-containing construction materials (e) wastes from gypsum-based construction material (f) wastes from other construction and demolition **[wastes]**	YES	YES
16. Wastes from human or animal health care and/or related research (except kitchen and restaurant wastes not arising from immediate health care)	(a) wastes from natal care, diagnosis, treatment (b) wastes from research, diagnosis, treatment or prevention of disease in humans prevention of disease involving animals	YES	YES

Industrial Group	Industrial Process	Potential generator identified in study area?	Hazardous waste actually generated at potential generator?
17. Wastes from waste management facilities	(a) hazardous portion of wastes from incineration or pyrolysis of waste (b) hazardous portion of wastes from physico/ chemical treatments of waste (c) hazardous portion of stabilised/solidified wastes (d) hazardous portion of wastes from aerobic treatment of solid wastes (e) hazardous portion of wastes from anaerobic treatment of waste (f) landfill leachate wastes (g) wastes from shredding of metal-containing wastes (h) wastes from oil regeneration (i) wastes from soil remediation	NO	N/A

Based on physical and chemical characteristics hazardous waste can be grouped according to the South African National Standards 10228/9 (SANS – 0228/9) into the following classes:

Hazardous Waste Class (SANS - 0228/9)	
Classes	**Description**
1	Explosives
2	Gases
3	Flammable Liquid
4	Flammable Solids/Substances
5	Oxidising Substances
6	Poisonous and Infectious Substances
7	Radioactive Substances
8	Corrosive Substances
9	Miscellaneous Substances

3.3.5.2 Waste Types and Characteristics

Aquila Environmental's scope included the identification of industrial waste, hazardous waste and health care risk waste generators as well as acquiring the available information of these waste types from the generators such as the volumes generated, treatment methods, transport methods, transporters and final disposal.

The data contained in this survey was obtained from owners/employees at the various places of business directly and it must be noted that there is a general lack of knowledge regarding waste generation or disposal throughout the entire spectrum of Industrial Groups, excluding Group 16 (Healthcare) who were all able to provide accurate and up to date information. Information on hazardous waste types within the BM is given in the hazardous waste survey report included as **Annexure C** to the IWMP.

3.3.5.3 Hazardous Waste Quantities

Where the waste generators provide information on the quantities of waste generated it was recorded and reported on. Some of the medical waste is reported as litres since the container used to dispose of the waste is a defined size and the volume of waste within each container was not known. Information is thus presented as obtained from waste generators.

The full report provides more detail on the waste quantities, but it was reported that 37,888.67 kg/annum of health care risk waste was generated and treated as well as 24,046.69 kg/annum of other hazardous waste and about 10,480 litres/annum of hazardous liquid waste.

3.3.5.4 Household Hazardous Waste

Household Hazardous Waste (HHW) is not a priority identified by the municipality. The public is probably also not requesting a special service for HHW. Establishing easy to use collection points for this waste stream is one way in which the presence of fluorescent lightbulbs and other household hazardous waste items can be prevented from going to landfill.

3.4 EXISTING WASTE MANAGEMENT STRUCTURE, SYSTEMS AND PRACTICES

This section discusses the current solid waste management system in the BM. This includes the organisational structure of the Municipality, solid waste collection methods and vehicles, collection schedules, diversion, treatment and disposal.

3.4.1 Organisational structure

Solid waste management for the Bergrivier Municipality falls under Civil Engineering Services, of whom the manager was Mr J. Breunissen who left the Municipality on 31 March 2025 leaving this post currently vacant. Civil Engineering Services falls under the Technical Services Department of which Mr Denwin van Turha is the Director. The current Municipal Waste Management officer is Ms Jamie-Lee van Zyl.

Chapter 3 of the Waste Act states that:

"10.(3) Each municipality authorised to carry out waste management services by the Municipal Structures Act, 1998 (Act No. 117 of 1998), must designate in writing a waste management officer from its administration to be responsible for co-ordinating matters pertaining to waste management in that municipality.

(4) A power delegated or a duty assigned to a waste management officer by virtue of subsection (3) may be sub-delegated of further assigned by that officer to another official in the service of the same administration, subject to such limitations or conditions as may be determined by the municipality.

(5) Waste management officers must co-ordinate their activities with other waste management activities in the manner set out in the national waste management strategy established in terms of section 6 or determined by the Minister by notice in the Gazette."

The designated Waste Management Officer for Bergrivier Municipality is Ms Jamie-Lee van Zyl who was appointed by Council as required by the Waste Act.

Provision must be made for the continuous training and education of the Bergrivier waste management employees. Waste management information sharing/capacity-building events such as the Departmental Waste Forum, Waste Khoro and the IWMSA's WasteCon should be attended by waste management employees determined by the BM.

The civil engineering services organogram is presented in **Figure 3-10** below. The number of new (unfunded) and vacant posts are shown on the Organogram. These posts need to be filled as part of the IWMP implementation plan. A need existed during the previous IWMP for the waste management functions of the manager Civil Engineering Services to be delegated to a newly appointed position. The Civil Engineering Services Manager has many responsibilities of which waste management is only one. This has since been done with the appointment of other technical personnel within Civil Engineering Services as well as the appointment of Ms Jamie-Lee van Zyl as WMO.

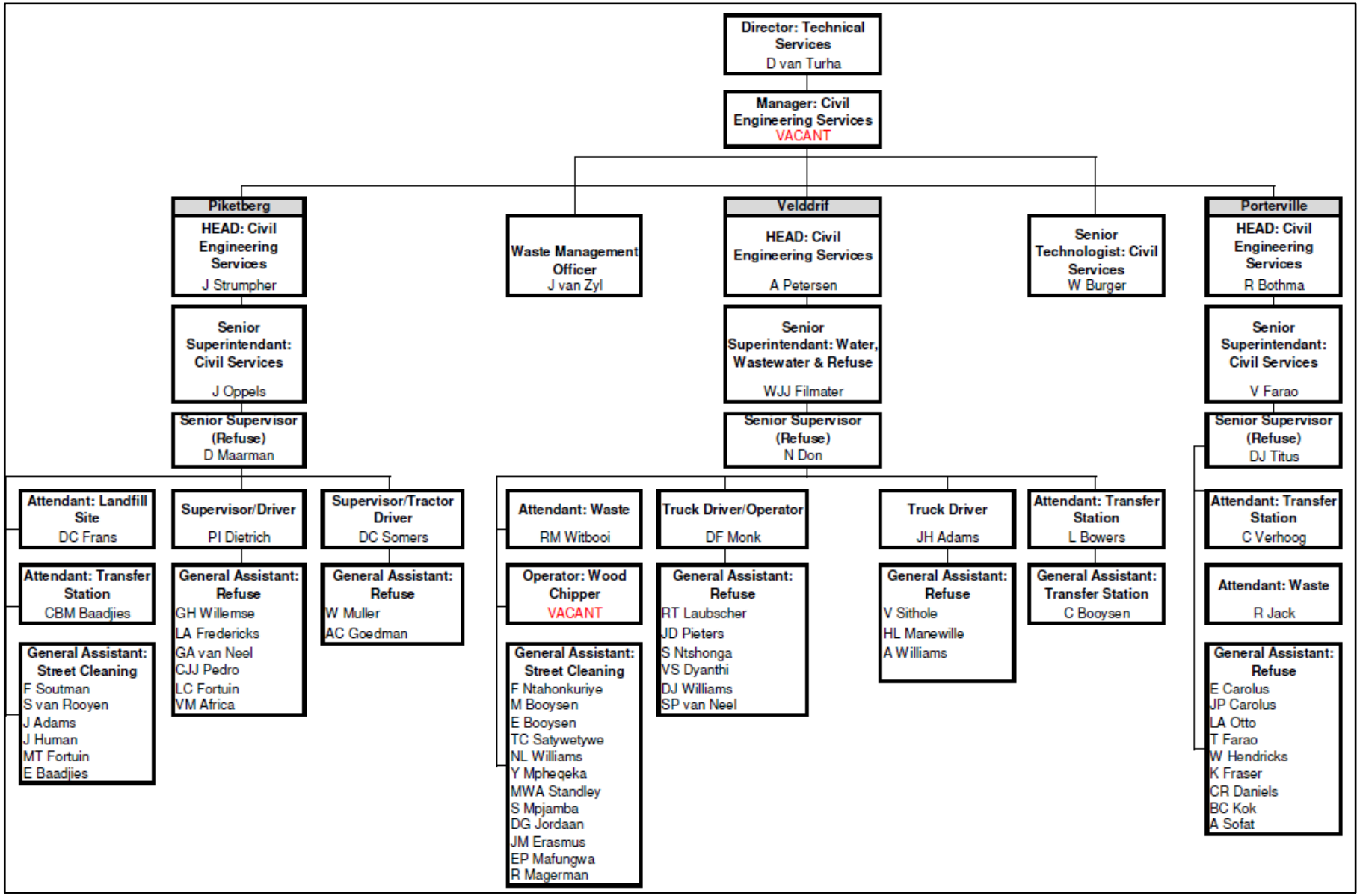


Figure 3-10: Bergrivier Municipality Solid Waste Management Organogram

3.4.2 Collection and cleansing services

The collections are split into three teams as mentioned in the waste organogram. Collections are done for all towns. The waste collection schedule is shown in **Table 3-15.** The BM uses bags (black, clear and green) and not wheelie bins. Waste from Piketberg, Eendekuil, Redelinghuys, Aurora and Porterville's black and clear bags are brought to Piketberg transfer station and MRF. Waste from black and clear bags in Dwarskersbos, Laaiplek, Velddrif and Port Owen is taken to Velddrif transfer station and MRF.

Street cleaning is divided into two teams that collect waste for transport to either Velddrif or Piketberg transfer stations.

Table 3-15: Waste Collection Schedule

Collection Day	Collection Area
Mondays	Dwarskersbos & Port Owen
Tuesdays	Piketberg Ward 4
Wednesdays	Laaiplek, Noordhoek, Porterville (Green Bags), Piketberg Ward 3, Eendekuil & Redelinghuys
Thursdays	Velddrif, Porterville (black and clear bags) & Aurora

BM has six refuse compactors which collect domestic waste and transport these to the transfer stations at Piketberg and Velddrif. Garden waste is collected separately by the Municipality in green bags on the same day as the black bags and taken to the landfill sites for chipping and composting. The BM solid waste collection fleet is shown in **Table 3-16.**

Table 3-16: Waste collection fleet

REG NO	MODEL	TYPE	MAKE	DESCRIPTION	CONDITION
CFP1315	2008	Collection Truck	NISSAN	UD 90 Waste Compactor	Fair/Replace in 2-3 Years
CBY1861	2010	Collection Truck	NISSAN	UD 330 Waste Compactor	Fair/Replace in 2-3 Years
CBY7858	2012	Collection Truck	NISSAN	UD 330 Waste Compactor	Fair/Replace in 2-3 Years
CBY7556	2017	Collection Truck	NISSAN	UD 330 Waste Compactor	Good
CBY10793	2023	Collection Truck	UD TRUCK	UD 330 Waste Compactor	New/Very Good
CBY10825	2023	Collection Truck	UD TRUCK	UD 330 Waste Compactor	New/Very Good
CBY4305	2018	Truck	UD TRUCK	N SERIES	Good
CBY8147	2016	Truck	ISUZU	N Series	Good
CBY8855	2023	Truck	UD TRUCK	CRONER 210	Urgent Replacement
CBY1392	1977	Trailer		Collections Trailer	Urgent Replacement
CBY4300	2001	Trailer		Collections Trailer	Fair/Replace in 2-3 Years
CBY9389	1984	Trailer		Collections Trailer	Fair/Replace in 2-3 Years
CBY11113	2020	Trailer		Collections Trailer	Good
CBY3353	2020	Trailer		Collections Trailer	Good
CFP5186	1985	Trailer		Collections Trailer	Fair/Replace in 2-3 Years

REG NO	MODEL	TYPE	MAKE	DESCRIPTION	CONDITION
CBY3021	1998	Tractor	MASSEY FERGUSON	Mixed Use	Fair/Replace in 2-3 Years
CBY9008	2014	Tractor	CASE	Mixed Use	Good
CBY9158	2017	Tractor	NEW HOLLAND	Mixed Use	Good
CBY4588	2018	Tractor	CASE	JXT	New/Very Good
N/A	2018	Machine	TOMCAT	Garden Waste Chipper	New/Very Good
N/A	2018	Machine	TOMCAT	Garden Waste Chipper	New/Very Good
CBY9273	2023	LDV	NISSAN	NP200 Bakkie	New/Very Good

It is advisable that collection vehicles should ideally not be operated beyond 7 to 8 years in age since the maintenance costs increase dramatically with age as well as down-time which also has cost-implications. It is recommended that all vehicles above 8 years are evaluated to determine the need for replacement. In the event that a vehicle is temporarily out of operation, its function is covered with a vehicle/s from other departments as solid waste collection takes priority.

There are a total of 10,495 municipal waste collection points receiving a bill from the BM for waste collection, and the majority of these points are residential. There are a total of 2,097 indigent households registered that receive a free weekly collection service.

Road networks used to transport waste from collection areas to the landfills and transfer stations are in a good condition. All collection areas are accessible by road and access to the transfer stations and landfills all have well maintained roads.

3.4.3 Levels of service

Bergrivier has been divided into collection areas that have a fixed day per week when waste is collected as shown above. All formal residential households receive door-to-door waste collection services but there are scattered rural farming communities within the municipality that do not receive a waste collection service since they are located long distances from the towns and thus manage their own waste. Although the Municipality does not collect waste per household at Goedverwacht, De Hoek and Wittewater, this service is done through a private company and transported to the transfer station in Piketberg.

Commercial waste is collected on the same scheduled rounds. Garden waste is collected separately by the BM. Collection services are not rendered to farms and rural households because of the transport distances. Nearby farmers off-load their waste at the drop-offs or transfer stations themselves and rural farmers manage their own waste. The current Municipal Waste Management Officer indicated that currently 100% of registered households receive a weekly refuse collection service.

The residents and businesses use black refuse bags and the collection frequency is once per week. Two black bags are allowed per household per collection. Source separation is practised and clear bags are used for recyclable waste. The clear bag is filled with mixed recyclables and is collected separately for processing by private companies at the Piketberg and Velddrif Material Recycling Facilities. The BM collects the clear bags from Aurora, Redelinghuys and Eendekuil on the same day as the black and green bags, and BM makes use of private recycling collection companies to collect clear bags at the other towns. Currently Zeevas Cleaning Services collect in Velddrif and Dwarskersbos, Barakh Projects collects in Piketberg, and Pison Hawila does collections in Porterville. The contracts for these collection companies are put out to tender every three years.

3.4.4 Waste related complaints

The Bergrivier Municipality makes use of a formal complaints registering system. All complaints received are logged on their internal system. Each town has its own client services official who records the complaint and the responsible person is entered into the system along with the complaint. The responsible person can then see all details of the complaint when he logs in and performs the necessary task or delegates it. Feedback must be entered in order to finalise the entry.

Most complaints received are related to illegal dumping and farmers having to pay for offloading waste at the transfer station. The calls regarding the illegal dumping were the public informing the Municipality of places where illegal dumping took place. The farmers' complaints were that if they are paying taxes, they should be able to offload their waste free of charge at the transfer station. The Waste Management Officer entered into discussion with these persons to clarify that the tariffs (refer heading 3.5.2) are required for transfer station operation. As Bergrivier does not make use of disposal sites within the Municipal boundaries, there are transport costs to be considered as well as disposal fees at the landfill sites that are being used. This service cannot be rendered free of charge.

3.4.5 Waste minimisation, re-use, recycling initiatives

3.4.5.1 Recyclers

The Bergrivier Municipality has appointed two private recyclers; one operating per recycling facility at the transfer stations.

Piketberg Civils is currently operating at the Piketberg MRF. They receive clear bags (source separated recyclables) from the collection company in Piketberg and BM collects the recyclables from Eendekuil and Redelinghuys and transports it to the recycler. Additional recyclables are also offloaded directly at the transfer station by the public.

Rocket Trading currently operates the Velddrif MRF. The Municipality collects the recyclables in Aurora and private companies do collections at Velddrif and Dwarskersbos and transports it to the Velddrif MRF where the recycler processes it.

3.4.5.2 Recycling statistics

The available recycling quantities and types of recycled material were provided by the Municipality for the recycling facilities at the Velddrif and Piketberg MRFs. These facilities mainly focus on the recycling of Plastic, Cardboard (and paper), Metals and Glass as shown in the figures below. The Velddrif MRF recycles on average about 23 tonnes per month and the Piketberg RTS recycles in the order of 42 tonnes per month total.

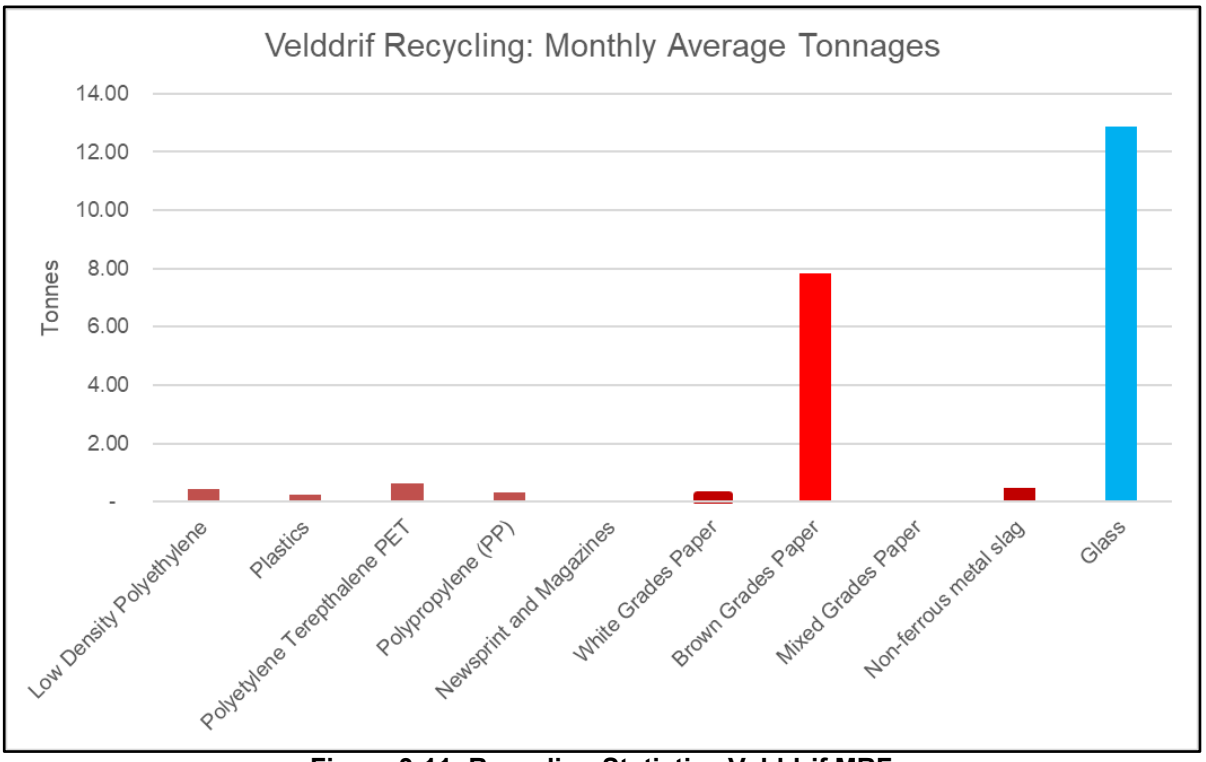


Figure 3-11: Recycling Statistics Velddrif MRF

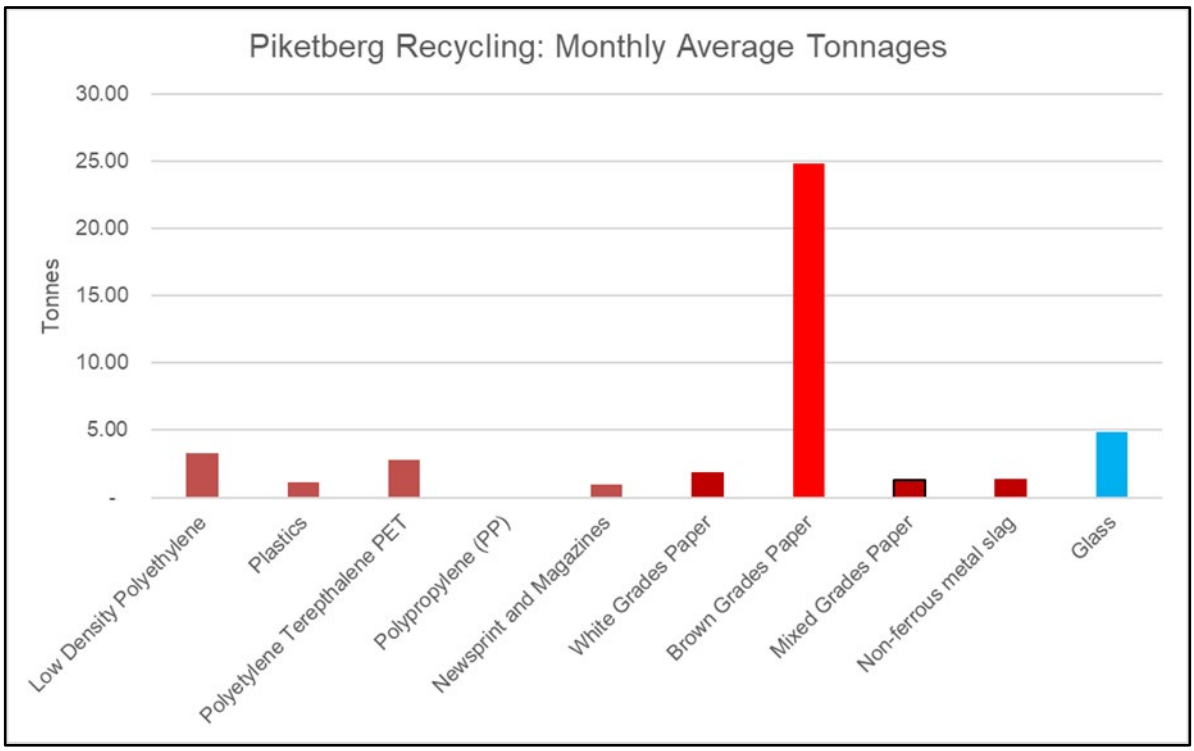


Figure 3-12: Recycling Statistics Piketberg RTS

From the above information the impact of recycling on the diversion of waste from landfill equates to an average of almost 790 tonnes per annum resulting in an 8% diversion per mass. The latest (May 2025) prices for baled recyclable materials per type delivered to Cape Town are as shown in **Table 3-17**.

Table 3-17: April 2025 Prices of Recovered Materials

MATERIAL	PRICE IN RAND/TONNE FOR BALED MATERIAL
Cardboard	1 900
White Paper	3 000
Newsprint	1 200
Mixed Paper	850
Metals (Mainly cans)	2 000
Glass (All colours, Crushed)	400
Plastic (PET, No 1, White, Blue)	8 000
Green PET	6 500
Plastic (PET, No 1, Brown & other colours)	6 500
Plastic (HDPE, No 2)	5 500
Plastic (LDPE)	Unwashed: 3 000 Washed: 5 000
Plastic (Polypropylene, No 5)	2 500
Plastic (Polystyrene, No 6)	Currently no buyers

The recycling market is an ever changing one with prices and demand for certain materials fluctuating all the time. Cardboard prices had been low at the start of 2025 but has recently increased again. About a year ago there was almost no market for PET, with recyclers having to stockpile it at their facilities, and very recently the price for PET increased dramatically. Polypropylene plastic prices also increased but currently there is no real demand for it. Metal is fetching a higher price than normal and glass has been constant for some time.

3.4.5.3 Organic waste and building rubble diversion

Organic Waste:
The municipality has a system for the separate collection of garden waste from households and businesses through use of a green bag. Green bag waste is taken to either the old Piketberg landfill, the Velddrif transfer station, Aurora landfill or Redelinghuys landfill where it is chipped and stored for composting. The Municipality has a programme where they empower the EPWP workers to compost the chipped garden waste and sell it to generate income for themselves.

The organic fraction of the generated and collected household black bag waste stream is 37% by weight as per the waste characterisation study discussed under heading 3.3.3 above. This is made up of 31% food waste and 6% garden waste. The minor fraction of garden waste in the black bags and the fact that the green bags contained 98% garden waste shows that the separate collection of grand waste does have a positive impact on diversion of garden waste.

Composting of garden waste at a centralised composting facility requires approximately a minimum 350 tonnes of garden waste per month (4,200 per annum) in order to achieve financial sustainability. From the volumes estimated from loads received, it was calculated that the BM treats approximately 3,000 tonnes of garden waste per annum at the Velddrif and Piketberg facilities combined. These volumes do not allow for the sustainable operation of a standalone composting facility and thus BM handles its garden waste in smaller operations at the different facilities.

The BM owned garden waste chippers are rotated between the Piketberg, Porterville, Velddrif and Aurora sites as and when required. Waste is then chipped and set aside for composting through the mayor's community composting projects.

There is a shortcoming in that the volumes of chipped garden waste converted to compost and/or mulch that leaves the facilities are not measured. The BM needs to report on the actual diversion of garden waste through composting.

If diversion of garden waste through the green bag system is improved upon, the possibility needs to be explored to also include food waste with the garden waste in the green bags.

Building Rubble:
It is reported that approximately 9,260 tons of building rubble gets disposed of at the landfills and the Velddrif transfer station annually. More than 97% of this reported tonnage is disposed of at the Velddrif transfer station alone, and this is continually creating a challenge since the waste is not removed from site and this facility is not licensed as a landfill site.

Building rubble can be either utilised as a cover material on a landfill without any significant form of treatment or it can be crushed and used as a filling material, road building material or brick making material. The choice of reuse is largely determined by the available quantities, since a small crusher can crush up to 120 tonnes per hour. However when feeding of rubble into a crusher is done with only one loader and not by an in-feed conveyor belt, then the capacity is limited to the effectiveness of the loader and would then typically be approximately 105m^3 per day.

Considering the reported tonnages of building rubble, the smallest crusher, fed by one loader, will require less than 30 days per year to crush all the building rubble disposed of at the Velddrif transfer station. With the building rubble on site estimated to be almost 10 000m^3 it will be possible to crush all the building rubble on site in less than 100 days, even with a small crusher.

What would typically be advised for a Municipality that generates volumes of building rubble that are too small to permanently occupy a crushing plant, is to stockpile building rubble until a sufficient volume, say 5 days of crushing, is available that would economically justify the temporary establishment of a mobile crushing plant. Spatial provision for such a storage area can be made under the existing WML conditions since the crushing of building rubble is normally one of the listed activities in the WML.

The capital requirement to procure a crusher would be approximately R4 Million and the municipal operation thereof would amount to some R0.5 Million per annum. The capital cost to add a crushing area to a licenced composting facility would, however, only be about R1.8 Million. The total net cost, capital and operational, for the Municipality to establish a crushing area on a licenced area, procure a crusher, crush the rubble departmentally and use the crushed material internally, would be in the order of R100 to R150 per tonne of building rubble. Should the municipality contract external service providers to render this service, the net cost would be approximately R80 per tonne or less, but the Municipality would still need to provide the crushing area. This net cost makes provision for a saving per tonne of having to procure this filling material commercially and shows that the Bergrivier Municipality should rather outsource the beneficiation of building rubble than procure and operate a crusher themselves. This also provides the opportunity to award this work (in possible combination with garden waste chipping) to a SMME contractor and in this way give back to the community.

3.4.6 2024 Velddrif Compliance Notice

In September 2024 the BM received a compliance notice from the D:EA&DP (Ref: 14/3/9/E1/9/0654/24) related to use of crushed building rubble waste at the Velddrif site. The BM apparently used crushed building rubble to fill up and harden an area near the Velddrif RTS just south of the adjacent WWTW. The compliance notice relates to D:EA&DP considering the use of the material to fill and harden the area to be mixed general waste and building rubble and not inert building rubble as argued by the BM. The BM are in the process of addressing he requirements if this compliance notice.

3.4.7 Awareness & Education

The BM is very active in awareness and education campaigns related to recycling and sustainable waste management. They publish a quarterly external municipal newsletter called the Bergrivier Bulletin. This newsletter is accessible to everyone in the Municipality and provides valuable information on what is happening within the BM. The newsletter contains regular news on solid waste management, and in the latest version of March 2025 the BM educated the public on illegal dumping. Similarly in the December 2024 version the public was reminded about the importance of recycling. Extracts from these two publications are shown below as **Figure 3-13.**

Figure 3-13: Education and Awareness in the Bergrivier Bulletin

The BM also engages with the public on waste management matters in the following ways:

- Awareness raising on recycling is conducted at schools in the form of educational performances teaching learners how and what to recycle.
- BM holds meetings and direct communication with businesses and members of the public encouraging recycling.
- The BM puts up recycling street signage and boulevard banners in all municipal towns.
- They publish the Bergrivier Bulletin and social media posts on recycling and illegal dumping on the Ward WhatsApp groups and on the municipal Facebook page (https://www.facebook.com/BergrivierMunisipaliteit)
- They do door-to-door awareness raising on municipal waste management services and facilities in Velddrif, Piketberg and Porterville.
- Public notices on waste management.
- Recycling calendars distributed to the public.
- Awareness conducted via the municipal outdoor and internal TV screens (reception areas).

3.4.8 Waste disposal facilities

The operational and closed waste disposal facilities in the BM area are discussed in this section.

3.4.8.1 Landfills

Operating Landfills

The BM currently has no licensed operational waste disposal sites and as a result remaining airspace volumes are not applicable to Bergrivier. The remaining lifetime estimates for the closed sites are discussed later and are effectively nil, but cannot be rehabilitated immediately because of budget constraints. The remaining lifetimes of the drop-off facilities and transfer stations are indefinite with regular maintenance or subject to license renewals and approvals.

All collected municipal waste is off-loaded either at the Piketberg or Velddrif Refuse Transfer Stations for long haul transport. Waste from the Velddrif RTS is transported for disposal at the Vredenburg landfill as per agreement with the Saldanha Bay Municipality. Waste from the Piketberg RTS is transported for disposal at the Highlands landfill near Malmesbury as per agreement with the Swartland Municipality.

Closed Landfills

There are a number of closed waste disposal sites within the BM area that have ceased operations but still require final capping and rehabilitation. These sites are located near:

- Aurora (S32°42'49.39"; E18°29'14.30")
- Piketberg (S32°53'57.20"; E18°46'36.49")
- Porterville (S33°02'10.38"; E18°59'26.78")
- Redelinghuys (S32°29'12.01"; E18°31'42.19")

All the above sites still accept building rubble and garden waste and they have valid closure licences. The Municipality also had a closure licence issued in 2011 for a landfill near Velddrif but this licence lapsed in 2021 and the property has since been sold to a private party.

Figure 3-14: Closed Aurora Landfill (Yellow Border) and Drop-off (Red Border)

Figure 3-15: Closed Piketberg Landfill

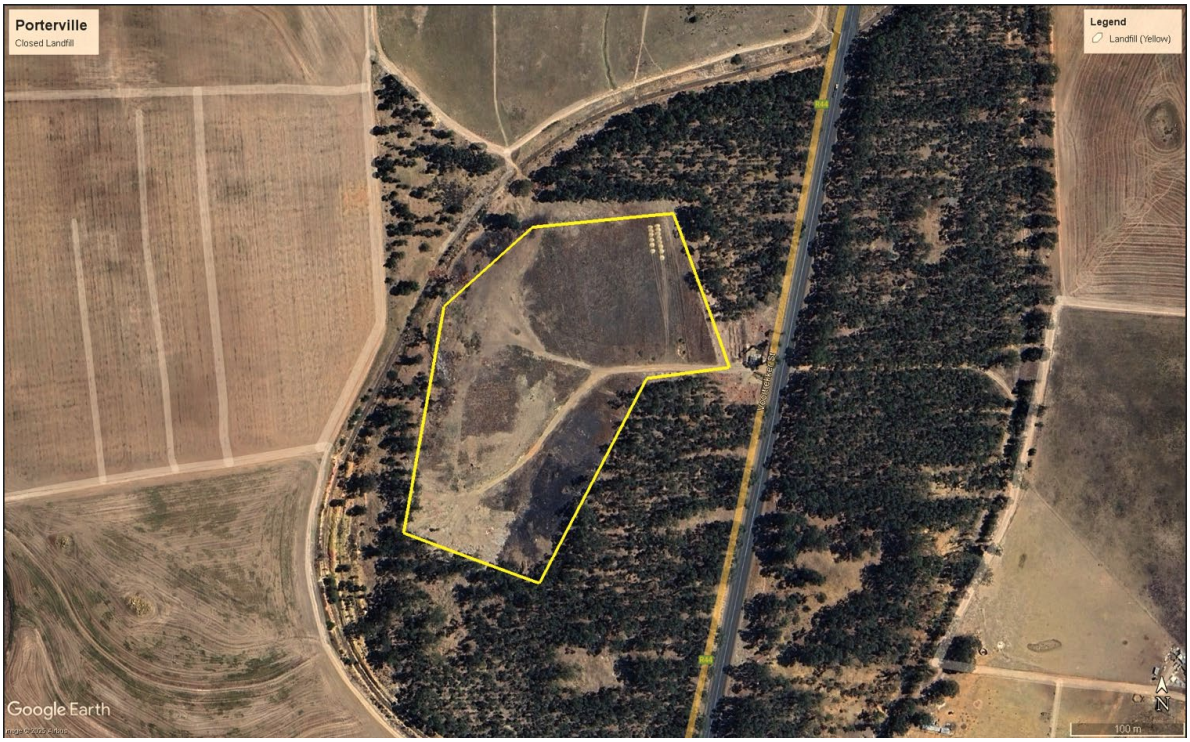


Figure 3-16: Closed Porterville Landfill

Figure 3-17: Closed Redelinghuys Landfill

The DEA is assisting Municipalities in acquiring licenses for all unlicensed sites. The closure license for Aurora (Ref. nr: 19/2/5/4/F1/1/WL0018/19), Piketberg (Ref. nr: 19/2/5/4/F1/11/WL0017/19), Porterville (Ref. nr: 19/2/5/4/F1/12/WL0019/19) and Redelinghuys (Ref. nr: 19/2/5/4/F1/13/WL0020/19) has been issued and updated in September 2024.

Table 3-18 shows the rehabilitation cost estimates as of June 2024 according to the annual GRAP19 closure cost report that each Municipality is required to submit to national treasury. The implementation section shows these cost estimates escalated to the planned year of rehabilitation.

Table 3-18: Landfill rehabilitation cost estimates

Landfill	Aurora	Piketberg	Porterville	Redelinghuys
Rehab cost estimate (excl. VAT)	R9 543 444.05	R57 805 438.05	R53 093 849.93	R3 464 336.45

Provision must be made to rehabilitate the Aurora, Piketberg, Porterville and Redelinghuys Landfills in line with the closure licenses issued. Commencement dates for decommissioning are currently between August and September 2029 and an application to extend these dates would be required if commissioning does not commence in time. Similarly these closed sites also require internal and external audits to be conducted in accordance with their recently amended closure licenses.

External Audits

The waste licences of the above closed landfill facilities require them to be externally audited on an annual basis the external audits evaluate compliance or non-compliance with the license conditions. The external audit compliance scores obtained for the closed landfill facilities during the most recent round of external audits in May 2025 are Aurora (59.75%), Piketberg (58.33%), Porterville (54.94%) and Redelinghuys (36.03%).

For the most part the license conditions where the facilities received a partial or non-compliance score were similar, and the areas where the municipality needs to give attention to the closed facilities are listed below:

- Waste placed outside licensed boundary (Aurora, Redelinghuys & Piketberg).
- Facility signage as required by the waste licence s need to be erected.
- Fencing and access control. Most sites are not fenced with a 1.8m high fence around the full perimeter and not all sites have adequate access control in place.
- Establishing monitoring committee meetings.
- Daily cover and compaction of waste.
- Developing of site documentation like emergency preparedness plans.
- Establish groundwater monitoring boreholes and undertake regular water quality monitoring (groundwater monitoring plans were developed during het recent audits).
- Stormwater management needs to be upgraded at all of the sites.

3.4.8.2 Garden Waste & Building Rubble Sites

There are no dedicated garden waste or building rubble sites in the BM. Garden waste is chipped and stored at the Piketberg, Porterville and Aurora closed landfills and at the Velddrif Transfer Station and is available for farmers or industry to use. Some of the chipped garden waste is also composted through a programme with extended public works that the mayor put in place.

Building rubble is currently placed at the Velddrif transfer station and the Piketberg landfill and is creating a challenge in Velddrif since this facility is not licensed for the disposal of building rubble. The building rubble needs to be removed from this site urgently and beneficiated. This can be done by breaking it down mechanically and using it as cover material at the landfill sites once all traces of general waste has been removed from the building rubble.

3.4.8.3 Waste Transfer Stations

The BM operates two Solid Waste Transfer Stations at Piketberg and Velddrif. Velddrif transfer station has a 2008 License (Ref: 12/9/11) that is still valid, but the Piketberg transfer station is not licensed as a separate entity from the recycling facility (see below for registration of recycling facilities). Both these transfer stations have 3 x 30m^3 containers on site which, when filled is removed from site to the respective landfills as discussed. Government Notice No.926 (Norms and Standards for the Storage of Waste) requires facilities that has the capacity to store more than 100m^3 of waste to be registered with D:EA&DP. The storage capacity of the containers on site are a combined 90m^3 each which is less than the N&S threshold, but the BM need to confirm with D:EA&DP if N&S registration would still be required based on the Authority's definition of capacity.

Figure 3-18: Piketberg Solid Waste Transfer Station (Recycling Facility bottom right))

Figure 3-19: Velddrif Solid Waste Transfer Station (Recycling Facility bottom right)

Waste that is collected by the Municipality at Eendekuil, Piketberg, Porterville Aurora and Redelinghuys is transported to the Piketberg transfer station from where it is hauled for disposal at the Highlands landfill near Malmesbury. Waste that is collected at Velddrif and Dwarskersbos is transported to the Velddrif transfer station from where it is hauled to the Vredenburg landfill.

3.4.8.4 Materials Recovery Facilities

There are two formal MRFs in the BM area located near the solid waste transfer stations at Velddrif and Piketberg. The Velddrif MRF (Ref: 19/2/12/3/2(0008/22) and the Piketberg MRF (Ref: 19/2/1/2/3/2(0026/21) are both registered with D:EA&DP in accordance with both Government Notice No. 926 (National Norms and Standards for Storage of waste) **AND** Government Notice No. 1093 (National Norms and Standards for the sorting, shredding, grinding, screening or baling of general waste). These facilities need to be audited in accordance with these Norms and Standards requirements without including the adjacent Refuse Transfer Stations.

3.4.8.5 Public Drop-off Facilities

Public Drop-off Facilities have been provided in Aurora (S32°42'50.36"; E18°29'13.04") and Porterville (S33°0'58.50"; E18°59'12.53"). These facilities receive only general waste and do not require licensing. Waste is transported from the Aurora and Porterville drop-offs to the Piketberg transfer station.

Figure 3-20: Aurora Drop-off

Figure 3-21: Porterville Drop-off

3.4.8.6 Disposal Facilities used outside the Bergrivier Municipality Boundaries

The hazardous waste generated in BM is transported to the privately owned Vissershok Waste Management Facility (VWMF) by contractors acting on behalf of the generators of such waste. The municipality is not responsible for the management of hazardous wastes. The Vissershok site has a valid landfill licence to accept hazardous waste. The site is situated some 800m west of the N7 at Vissershok and is operated and audited in terms of its permit conditions.

The general waste disposal facilities used outside the BM borders are the Vredenburg and Highlands landfills as discussed above.

3.4.8.7 Contaminated Land

There are no known contaminated land or unpermitted landfills prior to ECA 1989 in BM. All contaminated land is discussed under “Closed Landfills”.

3.4.8.8 Informal Salvaging

At some of the waste management facilities this has been identified as a concern. Although with security fencing, groups of informal salvagers gain entry to the facilities and salvage what they can before law enforcement arrives to assist with control. Funding does not allow for security guards which is something that could improve the state of the facilities.

The recycling facilities at Piketberg and Velddrif are both registered under the NEMWA Norms and Standards for storage of waste. Private contractors are currently appointed for the operation of the recycling activities as previously discussed. The BM need to engage with the operators of these facilities on the possible integration of the informal salvagers into the process.

3.5 ECONOMICS AND FINANCING OF SOLID WASTE MANAGEMENT PRACTICES

3.5.1 Current Solid Waste Management System Costs & Budget

Table 3-19 below reflects the Bergrivier Capital Budget for the waste management section for the next three years and **Table 3-20** reflects the current and future operational budget for the municipality's waste management, which includes the cost of providing a collection service to the indigent households. The budgets show that the municipality clearly does not have the funding available to close and rehabilitate the old landfill sites as discussed earlier.

Table 3-19: Bergrivier Waste Management Capital Budget

Town	Description	Budget 2025/2026	Budget 2026/2027	Budget 2027/2028	Type	Funding Source
Porterville	Skips at Waste Drop -Off	-	R150,000	-	New	Internally Generated Funds
All Towns	Fencing at Landfill Sites	R500,000	-	-	Upgrade	Internally Generated Funds
Redelinghuys	Solid Waste Drop-Off	R500,000	-	-	New	Borrowing
Eendekuil	Solid Waste Drop-Off	-	R1,500,000	R1,500,000	New	Internally Generated Funds
	Totals:	**R1,000,000**	**R1,650,000**	**R1,500,000**		

Table 3-20: Bergrivier Municipality Waste Management Operational Budget

Description	Detail	Budget 2025/26 (Rands)	Budget 2026/27 (Rands)	Budget 2027/28 (Rands)
SOLID WASTE REMOVAL				
Basic salaries	Employee Related Costs	7 031 000	7 569 000	8 034 490
Temporary workers	Employee Related Costs	150 000	247 000	262 190
Temporary workers EPWP's own recycling awareness	Employee Related Costs	50 000	408 000	433 090
Housing	Employee Related Costs	15 000	17 000	18 050
Bonus	Employee Related Costs	586 000	631 000	669 810
Assistance	Employee Related Costs	156 000	168 000	178 330
Long service	Employee Related Costs	-	-	-
Transport	Employee Related Costs	138 000	140 000	148 610
Assistance Levy	Employee Related Costs	41 000	44 000	46 710
Overtime non structured	Employee Related Costs	583 000	630 000	668 750
Leave redemption	Employee Related Costs	109 000	118 000	125 260
Group insurance	Employee Related Costs	156 000	168 000	178 330
Medical	Employee Related Costs	366 000	394 000	418 230
Industrial Council	Employee Related Costs	6 000	7 000	7 430

Description	Detail	Budget 2025/26 (Rands)	Budget 2026/27 (Rands)	Budget 2027/28 (Rands)
Pension	Employee Related Costs	1 266 000	1 363 000	1 446 820
Unemployment insurance fund	Employee Related Costs	64 000	69 000	73 240
Admin Cost	Internal Charges	718 000	750 000	750 000
Advertising (Auctions)	Operational Costs	-	-	-
Advertising (Corporate Municipal Activities)	Operational Costs	-	-	-
Advertising (Municipal Newsletters)	Operational Costs	-	-	-
Advertising (Signage)	Operational Costs	-	-	-
Advertising (Staff Recruitment)	Operational Costs	-	-	-
Advertising (Tenders)	Operational Costs	-	-	-
Fuel	Inventory consumed	-	-	-
Fuel	Inventory consumed	-	-	-
Fuel (New Vote)	Operational Costs	1 200 000	1 254 000	1 285 350
Chemicals	Inventory consumed	3 000	3 000	3 080
Services	Operational Costs	48 000	50 000	51 250
Services (water)	Internal Charges	56 000	59 000	59 000
Services (Electricity)	Internal Charges	135 000	141 000	141 000
Services (Sewer)	Internal Charges	1 000	1 000	1 000
Services (Refuse)	Internal Charges	1 000	1 000	1 000
Printing and Binding	Operational Costs	26 000	27 000	27 680
Tools & Equipment	Operational Costs	38 000	40 000	41 000
Rent – Machinery	Operational Costs	230 000	240 000	246 000
Congress Fee	Operational Costs	-	-	-
Membership	Operational Costs	-	-	-
Licence – Vehicles	Operational Costs	272 000	284 000	291 100
Spares & Materials	Inventory consumed	52 000	54 000	55 350
Herbicide	Inventory consumed	12 000	13 000	13 330
Training	Operational Costs	5 000	5 000	5 130
Training Levy	Operational Costs	52 000	54 000	55 350
Plants & Trees	Contracted Services	-	-	-

Description	Detail	Budget 2025/26 (Rands)	Budget 2026/27 (Rands)	Budget 2027/28 (Rands)
Postage	Operational Costs	-	-	-
Professional Services	Contracted Services	12 000 000	12 540 000	12 853 500
Professional Services (Research & Advisory)	Contracted Services	-	-	-
Professional Services (Cleaning of transfer stations)	Contracted Services	1 500 000	1 567 000	1 606 180
Professional Services (Master planning)	Contracted Services	-	-	-
Legal Fees	Contracted Services	-	-	-
Travel & Accommodation (Travel Agencies and Visas)	Operational Costs	-	-	-
Travel & Accommodation (Accommodation)	Operational Costs	1 000	1 000	1 030
Travel & Accommodation (Daily Allowance)	Operational Costs	1 000	1 000	1 030
Travel & Accommodation (Food & Beverage Served)	Operational Costs	-	-	-
Travel & Accommodation (Incidental Cost)	Operational Costs	-	-	-
Travel & Accommodation (Car Rental)	Operational Costs	-	-	-
Travel & Accommodation (Own Transport)	Operational Costs	3 000	3 000	3 080
Travel & Accommodation (Public Air Transport)	Operational Costs	-	-	-
Travel & Accommodation (Public Road Transport)	Operational Costs	-	-	-
Cell phone cost	Operational Costs	-	-	-
Donations Expense (Temporary Workers)	Employee Related Costs	-	-	-
Donations Expense (Safety Clothing)	Operational Costs	-	-	-
Donations Expense (Contractors – Audi Visual Services)	Contracted Services	-	-	-
Donations Expense (Tools and Equipment)	Operational Costs	-	-	-
Donations Expense (Travel and Accommodation)	Operational Costs	-	-	-
Donations Expense (Advertising Signs)	Operational Costs	-	-	-
Donations Expense (Public Road transport)	Operational Costs	-	-	-
Donations Expense (Public Air Transport)	Operational Costs	-	-	-
Donations Expense (Parts & Materials)	Inventory consumed	-	-	-
Donations Expense (Contractors)	Contracted Services	-	-	-
Donations Expense (Temporary Workers)	Employee Related Costs	-	-	-
Stationary	Inventory consumed	10 000	10 000	10 250
Subscription Fees	Operational Costs	38 000	40 000	41 000

Description	Detail	Budget 2025/26 (Rands)	Budget 2026/27 (Rands)	Budget 2027/28 (Rands)
Signage (Traffic & Information)	Operational Costs	23 000	24 000	24 600
Safety Clothing	Operational Costs	105 000	110 000	112 750
Insurance – General	Operational Costs	90 000	94 000	96 350
Insurance – Excess Payments	Operational Costs	25 000	26 000	26 650
Refreshments	Contracted Services	1 000	1 000	1 030
Refuse Bags	Inventory consumed	1 900 000	1 986 000	2 035 650
Buildings & Land	Inventory consumed	21 000	22 000	22 550
Rehabilitation of Landfill Sites	Operational Costs	2 282 000	2 385 000	2 444 630
Movement in Rehabilitation Provisions	Operational Costs	-2 282 000	-2 385 000	-2 444 630
Machinery	Operational Costs	140 000	146 000	149 650
Machinery (External Contractors)	Contracted Services	-	-	-
Radios	Contracted Services	-	-	-
Computers	Operational Costs	-	-	-
Vehicles	Contracted Services	800 000	836 000	856 900
External rent	Interest	651 000	593 000	477 000
Non deductible interest	Interest	10 249 000	11 165 000	12 163 000
Depreciation	Depreciation and amortisation	-	-	-
Depreciation (Solid Waste Infrastructure - Landfills)	Depreciation and amortisation	1 000	1 000	1 000
Depreciation (Solid Waste Infrastructure – Waste Transfer)	Depreciation and amortisation	-	-	-
Depreciation (Solid Waste Infrastructure – Waste Proc.)	Depreciation and amortisation	-	-	-
Depreciation (Solid Waste Infrastructure – Waste Drop)	Depreciation and amortisation	681 000	678 000	677 000
Depreciation (Solid Waste Infrastructure – Waste Separation)	Depreciation and amortisation	-	-	-
Depreciation (Operational Buildings - Municipal Offices)	Depreciation and amortisation	-	-	-
Depreciation (Furniture and Office Equipment)	Depreciation and amortisation	19 000	18 000	16 000
Depreciation (Machinery and Equipment	Depreciation and amortisation	127 000	124 000	123 000
Depreciation (Transport Assets)	Depreciation and amortisation	437 000	424 000	408 000
Bad debts	Debt impairment	7 608 000	8 359 000	9 195 000
Income Donation	Service charges - Waste Management	-	-	-

Description	Detail	Budget 2025/26 (Rands)	Budget 2026/27 (Rands)	Budget 2027/28 (Rands)
Income Donation (Covid 19)	Service charges - Waste Management	-	-	-
Income Donation (Ward 1)	Service charges - Waste Management	310 000	339 000	370 000
Income Donation (Ward 2)	Service charges - Waste Management	2 726 000	2 976 000	3 253 000
Income Donation (Ward 3)	Service charges - Waste Management	204 000	223 000	244 000
Income Donation (Ward 4)	Service charges - Waste Management	3 634 000	3 968 000	4 336 000
Income Donation (Ward 5)	Service charges - Waste Management	774 000	846 000	924 000
Income Donation (Ward 6)	Service charges - Waste Management	2 209 000	2 412 000	2 636 000
Income Donation (Ward 7)	Service charges - Waste Management	1 105 000	1 207 000	1 319 000
Landfill Sites – iGRAP2 Adjustments	Other Gains	-	-	-
Availability	Service charges - Waste Management	-	-	-
Availability (Ward 1)	Service charges - Waste Management	-	-	-
Availability (Ward 2)	Service charges - Waste Management	-	-	-
Availability (Ward 3)	Service charges - Waste Management	-	-	-
Availability (Ward 4)	Service charges - Waste Management	-	-	-
Availability (Ward 5)	Service charges - Waste Management	-	-	-
Availability (Ward 6)	Service charges - Waste Management	-	-	-
Availability (Ward 7)	Service charges - Waste Management	-	-	-

Description	Detail	Budget 2025/26 (Rands)	Budget 2026/27 (Rands)	Budget 2027/28 (Rands)
Availability (Waste - Ward 1)	Operational Revenue (Non-Exchange)	-174 000	-181 000	-188 000
Availability (Waste - Ward 2)	Operational Revenue (Non-Exchange)	-77 000	-80 000	-83 000
Availability (Waste - Ward 3)	Operational Revenue (Non-Exchange)	-304 000	-316 000	-328 000
Availability (Waste - Ward 4)	Operational Revenue (Non-Exchange)	-345 000	-358 000	-372 000
Availability (Waste - Ward 5)	Operational Revenue (Non-Exchange)	-356 000	-370 000	-384 000
Availability (Waste - Ward 6)	Operational Revenue (Non-Exchange)	-485 000	-504 000	-523 000
Availability (Waste - Ward 7)	Operational Revenue (Non-Exchange)	-1 995 000	-2 073 000	-2 153 000
Diverse	Sale of Goods and Rendering of Services	-45 000	-47 000	-49 000
Rent: Service Account – Refuse Ward 1	Interest earned from Receivables (Exchange)	-43 000	-45 000	-47 000
Rent: Service Account – Refuse Ward 2	Interest earned from Receivables (Exchange)	-292 000	-305 000	-320 000
Rent: Service Account – Refuse Ward 3	Interest earned from Receivables (Exchange)	-51 000	-53 000	-56 000
Rent: Service Account – Refuse Ward 4	Interest earned from Receivables (Exchange)	-778 000	-813 000	-854 000
Rent: Service Account – Refuse Ward 5	Interest earned from Receivables (Exchange)	-308 000	-322 000	-338 000
Rent: Service Account – Refuse Ward 6	Interest earned from Receivables (Exchange)	-1 143 000	-1 194 000	-1 254 000
Rent: Service Account – Refuse Ward 7	Interest earned from Receivables (Exchange)	-455 000	-475 000	-499 000
Cleaning Erven	Other revenue	-	-	-
Subsidy – Compassion	Transfer and subsidies - Operational	-10 963 000	-11 970 000	-13 082 000

Description	Detail	Budget 2025/26 (Rands)	Budget 2026/27 (Rands)	Budget 2027/28 (Rands)
Subsidy – Public (Heis op den Berg)	Transfer and subsidies - Operational	-	-	-
Subsidy – Capital: Public (Heis op den Berg)	Transfers and subsidies - capital (monetary allocations)	-	-	-
Subsidy – Provincial Operations (Local Government Public Employment Support Grant)	Transfer and subsidies - Operational	-	-	-
Contributed Assets	Transfers and subsidies - capital (in-kind)	-	-	-
Insurance Claims	Other revenue	-	-	-
Refuse Bags	Service charges - Waste Management	-2 000	-2 000	-2 000
Refuse Removal: Residential	Service charges - Waste Management	-	-	-
Refuse Removal: Internal	Internal Charges	-68 000	-71 000	-71 000
Refuse Removal: Residential Ward 1	Service charges - Waste Management	-3 707 000	-4 087 000	-4 509 000
Refuse Removal: Residential Ward 2	Service charges - Waste Management	-5 860 000	-6 459 000	-7 127 000
Refuse Removal: Residential Ward 3	Service charges - Waste Management	-4 800 000	-5 292 000	-5 839 000
Refuse Removal: Residential Ward 4	Service charges - Waste Management	-9 710 000	-10 704 000	-11 810 000
Refuse Removal: Residential Ward 5	Service charges - Waste Management	-3 147 000	-3 469 000	-3 828 000
Refuse Removal: Residential Ward 6	Service charges - Waste Management	-13 081 000	-14 420 000	-15 910 000
Refuse Removal: Residential Ward 7	Service charges - Waste Management	-16 899 000	-18 629 000	-20 554 000
Refuse Removal: Transfer Station	Service charges - Waste Management	-1 079 000	-1 128 000	-1 184 000
Refuse Removal: Garden	Sale of Goods and Rendering of Services	-211 000	-220 000	-231 000

Description	Detail	Budget 2025/26 (Rands)	Budget 2026/27 (Rands)	Budget 2027/28 (Rands)
	Total for Solid Waste Removal	**-15 419 000**	**-17 898 000**	**-21 874 840**
STREET CLEANING				
Salaries - Basic	Employee Related Costs	3 607 000	3 883 000	4 121 800
Temporary Workers	Employee Related Costs	-	-	-
Housing	Employee Related Costs	-	-	-
Bonus	Employee Related Costs	301 000	325 000	344 990
Assistance	Employee Related Costs	41 000	44 000	46 710
Long Service	Employee Related Costs	-	-	-
Transport	Employee Related Costs	-	-	-
Substitution Allowance	Employee Related Costs	44 000	48 000	50 950
Overtime (Non-Structured)	Employee Related Costs	689 000	744 000	789 760
Overtime (Structured)	Employee Related Costs	-	-	-
Leave Buyout	Employee Related Costs	63 000	68 000	72 180
Group Insurance	Employee Related Costs	80 000	87 000	92 350
Medical	Employee Related Costs	264 000	285 000	302 530
Industrial Council	Employee Related Costs	4 000	5 000	5 310
Pension Provision	Employee Related Costs	650 000	700 000	743 050
Unemployment Insurance Fund	Employee Related Costs	37 000	40 000	42 460
Admin Cost	Internal Charges	6 000	6 000	6 000
Advertising (Auctions)	Operational Costs	-	-	-
Advertising (Corporate Municipal Activities)	Operational Costs	-	-	-
Advertising (Municipal Newsletters)	Operational Costs	-	-	-
Advertising (Signs)	Operational Costs	-	-	-
Advertising (Staff Recruitment)	Operational Costs	-	-	-
Advertising (Tenders)	Operational Costs	-	-	-
Fuel	Inventory consumed	-	-	-
Chemicals	Inventory consumed	2 000	2 000	2 050
Printing and Binding	Operational Costs	-	-	-
Tools & Equipment	Operational Costs	5 000	5 000	5 130

Description	Detail	Budget 2025/26 (Rands)	Budget 2026/27 (Rands)	Budget 2027/28 (Rands)
Rent – Machines	Operational Costs	-	-	-
Congress Fees	Operational Costs	-	-	-
Membership Fees	Operational Costs	-	-	-
Licenses – Vehicles	Operational Costs	-	-	-
Parts & Materials	Inventory consumed	21 000	22 000	22 550
Herbicide	Inventory consumed	-	-	-
Training	Operational Costs	-	-	-
Training Fee	Operational Costs	33 000	34 000	34 850
Plants & Trees	Contracted Services	-	-	-
Legal fees	Contracted Services	-	-	-
Travel & Accommodation (Travel Agencies & Visas)	Operational Costs	-	-	-
Travel & Accommodation (Accommodation)	Operational Costs	-	-	-
Travel & Accommodation (Daily Allowance)	Operational Costs	-	-	-
Travel & Accommodation (Food & Beverages: Served)	Operational Costs	-	-	-
Travel & Accommodation (Incidental Cost)	Operational Costs	-	-	-
Travel & Accommodation (Car Rental)	Operational Costs	-	-	-
Travel & Accommodation (Own Transport)	Operational Costs	-	-	-
Travel & Accommodation (Public Transport: Air)	Operational Costs	-	-	-
Travel & Accommodation (Public Transport: Road)	Operational Costs	-	-	-
Cellphone Cost	Operational Costs	-	-	-
Stationary	Inventory consumed	-	-	-
Subscription Fees	Operational Costs	-	-	-
Signage (Traffic Information)	Operational Costs	-	-	-
Safety Clothing	Operational Costs	63 000	66 000	67 650
Insurance: General	Operational Costs	-	-	-
Insurance: Excess Payments	Operational Costs	5 000	5 000	5 130
Refreshments	Contracted Services	-	-	-
Vehicles	Contracted Services	-	-	-
Depreciation	Depreciation and amortisation	-	-	-

Description	Detail	Budget 2025/26 (Rands)	Budget 2026/27 (Rands)	Budget 2027/28 (Rands)
Depreciation – Machinery and Equipment	Depreciation and amortisation	-	-	-
Depreciation – Transport Assets	Depreciation and amortisation	-	-	-
Insurance Claims	Other revenue	-	-	-
Total for Street Cleaning		**5 915 000**	**6 369 000**	**6 755 450**
Total for Solid Waste Removal (from above)		**-15 419 000**	**-17 898 000**	**-21 874 840**
Total for Solid Waste Management		**-9 504 000**	**-11 529 000**	**-15 119 390**

NOTE: Negative values in above table shows income and positive values shows expenditures

3.5.2 Tariffs and billing

The current solid waste tariffs are as per **Table 3-21** below:

Table 3-21: Levies & Tariffs

Rates apply with effect from the first bill delivered after 1 July unless otherwise indicated.	
A pack containing 25 bags is provided free of charge to each household once every six months. It will be the occupant's / owner's responsibility to ensure that he/she has indeed received it.	
Availability Fees	**Tariff from 1 July 2024 (Including VAT)**
Refuse per erf - per year	R2,517.70
Residential	
Removal once per week - per month	R460.40
Goedverwacht/Wittewater	Actual Cost
Commercial	
The household rate also applies to all businesses as a monthly minimum service for the removal of 2 bags once a week. Any additional removals will be charged as indicated below.	
New Business rate applicable to all properties and uses that do not fall under a single residential seal.	
The volumes generated by each business will be confirmed by the technical department, based on the history of quantities removed over a period of 2 months in order to calculate the minimum quantity per business. (Every 3 black bags represent one household unit, a 20% discount is granted on 9 bags and more)	
Businesses once a week	
Business once a week 6 bags maximum	R767.50
Business once a week 9 bags maximum	R1,151.40
Business once a week 12 bags maximum	R1,535.20
Business once a week 15 bags maximum	R1,918.90
Business once a week 18 bags maximum	R2,302.70
Business once a week 21 bags maximum	R2,686.60
For each additional 3 bags	R394.10
Businesses twice a week	
Business twice a week 6 bags maximum	R1,535.20
Business twice a week 9 bags maximum	R1,918.90
Business twice a week 12 bags maximum	R2,302.70
Business twice a week 15 bags maximum	R2,686.60
Business twice a week 18 bags maximum	R3,070.30
Business twice a week 21 bags maximum	R3,454.10
For each additional 3 bags	R383.80
Each additional 3 black bags represents an additional single residential rate (20% discount applies to units over six black bags)	R383.80
Any additional removals will be charged as indicated below. Per load or part thereof during working hours (After hours actual cost)	
Additional removals: on request. Per load or part thereof. (This charge will apply in addition to the business rates per bag as set out above).	R1,693.40
After-hours additional special removals if requested. Per load or part thereof. (This charge will apply in addition to the business rates per bag as set out above).	R2,540.20
Per load or part thereof during working hours (After hours actual cost)	
Garden waste	
Per load or part thereof	R413.90

Refuse bags	
per pack of 25	R95.90
Construction debris (Tractor and wagon - 3m³)	
Per load	R857.80
Half load	R444.00
Dumping of refuse at Controlled Transfer Stations	
Household from outside the town area (3 bags)	R135.50
Pickup (0.5 ton - 1 ton)	R255.80
Truck (1 - 3 ton) half load	R380.00
Truck (1 - 3 tons) full load	R765.60
Truck (3 - 5 tons) half load	R765.60
Truck (3 - 5 tons) full load	R1,271.50
Truck (5 - 10 tons) half load	R1,271.50
Truck (5 - 10 tons) full load	R2,545.10

4. GAPS AND NEEDS ASSESSMENT

From the status quo evaluation the gaps and needs were identified and are discussed below. The methodology used to determine these gaps and needs were through a combination of the following methods and processes:

- Gaps and Needs specifically identified by the municipality's waste management officer during the meetings between JPCE and the BM;
- Complaints, comments and suggestions made by members of the public during the public consultation process of the IDP;
- Shortcomings of municipal infrastructure and/or systems to adhere to the national and provincial requirements of waste volume recording and reporting and management;
- Processes and practices identified that could assist the municipality to adhere to the principles of the National Waste Management Strategy and the NEMA Waste Act and its regulations.

4.1 LEGISLATION

The general awareness of the latest legislation has been identified as a gap. Various waste generators (especially hazardous waste) are unaware of the requirements listed in legislation pertaining to the transport and disposal of waste.

The non-compliances (where applicable) at municipal solid waste facilities need to be comprehensively assessed through internal and external audits. These findings must be communicated to the D:EA&DP.

Disposal facilities that have been issued with closure licences require rehabilitation to commence before the dates specified in the licences in order to achieve compliance.

4.2 WASTE GENERATION QUANTITIES

Information on waste tonnages being disposed of at the Vredenburg and Malmesbury (Highlands) landfills are available from the operators of these landfills since they have weighbridges and record all the waste entering the facility. The weighbridges at the Velddrif and Piketberg Transfer Stations are operational and all loads entering the facility are recorded. There is however a lack of record keeping for materials and waste exiting these facilities. This specifically refers to recycled materials and chipped garden waste compost and mulch material. All waste entering and exiting the facilities need to be weighed and recorded in order to understand the mass balance of generation, recovery and disposal of waste within the municipality.

Quantities of hazardous waste generators are not easily accessible and in some cases not recorded correctly or accurately.

4.3 COLLECTION NEEDS

The BM is doing well with effective curbside waste collection and care must be taken to ensure that this service is upheld and improved on. They have added categories for different waste collection requirements within their waste tariffs, and must ensure that these are enforced to minimize illegal dumping.

Education and awareness campaigns related to illegal dumping, as well as the collection and transport of the illegally dumped waste to the transfer stations is important and must receive continuous attention.

4.4 WASTE TRANSFER AND DISPOSAL NEEDS

All waste drop off and transfer infrastructure needs to be well maintained in order to ensure that the public can easily access waste drop-off points for their non-collected waste. From the recent external audits, the waste transfer stations are functioning well, but upgrades are required at these facilities since some structural damage has occurred over the last number of years. Security at the transfer stations have also been reported to be a challenge, and the BM needs to work with the police department to improve security at these facilities.

The solid waste drop-off at Aurora requires maintenance and general clean up to ensure sustainable operation. A need for solid waste drop off facilities at Redelinghuys and Eendekuil has been noted, and some funding was budgeted for the development of this infrastructure. The BM need to continue with the implementation of these projects to improve waste management within these towns.

There are a number of unrehabilitated, closed disposal sites in the Municipality. These sites have received closure licenses and need to be formally closed. This is however addressed in the implementation plan and the Municipality will rehabilitate these sites as the budget and/or external funding allows.

The Velddrif RTS contains a very large volume of clean and contaminated building rubble that needs to be removed from this facility since the site is not registered as a waste disposal site. The BM has already received a D:EA&DP directive in this regard which they are giving attention to. They have also received a plan for cleaning and rehabilitation of the area from JPCE upon request and need to apply for funding to implement the recommendations of this report.

4.5 WASTE MINIMISATION, RECYCLING AND RE-USE INITIATIVES

Waste minimisation must continually be promoted throughout the BM and it is clear from recent awareness and education campaigns that improvements have been made in this regard already. The recycling and recovery operations at the Velddrif and Piketberg transfer stations need to be optimised in order to improve waste diversion rates. This specifically relates to separation at source and accurate recording of tonnages.

With the lack of remaining disposal sites in the BM, waste that needs to be disposed must be transported over large distances. The volumes of recoverable materials help somewhat to reduce disposal costs, but the recyclables must also be transported over large distances in order to be sold. The recycling industry is not yet fully developed in Bergrivier and requires support.

A strategy to achieve waste diversion targets as well as an organic waste and building rubble diversion plan must be generated and the levels of illegal dumping need to be reduced by stricter law enforcement on the perpetrators. Chipping and composting of garden waste does take place and is something that needs to be improved on by accurately recording the volume of garden waste received, chipped and composted.

It is recommended that the municipality appoints a contractor to divert building rubble and organic waste from landfills through chipping, crushing and beneficiating the resultant material. The focus needs to be on the Velddrif transfer station since this facility is currently being operated in non-compliance with its waste license, which does not allow for the disposal of waste.

4.6 INSTITUTIONAL AND ORGANISATIONAL NEEDS

The BM has a good team in place taking care of waste management. The two vacant positions need to be filled as soon as possible with the civil engineering services manager position the most crucial. In the previous generation IWMP the BM was in need of more senior personnel in positions to assist the civil engineering services manager. Although this position is now vacant, the process has started to appoint someone to the position. There has also been progress in terms of appointing some personnel dedicated to waste management, with Ms Jamie -Lee van Zyl being appointed as the waste management officer for the BM.

Staff and personnel need to receive continual training and education on waste management and waste management service delivery in order to provide the best possible service to the people of the Municipality.

4.7 IDENTIFICATION OF ALTERNATIVES

An alternative treatment for generated green waste and building rubble in BM must be found. The current method of chipping and storing chipped garden waste on site needs be addressed to ensure sustainability and encourage beneficiation. A centralised composting facility is a proposal that needs to be investigated. The high volumes of garden waste present at the Velddrif Transfer Station are a concern due to the possibility of pollution and it being a potential fire risk. The garden waste needs to be chipped on site and transported off site to be used privately or composted at a licensed composting facility. This needs to be a priority for the Municipality since the facility is currently operating in noncompliance with its waste license. This was also identified as a gap during the previous generation IWMP.

Building rubble is currently being stored at the Velddrif transfer station and is effectively creating a landfill since it is not beneficiated or removed. This is even more of a challenge since not all of this material is clean building rubble, with some piles being mixed with municipal waste. The building rubble needs to be reduced in size mechanically and transported to the closed landfills where it can be used as cover material. Alternatively, the building rubble needs to be crushed/broken down and beneficiated. A mobile crushing contract can be procured for this purpose which will stimulate the growth of potential SMME contractors in the area. The removal of building rubble from the Velddrif site and the future crushing or treatment of building rubble on site needs to be made a priority since the site is currently being operated in non-compliance with its license conditions.

In a 2021 report on the options for cleaning up the Velddrif transfer station area, the recommendation was that the waste be screened and separated so that building rubble can be moved to other landfills as cover and or used as fill in other areas.

In addition to the above, sustainable alternative technologies to replace landfilling of waste needs to be continually investigated.

4.8 FUNDING MECHANISMS

Funding mechanisms need to be continuously explored. The cost requirements of many of the proposed projects cannot be funded by the civil engineering services department itself, even if it is operating with a profit. The amount of capital is simply too much without alternative sources of funds.

Waste minimisation, including composting and crushing of building rubble, will require financial support and continual public awareness and education (which is on-going and very important) is also a continuous expense.

The Municipality must make provision for the rehabilitation of closed landfills. With the requirements set in the latest issued licences (which take into account that sites were not constructed with impermeable base liners), the rehabilitation costs have become unaffordable in the short to medium term. It would be most beneficial if the funding allocation for landfill rehabilitation would come through, or be sourced by, the Provincial government systems.

5. STRATEGY AND IMPLEMENTATION

Based on the gaps and needs identified, aligned goals of the IWMP and planned projects by the municipality, this section contains the objectives, timeline and required resources for implementation of the IMWP. These gaps and needs are linked to the main goals contained in the Western Cape Provincial IWMP.

<table>
<tr><th colspan="8">Goal 1: Strengthened education, capacity and advocacy towards Integrated Waste Management</th></tr>
<tr><th colspan="2">Objectives</th><th>2025</th><th>2026</th><th>2027</th><th>2028</th><th>2029 and on</th><th>Priority</th></tr>
<tr><td rowspan="2">Strategic Objective 1:</td><td>Create awareness and education of integrated waste management.</td><td colspan="5">The WMO needs to co-ordinate the follow-up visits to the special and hazardous waste generators in the BM to ensure that all these generators are aware of applicable legislation and are following steps to become compliant if required. WMO to also oversee the information gathering as per legislation, in other words, ensure that generators and transporters report to the municipality as required. General public awareness and feedback on recycling issues and information will also fall under the duties of this person, including maintaining and improving upon the recycling information provide to the public.

BM Solid Waste employees to attend education seminars and waste forums. Capacity training and education conducted within the Municipality where needed. It must be ensured that the engineering services department employees are informed regarding the latest legislation and how to appropriately handle and identify various waste types. Law enforcement departments must also be approached and receive education in solid waste legislation and management to enable them to identify issues and act when required.

The South African Institute of Waste Management (www.iwmsa.co.za) is a voluntary organization that provides training on the management of waste. The Bergrivier Municipality is encouraged to have their staff become members of this institute and to attend the training sessions that is available on their website.</td><td rowspan="2">High</td></tr>
<tr><td>Costs & Human Resources</td><td colspan="5">Costs to be determined (OPEX). The new WMO is doing well with recent education and awareness campaigns but one to two persons in the municipality could be required to assist. A consultant could also be appointed for public awareness and education if required. Additional costs are dependent on the number of employees attending educational and capacity building events.</td></tr>
</table>

Goal 2: Improved integrated waste management planning and implementation for efficient waste services, technologies and infrastructure							
Objectives		**2025**	**2026**	**2027**	**2028**	**2029 and on**	**Priority**
Strategic Objective 1:	Facilitate municipal waste management planning	Finalise 5th Generation IWMP, including a waste characterisation study and Organic Waste Diversion Plan.	Review IWMP and submit IWMP & OWDP annual report along with implementation projects update.	Review IWMP and submit IWMP & OWDP annual report along with implementation projects update.	Review IWMP and submit IWMP & OWDP annual report along with implementation projects update.	Start IWMP 6th Generation development	High and already under way.
	Costs & Human Resources	R520 000.00. Appointed consultants and solid waste manager.	Can be done in-house by the solid waste manager. Cost estimate for consultant: R50,000.00 per report.			Cost to be determined with new tender/consultants.	
Strategic Objective 2:	Promote industry waste management and the circular economy	This objective is coupled with Goal 1, where the appointed persons will liaise with industry to ensure that they are aware of the relevant legislation. Follow-up meetings and on-going communication will ensure that industry sufficiently plans and implements actions in order to be compliant and reduce waste generation along with responsible handling/treatment/transport/disposal.					High
Strategic Objective 3:	Promote the establishment of integrated waste management infrastructure and services	Continued Collection Service Review: The BM must ensure that all residents receive an affordable waste service at an acceptable level. Current service levels need to be improved where possible. The civil engineering services department must liaise with the town planning department to stay up to date with new areas that require or will require services. The complaints registry and service requests must be reviewed daily by the Waste Management Officer. 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.					High
	Costs & Human Resources	Review and replace collection vehicles where required. 15m^3 REL approx. R2.5 Million; 19m^3 REL approx. R3.5 Million; 4Tonne Truck approx. R0.8 Million					
	Promote the establishment of integrated waste management infrastructure and services	Maintenance and calibration of weighbridges at Piketberg and Velddrif. Continual recording of weighbridge readings and reporting to IPWIS as required					High
	Costs & Human Resources	TBD					
	Promote the establishment of integrated waste	Provide Solid Waste drop-offs at Eendekuil, Redelinghuys and Dwarskersbos			Continual operation and maintenance of the drop off sites and transfer stations.		

	management infrastructure and services			
	Costs & Human Resources	R11,500,000.00	TBD	
	Promote the establishment of integrated waste management infrastructure and services	Appoint a contractor to divert building rubble and organic waste from the Velddrif transfer station through chipping, crushing and beneficiating.	Appoint a contractor to divert building rubble and organic waste from the Velddrif transfer station through chipping, crushing and beneficiating.	
	Costs & Human Resources	R5,000,000.00	TBD	
	Promote the establishment of integrated waste management infrastructure and services	Formally close and rehabilitate the landfills that have closure licenses. Please note that the rehabilitation cost estimates indicated below include professional fees and construction monitoring. The estimate for each site was determined for the current financial year and escalated by 6% per annum to estimate future costs. These costs must be re-evaluated annually. Closure licenses are valid for until 2034 but rehabilitation works need to start by mid-2029.		Medium
	Costs & Human Resources	R9,6 Million (Aurora); R57,8 Million (Piketberg); R53,1 Million (Porterville); R3,5 Million (Redelinghuys		
	Promote the establishment of integrated waste management infrastructure and services	Vacant positions need to be filled and the Waste Department expanded in order to keep up with growth and service needs. In order to provide an effective service, key vacant positions in the solid waste department need to be filled.		High
	Costs & Human Resources	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.		
Strategic Objective 4:	Ensure timeous and reliable waste information reporting	Registering of waste generators, transporters and recyclers and reporting to the Municipality. This will enable the municipality to evaluate waste management system requirements in greater detail. It will also enable a clearer indication of the amount of diversion that takes place in the Bergrivier Municipal area. The requirement of registering and reporting to the Municipality is addressed in a revision of the solid waste by-laws. Improve data capturing at waste sites and register all sites on IPWIS and report. The reporting of organic waste material leaving the sites as compost or mulch is a need that requires immediate attention.		Medium

Goal 3: Effective and efficient utilisation of resources							
Objectives		**2025**	**2026**	**2027**	**2028**	**2029 and on**	**Priority**
Strategic Objective 1:	Minimise the consumption of natural resources and promote circular economy principles	This also ties in with Goal 1 to promote waste minimisation and recycling, which will in turn reduce pressure on natural resources by re-using materials efficiently. New facility designs must take cognisance of natural resource protection. For example, a rehabilitated disposal site must be covered with indigenous vegetation suited to the climate so as not to require additional watering to thrive.					High
Strategic Objective 2:	Stimulate job creation within the waste economy	Appoint and manage contractor(s) for recycling and RTS operations every three years. Assess job creation opportunities, both permanent and temporary in the waste management field and upcoming projects. Job creation remains a top need in the community.					High
Strategic Objective 3:	Increase waste diversion through reuse, recovery and recycling	Appoint contractor(s) for recycling and RTS operations every three years. Continue awareness and education as per Goal 1.					High
	Increase waste diversion through reuse, recovery and recycling	Investigate the establishment of dedicated Material Recovery Facilities, Composting sites and Building Rubble Crushers. These facilities may be owned and operated in house but may also be shared between municipalities should the volumes required, or sustainability dictate this.					
	Costs & Human Resources	Appointment of consultant and communication and discussions between the solid waste departments of Bergrivier and neighbouring municipalities. Estimated construction cost of composting facility is approx. R8 million					

Goal 4: Improved compliance with environmental regulatory framework							
Objectives		**2025**	**2026**	**2027**	**2028**	**2029 and on**	**Priority**
Strategic Objective 1:	Strengthen compliance and enforcement	Conduct internal and external compliance audits at all waste management facilities as required according to licences and legislation. Findings must be communicated to the D:EA&DP.					High
	Costs & Human Resources	External auditors to be appointed. Waste management officer to conduct internal audits. Between R40,000 and R60,000 per Audit depending on the requirements.					
	Strengthen compliance and enforcement	Cooperate with the public and law enforcement to reduce instances of illegal dumping. Enforce legislation on perpetrators.					
Strategic Objective 2:	Facilitate the rehabilitation of Waste Management Facilities	Commencement dates for rehabilitation of landfills were extended to mid-2029. Plan for closure of these facilities to adhere to landfill licence conditions. Develop and obtain approved closure and rehabilitation designs for sites issued with closure licences. Close and rehabilitate disposal sites as per approved designs.					Medium
	Costs & Human Resources	Solid waste manager as leader. Specialist civil engineering consultants and Environmental assessment practitioners for application, design and construction monitoring purposes. Civil engineering contractors with specialist installers for rehabilitation construction. Latest available total cost estimate (June 2024) = R 124 Million excl. VAT which includes construction costs and professional fees. These cost estimates must be recalculated annually until appointments are made.					

6. MONITORING AND REVIEW

6.1 ESTABLISHMENT OF AN IWMP MONITORING ADVISORY COMMITTEE

To ensure that the IWMP remains up to date as far as practically possible and stays relevant, it must go through a review process. This process will be initiated and followed by the IWMP advisory committee.

The committee will review the proposed projects and implementation items contained in the IWMP. The committee should consist of at least the following persons:

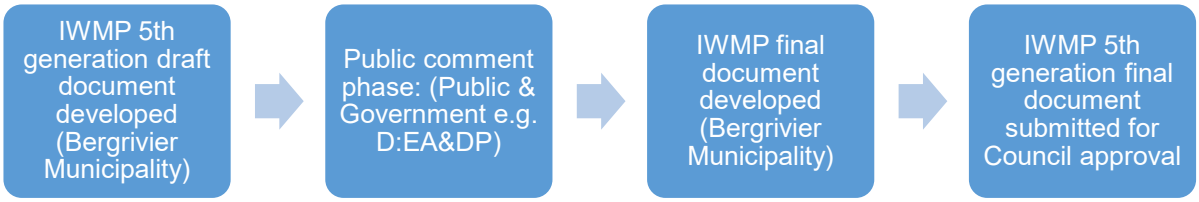
- The Bergrivier Waste Management Officer with assistance from the Civil Engineering Services Department's Supervisors and Foremen.
- The Bergrivier Development and Town Planning Director
- The Bergrivier Community Services Director
- The Bergrivier Municipality's appointed consultant, but only if required.

The members of the Committee, responsible for their separate tasks, will ensure that projects are followed, reported on and the IWMP and its schedule are up to date.

6.2 MONITORING SCHEDULE OR PROGRAMME

For the IWMP to be an effective and relevant tool and guide for integrated waste management in the BM, it will need to be monitored and reviewed. Monitoring relates to the goals and targets set out in the IWMP and whether they are being achieved or pursued. Reviewing relates to the document and the projects themselves which will require regular updates to stay up-to-date, specifically the implementation items of Section 5. The proposed implementation schedule as well as allocated budget may change at any time and these changes, if any, need to be reflected in the reviewed IWMP to avoid confusion.

The following diagram illustrates the initial review cycle when a new IWMP is developed:



The implementation of the fifth generation IWMP will start following Council approval. Apart from the continuous project implementation and goal tracking, which must be done by each individual project team as and when each project is running and report to the Manager: Civil Engineering Services (post currently vacant) and/or the designated Waste Management Officer, an annual IWMP report must be submitted along with the other Municipal annual reports and a copy sent to D:EA&DP as well.

As per the Waste Act, the IWMP annual report must reflect the following:

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

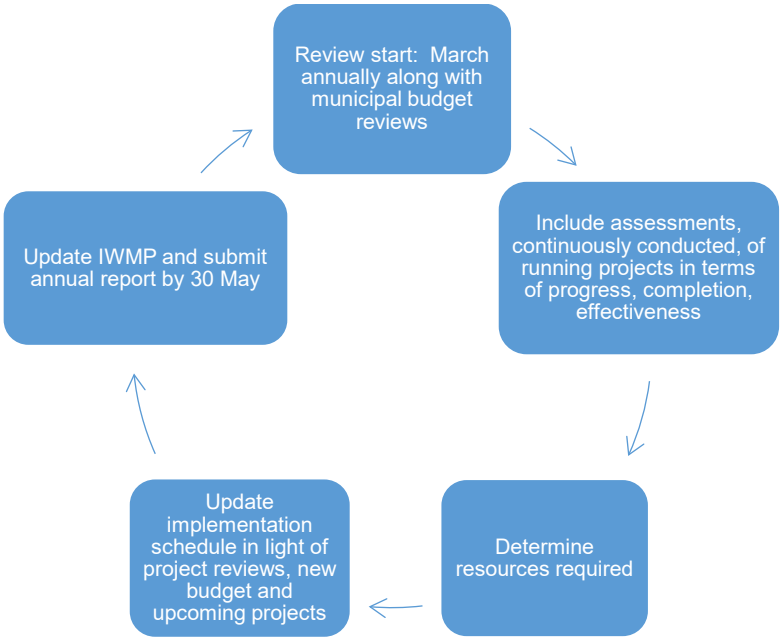
The annual implementation reports will be submitted by the BM and will be compiled by the Manager: Civil Engineering Services, or to whom the task is delegated by him/her. The annual report must contain the approved implementation items and dates of the IWMP and the progress thereof of the past year. Based on the progress and possible new budget allocations, the implementation schedule of the IWMP must be updated and included in the annual report. This new implementation schedule must provide for 3 upcoming years from the report date.

The progress of each task on the implementation schedule, if under way according to the schedule for that year, must be summarised and the estimated completion date must be updated. The reasons for the lack of progress or practical difficulties must be stated along with a summarised action plan to adhere to the schedule as close as possible. This does not infer that the implementation items themselves are only reviewed once per year. Each item and progress must be continually evaluated by the persons responsible. This will allow the information, whether a project has been completed or is on-going, to be included in the annual report and allow for the implementation schedule of the IWMP to be updated as part of the IWMP annual review process.

The report must further discuss the effectiveness of completed projects. For example, when a new system is established for measuring the impact of the composting project, the collected data must be reported on and added to the IPWIS. Also the participation rates of source separation can be monitored along with the public awareness and education campaign. The way in which projects are tracked for review are not prescribed, as long as it is done in order to measure the success of addressing the identified gaps and requirements and to identify and plan for new gaps and needs.

Wherever issues are reported or identified in the projects, these issues must also be evaluated in terms of the relevant legislation and by-laws. It must be stated if there is relevant legislation applicable to the issue and if so, was it the lack of enforcement, for example, that caused the issue. If no relevant legislation exists, it must be noted to adapt the by-laws accordingly in future revisions.

Below is the proposed review cycle and amendment procedure of the IWMP and its projects:



7. CONCLUSIONS AND RECOMMENDATIONS

Through this 5th generation IWMP development, the current solid waste management system of the Bergrivier Municipality has been assessed in order to determine the adequacy, shortcomings and possible improvements.

In terms of service rendering, the collection of waste in rural areas has improved since the previous IWMP, but needs to be maintained and further improved on where possible. Transfer Station sites require improved operations and data capturing and the unused landfills require eventual closure and rehabilitation. Waste diversion needs to be continually improved upon in order to meet diversion targets.

During the process of the implementation of the municipality's IWMP, and arising from the public consultation process, further input and/or corrections to the report may come to light that will then be added as a revision to the report.

The strategic objectives for integrated waste management in Bergrivier Municipality can be summarised as follows:

- To ensure that Waste Management in the Bergrivier Municipal Area complies with South African and International environmental standards so that it is beneficial to industrial and agricultural growth and the public's right to a clean and healthy environment.
- To minimise the entrance of material of value into the waste stream.
- To reduce all waste so that nothing of value nor anything that can decompose, gets disposed.
- To store, dispose or treat all waste that cannot be avoided nor reduced at licensed facilities with regular operational and environmental monitoring and in accordance with regulatory requirements.

For these strategic objectives to be met, a series of implementation instruments (action plans) will need to be implemented. These implementation instruments as well as time framework within which it should be addressed are described in this report but need to be fully detailed at a later stage as projects are approved and acquires funding. The instruments are the following:

- Strengthened education, capacity and advocacy towards Integrated Waste Management;
- Improved integrated waste management planning and implementation for efficient waste services, technologies and infrastructure;
- Effective and efficient utilisation of resources;
- Improved compliance with environmental regulatory framework.

The above instruments, through implementation via their action plans, will ensure that waste management in Bergrivier focusses on avoidance and reduction rather than collection and disposal, but simultaneously maintaining the practical balance between the various waste management functions.

The analyses of the current waste management system has led to the identification of gaps and needs (**Chapter 4**) and these are addressed with the overarching goals and implementation (**Chapter 5**).

Legislation & Compliance

New integrated waste management by-laws have been developed since the previous generation IWMP. It is recommended to increase public awareness regarding legislation, especially generators of hazardous waste. It is also recommended to improve the enforcement of legislation.

All municipal waste management facilities must be audited for compliance. The municipality must then address any identified non-compliances. This is made difficult in the short term due to funding. It is recommended that planning is in place to address compliance as soon as it becomes possible.

All facilities that require licensing are licensed. It is recommended to make provision to rehabilitate the disposal facilities according to their issued licences.

Waste Quantities & Data

Data collection in terms of solid waste types and quantities needs to improve. It is recommended that generators of hazardous waste register and report to the municipality. Information from private recyclers also need to be obtained where applicable. Data related to the composting of garden waste requires immediate improvement. The BM needs to report on the tonnages of garden waste received at the different facilities and on the amount of compost or mulch that is removed from the facilities after treatment.

Waste Collection, Transfer and Transport

Collection services need to be maintained. Drop-off facilities need to be provided in all towns. Investigate the provision of additional drop-offs and new skips.

Waste diversion

Waste diversion must improve in order to meet diversion targets. Recycling currently has a minimal impact on the waste stream even though recycling efforts within the municipality is operating successfully. Garden waste chipping, composting, building rubble crushing and organic waste diversion need to be investigated to add to the impact recycling is making on waste diversion from landfill. It is recommended that the municipality appoints a contractor to divert building rubble and organic waste from landfills through chipping, crushing and beneficiating the resultant material. The focus needs to be on the Velddrif transfer station since this facility is currently being operated in non-compliance with its waste license, which does not allow for the disposal of waste. Composting of garden waste by EPWP workers through the mayoral project is a good start, but more diversion of organic waste is required.

It is lastly recommended to start with the implementation of the 5th generation Bergrivier IWMP as soon as it is approved by Council and be included as a sectorial plan of the Bergrivier IDP. It must be regularly reviewed as per the recommended review programmes and updated as necessary.

Organisational Needs

The post of the manager Civil Engineering Services is currently vacant and needs to be filled in order for the staff within eh waste management department to have a clear reporting structure.

8. REFERENCES

- Government Gazette (10 March 2009). National Environmental Management: Waste Act (Act no. 59 of 2008)
- Department: Environmental Affairs & Development Planning (January 2019). Assessment Report of the 4th Generation Integrated Waste Management Plan Bergrivier Local Municipality
- Department: Environmental Affairs (November 2011). National Waste Management Strategy
- Department: Environmental Affairs & Development Planning (March 2023). Western Cape Integrated Waste Management Plan 2023 – 2027.
- Jan Palm Consulting Engineers (February 2010). Report on Collection and Cleansing.
- JPCE (Pty) Ltd (December 2016). West Coast District Municipality Regional Site Business Case for the Bergrivier and Cederberg Regional Landfill.
- Bergrivier Municipality (2022). 5th Generation Integrated Development Plan for 1 July 2022 – 30 June 2027
- Department: Environmental Affairs & Development Planning (March 2014). Western Cape Provincial Spatial Development Framework
- PwC (March 2014). Western Cape Population Projections 2011 – 2040
- National Planning Commission. Executive Summary of the National Development Plan 2030
- Selected information from the West Coast District Municipal website
- Statistics South Africa. Census 2011 and 2022
- Bergrivier Municipality (2024-2029). Bergrivier Municipal Spatial Development Framework
- Western Cape Government. Green is Smart; Western Cape Green Economy Strategy Framework 2013
- Western Cape Government. Provincial Strategic Plan 2014 – 2019.
- Western Cape Government. OneCape 2040.

ANNEXURE A

4TH GENERATION IWMP EVALUATION REPORT

Western Cape Government
Environmental Affairs & Development Planning

Assessment Report of the 4th Generation Integrated Waste Management Plan

Berg River Local Municipality

January 2019

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Report Summary

The Department would like to thank the Bergrivier Local Municipality for the submission of their 4th generation Integrated Waste Management Plan (IWMP) for assessment. The plan, in its current state, meets the requirements of an IWMP as stated in the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) (NEMWA), Chapter 3, Institutional and Planning matters, sub section 12. "Contents of Integrated waste management plans". Below is a brief discussion on each section as assessed by the Waste Management Planning sub-directorate.

1. INTRODUCTION

1.1 Background

The Integrated Waste Management Plan (IWMP) draft report provides a detailed background with a clear aim, methodology and approach used to develop the IWMP. The draft report also addresses the recommendations highlighted in the 3rd generation IWMP assessment report provided by the Department of Environmental Affairs and Development Planning (DEA& DP). It is recommended that tender specifications be amended to ensure that service providers incorporate the recommendations of the DEA&DP prior to the approval of the IWMP by the Council of the Bergrivier Local Municipality.

1.2 Geographical area, geo-physical and geo-hydrological conditions

The IWMP draft report provides a clear description and maps of the geographical area, geo-physical and geo-hydrological conditions of the Municipality.

1.3 Strategic linkages

The Bergrivier municipality has adopted the goals and strategic objectives of the Western Cape IWMP (2017-2022). The draft report provides linkages with national policies, municipal Integrated Development Plan (IDP) and the Spatial Development Framework (SDF) as well as the West Coast District Municipality (WCDM) IWMP.

1.4 Public participation

The draft report indicates that no actual public participation has been conducted for the 4th generation IWMP. However, a table has been provided with the waste management needs identified at ward meetings during the 2016/17 IDP process and through public meetings held bi-annually in 2017 and 2018. The public still needs to be given the opportunity to comment on the draft document before approval by the Council.

2. Status Quo

2.1 Legislative requirements

The draft report outlines the relevant national, provincial and international legislation, policies and plans. It also highlights the need for an updated municipal integrated waste by-law. The report provides an overview of the effectiveness and implementation of the legislation and policies.

2.2 Demographic profile

The draft report provides the current and projected population, income distribution, education, gender and age distribution as well as the development profiles. However, there is no information on the employment and the economic performance of the municipal area, this information can be sourced from the 2011 Census report and the Municipal Economic Review and Outlook (MERO) respectively.

2.3 Waste management cost and financing

The capital, current and projected budget as well as the tariffs and levies are provided in the draft report. The provision of free basic services is mentioned under section 3.4.3, which deals with the levels of service but the relevant cost to the municipality has not been included.

2.4 Services and delivery

The draft report indicates the provision of a waste collection service to formal residential households, the indigent, the commercial sector and farmers nearby Waste Management Facilities (WMFs). The report also highlights areas that do not receive a waste collection service such as rural farmers who manage their own waste. However, the municipality still needs to monitor and report on the waste management activities of these farmers.

2.5 Compliance and enforcement

According to the draft report, the Bergrivier Municipality has no licensed waste disposal facilities. All the waste collected within the municipal area is sent to licensed refuse transfer stations (Piketberg and Velddrif) before disposal at the Vredenburg and Highlands landfills as per agreement with the Saldanha Bay and Swartland municipalities respectively. The airspace and remaining lifespan for the operational WDFs are provided. Most of the municipal landfills are closed and some have closure licenses but still require rehabilitation. The municipality has no knowledge of contaminated land other than the closed landfills and informal salvaging is a concern at some of the waste management facilities. The main complaints received by the municipality are related to illegal dumping and farmers also complain about paying to offload

waste at the transfer station. All complaints are either handled by law enforcement or the waste management officer.

2.6 Waste generation and composition

The draft report provides current and projected waste generation quantities for the municipal area. The current data was obtained from the Saldanha Bay and Swartland municipal landfills used by the Bergrivier Municipality. The waste quantities are for a four-year period from 2015 to 2018 and an average annual as well as monthly rate of disposal has been provided. This however, excludes builder's rubble, garden waste and waste from rural areas (from farms) but the municipality does have estimates of the waste types except for the waste from farmers. A hazardous waste survey (including industrial as well as health care risk waste) was conducted and the quantities from the survey have been provided in the report.

2.7 Waste avoidance, reduction and recycling

The municipality has two private recyclers operating from each of the transfer stations and the municipality collects the recyclables to the transfer stations. An 8% diversion rate has been recorded as an annual average. The municipality collects green waste upon request, which is chipped and the builder's rubble is off-loaded at the Velddrif transfer station. However, both waste types are stockpiled at the transfer station as there are no programmes in place to deal with the waste.

2.8 Organisational structure and staff capacity

A waste management officer has been designated as per the Waste Act and an organogram for the Civil Engineering Services has been provided with new (unfunded) and vacant posts.

2.9 Waste awareness and education

Existing as well as planned awareness and education campaigns have been included in the draft report.

2.10 Waste information management

The draft report does not have a waste information management section but under the goals it has been indicated that there needs to be improvement in data capturing at waste sites and that all sites need to be registered to report on IPWIS.

3. GAP/ NEED IDENTIFICATION

The IWMP draft report provides an assessment of existing waste management gaps and needs within the Bergrivier Municipality.

4. GOALS, OBJECTIVES AND TARGETS

The Bergrivier Municipality has adopted the WCIMWP goals and the draft report provides clear objectives and realistic targets as indicated in the strategy and implementation table in section 5. The report indicates a 4th generation IWMP will be developed in 2022 and on, under the second goal and strategic objective 1; this needs to be corrected as this will be the 5th generation IWMP of the municipality.

5. IMPLEMENTATION

Besides objectives and targets, the strategy and implementation table also provides costs and human resources as well as timeframes and prioritises the objectives and targets.

6. MONITORING AND REVIEW

The draft report proposes the establishment of an IWMP monitoring advisory committee to ensure the implementation of the IWMP remains on track using an implementation schedule or programme. The report also indicates that progress on the implementation of the IWMP will be communicated through annual reports that will be drafted by the waste management officer and submitted to the DEA& DP.

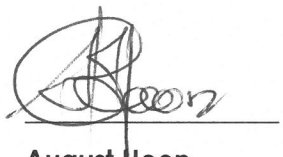
7. IWMP CHECKLIST SCORE

The draft report fulfils **83%** of the requirements of an IWMP and for further clarity, August Hoon or Dean Gilbert can be contacted via telephone (021) 483 2712/ 8336 or email August.Hoon@westerncape.gov.za or Dean.Gilbert@westerncape.gov.za.

8. CONCLUSIONS AND RECOMMENDATIONS

- The final report needs to have information on the employment and the economic performance of the municipal area, which can be sourced from the 2011 Census report and the Municipal Economic Review and Outlook (MERO) respectively.
- The public still needs to be given the opportunity to comment on the draft document before approval by the Council.

- The action plan must indicate when the by-law will be updated or developed as well as the relevant cost to the municipality
- The municipality must indicate how they are going to monitor rural farmers who manage their own waste to ensure the waste is not dumped illegally or burned on site. This is besides the farmers that use transfer stations to drop-off their waste themselves.
- The municipality needs to provide details on how and where they will source the budget to rehabilitate the closed waste management facilities.
- The municipality needs to indicate how they will address the stockpiling of building material and green waste.
- The municipality needs to provide an action plan that shows how they will improve the data capturing at the respective waste management facilities to ensure accurate capturing and reporting of source data to IPWIS.



August Hoon
Deputy Director: Waste Management Planning
Date: 08/04/2019

ANNEXURE B

HAZARDOUS WASTE SURVEY

BERGRIVIER MUNICIPALITY

HAZARDOUS AND HEALTH CARE RISK WASTE SURVEY

DECEMBER 2024

Completed by:

Aquila Environmental (Pty) Ltd

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Executive Summary

A Hazardous and Health Care Risk Waste (H&HCRW) Survey was conducted from October to December 2024 in the Bergrivier Local Municipality. The survey found that the H&HCRW generated in the study area can be categorised into four of the seventeen potential Industrial Groups listed in Schedule 3 of the National Environmental Management: Waste Amendment Act (NEM:WAA) (Act No. 26 of 2014).

Based on the data collected, it is estimated that approximately 61 935.36 kg of hazardous waste is generated annually. This includes 24 000 kg of discarded car batteries, most of which are generally returned to manufacturers for recycling. The total also includes 43.2 kg of used ink cartridges and 3.5 kg of power tool batteries. Additionally, in the order of 10 080 litres of used oil are generated annually, with most generators reporting that the oil is collected for recycling. A further 400 litres of thinners are generated within the year. The quantity of Health Care Risk Waste (HCRW) generated in the study area annually is nearly 38 000 kg.

At least 19 service providers are involved in the collection and transportation of H&HCRW in the area. The survey found that the majority of businesses generating either hazardous or HCRW waste have adequate systems in place to manage it responsibly. This report also provides insights into the treatment and disposal methods used by common service providers. The report concludes with useful contact information for organisations that regularly handle H&HCRW streams that Bergrivier Municipality might consider to partner with if required.

1 Introduction

In October 2024, JPCE (Pty) Ltd was appointed by Bergrivier Municipality to update their existing Integrated Waste Management Plan (IWMP) and develop the 5th generation version. This is done in accordance with the National Environmental Management: Waste Act of 2008 and as stipulated by the Western Cape Department of Environmental Affairs and Development Planning.

Aquila Environmental was appointed by JPCE as sub-consultant to conduct a survey on the types and quantities of Hazardous and Health Care Risk Waste (H&HCRW) generated within the Bergrivier Municipality. The H&HCRW Survey was undertaken from October to December 2024 and forms part of the 5th generation IWMP for Bergrivier Municipality.

Aquila Environmental's scope included:

1. identifying H&HCRW generators; and
2. collating information on H&HCRW volumes generated, treatment- and transport methods, transporters and final disposal.

Note that health care risk waste is a type of hazardous waste, but due to the difference in nature of these waste streams and the generators involved, the survey and report keeps hazardous waste and health care risk waste separately. The following definitions were used to define the waste streams:

- **Hazardous Waste** refers to objects, materials, or substances that, due to inherent properties, are potentially harmful to human health or the environment, and includes oil and grease waste; lighting equipment; paint, varnish, glue; containers, packaging contaminated with hazardous chemicals; empty aerosol and pesticide waste; electrical and electronic waste; batteries; asbestos; slag; bottom ash; brine and any waste with the hazardous properties. It does not include tyres, which are banned from landfill due to their impact on the stability of the landfill rather than their composition.

- **Health Care Risk Waste** refers to the portion of health care waste (waste generated from medical care or research, or waste that has been in contact with human blood/fluids) that is hazardous, and includes infectious waste, pathological waste, sharps waste, pharmaceutical waste, genotoxic waste, chemical waste, waste with heavy metals, radioactive waste, and any other health care waste which is defined as hazardous.

Section 2 of the report details the methodology used to identify and gather data and information around hazardous waste in the municipal area. Section 3 of the report relates to Hazardous Waste. It first describes the Hazardous Waste legislative context in South Africa (Section 3.1), before concluding with the findings from the survey detailing the volumes of Hazardous Waste generated in Bergrivier Municipality (Section 3.2).

Section 4 of the report relates to HCRW. Section 4.1 first describes the HCRW legislative context in South Africa, before concluding with the findings from the survey detailing the volumes of HCRW generated in Bergrivier Municipality (Section 4.2).

Section 1 provides information on all the service providers dealing with either Hazardous or HCRW in the study area, while Section 6 provides useful contacts and details of organisations responsible for hazardous waste management.

Section 7 concludes the report and provides recommendations on interventions required.

2 Methodology

For the purposes of this study, the business waste types section of Schedule 3, Category A of NEM:WAA was used to determine the various business/industrial groups potentially generating hazardous waste in the study area (Table 1 - see Appendix A for further details).

Table 1: Categories of Hazardous Waste generated by industries according to Schedule 3 of NEM:WAA, 2014

Industrial Groups
1. Wastes from agriculture, horticulture, aquaculture, forestry, hunting and fishing, food preparation and processing
2. Wastes from wood processing and the production of panels and furniture, pulp, paper and cardboard
3. Wastes from the leather, fur and textile industries
4. Wastes from petroleum refining, natural gas purification and pyrolytic treatment of coal
5. Wastes from inorganic chemical processes
6. Wastes from organic chemical processes
7. Wastes from thermal processes
8. Waste from the photographic industry
9. Wastes from the manufacture, formulation, supply and use (MFSU) of coatings (paints, varnishes and vitreous enamels), adhesives, sealants and printing inks
10. Wastes from chemical surface treatment and coating of metals and other materials; non-ferrous hydrometallurgy
11. Wastes from shaping and physical and mechanical sur- face treatment of metals and plastics
12. Oil wastes and wastes of liquid fuels (except edible oils)
13. Waste organic solvents, refrigerants and propellants
14. Other wastes not specified in the list
15. Construction wastes
16. Wastes from human or animal health care and/or related research (except kitchen and restaurant wastes not arising from immediate health care)
17. Wastes from waste management facilities

The data collection methodology included three avenues, including contacting generators directly; engaging with service providers who collect, treat and/or dispose of the waste streams; and obtaining information reported onto the Western Cape Provincial Integrated Pollutant and Waste Information System (IPWIS):

Generators:

- A comprehensive desktop study was undertaken, involving the review and analysis of relevant literature, data, and online resources to gather insights and inform the research process.
    - For Hazardous Waste, this included searching for retailers, workshops, panel beaters, manufacturers, and producers or service providers that may generate hazardous waste.
    - For HCRW, this included searching for hospitals, doctors, dentists, veterinary practices, clinics, pharmacies, mortuaries, funeral parlours, old age homes and medical research facilities in the study area.
- All businesses and facilities potentially generating Hazardous and/or HCRW waste were identified.
- Each entity contributing data to this report was contacted telephonically or via e-mail.

Service providers:

- Common service providers noted by entities were engaged with to obtain information directly from them regarding generators in the area as well as quantities managed.

IPWIS:

- The Western Cape Department of Environmental Affairs & Development Planning (DEA&DP) was engaged with to find out which entities report onto IPWIS to ensure that data provided on this regulated system is included and captured in this study.

3 Hazardous Waste

3.1 Legislative context for Hazardous Waste in South Africa

To fully understand the importance of proper handling and disposal of Hazardous Waste in South Africa, the legislative context will first be described. The following pieces of legislation are relevant to management of hazardous waste in South Africa.

3.1.1 The National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)

The first waste specific legislation published in South Africa was the National Environmental Management: Waste Act (NEM:WA). It provided the mechanism to regulate the waste value chain aiming to minimise adverse effects on human health and the environment. The National Department of Forestry, Fisheries and the Environment (DFFE) is the regulatory body for the licensing of Hazardous Waste facilities, according to NEM:WA's Chapter 5. In addition, the management of hazardous waste is included in the concurrent legislative competence of both National and Provincial Government assigned by the South African Constitution with respect to environment and pollution control.

3.1.2 The National Environmental Management: Waste Amendment Act, 2014 (Act No. 26 of 2014)

On 02 June 2014 an amendment of Section 1 of the NEM:WA, as amended by the National Environmental Management: Waste Amendment Act (NEM:WAA), was enacted whereby "Schedule 3: Defined Wastes" was inserted. The purpose of Schedule 3 is to define all types of waste and to categorise them in order to assist with the identification of wastes. This Schedule is divided into Category A: Hazardous Waste and Category B: General Waste.

Schedule 3, Category A defines Hazardous Waste as follows:

> *"Hazardous waste" means any waste that contains organic or inorganic elements or compounds that may, owing to the inherent physical, chemical or toxicological characteristics of that waste, have a detrimental impact on health and the environment and includes hazardous substances, materials or objects within business waste, residue deposits and residue stockpiles."*

It further defines "business waste" to mean waste that emanates from premises that are used wholly or mainly for commercial, retail, wholesale, entertainment or government administration purposes and the waste types are grouped into 17 categories. For the purposes of this study, this section of Schedule 3, Category A of NEM:WAA was used to determine the various industrial groups potentially generating hazardous waste in the study area (see Appendix A).

3.1.3 Waste Classification and Management Regulations (G.N. No. R. 634 of August 2013)

These regulations support and implement the provisions of the NEM:WA and, amongst others, establishes a procedure and mechanism for the listing of waste management activities that do not require a Waste Management Licence. It also states that waste must be classified

according to the South African National Standard Globally Harmonized System of Classification and Labelling of Chemicals (SANS 10234:2008).

SANS 10234:2008 is a standard that classifies waste according to the physical and health hazards specific substances could potentially pose (including hazards to the aquatic environment).

The regulations also talk to the requirements for disposal, record keeping and re-classification. For example, it is stated that:

> *"Waste must be classified within 180 days of generation and should be re-used, recycled, recovered, treated and/or disposed of within 18 months of generation."*

Based on physical and chemical characteristics, hazardous waste can be grouped according to the South African National Standards 10234 (SANS 10234:2008) into the following classes:

Table 2: Hazardous Waste Classes

Hazardous Waste Class (SANS 10234:2008)	
Classes	Description
9.1	Explosives
9.2	Flammable gases
9.3	Flammable aerosols
9.4	Oxidising gases
9.5	Gases under pressure
9.6	Flammable liquids
9.7	Flammable solids
9.8	Self-reactive substances and mixtures
9.9	Pyrophoric substances
9.10	Self-heating substances and mixtures
9.11	Substances and mixtures that, on contact with water, emit flammable gases
9.12	Oxidizing substances and mixtures
9.13	Organic peroxides
9.14	Corrosive to metals

3.1.4 Waste Information Regulations (GN No. 625 of August 2012)

The National Waste Information Regulations, 2012 took effect on January 1, 2013. They outline the reporting requirements and identify who must report. The South African Waste Information System (SAWIS) was created to collect and analyse data on the quantity, type, and characteristics of waste generated, reused, recycled, recovered, stored, transported, treated, and disposed of.

Individuals starting activities listed in Annexure 1 of the Waste Information Regulations must register with SAWIS within 30 days. Failure to register can result in a fine or imprisonment for up to 15 years. Annexures 3 and 4 provide codes for reporting general and hazardous waste. Registered facilities must report their waste information within 60 days after each quarterly reporting period.

3.1.5 Norms & Standard for the Assessment of Waste for Landfill Disposal (G.N. No. R. 636 of August 2013)

This piece of legislation covers the assessment of waste prior to landfilling and prescribes limits relating to chemical composition of waste from laboratory testing such as Leachable Concentration Threshold (LCT). These standards aim to ensure that only appropriate waste is sent to landfills, thereby protecting environmental and public health.

3.1.6 National Norms and Standards for the Disposal of Waste to Landfill (GN. No. R. 635, 2013)

These norms and standards establish guidelines for the safe and environmentally responsible disposal of waste in landfills in South Africa. They set out requirements for landfill design, operation, and closure, focusing on minimising environmental impacts and protecting public health. Overall, these norms aim to ensure that waste disposal practices are sustainable and compliant with environmental protection standards.

Although the above legislation is the most pertinent to the scope of this study, many other South African regulations make mention of either hazardous or health care risk waste. Other legislation to be aware of includes, but is not limited to:

- Hazardous Substances Act (No. 15 of 1973)
- Regulations for Hazardous Chemical Agents (No. R280 of 2021)
- National Policy on Thermal Treatment of General & Hazardous Waste (No. 777 of 2009)
- Occupational Health & Safety Act (No. 85 of 1993)
- National Road Traffic Act (No. 93 of 1996)
- National Norms and Standards for Storage of Waste (No. 926 of 2013)
- Regulations for Extended Producer Responsibility (No. 1184 of 2020, as amended)

3.2 Hazardous waste generated in the Bergrivier Local Municipality

Entities identified as potential hazardous waste generators were interviewed in October and December 2024. Table 3 below indicates a summary of all quantitative information gathered during the survey on hazardous waste produced in the study area. A full list of these businesses, and detailed notes on information provided, has been provided to Bergrivier Municipality.

Majority of the hazardous waste generated was used oil (>10 000 litres per annum) from various sources and car batteries (>24 000 kg per annum). Both of these waste streams were noted to be recycled through services providers collecting the waste or by returning to manufacturer. Ink cartridges, however, were disposed of together with general waste. This waste stream should not be landfilled, but the generators also noted that manufacturers who formerly took the used cartridges back, were no longer doing so.

The data contained in this survey was obtained from owners/employees at the various places of business directly and it must be noted that there is a general lack of knowledge regarding waste generation or disposal throughout the entire spectrum of Industrial Groups, excluding Group 16 (HCRW) who were mostly able to provide accurate and up to date information.

Assumptions and Limitations:

1. The following conversion ratios were used for various hazardous wastes:
    a. For car batteries: 1 battery = 20kg
    b. For ink cartridges: 1 cartridge = 0.03kg
    c. For power tool batteries: 1 battery = 0.35kg
2. If ranges were given for collection times (e.g. "(name of service provider) collects once every 2-3 months"), the longer timeframe was consistently chosen for quantity calculation purposes (in this example, a collection every 3 months would be assumed).
3. To fully verify results, site visits will need to be undertaken. This desktop survey is fully reliant on the honesty, knowledge and transparency of person being interviewed telephonically or data received.

Table 3: Hazardous waste quantitative data collation summary

Industrial Group (NEM:WAA Schedule 3)	Waste fraction (NEM:WAA Schedule 3)	Generator and notes	Process followed	Number of generators surveyed in study area:	Quantity generated per annum
9	Other wastes not specified in the list	Service centres doing printing: (c) wastes from MFSU of printing inks	Disposed with general waste	1	43.2 kg / annum
12	Oil wastes and wastes of liquid fuels (except edible oils)	Service centres: (a) waste hydraulic oils (b) waste engine, gear and lubricating oils (c) waste insulating and heat transmission oils (d) oil/water separator contents (e) wastes of liquid fuels (f) hazardous portion of other oil waste	Collected and assumed to be recycled	10	10 080 litres / annum
14	Other wastes not specified in the list	Service centres repairing and/or printing: Thinners	Unclear	2	400 litres / annum
14	Other wastes not specified in the list	Retailers/service centres selling batteries: (e) wastes from discarded batteries and accumulators (car batteries)	Returned to dealer	3	24 000 kg / annum
14	Other wastes not specified in the list	Service centres repairing and servicing: (e) wastes from discarded batteries and accumulators (power tool batteries)	Sold to scrap dealer	1	3.49 kg / annum
16	Wastes from human or animal health care and/or related research	Hospitals, Clinics, Medical practitioners, Pharmacies, Veterinarians, Beauty Salons, Mortuaries: Included in HCRW results	Refer to HCRW results	Refer to HCRW results	Refer to HCRW results
				TOTAL Hazardous Waste:	**24 046.69 kg and 10 480 litres per annum**

4 Health Care Risk Waste

4.1 Legislative context for Health Care Risk Waste in South Africa

4.1.1 National Health Act, 2003 (Act No. 61 of 2003) as amended

This Act regulates national health and provides uniformity in respect of health services. This is done by aiming to establish a national health system which encompasses public and private providers of health services. It further aims to provide the population of South Africa with the best possible health services that available resources can afford. It sets out the rights and duties of healthcare providers, health workers, health establishments and users.

4.1.2 Regulations Relating to Health Care Waste Management in Health Establishments (G.N. No. R. 375 of May 2014)

The following section highlights key principles contained within these Regulations, relevant to this study:

Section (3)(1) maintains that all health establishments that generate Health Care Waste:
(a) have a duty to dispose of the waste safely;
(b) are legally and financially responsible for the safe handling and environment sound disposal of the waste they produce;
(c) must always assume that the waste is hazardous until shown to be safe; and
(d) have a responsibility of the waste from the point of generation until its final treatment and disposal.

Section (4) further indicates that the Scope of the Regulations are applicable to all private and public health establishments; that the regulations shall regulate the handling, storage, collection, transportation, treatment and disposal of health care waste; and that it does not apply to radioactive, electronic and animal wastes.

These Regulations also provide a formal definition of "Health Care Risk Waste". It refers to the portion of health care waste (generated or derived from medical care/research or has been in contact with blood, bodily fluids or tissues from humans or infected animals) that is hazardous and capable of producing any disease. It includes, but is not limited to, the following:

(i) Chemical waste

Means solid, liquid and gaseous products that are to be discarded and that contain dangerous or polluting chemicals that pose a threat to humans, animals or the environment, when improperly disposed of.

(ii) Cytotoxic waste

Means waste that is toxic to cells and that can lead to cell death.

(iii) Genotoxic waste

Means waste capable of interacting with living cells and causing genetic damage.

(iv) Infectious waste

Means materials suspected to contain pathogens (bacteria, viruses, parasites or fungi) in sufficient concentrations or quantity to cause disease in susceptible hosts.

(v) Isolation waste

Means waste containing discarded materials contaminated with excretion, exudates, or secretions from humans or animals who or which are required to be isolated in order to protect others from highly communicable or zoonotic diseases.

(vi) Laboratory waste

Means human or animal specimen cultures from healthcare and pathological laboratories; cultures and stocks of infectious agents from research and industrial laboratories; wastes from the production of bacteria, viruses, or the use of spores, discarded, live and attenuated vaccines, and culture dishes and devices used to transfer, inoculate and mix cultures; and waste containing any microbiological specimen sent to a laboratory for analysis.

(vii) Pathological waste

Means tissues, organs, body parts, blood, body fluids, human foetuses, infected animal carcasses and other waste from surgery and autopsies on patients with infectious diseases.

(viii) Pharmaceutical waste

Means unused medicines, medications and residues of medicines that are no longer usable as medication.

(ix) Radioactive waste

Means liquid, solid or gaseous materials that contain, or are contaminated with, radionuclides at concentrations or activities greater than the clearance levels and for which no use is foreseen.

(x) Sharps waste

Means items that could cause cuts or puncture wounds, including needles, hypodermic needles, scalpels and other blades, knives, infusion sets, saws, broken glass and pipettes.

4.1.3 Western Cape Health Care Waste Management Act, 2007 (Act No. 7 of 2007)

This Act provides for the effective management (handling, storage, collections, transportation, treatment and disposal) of health care waste in order to protect communities and the environment from the risks posed by this waste as required in terms of section 24 of the Constitution.

4.1.4 Western Cape Health Care Risk Waste Management Regulations, 2013

These regulations were made by the Provincial Minister of Local Government, Environmental Affairs and Development Planning in the Western Cape. These regulations provide important details regarding storage, handling, transport and disposal of waste and has also included the establishment of a health care waste manifest system that will ensure the effective management of health care waste by tracking all such waste from "cradle to grave".

4.2 HCRW generated in the Bergrivier Local Municipality

Entities identified as potential health care risk waste (HCRW) generators were interviewed in October and December 2024. Table 4 below indicates a summary of all quantitative information gathered during the survey on HCRW produced in the study area. A full list of these businesses, and detailed notes on information provided, has been provided to Bergrivier Municipality.

A large amount of HCRW is generated within the Bergrivier Municipal Area, with Human or Animal Healthcare (Industrial Group 16) being of greatest importance and influence. More than 37 000kg of HCRW is generated per annum, consisting largely of infectious waste. Small amounts of pathological waste is generated from hospitals, and from a horse breeding farm which disposes of the horses on site. Sharps, although small, are plentiful and make up 1 652.56kg of the total HCRW generated within a year. Pharmaceutical waste is the smallest contributing medical waste steam, with just over 200kg generated per annum.

Much of this data contained in this survey was obtained from owners/employees at the various places of business directly. For this Industrial Groups Group 16 (HCRW), most were able to provide accurate and up to date information. Further information was gathered from service providers and from IPWIS.

Assumptions and Limitations:

1. The following conversion ratios were used if information was provided in litres:
    a. Sharps waste: 1litre = 0.33kg
    b. Infectious waste: 1 litre = 0.10kg
    c. Pharmaceutical waste: 1 litre = 0.35kg
2. If ranges were given for collection times (e.g. "(name of service provider) collects once every 2-3 months"), the longer timeframe was consistently chosen for quantity calculation purposes (in this example, a collection every 3 months would be assumed).
3. To fully verify results, site visits will need to be undertaken. This desktop survey is fully reliant on the honesty, knowledge and transparency of person being interviewed telephonically.
4. Where data was provided by both the entity and the service provider, the data provided by the service provider was accepted as more accurate and used in the results.

Table 4: HCRW generated within the study area

Industrial **Group** (NEM:WAA Schedule 3)	Waste fraction (G.N. No. R. 375 of May 2014)	Generator and notes	Number of generators surveyed in study area:	Kilograms generated per annum
16	(i) Chemical waste	None identified during this study	0	0
16	(ii) Infectious waste	Hospitals, Clinics, Medical practitioners (including general practitioners, physiotherapists, dentists etc.), pathologists, pharmacies, veterinarians: Includes Medical Disposables such as cotton swabs, used bandages, gauze, plaster and syringes and could also include pathological waste from small surgeries (e.g. moles, extracted teeth, etc.) as well as isolation waste.	25	34 192.75 kg / annum
16	(iii) Isolation waste	None identified during this study	0	0
16	(iv) Laboratory waste	None identified during this study	0	0
16	(v) Pathological waste	Hospitals, Clinics and Medical practitioners: Also referred to as anatomical waste and includes removed organs, tissues and body parts from humans and animals.	3	1 814.4 kg / annum
16	(vi) Pharmaceutical waste	Hospitals, Clinics, Medical practitioners and pharmacies: Expired and redundant pharmaceuticals.	7	228.97 kg / annum
16	(vii) Sharps waste	Hospitals, Clinics, Medical practitioners, Pharmacies,	25	1 652.56 kg / annum
			TOTAL HCRW:	**37 888.67 kg / annum**

5 Service providers active in the study area

The following service providers collect, transport, treat and/or dispose of hazardous or HCRW in the study area.

Table 5: Service providers collecting various H&HCRW types in the study area

	WASTE TYPE									
SERVICE PROVIDER	**Infectious**	**Sharps**	**Patho-logical**	**Pharma-ceutical**	**Oil**	**Fluorescent Tubes**	**Oil and Grease contaminated material**	**Batteries**	**Sludge and Kalk**	**Paint**
Interwaste (Clinx Medical Waste Management)	x	x		x						
Havenga Used Oil					x					
Interwaste (Reclite)						x				
Interwaste							x			
Battery Manufacturers (Willard, Auto X, Sabbat, etc.)								x		
Old Oil Boys					x					
Oilkol					x					
Reinoil					x					
Oildrop					x					
Used oil collection and refining					x					
WasteMart									x	
Dekro Paints										x
Averda	x	x	x	x						
Compass Medical Waste Services	x	x	x	x						
BCL Medical Waste Management	x	x	x	x						
Bidvest Rentokil	x	x		x						
Initial	x	x								

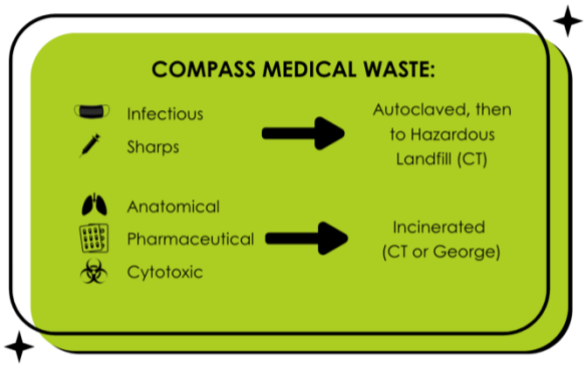
In order to understand how and where hazardous waste is treated and/or disposed of, we engaged with the following service providers: Compass Medical Waste Services, BCL Medical Waste Management, Averda, and Old Oil Boys. Brief details of each are provided below.

Note that infectious waste and sharp waste is not required to be incinerated, but must be treated and sterilised (e.g. autoclave, microwave, electro-thermal deactivation) before being disposed of. All other HCRW (e.g. pharmaceutical, pathological) is required to be incinerated.

Compass Medical Waste Services

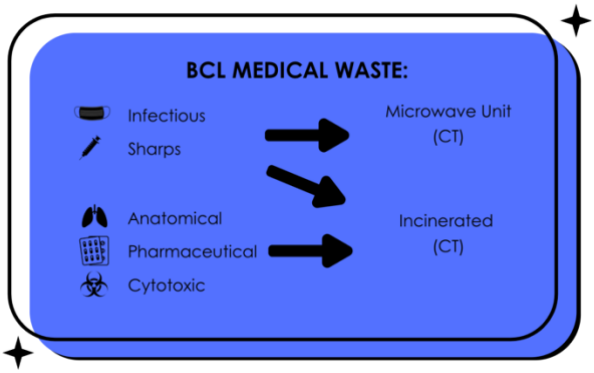
Compass provides healthcare risk waste (HCRW) management services specialising in the containment, collection, treatment, and disposal of this stream.

All infectious and sharps waste is treated using autoclave technology, a sterilisation process, before the waste is shredded, compacted and sent to a Class A (hazardous) landfill (Cape Town). All anatomical, pharmaceutical and cytotoxic waste is sent to licensed third-party incinerators (Cape Town and George), and the resulting ash is transported to a Class A landfill site. Once the waste is safely disposed of, clients are issued with a safe disposal certificate.



BCL Medical Waste Management

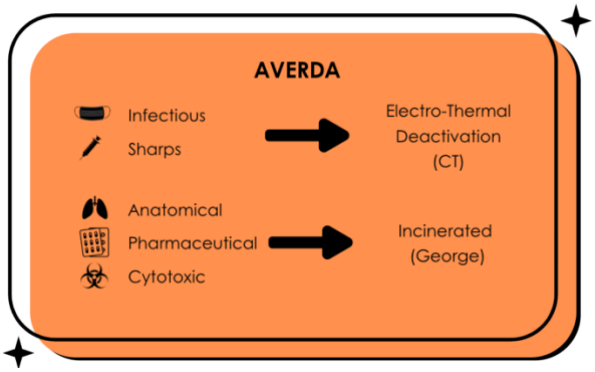
BCL offers the destruction of healthcare risk waste and associated waste streams, via high-temperature incineration. They own and operate the only licenced incinerator plant in the Western Cape (Blue Downs, Cape Town) and also have a microwave facility (Ecosteryl Microwaving process). Infectious and sharps waste can be treated in the microwave unit or incinerated together with all the other waste types.



They also offer cremation of deceased animals via R.I.Pets, servicing veterinary practices and pet owners.

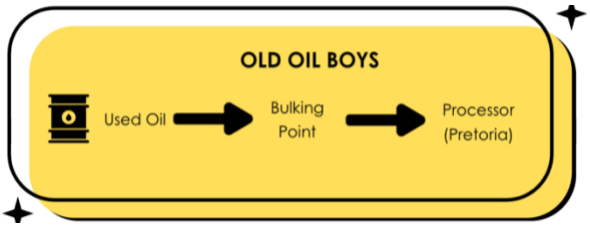
Averda

Averda South Africa owns four thermal treatment facilities in the country; two ETDs (Electro-Thermal Deactivation) and two incinerators. Infectious and sharps waste gets delivered to their ETDs where it is treated to render it harmless to environmental and human safety and therefore safe for landfill disposal.



All other waste categories, from anatomical waste through to unrecyclable materials, are sent to their incinerators in George and burned at temperatures of up to 1150°C, reducing the volume by 85% in the form of 'incinerator ash'. In the Western Cape, this ash is disposed of at Vissershok, while in Gauteng, it is disposed of at Vlakfontein (Mpumalanga), an Averda-owned Class A hazardous waste landfill.

Old Oil Boys
Old Oil Boys are certified to collect used oil including old motor oil, hydraulic oil, gearbox oil, diesel & petrol oil, and transformer oil. This oil can either be donated or they pay the generator a minimum of R1 per litre (if separated correctly).



They work with Oricol or Dryzit to safely remove any water contaminated with oil from their site. This ensures proper disposal in compliance with environmental standards. The collected oil is stored at a bulking point from where it is fetched by registered processors who recycle and use the oil (e.g. for explosives in the mining industry, currently in Pretoria). Old Oil Boys as well as any processors who make use of the oil are all registered and certified by the ROSE (Recycling Oil Saves the Environment) Foundation.

6 Useful Contacts

The following organisations are useful contacts for assisting with the correct handling, storing, treatment, disposal of hazardous waste:

info@circular-energy.org
www.circular-energy.org

Circular Energy
Circular Energy is a PRO approved and registered to operate a nationwide take-back system for the collection, recycling, and environmentally sound processing of: electrical and electronic equipment, lighting and lighting equipment, paper and packaging, portable batteries, and lubricant oil.
Households and businesses can request a collection for used electric or electronic equipment, lighting or lighting equipment and batteries by submitting a form on their website.

info@croplife.co.za
www.croplife.co.za

CropLifeSA
CropLife SA serves responsible manufacturers, suppliers and distributors of sustainable crop protection, public health and plant biotechnology solutions in South Africa and are the only PRO for pesticides.
CropLife SA has an empty container management system with collectors and recyclers that have been vetted and approved as reliable and ethical operators.
They have extensive resources on cleaning, triple rinsing, recycling and disposal of containers and have a list of certified recyclers of empty pesticide packaging on their website.

info@rosefoundation.org.za
www.rosefoundation.org.za

ROSE Foundation
ROSE (Recycling Oil Saves the Environment) aims to collect and enhance used lubricating oil within strict environmental standards, prioritising cleaner production and recycling for economic value.
The responsibility of ROSE Foundation as a PRO for the lubricant industry is to ensure that all the used oil is collected, transported, stored, and recycled responsible to protect the environment in South Africa.

SAICRA

admin@saicra.co.za
www.saicra.co.za

SAICRA is the South African Industrial Container Reconditioners Association and they represent reconditioners of industrial containers and new drum manufacturers, promoting responsible environmental collection and reconditioning of industrial containers in South Africa.
Their mission is to promote the role of the South African industrial container producers, brand owners and reconditioners to meet the Extended Producer Responsibility regulations in the collection, transportation, recycling and treatment of previously certified packaging in a sustainable, ethical, environmentally compliant and responsible manner.

info@ewasa.org
www.ewasa.org

Ewasa
The EPR Waste Association of South Africa (eWASA) is a PRO for the electrical and electronic equipment, lighting, paper and packaging, portable batteries and lubricating oils sectors.
Ewasa has extensive resources available to assist with the correct management of various waste products, including hazardous types such as electronic waste, batteries and oil.

These organisations can assist the municipality and generators within the municipal area to safely manage their hazardous waste and may also be able to provide alternative treatment options to disposal (e.g. reuse and/or recycling). Note that this list is not exhaustive.

7 Conclusion and Recommendations

Results from the H&HCRW Survey conducted from October to December 2024 within the Bergrivier Local Municipality indicate that the majority of waste generators have systems and processes in place to adequately and responsibly manage the waste they generate. An approximate total of 37 888.67 kg of healthcare risk waste is generated annually. Additionally, an estimated 24 046.69 kg of hazardous waste and 10 480 litres of hazardous liquids are generated each year. In total, this amounts to 61 935.36 kg of waste and 10 480 litres of H&HCRW generated annually.

This waste is primarily treated and disposed of by service providers who collect it from the waste generators. However, the following risks were identified during the 2024 H&HCRW survey:

1. Household Hazardous Waste (HHW): The survey did not include the generation of household hazardous waste, yet disposal of such waste via the municipal waste system could still pose risks. It is recommended that a system be established to collect household hazardous waste separately.
2. Improper disposal by some generators: A number of businesses, including paint manufacturers, printers, and cleaning detergent suppliers, admitted to disposing of hazardous waste with general waste or down the drain. While these businesses are willing to improve their waste management practices, there is a need for greater awareness and resources, particularly for small hazardous waste generators, to ensure proper, responsible, and safe management of hazardous waste.

In summary, this study has shown that hazardous waste management in the Bergrivier Municipality is generally effective and does not pose significant risks. It is recommended that the municipality continue to update contact information and resources—such as those available on the municipal website—to assist waste generators in managing their hazardous waste. Furthermore, the municipality should provide guidance on proper disposal methods and ensure access to certified service providers to guarantee safe disposal, minimising harm to both human health and the environment.

Appendix A

Table 6: Schedule 3 of the National Environmental Management: Waste Amendment Act, 2014 Act No. 26 of 2014: Category A: Hazardous Waste

Industrial Group	Waste Fractions
1. Wastes from agriculture, horticulture, aquaculture, forestry, hunting and fishing, food preparation and processing	(a) hazardous portion of wastes from agriculture, horticulture, aquaculture, forestry, hunting and fishing
2. Wastes from wood processing and the production of panels and furniture, pulp, paper and cardboard	(a) hazardous portion of wastes from wood processing and the production of panels and furniture (b) hazardous portion of wastes from wood preservation (c) hazardous portion of wastes from pulp, paper and cardboard production and processing
3. Wastes from the leather, fur and textile industries	(a) hazardous portion of wastes from the leather and fur industry (b) hazardous portion of wastes from the textile industry
4. Wastes from petroleum refining, natural gas purification and pyrolytic treatment of coal	(a) wastes from petroleum refining (b) wastes from the pyrolytic treatment of coal (c) wastes from natural gas purification and transportation
5. Wastes from inorganic chemical processes	(a) wastes from the manufacture, formulation, supply and use (MFSU) of acids (b) wastes from the MFSU of bases (c) wastes from the MFSU of salts and their solutions and metallic oxides (d) metal-containing wastes (e) wastes from the MFSU of sulphur chemicals, sulphur chemical processes and desulphurisation processes (f) wastes from the MFSU of halogens and halogen chemical processes (g) wastes from the MFSU of silicon and silicon derivatives (h) wastes from the MSFU of phosphorous chemicals and phosphorous chemical processes (i) wastes from the MFSU of nitrogen chemicals, nitrogen chemical processes and fertiliser manufacture (j) wastes from the manufacture of inorganic pigments (k) other wastes from inorganic chemical processes
6. Wastes from organic chemical processes	(a) wastes from the manufacture, formulation, supply and use (MFSU) of basic organic chemicals (b) wastes from the MFSU of plastics, synthetic rubber and man-made fibres (c) wastes from the MFSU of organic dyes and pigments (d) wastes from the MFSU of organic plant protection products, wood preserving agents and other

		biocides (e) wastes from the MFSU of pharmaceuticals (f) wastes from the MFSU of fats, grease, soaps, detergents, disinfectants and cosmetics (g) other wastes from the MFSU of fine chemicals and chemical products
7.	Wastes from thermal processes	(a) hazardous portion of wastes from power stations and other combustion plants (b) hazardous portion of wastes from the iron and steel industry (c) wastes from aluminium thermal metallurgy (d) wastes from lead thermal metallurgy (e) wastes from zinc thermal metallurgy (f) wastes from copper thermal metallurgy (g) wastes from silver, gold and platinum thermal metallurgy (h) wastes from other non-ferrous thermal metallurgy (i) hazardous portion of wastes from casting of ferrous pieces (j) hazardous portion of wastes from casting of non-ferrous pieces (k) hazardous portion of wastes from manufacture of glass and glass products (l) hazardous portion of wastes from manufacture of ceramic goods, bricks, tiles and construction products (m) hazardous portion of wastes from manufacture of cement, lime and plaster and articles and products made from them
8.	Waste from the photographic industry	(a) hazardous portion of waste from the photographic industry
9.	Wastes from the manufacture, formulation, supply and use (MFSU) of coatings (paints, varnishes and vitreous enamels), adhesives, sealants and printing inks	(a) wastes from MFSU and removal of paint and varnish (b) wastes from MFSU of other coatings (including ceramic materials) (c) wastes from MFSU of printing inks (d) wastes from MFSU of adhesives and sealants (including waterproofing products)
10.	Wastes from chemical surface treatment and coating of metals and other materials; non-ferrous hydrometallurgy	(a) wastes from chemical surface treatment and coating of metals and other materials (for example galvanic processes, zinc coating processes, pickling processes, etching, phosphating, alkaline degreasing, anodising) (b) wastes from non-ferrous hydrometallurgical processes (c) wastes from sludges and solids from tempering processes (d) wastes from hot galvanising processes
11.	Wastes from shaping and physical and mechanical surface treatment of metals and plastics	(a) hazardous portion of wastes from shaping and physical and mechanical surface treatment of metals and plastics (b) wastes from water and steam degreasing processes

12. Oil wastes and wastes of liquid fuels (except edible oils)	(a) waste hydraulic oils (b) waste engine, gear and lubricating oils (c) waste insulating and heat transmission oils (d) oil/water separator contents (e) wastes of liquid fuels (f) hazardous portion of other oil waste
13. Waste organic solvents, refrigerants and propellants	(a) waste organic solvents, refrigerants and foam/aerosol propellants
14. Other wastes not specified in the list	a) hazardous portion of wastes from end-of-life vehicles from different means of transport (including off-road machinery) and wastes from dismantling of end-of-life vehicles and vehicle maintenance (b) hazardous portion of wastes from electrical and electronic equipment (c) hazardous portion of wastes from off-specification batches and unused products (d) wastes from discarded gases in pressure containers and discarded chemicals (e) wastes from discarded batteries and accumulators (f) wastes from transport tank, storage tank and barrel cleaning (g) spent catalysts wastes (h) oxidising substances wastes (i) aqueous liquid wastes destined for off-site treatment (j) waste linings and refractories
15. Construction wastes	(a) wastes from bituminous mixtures, coal tar and tarred products (b) discarded metals (including their alloys) (c) waste soil (including excavated soil from contaminated sites), stones and dredging spoil (d) wastes from insulation materials and asbestos-containing construction materials (e) wastes from gypsum-based construction material (f) wastes from other construction and demolition wastes
16. Wastes from human or animal health care and/or related research (except kitchen and restaurant wastes not arising from immediate health care)	(a) wastes from natal care, diagnosis, treatment (b) wastes from research, diagnosis, treatment or prevention of disease in humans prevention of disease involving animals
17. Wastes from waste management facilities	(a) hazardous portion of wastes from incineration or pyrolysis of waste (b) hazardous portion of wastes from physico / chemical treatments of waste (c) hazardous portion of stabilised/solidified wastes (d) hazardous portion of wastes from aerobic treatment of solid wastes (e) hazardous portion of wastes from anaerobic treatment of waste (f) landfill leachate wastes

	(g) wastes from shredding of metal-containing wastes (h) wastes from oil regeneration (i) wastes from soil remediation

ANNEXURE C

2025 ORGANIC WASTE DIVERSION PLAN UPDTAE

BERGRIVIER MUNICIPALITY

ORGANIC WASTE DIVERSION PLAN
ANNUAL UPDATE - 2025

COMPILED BY:

JPCE

(Specialist Consulting Engineers)

JUNE 2025

REPORT: BERGRIVIER MUNICIPALITY - ORGANIC WASTE DIVERSION PLAN: ANNUAL UPDATE - 2025

JPCE Project Number: A165

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JPCE (PTY) LTD P O Box 931 BRACKENFELL 7561	Project File	3	06/2025	JG PALM

BERGRIVIER MUNICIPALITY

ORGANIC WASTE DIVERSION PLAN

ANNUAL UPDATE - 2025

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FIGURES

ABBREVIATIONS

BM	Bergrivier Municipality
D:EA&DP	The Department: Environmental Affairs and Development Planning
DEA	The Department of Environmental Affairs
IWMP	Integrated Waste Management Plan
MBT	Mechanical & Biological Treatment
N&S	Norms and Standards
NWMS	National Waste Management Strategy
OWDP	Organic Waste Diversion Plan
RTS	Refuse Transfer Station
WCS	Waste Characterisation Study
WWTW	Wastewater Treatment Works

APPENDICES

APPENDIX 1: D:EA&DP COMMENTS ON PREVIOUS OWDP

BERGRIVIER MUNICIPALITY

ORGANIC WASTE DIVERSION PLAN

1. INTRODUCTION

1.1 TERMS OF REFERENCE

JPCE (Pty) Ltd (JPE) has been appointed by the Bergrivier Municipality (BM) in the West Coast District of the Western Cape Province to assist in compiling the annual update to the Organic Waste Diversion Plan (OWDP). The previous OWDP was developed in 2021 and the Western Cape Department of Environmental Affairs and Development Planning (D:EA&DP) provided their comments on this report. The D:EA&DP comments are included as **Appendix A** to this report.

This annual update consists of the original plan and, where applicable, updated figures relating to waste and disposal quantities and progress in implementation. In summary the following is included in the update:

- Updated waste volumes received.
- Diversion update.
- Updated target figures.
- Departmental Comments on the 2021 OWDP.

D:EA&DP is the licensing authority for municipal waste management, and have included the requirement for OWDPs in the waste licenses they issued. The following requirement was included in the closure licences of the Piketberg, Porterville, Aurora and Redelinghuys Landfills:

> *"The Licence Holder must submit an Organic Waste Diversion Plan to the Director 90 days after the date of issue of this Licence and annually thereafter. The information within the Organic Waste Diversion Plan must:*
>
> *Provide a status quo of organic waste sources and volumes disposed at municipal WDFs, and current rates and procedures of organic waste diversion from the facility; and*
>
> *set annual targets and identify procedures from 2018 that will be implemented to meet these targets for the diversion of organic waste from municipal WDFs, in order to reach a 50% diversion by the year 2022 and 100% diversion by the year 2027."*

This updated report will not focus on diversion from only one site and will be a Municipality wide document. The plan will be focussed on providing the BM with options on how to divert organic waste from landfill through separation initiatives such as separate collection of garden waste, chipping and composting, and providing home composting units to households to separate their organic green and food waste through composting. It will also include comments on generation and diversion of other organic waste sources where applicable.

The BM does not make use of any internal landfill sites for household waste disposal. They implement a three-bag collection service to the residents where recyclable materials get collected in a clear bag and taken to the Piketberg or Velddrif Recycling Facilities, general household waste gets collected in a black bag and taken to either the Velddrif or Piketberg Solid Waste Transfer Stations from where it is taken to Vredenburg (from Velddrif) and Malmesbury (from Piketberg) Landfills. The Malmesbury Landfill is also known as the Highlands landfill. The household garden waste is then collected in green bags and taken to either the old Piketberg Landfill, Porterville Landfill or the Velddrif Transfer Station where it is stored and chipped on site for composting.

Apart from being a requirement of the waste management licences of the waste disposal facilities within BM, the OWDP also addresses the management of a specific waste type generated within the Municipality. This OWDP must therefore be read with the Municipality's Integrated Waste Management Plan (IWMP) and as such the information already contained in the Municipality's IWMP regarding waste volumes, population demographics, etc. will not be repeated in this document.

1.2 LEGISLATIVE FRAMEWORK

The development of the National Waste Management Strategy (NWMS) in 2011 was an important milestone in facilitating the implementation of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008). The Waste Act promotes diversion of waste from landfill and various strategies and regulations have since followed. The Department of Environmental Affairs (DEA) for instance developed a National Organic Waste Composting Strategy in 2013 to assist with the diversion of organic waste from landfill through composting and although this has given rise to many successful composting projects, more can still be done in the field of organic waste diversion.

The 2021 National Norms and Standards (N&S) for Organic Waste Composting (Government Gazette No. 44762) states that "*the diversion of organic waste from landfills promotes the achievement of comprehensive and sustainable management of environmental resources and contributes to upholding of the constitutional rights of all South Africans to an environment that is not harmful to human health and wellbeing*". The N&S also states that composting facilities only need to comply with the requirements of these N&S if they have the capacity to process compostable organic waste, in excess of 10 tonnes per day. Facilities with a capacity to process less than 10 tonnes per day are still required to register the facility and align with the requirements of applicable integrated waste management by-laws and comply with the principle of duty of care as contained in section 28 of the National Environmental Management Act, 1998.

D:EA&DP thus decided to incorporate targets for organic waste diversion into the waste license of landfill facilities in the Western Cape. The targets are to divert 50% by the year 2022 and 100% by the year 2027. In the composting norms and standards, Organic Waste is defined as "*waste of biological origin which can be broken down, in a reasonable amount of time, into its base compounds by micro-organisms and other living things".*

These OWDP's need to provide a status quo of current organic waste sources and volumes disposed, and the current rates and procedures of organic waste diversion from the facility in question. These plans also need to set annual targets and identify procedures that will be implemented to meet these targets for the diversion of organic waste from the municipal facilities.

2. STATUS QUO OF ORGANIC WASTE IN BERGRIVIER

2.1 VOLUMES AND COMPOSITION

2.1.1 Municipal Organic Waste

The 5th generation BM IWMP developed in 2025 indicated that the black bag waste contained in the order of 37% (*was 35.2% in 2021 OWDP*) organic waste, which is made up of 31% food waste (*same as 2021 OWDP*) and 6% garden waste (*was 4% in 2021 OWDP*). This waste is taken to either the Vredenburg or Highlands (Malmesbury) Landfills from the transfer stations in BM.

The IWMP also showed that about 10% food waste (*same as 2021 OWDP*) and 4% garden waste (*was 1.1% in 2021 OWDP)* forms part of the clear bag waste stream. These wastes are added to the municipal waste streams at the transfer stations and gets taken to the above landfills with the black bag waste as tailings after the recycling process. On average, using data for the last two years, 1,885 tonnes per annum of organic waste from BM gets disposed of at the Vredenburg landfill and 1,846 tonnes per annum at the Highlands landfill. This is a significant increase from the 2021 OWDP reported numbers of 980 tonnes to Vredenburg and 1,480 tonnes to Highlands.

The IWMP estimated that approximately 2,555 tonnes of garden waste per annum is received at the Velddrif RTS (*1,700 in 2021 OWDP*), 26 tonnes per annum at the Piketberg Landfill (*was 800 in 2021 OWDP*), and an additional 211 tonnes per annum going to the closed Porterville Landfill (*was 650 in 2021 OWDP*). These are estimates based on the records kept at the entrances of these facilities. Garden waste also gets taken to the closed landfills at Redelinghuys and Aurora although these are in small quantities and the tonnages fluctuate. The information in **Figure 2-1** below provides a visual representation of the total estimated tonnages of organic waste that gets collected and or disposed from the BM.

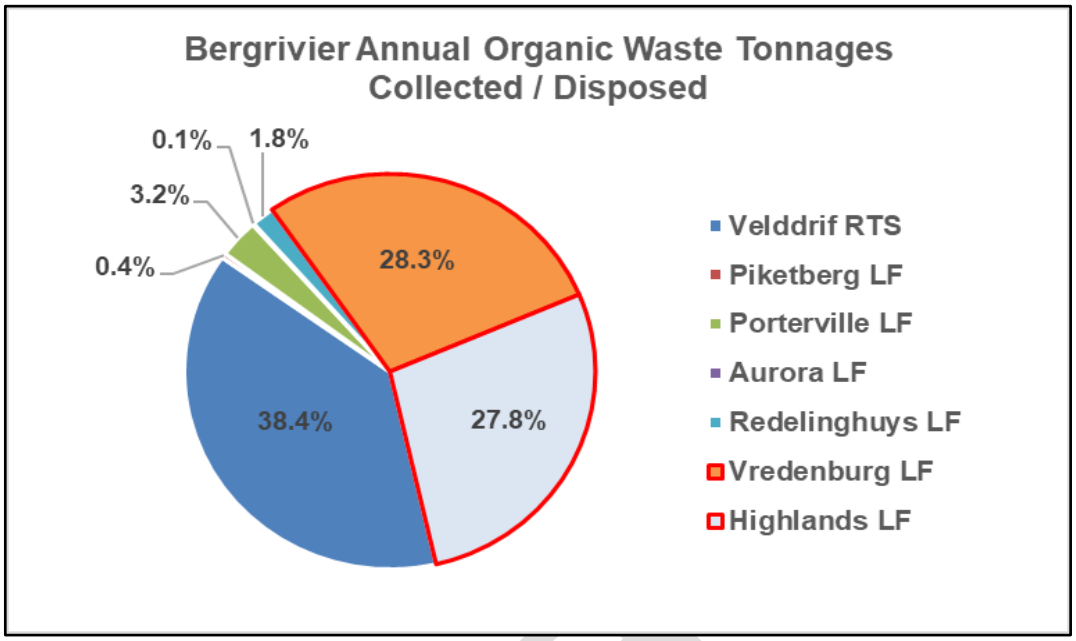

Figure 2-1: Annual organic waste collected and disposed in Bergrivier Municipality

This information shows that most of the organic waste (56.1%) in the BM collection system ends up at the Vredenburg and Highlands landfills, bearing in mind that this is mostly food waste since only 6% of this disposed tonnage is characterised as garden waste.

2.1.2 Municipal Garden Waste

The waste characterisation study (WCS) that was done for the latest IWMP also characterised the green bag waste and found that 98% of waste in the green bags were garden waste with only trace amounts of food waste and other general waste. If the data in **Figure 2-1** is reworked to show garden waste only, the tonnages are shown graphically in **Figure 2-2** below showing that 17% of garden waste in the BM area is still being landfilled at the Highlands and Vredenburg landfills. This equates to about 600 tonnes per annum.

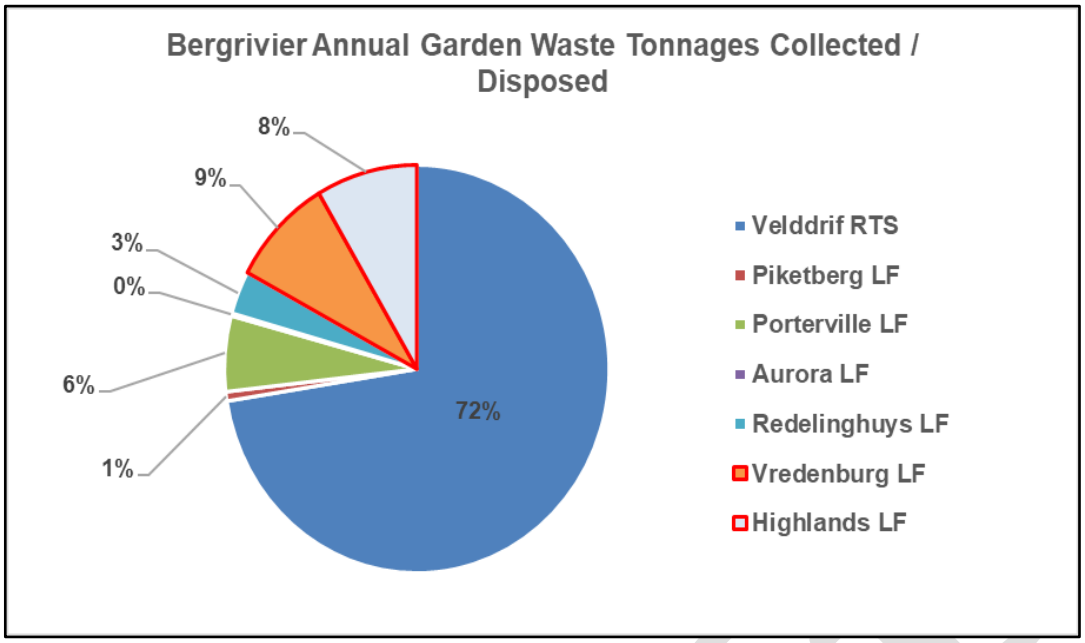

Figure 2-2: Annual Garden waste collected and disposed in BM

A 2021 study at the Velddrif Refuse Transfer Station (RTS) facility showed that a volume of about 34,100m^3 garden waste was stockpiled on this site requiring treatment. This was a combination of dry bush waste, branches, leaves and green bag waste as well as some general municipal waste that would have to be removed before treatment.

At the Velddrif and Piketberg sites, the green bags are mostly kept separate from the other garden waste stockpiles brought in by the public. The garden waste in the green bags may be assumed to consist mostly of leaves, grass cuttings and smallish branches and should be mostly contaminant free as shown in the 2025 WCS. The garden waste off-loaded by the public, with little supervision, can however be expected to be contaminated and general domestic waste have been observed within these garden waste stockpiles.

Stockpiles of public garden waste as well as green bags are also present at the Piketberg and Porterville sites. It in unknown what the current stockpile volumes are at the facilities compared to the information provided in the previous (2021) OWDP, but from recent external audits undertaken at these sites the volumes can be considered similar.

The proposed method to treat this waste stream is to separate out the general waste from the stockpiles and to chip the remaining waste into a mulch that can then be composted or collected by the public. A report entitled “Velddrif Transfer Station: Building Rubble and Garden Waste Areas Clean-up Study” was submitted to the BM in January 2021 by JPCE (Pty) Ltd to address this matter.

2.1.3 Other Sources of Organic Waste

From the D:EA&DP comments on the 2021 OWDP the diversion targets determined by the licensing authority are based on the total amount of organic waste generated that could potentially be disposed of. The baseline should therefore theoretically include all garden waste, food waste, commercial organic waste, industrial organic waste (abattoir and food producer waste), water and wastewater treatment sludge and possibly even agricultural organic waste. The Department rightfully mentions that much of this waste is already diverted from disposal by alternative means and would assist in reaching the diversion targets.

The BM has reported that they have no records of organic waste generated at abattoirs or farms. These are mostly private facilities that do not report their waste volumes to the BM. The organic waste generated on farms within the BM are generally managed on the individual farms, so quantifying this waste would be very challenging.

Wastewater sludge generally stays at the retention ponds at the wastewater treatment works. The BM has however initiated a project where dried sludge was given to a farmer to work into soils as fertilizer. There are however no records of the volumes involved. The volumes from commercial organic waste producers are included in the black bag waste tonnages transferred to the two landfills.

Organic waste for the purpose of this report will thus be municipal Food and garden waste due to the uncertainty of volumes and treatments of the other potential organic waste streams.

2.2 DIVERSION

2.2.1 Green Bag System

The methods BM currently employ to divert organic waste from landfill, starts with the implementation of the green bag system. Residents are given a green bag in which to place their residential garden waste and this gets collected by the BM as discussed in the IWMP. The large majority of Municipalities in South Africa collect residential garden waste as part of the black bag waste stream, which results in this waste ending up on landfill. Here the BM are already leading the way in that they provide a separate collection system for garden waste.

As discussed earlier the organic waste taken to the Vredenburg and Highlands Landfills represents in the order of 56% of the total municipal organic waste collected in the Municipality. The remaining 44% comprises almost completely of garden waste collected through the green bag system and garden waste taken to the landfills by members of the public. As shown in **Figure 2-2** the vast majority of this garden waste is taken to the Velddrif RTS.

As far as garden waste goes the departmental target of 100% diversion by 2027 is thus very achievable for the BM, if considering the BM as a whole, and can be achieved by chipping and composting of source separated garden waste at their current facilities. To get closer to achieving this target the BM needs to initiate efforts to remove the remaining garden waste form the black and clear bags.

2.2.2 Composting

Composting of organic waste currently takes place at the Piketberg Landfill, Porterville Landfill and Velddrif Transfer Station thanks to historic development funding from the Belgian Municipality Heist-op-den-Berg (funding ended in 2023) as well as from municipal funding as part of an initiative from the mayor's office. Entrepreneurs, or Waste Ambassadors, are being supported to compost at these facilities with the long-term goal of creating their own composting businesses, which in turn will assist the BM to divert more organic waste from landfills. Currently the volumes of compost generated through these initiatives are relatively low and the compost gets picked up free of charge by members of the public without a record of how much gets collected and removed from site. This has remained the status quo since the 2021 OWDP and the BM need to focus on how to measure the actual impact of these composting projects on the garden waste delivered to the sites.

Municipal owned mechanical garden waste chippers are being deployed at the Piketberg Landfill, Porterville Landfill and Velddrif RTS as and when required. The regularity of the chipping at these sites depends on the condition of the chippers, available budget and the availability of dedicated staff and transport. The chippers at Piketberg and Velddrif are larger chippers capable of chipping branches of approximately 300mm in diameter whilst the chipper deployed at Porterville is slightly smaller and capable of chipping branches of about 180-200mm in diameter. These chippers are reportedly in good condition with only minor breakdowns.

2.2.3 Household Composters

Since the 2021 OWDP the BM has progressed in the rolling out of household composter units to the public. These HDPE plastic containers are made by Mpact® and has a capacity of 150 liters. Rollout of these units to residents has started and 940 households have already received units since the 2021 OWDP.

The aim is to encourage households to use kitchen scraps and household organic wastes to make compost at home, which will further assist in the diverting of food and garden waste from landfills. The manufactures of these units have undertaken a similar project with the City of Cape Town and has reported that a diversion of approximately 16kg of organic waste per participating household per month has been achieved.

Figure 2-4 below shows what these units typically look like. The effectiveness of these household composters should be seen in the reduced volume of food waste disposed of at the Vredenburg and Highlands Landfill sites through the municipal black bag system. Recent information on tonnages of organic food waste received at these landfills show that the impact of the home composters has not yet taken effect, and this will require the BM to improve on their awareness and education campaigns towards using these units and to the general diversion of organic waste at household level.

Figure 2-3: Household composters to be deployed to residents.

3. ORGANIC WASTE DIVERTION OPTIONS

3.1 FOOD WASTE DIVERSION THROUGH MECHANICAL BIOLOGICAL TREATMENT

Mechanical Biological Treatment (MBT) is a well proven method internationally for removing organics from the municipal waste stream. An MBT process essentially separates all the various material types of a mixed waste stream by using a combination of mechanical equipment and manual labour. It has many possibilities and associated technologies and since the organic waste fractions that arrive at the Bergrivier sites are only already separated garden waste, any possible MBT option would have to focus on the food waste portion.

From the information in this report less than 3,800 tonnes of organic waste are taken to landfill by means of the transfer stations every year. Although this forms a significant portion of the BM municipal organic waste stream, the capital and operational costs to consider MBT infrastructure for removal of organic waste only really becomes viable at rates closer to 3,000 tonnes per month, so for the BM this option would not be viable to further evaluate.

3.2 CHIPPING AND COMPOSTING OF GARDEN WASTE

Composting of garden waste at a centralised composting facility would require a minimum of 350 tonnes of garden waste per month (4,200 per annum) to achieve financial sustainability. Although this is an approximate number that depends on a range of factors, the bottom line is the BM does not have the required volumes to justify the capital contribution required to develop a central garden waste composting plant.

Effective composting requires garden waste to ideally be chipped within one week of being off-loaded to reduce the abrasiveness of the dry garden waste on the chipper's mechanical parts, thereby reducing maintenance costs and to produce chipped material that can still be composted. Although the dry materials are important carbon contributors for compost, it is equally important to include enough freshly chipped green material to provide the nitrogen required for organism growth to oxidize the carbon and produce quality compost.

Composting through chipping of garden waste is the recommended organic waste diversion option for the BM. Where material is too dry and not enough green material is available to mix in with it, the material needs to be chipped and stockpiled separately as wood chips or mulch for collection by the public.

3.3 SEPARATE COLLECTION AND COMPOSTING OF FOOD WASTE

Food waste in the right volumes can be composted with the chipped garden waste, and with the volumes of food waste available the minimum tonnages for operation of a successful composting facility (see above) definitely becomes possible.

As discussed, household separation of food waste is still very challenging to achieve with the only incentive being "doing the right thing" at individual household level. Given the current economic situation in the country, it is safe to assume that participating households will be mostly from the more affluent areas. Although the BM is strongly encouraged to continue with, and improve on household composters, this will not be an immediate solution to household food waste management.

Approaching commercial food waste producers within the BM, like restaurants, hotels and shopping centres, could be an easier way of isolating food waste for possible future composting. It is unknown how much of the existing food waste generated by the BM comes from commercial sources but implementing a pilot project to collect food waste from partaking commercial partners will be a good start to evaluate volumes.

Composting a mixture of food and garden waste is a specialised process that, if done incorrectly, can result in bad odours, pollution of groundwater, increase in vectors like rats and snakes, and unusable compost. For this reason, if the BM decides to separately collect commercial (and possibly some selected household) food waste for composting with the chipped garden waste, they will need to approach private companies for this, and outsource the collection and composting process at preferably a single facility located near Piketberg.

4. BERGRIVIER STRATEGY

4.1 ANNUAL TARGETS

The departmental target for organic waste diversion from landfill was 50% by 2022 and is 100% by 2027 as discussed. Food waste is collected with black bag waste and landfilled outside the boundaries of the BM and garden waste is separately collected through the green bag system or taken to the facilities by the public.

The BM has embarked on a process where home composters were distributed to residents with a capacity to reduce food waste to landfill by about 16kg per household per month. The latest IWMP indicated an estimated 12,300 urban households in 2025, with an additional 6,800 urban and farming households. Reportedly only around 10,000 of the urban household erven have been developed, and this will result in an annual reduction of organic waste to landfill of just under 1,000 tonnes, assuming a 50% household participation rate. This would greatly improve the organic waste diversion numbers of both landfills. The continuation of the household composter project is thus encouraged.

Assuming the municipal cross-boundary disposal of household organic waste through the black bag system will remain in place, the BM is theoretically very close to the 2022 target of 50% diversion, since 44% of the total organic waste generated is diverted from these landfills through the current green bag system. This is assuming the diverted garden waste is in fact chipped and composted and not just stockpiled at the closed landfill sites, which is happening in many cases as discussed.

Diversion of 100% of garden waste by 2027 is possible by removing the remaining 17% of garden waste in the black bag system and chipping and composting at all the existing closed landfills, or by bringing it all to one centrally located composting facility that is registered through the N&S. To make this happen the BM need to focus on education and awareness campaigns directed at the green bag system to remove the remaining 17% by mid-2026 (one year), and then on formalising the chipping and composting of this waste stream by 2027. It is recommended that this process be outsourced to the private sector and encourage them to also include household waste in the process.

The remaining organic wastes being generated inside the BM also needs to be diverted to achieve the long-term target of 100% diversion.

As discussed, the current generation, and possible diversion numbers, for non-household organics like WWTW sludge, abattoir waste and commercial farming waste etc. is unknown. These wastes are not part of the black bag collection system, nor taken to the closed landfill sites or transfer stations, so it is safe to assume that they are diverted from landfill thereby improving the percentage diversion targets as per the licence conditions of each facility. Estimating the volumes of these waste streams and then increasing the percentage diversion for the BM will improve the percentage target reached, but will not be a reliable way of reporting and will thus not form part of this OWDP.

The BM need to focus on improving garden waste chipping and composting and on removing food waste from the black bag waste stream in order to add it to a commercially operated entrail composting facility. There has been no measurable increase in the diversion of organic food waste from landfill and the target of 100% by 2027 can only be achieved through maximising on home composting and through private contracts to collect and compost food waste from homes and businesses.

4.2 SIZING OF CHIPPING EQUIPMENT

To chip the incoming organic (garden waste) waste fractions the chippers would initially have to be able to accommodate the monthly disposal tonnages shown in **Figure 2-1**. The current chipper used at the Velddrif site reportedly operates during office hours and according to the specifications provided for this Bandit 90XP machine it has an opening of 43.18cm x 24.13cm with a feed rate of 27.43m/min. Theoretically this would result in a throughput rate of 2.8m^3/min but given the makeup of the garden waste at these sites, and the realistic speed of feeding, a throughput rate of about 1.0m^3/min is more realistic. Using a 6-hour shift with operations 5 days a week and 4 weeks per month, this would result in a chipping capacity of more than 2,000 tonnes per month if a density of 0.3tonne/m^3 is assumed.

Although these are theoretical numbers, it does show the current chipping capacity is more than enough considering the tonnes per year received. Piketberg has the same chipper as Velddrif with less waste to chip, and even though the Porterville chipper is much smaller, using the same calculations as above, the chipper is more than capable of chipping the garden waste taken to the Porterville facility.

To make sure that each chipper remains equipped to process the waste on site, the Municipality needs to develop and maintain a maintenance plan for each machine, which includes timelines for servicing, parts replacement etc.

Where existing stockpiles of garden waste exist, as discussed under heading 2.1, these stockpiles would have to be chipped first and shifts perhaps increased to work through the backlog until the stockpiles are cleared. Alternatively, the Municipality could obtain the assistance of outside chippers through short term rentals or longer contracts to chip these existing stockpiles.

4.3 CHIPPING LOCATIONS

The chippers are present at the three main towns in the BM, but garden waste also gets taken to the other smaller sites by members of the public. If not managed properly the stockpiles of garden waste at these smaller facilities grow rapidly and increases the fire risk on site.

It is proposed that a team of Municipal workers collects garden waste from each of the smaller towns on at least a fortnightly frequency and bring it to one of the three main towns for chipping.

4.4 HUMAN RESOURCES

The chipping of garden waste will be most effective if responsibility of the chipping operation is given to dedicated personnel. This includes responsibility of throughput, quality, size, and location of chipped material as well as general upkeep of the machine in general. These staff members should also be responsible for the accurate record keeping of chipped waste and waste removed from site. although staff have been allocated for this purpose since the 2021 OWDP, the reporting of chipped waste and compost produced has not improved.

The recently appointed solid waste manager has a responsibility of reporting the chipped and composted waste volumes.

4.5 RECORD KEEPING

Currently the only form of record keeping regarding organic waste is of incoming loads, and no records are kept of how much chipped material leaves the sites. In order to meet the targets set by D:EA&DP, the BM would have to show how they are diverting waste, so keeping record of the garden waste leaving the site, either as compost or chipped mulch, is thus crucial. The weighbridges that were not operational during the 2021 OWDP have been refurbished to working order and the waste managers in the respective towns need to take ownership of this system in order to accurately reflect the chipped volumes.

4.6 QUALITY AND OFFTAKE

As discussed, if composting of the chipped waste is to be the method of treatment, the makeup of wet and dry garden waste needs to be managed. As a minimum the BM is to ensure that the Chipping Managers at each site at least undergoes basic training on the methods of composting to ensure that the operation is sustainable. Where waste is too dry to effectively use in composing, the material should still be chipped and stockpiled separately as wood chippings or mulch for free collection by the public.

Until such time that the quantity and quality of compost will be good enough to sell for a profit, it is recommended that the materials be made available for free to members of the public to ensure it gets diverted from site. The availability of this material to members of the public needs to be advertised in the local media to ensure that people are aware.

To maximise on off-take the BM need to consider soliciting bids form the private sector to collect, chip and compost all food and garden waste in the BM and perhaps make a facility available to them in order t improve viability.

4.7 COST IMPLICATIONS

The bulk of the achieved diversion from BM landfills is achieved by ensuring the organic waste fractions contained in the black bag residential waste gets disposed of at landfills not licensed to the BM. This does not remove the responsibility from the BM for diverting this waste group and means to reduce the food waste from the collected black bags need to be found. Continuing and improving on the home composters project is a good place to start. To provide each urban household in the BM with such a unit will cost in the order of R10 Million, and could result in about a 30% diversion of black bag organic food waste to landfills if, assuming a 50% cooperation rate. If only the households that want to contribute receives such a unit, the capital requirement will obviously reduce significantly. Participation rates are lower than expected or planned, and to obtain donor funding for more composters, the BM would need to improve on the current participation rate to show progress.

To ensure the required chipping of garden waste operation is sustainable, the BM needs to ensure through regular maintenance and upkeep that the downtime of the chippers is minimal. If not already done, the chippers need to be added to the Municipal fleet register and included in maintenance contracts. The Municipality also needs to budget for replacement of at least two of these chippers before 2027 at a capital cost of approximately R500,000 each. This, together with salaries for chipping personnel, has been done and included in the budget as shown in the IWMP.

The privatisation of the organic waste diversion process was discussed and if proven successful will result in a monthly cost to the BM, that still needs to be determined but will form part of the operational budget.

5. CONCLUSION

The BM does not operate any landfills for the disposal of general household waste. By utilising the Vredenburg and Highlands Landfills for disposal of all the municipal black bag waste, the BM effectively diverts approximately 56% of the organic waste generated within its area of jurisdiction to remote landfills. This is almost exclusively food waste contained in the black bag waste, and since the waste is generated within the BM they still need to plan for diversion of this waste stream

The Western Cape D:EA&DP made it a condition in most of the provincial waste licences that organic waste diversion plans be developed for landfills in the province. This also holds true for landfills issued with closure licenses that typically only receive garden waste and building rubble, as is the case with the landfills in the BM.

The BM is aware that they have a responsibility to divert organic waste from landfill, and through partnership and international funding, they have progressed with a home composting programme where home composting units have been provided to 940 households. Through this same funding partnership, onsite garden waste composting programmes were also started at the Velddrif Refuse Transfer Station, and the Porterville and Piketberg Closed Landfills. The impact of this needs to be measured and recorded for reporting.

The success of the home composting system and the chipping or chipping and composting of organic waste at the landfills are crucial to the Municipality's ability to successfully divert organic waste, and the international partnership needs to be sustained for as long as possible or at least until the Municipality can continue without the financial support. Since the roll out of the home composters is a relatively recent programme, the effect on landfill diversion is not yet obvious from the reported landfilled tonnages of food waste. The BM must not be discouraged by this, and must continue with the roll out and increase education and awareness campaigns related to home composting in order to work towards measurable results. In addition to processing with the home composting process, the BM need to test the market through soliciting bids from the private sector to collect and compost all organic garden and food waste for composting at a central location to be determined in cooperation with the BM.

Through implementation of the home composting system BM can greatly assist to reduce the organic waste delivered to the Vredenburg and Highlands Landfills by reducing household organic wastes contained in the black bags by about 30% if they achieve a 50% participation rate from the urban households.

By maintaining the garden waste chippers they currently have and ensuring that dedicated staff are available on site to operate the chippers, BM will be able to achieve the target of diverting all garden waste generated within the Bergrivier by 2027. The availability of plant and staff, as well as the accuracy of record keeping should be the key focus areas for the Municipality to achieve these targets since there is currently no record keeping of organic waste actually diverted through chipping and composting.

Garden waste disposed of at the Aurora and Redelinghuys Landfills should be transported to Piketberg or Porterville for chipping and composting at regular intervals to ensure the Municipality achieves the targets set in this organic waste diversion plan.

APPENDIX A

D:EA&DP COMMENTS ON PREVIOUS OWDP

Western Cape Government
Environmental Affairs and Development Planning
BETTER TOGETHER.

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COMMENT ON THE DRAFT ORGANIC WASTE DIVERSION PLAN FOR THE BERG RIVER MUNICIPALITY.

1. This letter serves as comment on the aforementioned document dated March 2021, as received by the Department of Environmental Affairs and Development Planning (DEA&DP), Sub-directorate: Waste Management Licensing (hereafter 'the Department') on 17 March 2021.

2. The Department has the following comments on the aforementioned document:

2.1. On **Page 1**, Section 1.1 'Terms of reference', it is stated that "This OWDP must therefore be read with the Municipality's Integrated Waste Management Plan (IWMP) and as such the information already contained in the Municipality's IWMP regarding waste volumes, population demographics etc., will not be repeated in the document". There is agreement with this statement as it keeps the OWDP concise and does not repeat info from the IWMP.

2.2. On **Page 2**, Section 2.1 'Volumes and composition', there is a lot of detail provided. Presenting this in a process flow or block diagram, per waste type (food, garden etc.), would make for easier reading and/or understanding.

2.3. On **Page 4**, Section 2.2, the OWDP describes in detail the waste management infrastructure and comprehensively explains steps taken to divert organic waste but these processes as a whole need to be constantly evaluated so that the path towards 100% diversion may be assessed. A flow chart that describes the Solid Waste Process and disposal at the Berg River Municipality, accompanied by formula used, allows for efficient assessments of volumes diverted.

2.4. On **Page 5**, Section 3.1 'Mechanical Biological Treatment', should be removed from the plan as it is not an option that would realistically apply to the Berg River Municipality.

2.5. On **Page 5**, Section 4.1, 'Annual Targets', 1st paragraph, 2nd line, it states that "Food waste is collected with black bag waste and landfilled outside the boundaries of the Berg River Municipality and the reduction of this organic waste fraction would thus form part of the OWDP of the landfills in question". This needs to form part of the municipality's projects to separate at source and remove organic waste from the black bags. This will reduce the weight of waste transported by approximately 30%, thus creating a saving in terms of fuel and landfill airspace.

2.6. On **Page 7**, 4.5 'Record Keeping', 1st paragraph, it reads, "Currently the only form of record keeping regarding organic waste is of incoming loads, and no records are kept of how much chipped material leaves the site. In order to meet the targets set by DEA&DP, the Municipality would have to show how they are diverting waste, so keeping record of the garden waste leaving the site, either compost or chipped mulch, is thus crucial, in the absence of weighbridges, the method of recording outgoing waste can be similar to recording incoming waste and the waste managers in the respective towns need to take ownership of this system in order to accurately reflect the chipped volumes." When calculating diversion take the following into account. Report on incoming waste (raw material) from different areas (if applicable) and not on outgoing composted amount as it is a product. Diversion is counted before treatment is being done. As soon as it is a product, it is not diversion.

2.7. On **Page 8**, 5 'Conclusion', The draft OWDP does not cover stakeholder meetings and weekly monitoring of the project. It does not speak about the establishment of a monitoring committee for the OWDP. Monitoring committee meetings necessary to establish compliance with the OWDP, is necessary to ensure robust implementation of the OWDP. Regular updates to the Department must be supplied by the Monitoring Committee.

2.8. General: No detailed budget, nor implementation plan to identify the specific tasks to be implemented to achieve the diversion targets.

2.9. General: No one has been identified to ensure implementation of the activities.

2.10. General: Plans that are developed by the same consultant generally use the same format, with all recommendations. However, OWDPs should be unique as each municipality is subject to different circumstances.

2.11. General: There is a chipper maintenance programme and municipal worker collection teams, dedicated personnel to monitor chipping and record keeping of organic waste volumes. However, the Berg River Municipality does not have weighbridges and the need for weighbridges must be addressed so accurate record keeping of organic waste volumes may take place. All efforts must be made to move away from the current estimation systems if the OWDP is to be credible. Estimations will unfortunately lead to inaccuracies and misinformation, resulting in an obvious and potentially fatal flaw for the OWDP.

2.12. General: The diversion targets determined by DEADP are based on the total amount of organic waste generated that could potentially be disposed of. The baseline should therefore include all garden waste, organic household waste (mainly food waste), commercial organic waste (restaurants and shopping malls), industrial organic waste (abattoir and food producer waste), water and waste water treatment sludge and possibly even agricultural organic waste. Much of this waste is already diverted from disposal by alternative means and would assist in reaching the diversion targets.

2.13. The OWDP does not indicate when waste characterization was completed, although it indicates 42% of organic waste is currently diverted, with 5860 tonnes collected and disposed annually.

2.14. The Department notes that a green bag system, composting, household composters are methods of organic waste diversion, along with chipping and composting at Piketberg WDF, Porterville WDF and Velddrif RTS. However, no waste flow-chart is included.

2.15. No Municipal bylaw is mentioned in the OWDP, while organic waste diversion and the need for an OWDP are not addressed in the IDP.

2.16. Although diversion targets have been set in tonnes/annum, no gap/needs analysis has been conducted to achieve these targets.

2.17. The Berg River Municipality does not report on the IPWIS system and this needs to be done for organic waste diversion together with the other waste information.

2.18. More detailed timeframes must be allocated to activities and in line with provincial targets of 50% by 2022 and 100% by 2027.

3. The Department reserves the right to revise its initial comments and request further information from you based on any new or revised information received.

Yours faithfully,

DEPUTY DIRECTOR: WASTE MANAGEMENT LICENSING

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