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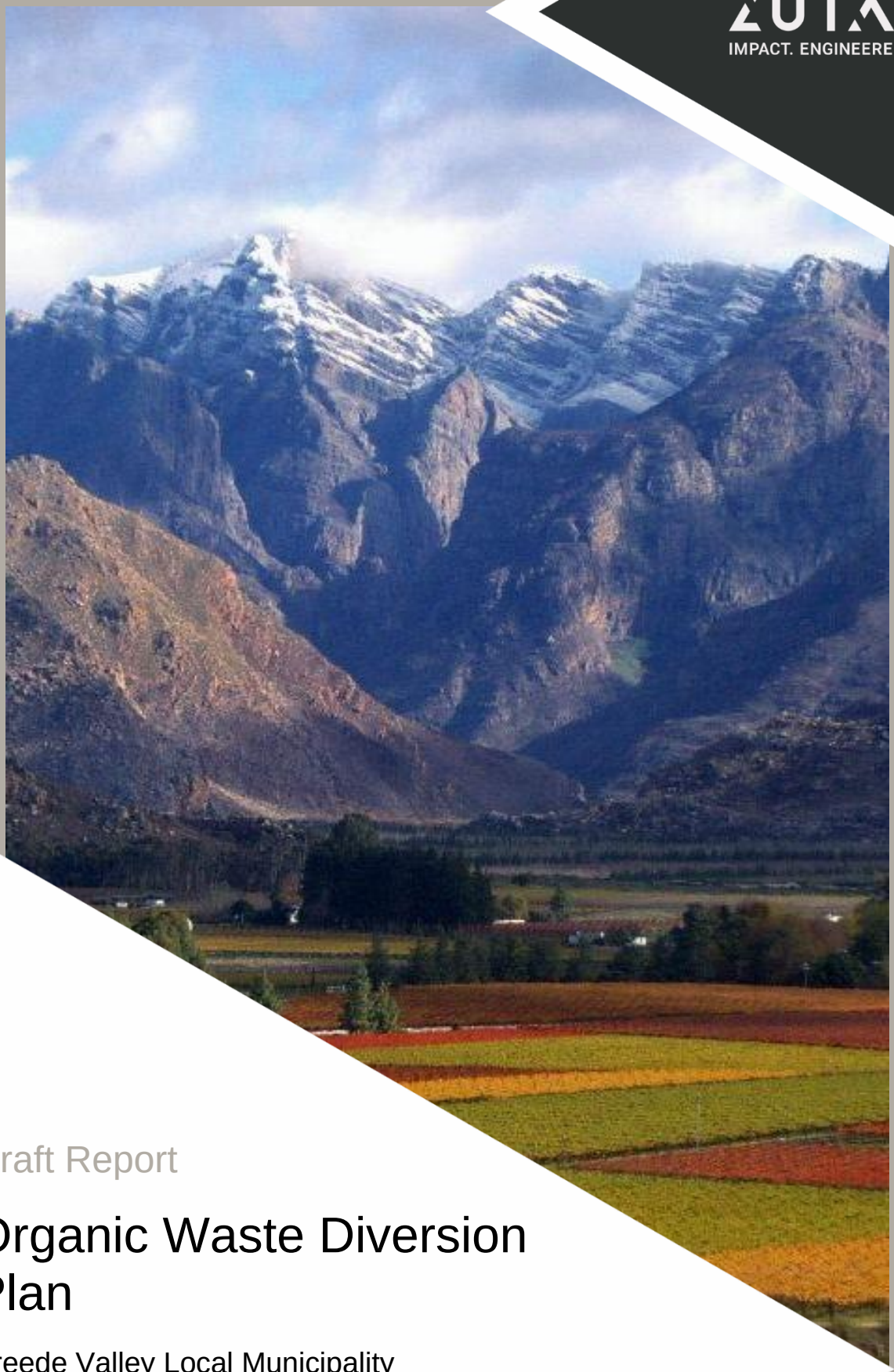

Draft Report

Organic Waste Diversion Plan

Breede Valley Local Municipality

Cape Winelands District Municipality

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1 Introduction

1.1 Background

Zutari has been appointed by the Cape Winelands District Municipality (CWDM) in the Western Cape to assist with the developing an Organic Waste Diversion Plan (OWDP) on a District level as well for each of the Local Municipalities. This OWDP is compiled for the Breede Valley Local Municipality (BVLM).

The CWDM comprises of the following municipalities:

- Drakenstein Local Municipality (DLM);
- Witzenberg Local Municipality (WLM);
- Stellenbosch Local Municipality (SLM);
- Breede Vally Local Municipality (BVLM); and
- Langeberg Local Municipality (LLM).

The Breede Valley Local Municipality comprises of the following main areas as per the municipal Integrated Waste Management Plan (IWMP) (Draft, May 2020, Delta BEC):

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

This report is for the OWDP plan for the above mentioned local municipal areas and is being developed based on the principles and requirements of the National Waste Management Strategy (GN R. 56 of 28 January 2021) (NWMS) and the requirements of the Western Cape Department of Environmental Affairs and Development Planning (DEADP).

The NWMS has the concept of “circular economy” at its centre. Circular economy is an approach to minimising the environmental impact of economic activity by reusing and recycling processed materials to minimise: (a) the need to extract raw materials from the environment; and (b) the need to dispose of waste. The circular economy is built on innovation and the adoption of new approaches and techniques in product design, production, packaging and use. These principles need to apply to all waste streams including organic waste.

The NWMS is important in terms of facilitating the implementation of the National Environmental Management: Waste Act, Act 59 of 2008 (NEM:WA). NEM:WA aims to promote diversion of waste from landfill. Numerous regulations have followed to promote this, specifically the National Norms and Standards for Organic Waste Composting (R 561 of 25 June 2021).

The following requirements from the DEADP need to be fulfilled through the development of this OWDP:

- The OWDP’s timelines need to be under pressure for the municipalities to meet the 50% target for 2022;
- The department is concerned that data is not captured correctly or not reported correctly, especially with the interventions that are currently taking place in the LMs. The recording of all interventions for diversion will help show that 50% is being diverted; and

- Private sector involvement and enforcing the by-laws on organic waste would make a big impact if reported on correctly.

Thus, the compilation of this OWDP has focused on these requirements for the BVLM.

1.2 Objectives

The objective in the development of this OWDP is to meet the required legislative requirements of the Western Cape Government – Environmental Affairs & Development Planning's Provincial Organic Waste Strategy (March 2020) in line with "Addendum C: Developing an Organic Waste Diversion Plan" of the Strategy.

1.3 Scope of Works

This OWDP should provide the following as a minimum:

- Status Quo of organic waste sources and volumes disposed at the Municipal Waste Management Facilities (WMFs);
- Current diversion rates within the BVLM;
- Annual targets to achieve 50% diversion rate by 2022 and 100% diversion rate by 2027; and
- Where required, diversion of organic waste from landfill to meet the licence conditions.

1.4 Organic Waste definitions

The Norms and Standards for Organic Waste Composting (GN 561 of 2021) provides the following definitions:

- **Organic waste:** means 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 and/or by other forms of treatment; and
- **Organics:** means both processed and unprocessed compostable organic waste.

For the purpose of this Plan, "*organic waste*" is regarded as waste which is produced by all waste generators served by municipal collection services for general municipal waste. The main categories of organic waste would include:

- **Food waste:** mix of cooked and raw leftovers after the preparation and consumption of human food originating from households/residential areas as well as from commercial activities, such as restaurants, canteens, bars, etc.;
- **Greens or garden waste:** waste coming from maintaining private residential areas/gardens (households) as well as from Municipal public areas, such as parks, playgrounds, verges etc.; and
- **Industrial waste:** the mixture of different types of residues of raw vegetables/food waste and woody materials such as packaging. This can include organic waste streams from agro-industries, such as food and animal feed processing or the processing of agricultural products for other purposes.

1.5 Motivation for Organic Waste Diversion

The following are the overarching benefits of diverting organic waste from landfill:

- Reduced cost of landfill disposal;
- Landfill air space savings;

- Reduction in greenhouse gas emissions;
- Reduced possibility of environmental pollution from landfill management i.e., leachate generation and improved air quality impacts;
- Long term/future avoided costs and savings as a result of saved landfill airspace;
- Positive impact as a result of recovering a valuable resource (organics) and processing these to produce beneficial soil amendments (i.e., compost) or used for electricity generation (i.e., biogas); and
- Practical application of a circular economy strategy to waste management which keeps organic materials in circulation at their highest value.

2 Review of legislation and by-laws

The following Legislative requirements and underlying principles will need to be considered when developing the strategy for organic waste management in BVLM.

2.1 Legislative overview

Below is a summary of legislation applicable to the waste management in general which covers organic waste as well: compilation of the OWDS:

2.1.1 Legislation applicable to waste management

- National Environmental Management: Waste Act (Act No. 59 of 2008) (NEMWA);
- The National Environmental Management Act (Act No. 107 of 1998);
- Environment Conservation Act (Act No. 73 of 1989);
- The National Environmental Management: Air Quality Act (Act No. 39 of 2004);
- Hazardous Substances Act (Act No. 5 of 1973);
- National Water Act (Act No. 36 of 1998);
- Municipal Systems Act (Act No. 32 of 2000);
- Municipal Finance Management Act (Act No. 56 of 2003)
- The South African Constitution (Act 108 of 1996);
- Health Act (Act 63 of 1977);
- Occupational Health and Safety Act (Act 85 of 1993);
- Municipal Structures Act (Act 117 of 1998);
- Mineral and Petroleum Resources Development Act (Act 28 of 2002); and
- National Treasury: GRAP 17 and 19 Compliance

2.1.2 NEMWA regulations, norms and standards

- National Waste Information Regulations, R 625 (August 2012);
- National Waste Management Strategy (2020)(GN 56,28 January 2021),
- Waste Classification and Management Regulations R 634 (August 2013);
- National Norms and Standards for the Assessment of Waste for Landfill Disposal R 635 (August 2013);
- National Norms and Standards for Disposal of Waste to Landfill R 636 (August 2013);
- List of Waste Management Activities that have, or are likely to have a detrimental effect on the environment, R 921 (November 2013) (amended);
- National Norms and Standards for extraction, flaring for recovery of landfill gas, scrapping or recovery of motor vehicle, storage of waste R 924 - 926 (November 2013); and
- National Norms and Standards for the Remediation of Contaminated Land and Soil Quality R 331 (May 2014).

2.1.3 Other

- Minimum Requirements for Waste disposal by Landfill (DWAF 1998).

2.1.4 Legislation relevant to organic waste management

Legislation most relevant to the compilation of the OWDP for BVLM is discussed below:

National Organic Waste Composting Strategy (2013)

The Final National Organic Waste Composting Strategy (NOWCS) Report was published by DEA (now DFFE) in 2013, with the aim to promote the diversion of organic waste from landfill through organic waste composting for soil beneficiation and other users through composting.

The NOWCS is based on five goals which seek to drive viable and sustainable change in response to legislation change, responsible waste handling and enhancing the use of organics in a circular system. The five goals and associated objectives are detailed in the NOWCS, including actions to be undertaken in order to realise each of these goals. Table 3 provides a summary of the five goals and associated objectives of the NOWCS.

Table 1: Summary of five goals and associated objectives of the NOWCS

Goals	Objectives
1. Review legal and regulatory requirements.	The objectives of Goal 1 are to identify legislation and regulations that require modification in order to facilitate the legal registration of composting activities and facilities.
2. Understand and facilitate feedstock sources and opportunities.	Improving the monitoring of organic waste generation, disposal and treatment, as well as identifying both feedstock and product market opportunities
3. Provide the necessary support structure and functions to implementing composting.	The objective of Goal 3 is to consider necessary support structures and functions that would assist in the creation of opportunities, promoted and facilitated by legal enabling frameworks, and financial support and incentivization. Governmental synergies with the private sector and regionalization are also identified as necessary aspects requiring consideration.
4. Undertake education, skills transfer and awareness.	Enhancing public awareness and education campaigns and programmes regarding certain waste types is required in order to assist with not only separation at source, but diversion of organic waste from landfill, by means of potential home composting in urban/residential areas, as well as possible communal composting within the informal, lower-income areas.
5. Incorporate composting into municipal planning, responsibilities and create roles for the private sector.	This goal is about adapting the existing municipal structures to suit roles and responsibilities, including the use of IWMP's and Integrated Development Plans (IDP) and identification of private involvement, where necessary. Waste Management Officers will play a key role in planning and achieving the objectives of the NOWCS.

National Norms and Standards for Organic Waste Composting (GN 44762 of 2021)

On 25 June 2021, the Ministry of Forestry, Fisheries and the Environment promulgated the National Norms and Standards for Organic Waste Composting under the NEMWA. An objective of the Norms and Standards is that organic waste composting will no longer require a waste management license under NEMWA.

The Norms and Standards seek to provide a national uniform approach relating to controlling the composting of organic waste at any facility that falls within the threshold, thereby ensuring that the best practice is always followed. The Norms and Standards are applicable to compostable organic waste and to organic composting facilities with the capacity to process in excess of 10 tonnes per day.

Provincial organic waste strategy

Western Cape Government – DEADP released a Provincial Organic Waste Strategy in March 2020 which focusses on the following:

- Alignment with the principles of the waste hierarchy to address various aspects of organic waste
- Organic waste preventative strategies, making material available as a resource, develop the required infrastructure for recovery and to support the uptake and beneficiation of this resource
- Initiatives being implemented by the private sector and other agencies with a view of forming synergies with these entities working towards a fully integrated strategy
- Identification of possible policy instruments that can be applied by various organs of state to meet the 50% and 100% organic waste targets for 2022 and 2027 respectively.

2.2 Waste By-Laws

2.2.1 BVLM Solid Waste Disposal By-Law (2008)

The BVLM has Solid Waste Disposal by-laws dated 2008. The current waste management by-laws need to be revised as legislation has changed considerably since then. The by-laws do not require that waste generators, transporters and recyclers should register with the Municipality or report information to the municipality; and BVLM does not have any dedicated staff to enforce the waste management by-laws[1].

The Municipality must update the by-laws to ensure that they give effect to the legislation for management and more specific to this plan, separation and diverting organic waste.

[1] Breede Valley IWMP (2020)

3 Status Quo of Waste Management

3.1 Background to Breede Valley Local Municipality

BVLM is a local municipality located within the CWDM, in Western Cape Province of South Africa. It is bordered by Witzenberg in the north, Langeberg in the south, the Central Karoo District in the east, and Drakenstein and Stellenbosch in the west. The municipality covers a total area of approximately 3 834 km^2 and includes the Breede Valley rural areas, Touws Rivier, De Doorns, Worcester; and Rawsonville as shown in Figure 1.

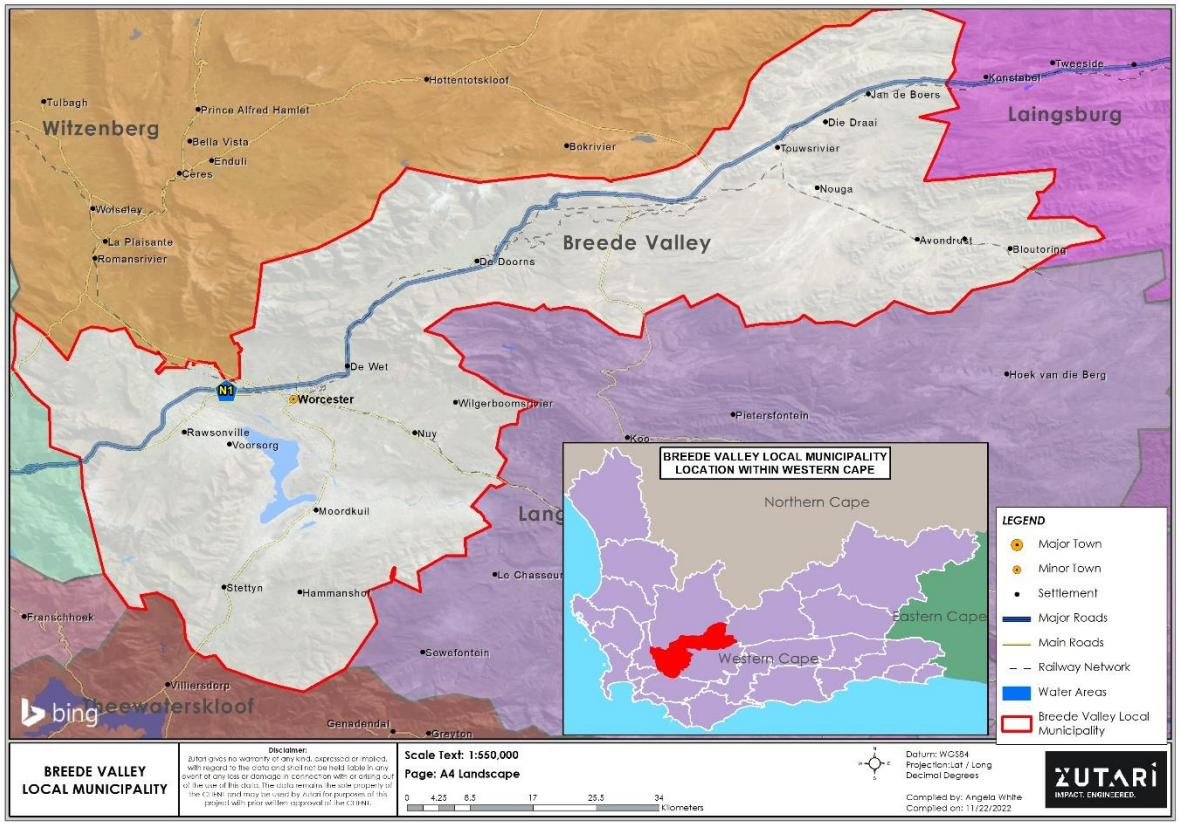


Figure 1: Breede Valley Local Municipality locality map

3.2 Waste management facilities within the BVLM

An OWDP is required for the facilities listed below, however one overarching OWDP has been compiled for CWDM in order to take into account all the operations in the BVLM and to ensure an integrated approach is required for managing organic waste. BVLM currently has a number of waste management facilities accepting organic waste. These are described in Table 2.

- De Doorns landfill, licence no.: 19/2/5/4/B2/3/WL0041/18;
- Worcester landfill licence no.: 19/2/5/4/B2/32/WL0126/18;
- Touws Rivier landfill licence no.: 19/2/5/4/B2/29/WL0040/18;
- Touws River Transfer Station

Table 2: Waste facilities in BVLM[2]

Waste Management Facility	Licence no.	Location	Status	Waste accepted	Description
De Doorns landfill	19/2/5/4/B2/3/WL0041/18	33°29'02.913"S 9°41'42.786"E	Operational	▪ Domestic waste ▪ Commercial waste ▪ Industrial waste ▪ Construction waste ▪ Garden waste	▪ No weighbridge installed at the landfill and loads are estimated using the DEA&DP waste calculator ▪ Landfill audit conducted in 2019 indicated that the estimated maximum capacity will be reached by April 2048 ▪ Serves as a transfer station for waste to be collected and sent to Worcester Landfill
Worcester landfill	19/2/5/4/B2/32/WL0126/18	33°40'49.37"S 19°28'10.85"E	Operational	▪ Domestic waste ▪ Commercial waste ▪ Industrial waste ▪ Construction waste ▪ Garden waste	▪ Applied for a 5m height increase in 2020 ▪ No recycling is undertaken at the landfill. ▪ Next to a Materials Recovery Facility (MRF) ▪ No weighbridge installed at the landfill and loads are estimated using the DEA&DP waste calculator ▪ Green waste is brought in mixed with domestic waste and no separation on site
Touws Rivier landfill	19/2/5/4/B2/29/WL0040/18	33°21'2.09"S 20°01'28.51"E	Operational	▪ Builder's rubble ▪ Garden waste	▪ Landfill site is only used by the BVLM for builder's rubble and garden refuse. ▪ Transfer station in Touws River, where the public can drop-off general waste. The waste is then transported to the Worcester landfill site.

[2] Breede Valley IWMP (2020)

Waste Management Facility	Licence no.	Location	Status	Waste accepted	Description
					■ Informal recyclers enter the site and salvage recyclables ■ Waste that enters the landfill is not recorded and reported.
Touws Rivier Transfer Station	-	S33° 20 30.7 E20° 01 39.7	Decommissioned	■ Domestic waste	■ Waste is dropped off at the site and then transported to the Worcester landfill site. ■ The landfill is not being used anymore

Photos of the the Worcester and De Doorns landfills at the time of the site visits on 9 November 2022 are shown in Figure 2 to Figure 6 .

Figure 2: Entrance to the Worchester Landfill, co disposal of general and organic waste

Figure 3: Working face of Worchester landfill, co disposal of general and organic waste

Figure 4: De Doorns landfill, main working face where organic and general waste is co-disposed

Figure 5: Working face of De Doorns landfill

Figure 6: Transfer station adjacent to De Doorns landfill

4 Waste characterisation

The CWDM IWMP (2021) summarised the waste characterisation studies done within each of the local municipalities and the results are shown below in Figure 7. The organic waste, which included food and green waste) amounted to 33% of the waste composition.

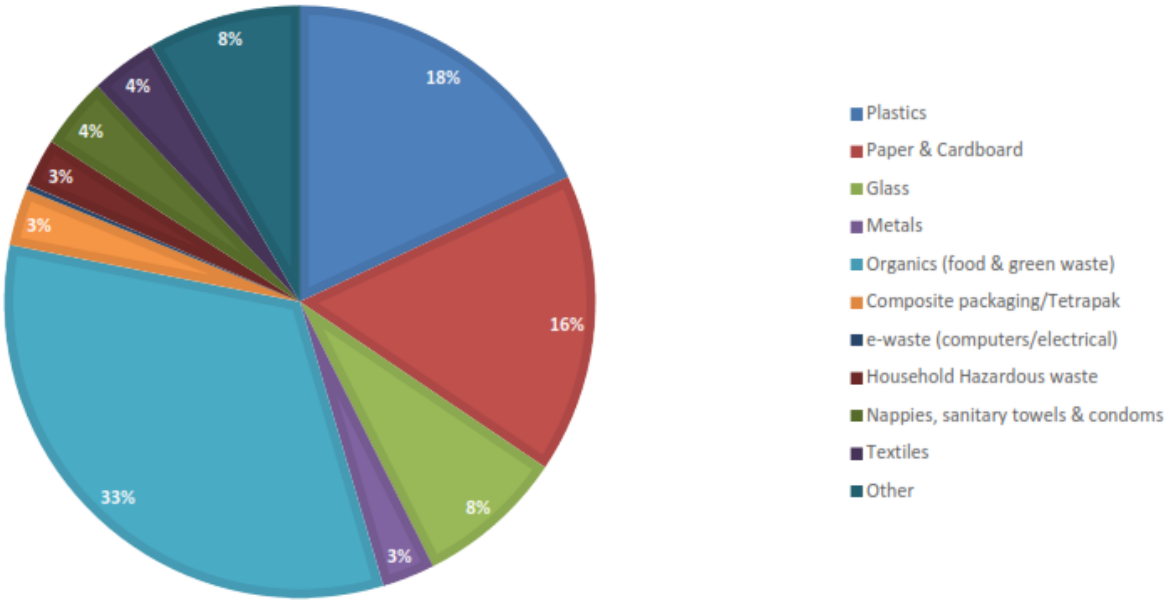


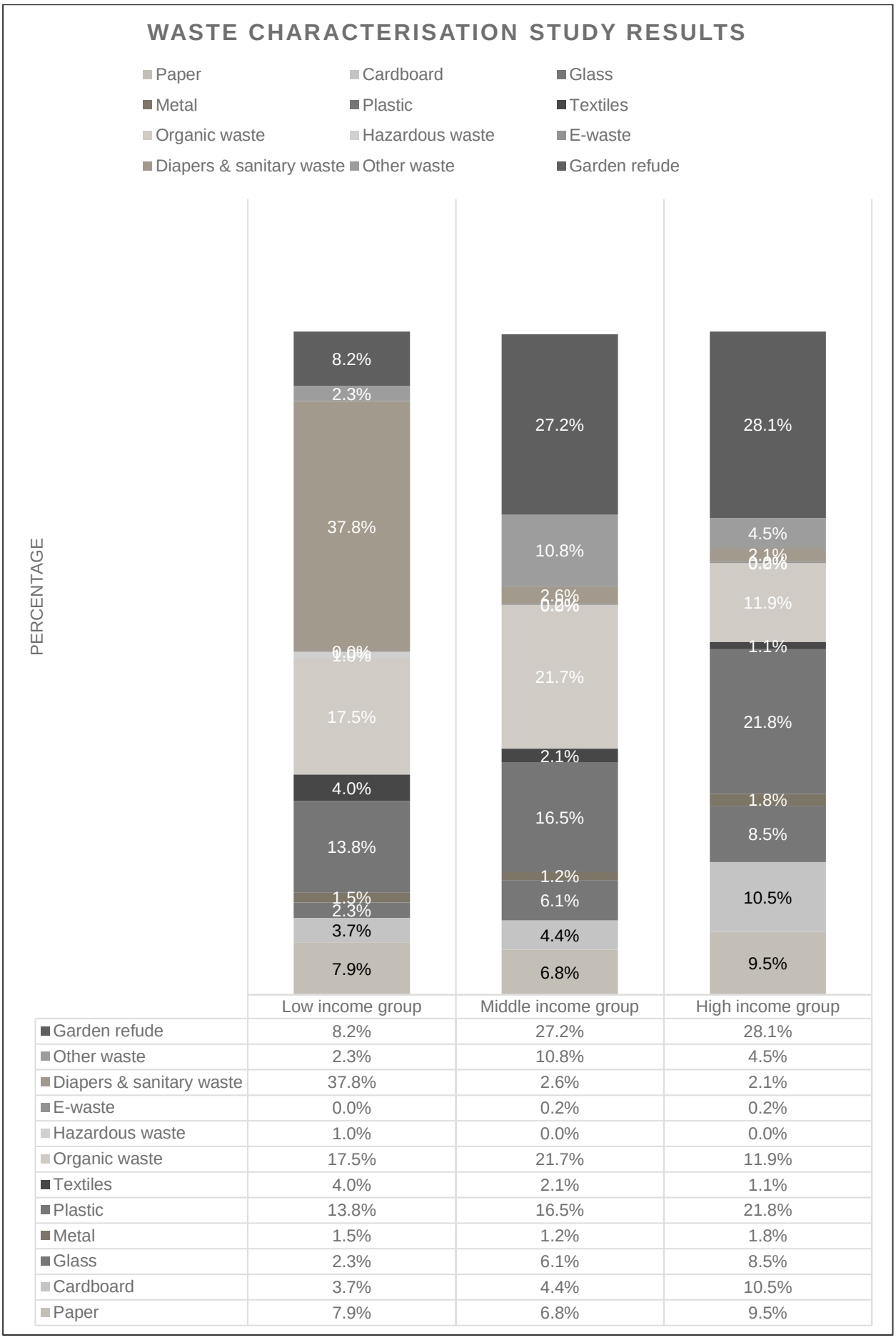
Figure 7: CWDM IWMP Waste Characterisation study summary[3]

As part of updating the BVLM IWMP, a waste characterisation study was conducted over a five-day period in Worcester in 2020. The areas that were chosen for the study was Roodewal (low income), Fairy Glen (middle income) and Panorama (high income). It was noted that due to cost, time and resource constraints, the waste categorisation was only conducted during one season of the year. According to the IWMP, the waste categorisation study will be added as a future project, to be implemented by the BVLMM on a continuous basis in future IWMP[4] updates.

The results from the waste characterisation study indicate that that the low-income group's waste stream consisted of the highest percentage of organic waste (27%). The summary of the results is shown in Figure 8. The average percentage of organic waste across the municipality amounted to 17.03% and garden waste 21.2%, thus an average total of 38.2%. In order to quantify this, one would need to consider the population or household size for income group to calculate accurate figures. This would also need to be expanded to cover more than one season.

Comparatively there is a significant difference between the waste characterisation conducted for the BVLM IWMP (2020) compared to the CWDM IWMP (2021) results.

[3] CWDM IWMP (2021)
[4] Breede Valley IWMP (2020)



	Low income group	Middle income group	High income group
Garden refude	8.2%	27.2%	28.1%
Other waste	2.3%	10.8%	4.5%
Diapers & sanitary waste	37.8%	2.6%	2.1%
E-waste	0.0%	0.2%	0.2%
Hazardous waste	1.0%	0.0%	0.0%
Organic waste	17.5%	21.7%	11.9%
Textiles	4.0%	2.1%	1.1%
Plastic	13.8%	16.5%	21.8%
Metal	1.5%	1.2%	1.8%
Glass	2.3%	6.1%	8.5%
Cardboard	3.7%	4.4%	10.5%
Paper	7.9%	6.8%	9.5%

Figure 8: BV IWMP Waste Characterisation study results[5]

5 Organic waste management

5.1 Background to organic waste management within the BVLM

BVLM does not provide a separate waste collection service dedicated to organic waste and the public disposes of organic waste fractions into the general waste stream. Organic waste disposed into the general waste stream includes grass cuttings and other smaller garden waste fractions capable of fitting into the black bags for kerbside collection.

Currently organic waste is accepted at the waste facilities listed in the section above and all organic waste is transported to Worcester and De Doorns landfill sites.

The BVLM is in the process of commissioning a plot study to provide a gated community with bins for disposal of organic waste which will then be composted.

5.2 Current organic waste generation

.

Based on the BVLM IWMP 2020 (compiled by Delta BEC), the results from the waste characterisation study for organic waste generation were as follows (combining organic and garden waste):

- Low-income group- highest percentage of organic waste at 27% with 12% garden waste;
- Middle income group – 22% organic waste and 28% garden waste; and
- High-income group - lowest percentage of organic waste at 12% and 28% garden waste.

One should note that the above is based on one sample period in one town within the municipality and it is suggested that these figures be updated as soon as possible to reflect a more inclusive view of the waste generated within the BVLM.

Obtaining quantities and identifying the generators of organic waste will enable the Municipality to ensure better implement organic waste diversion.

Data provided in the IWMP indicates that estimated municipal waste received at Worcester landfill site for 2019 is approximately 16 000 tonnes, and for De Doorns 4 000 tonnes. Thus using the characterisation percent of 17% for organic waste, the volume of organic waste should be approximately 3 400 tonnes.

The garden waste recorded for 2019 at Worcester amounted to 2 000 tonnes and De Doorns 900 tonnes giving a total of 2 900 tonnes. Thus total organic waste received in 2019 would be approximately 6 300 tonnes which is only 32% compared to the 38% recorded during the waste characterisation study. Once more recent data is obtained, these figures will be revised.

Food waste from retail industry generally does not come to landfill. The waste is collected by pig farmers for feedstock. No quantities are available.

Other organic waste generated within the BVLM is discussed below.

[5] Breede Valley IWMP (2020)

5.2.1 Agricultural waste

Currently the BVLM does not provide waste collection services to farmers and rural households due to long transporting distances and limited accessibility. Farmers may offload agricultural waste at the disposal sites free of charge[6] however most of the farmers process their organic waste for own use.

Other organic waste received is wooden offcuts from the saw mill just outside Worchester.

5.2.2 Sewage sludge

No information is available on sewage sludge generation rates in the BVLM. Data is to be updated in the final report

5.2.3 Abattoir waste

Abattoir waste is not accepted at the landfills and no information was available at the time of drafting this report. Data is to be updated in the final report

[6] CWDM IWMP (2020)

6 Gap Analysis

The following potential gaps have been identified for further investigation regarding Organic waste Management/ Practices/ Requirements within BVLM.

Table 3: Gap analysis

Objective / Target	Current state	Gaps	Actions required to address Gaps
Implement By-Laws regarding management of organic waste. Implement system whereby organic waste can be separated at source	The Integrated Waste Management By-Laws is not aligned to the current national and provincial legislation and priorities.	Need to review and amend the By-Law or adapt the provincial model by law.	Review current waste bylaw in terms priorities and initiate legislative process.
Inadequate information regarding organic and garden waste generators, quantities generated and current methods of treatment/disposal	Garden waste is disposed of at the landfills and transfer station where records are kept of loads entering the facilities. The waste data and quantities were made available. No data is kept of private generators such as restaurants', fruit industry, hotels etc.	Limited record of garden waste disposal at landfills, No records of organic waste generators such as agriculture, abattoirs, hospitality industry etc.	Registering of waste generators and transporters in the municipality. This will improve data capturing at waste sites. Moreover, it will enable a clearer indication of the amount of diversion that can take. place in BVLM. This will enable the municipality to evaluate organic waste management system requirements in greater detail.
Organic waste stream diversion strategies	No formal organic waste stream diversion strategies.	The need for formal organic waste stream diversion strategies as they will favour and encourage separation at source, identifies a treatment option and creates an enabling environment.	Diversion strategies for organic waste stream should be put in place such as the following: ■ Separation at source strategy. ■ Proper collection plan. ■ Training, Education and Awareness Campaign.

Objective / Target	Current state	Gaps	Actions required to address Gaps
Adequate budgets for human resources	▪ Insufficient budget for upcoming waste management projects. ▪ Vacancies in the Solid Waste and Landfill Management staff structure	There is a need to explore funding mechanism as there are many proposed projects that cannot be funded only by the Waste and Landfill Management Department. Vacancies in the Solid Waste and Landfill Management staff structure.	BVLM must ensure that there is sufficient provision in the capital and operational budget for upcoming waste management projects. Review staff stricture and requirements to fill vacant positions with suitable qualified and experienced staff.
Implement a phased approach to manage, process, treat and reduce organic waste to landfill considering the provincial targets	▪ There is no organic waste management system in place in BVLM.	The need for a phased approach is required which is aligned with provincial targets.	▪ BVLM must pursue a multi-pronged approach to organic waste diversion that will manage, treat, and reduce organic waste to landfill. ▪ The recommended phased approach may include the following: ▪ Separation at source roll out for a phased 2-bag separation at source programme. ▪ Implementation and encouraging incentives for separation of garden waste along with enforcement of the amended by-law as a last resort. ▪ Processing and or Treatment of Organic Waste ▪ Improvement of waste data capturing and reporting. ▪ Training, Education and Awareness Campaign focused on Separation at Source and organic waste. ▪ Monitoring and Measuring
Infrastructure to divert organics	Transfer stations equipped to recover and separate waste	Lack of infrastructure	Apply for funding for additional infrastructure

Objective / Target	Current state	Gaps	Actions required to address Gaps
Communicating strategies to the various communities whilst respecting the diversity and uniqueness of each community	No communication since there is no strategy – to be updated	No communication since there is no strategy – to be updated	▪ Finalise first version of this plan and update accordingly. ▪ Development of a communication strategy which includes engagement and awareness with generators is required to be developed

7 Options available for beneficiation of organic waste

The options and framework for developing the strategy are summarised in Table 4 below. At this stage it is a draft strategy which will be updated once workshopped with the BVLM.

Table 4 Implementation plan for BVLM

Municipal Options	Requirements – Infrastructure / Actions	Possible constraints	Possibility of implementing	Mode of implementation	Budget required	Actions required	Implementation timeframe Short: 1-2 years Medium: 2-5 years Long term: 5 – 10 years
Separation of Organics							
▪ **Separation at source - Residential**	Wet & Dry separation	Budget - cost of bags Public commitment	Limited due to human nature Separation at MRF and landfill considered by BVLM				
▪ **Separation at source - Commercial**	Wet & Dry separation	Participation of commercial entities	Good	Through By-laws and incentives such as discount on rates depending on participation Additional vehicle to service commercial clients	Depending on waste characterisation and additional collection vehicle may be required Potential R2,5 mil	Awareness raising Dedicated commercial collection of organic waste	Short to medium
▪ **Mechanical biological separation**	Decanter to separate solid and liquid waste can be considered at Landfill or TS	Budget Identify suitable location Need back-up equipment for failures	Possible	Public consultation, environmental authorisations, appoint operator	R5,5 mil	Investigate financial viability and conduct cost-benefit analysis	Short to medium
Public drop-off facility	Public garden waste disposal facilities	Legislative and budget constraints Availability of suitable locations	Possible	Environmental authorisations or registration, public consultation, design, construction	TBD	Evaluation if such a system will add benefit to the municipality, especially in rural areas	Medium to long term
Separate garden waste from general waste at landfill	Dedicated area on landfill for separate disposal of garden waste Refurbish transfer station at Worcester Landfill	Limited space Security	Good	Identify a suitable area on the landfill that is only dedicated to the disposal of garden waste. Adequate landfill personnel to ensure separate disposal	Extra spotter per landfill	Determining long term feasibility of separating and storage and or chipping and removal to external facility.	Short term
Shredding/Chipping of Garden Waste	Personnel and appropriate equipment	Budget	Good	Ensure appropriate registration/authorisation of facility	R1,5 mil	Budget for additional personnel and equipment	Medium
▪ **Own use**	None	None					
▪ **Sell off to users**	Investigate markets	Municipal financial management	Good	Adequate planning by Municipality	None	Adequate planning by Municipality	Short, Medium and long term
Composting							
▪ **Municipality on landfill**	Dedicated area on landfill for disposal of garden waste and organics. Area to be adequate space required for compost windrows	Appropriate personnel and equipment Possible legislative requirements	Limited				

Municipal Options	Requirements – Infrastructure / Actions	Possible constraints	Possibility of implementing	Mode of implementation	Budget required	Actions required	Implementation timeframe Short: 1-2 years Medium: 2-5 years Long term: 5 – 10 years
▪ **Municipality on alternative land**	Suitable land, licensing and operational requirements	Legislative and budget constraints	Limited				
▪ **External Composting**	Composting company within the municipal area	Procurement / competitive bidding	Possible	Investigate and finalise long term goals for composting Engage with private company Offset airspace saving	Currently None Longer term TBD	Engagement from municipality with private companies, also dependant on long term planning	Medium
▪ **Home composting**	Provide households with equipment (such as composting bins) and/or knowledge on composting techniques	Budget Lack of public commitment	Limited	Public awareness and training	R 200 000 p/a	Development of a communication strategy which includes engagement and awareness with generators should be developed and implemented	Short term
Bio digestion							
▪ **Internal**	Biodigester	Legislative and budget constraints Insufficient feedstock	Possible	Procure funding Authorise facility Public consultation Appoint contractor to construct and commission			Long term
▪ **External**	Separation of organics and garden waste Bio 2 watt has equipment that can be placed at landfill to separate organics	Procurement / competitive bidding	Possible	Engagement with companies doing bio digestion or other alternative technologies	Depending on procurement process	Engagement with companies doing bio digestion	Long term

7.1 Summary of infrastructure requirements to meet targets

At this stage it seems as if the BVLM is waiting for confirmation of the construction of the new regional landfill before any detailed planning will be done regarding organic waste diversion and the like. This plan should provide the basis for minimum planning in terms of organic waste diversion and it is proposed that the BVLM at least engage with private service providers on possible composting and bio digestion of organic waste.

7.2 Budgetary requirements

At this stage no budgetary requirements can be confirmed. This section can be updated once the document has been workshopped with the BVLM.

7.3 Implementation Plan

The implementation plan will be updated once additional data is made available.

7.4 Communication Plan

A communication plan has to be developed to discuss the possible implementation scenarios with the various communities, once the feasibilities have been determined.

The establishment of a Monitoring Committee will be developed with members of the municipality to monitor and manage the progress of the OWDP. The committee will meet annually to establish compliance to the OWDP, progress to meet the National targets, verify calculations and reporting to the Department and IPWIS through an established monitoring and evaluation system to monitor progress. Annual reports must be sent to the Department, accompanied by graphic representations of percentages diverted.

8 Conclusion

There is currently no diversion of organic waste within the BVLM other than the private initiatives of agriculture, retail and hospitality industries. It is assumed that the diversion of agriculture organic waste is close to 100%, however as no data is available the diversion rates cannot be quantified. This is the same for WWTW and abattoir waste. If this data was available it would presumably significantly increase the diversion rate.

It is proposed that this plan be used as a basis to commence with organic waste diversion planning with or without the new regional site. As a minimum the BVLM can have separate disposal areas for organic/greens waste at the landfill. This waste can be shredded and composted or private companied can be approached to create a sustainable composting production company. The savings in airspace and leachate and gas management should be off set against possible expenses.

In diversity there is beauty and there is strength.

MAYA ANGELOU

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