Western Cape Government
Environmental Affairs & Development Planning

Annual State of Waste Management Report

Western Cape - 2016

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SCHEDULE OF ACRONYMS

2W2W	2Wise2Waste
CCT	City of Cape Town
CFCS	Consumer Formulated and Chemical Sector
CKDM	Central Karoo District Municipality
CWDM	Cape Winelands District Municipality
CSIR	Council for Scientific and Industrial Research
DEA	Department of Environmental Affairs
DEA&DP	Environmental Affairs and Development Planning
DM	District Municipality
EDM	Eden District Municipality
EMDC	Education Management District Centre
EPWP	Extended Public Works Programme
EPWP	Extended Public Works Programme
HCRW	Health Care Risk Waste
HCRWMR	Health Care Risk Waste Management Regulations
HCWMA	Health Care Waste Management Act
HCWMAA	Health Care Waste Management Act Amendment
IDP	Integrated Development Plan
IPWIS	Integrated Pollutant and Waste Information System
IPWM	Integrated Pollution and Waste Management
IWMPs	Integrated Waste Management Plans
IWMF	Integrated Waste Management Forum
MEC	Member of Executive Council
MIG	Municipal Infrastructure Grant

MRF	Materials Recovery Facility
MSA	Municipal Systems Act (Act 32 of 2000)
NEMA	National Environmental Management Act, 107 of 1998
NEMWA	National Environmental Management: Waste Act, 59 of 2008
NWMS	National Waste Management Strategy
ODM	Overberg District Municipality
SAWIS	South African Waste Information System
SoWR	State of Waste Report
WC IWMP	Western Cape Integrated Waste Management Plan
WCDM	West Coast District Municipality
WCG	Western Cape Government
WCRAG	Western Cape Recycling Action Group
WDF	Waste Disposal Facility
WMO	Waste Management Officer
WMOF	Waste Management Officer's Forum

2016 AT A GLANCE

GOVERNANCE

Governance Platforms:

- 4 x WC WMOF (average participation 60.93% of municipal WMO's)
- 4 x WC RAG
- 1 x WC IWMF

Support to Municipalities & Industry:

- Waste Characterisation Guideline and Eden District – assisted, Drakenstein Municipality - Training and Elim – Study
- Waste Information ongoing
- Waste Minimisation and Policy development of Model Waste By-law for use by Municipalities, attend Western Cape Recycling Action Group (WCRAG), WAME: Waste Management in Education, 2Wise2Waste and Waste Minimisation Training

WASTE MANAGEMENT PLANNING

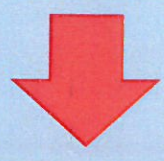
- **4 x** Municipal Integrated Waste Management Plans and 1 Situational Analysis of IWMP submitted to DEA&DP for assessment
- **2nd Generation Provincial Integrated Waste Management Plan** being developed
- **1 x** Industry Waste Management Plan
- Quality of submitted IWMPs **improved.**

WASTE INFORMATION MANAGEMENT

Waste Information management:

- Population of 6 195 138 people
- 0.96 kg/capita/day as reported in IWMPs vs World bank 2 kg/ capita/day; due to inclusion of large rural areas in the provincial average.
- 4 067 982 tons' general municipal waste (**28% increase**)
- 664 330 tons diverted thus **diversion rate of 16%** for WC 2016
- Rates range from 0% to 45.66 %.
- 2 x municipalities 20% diversion rate namely **Bergriver** and **Overstrand**
- City of Cape Town's diversion rate 19.18% but total largest tonnage of waste diverted **592 309.72 tons**.

COST OF WASTE MANAGEMENT SERVICES



Provincial:

- 33 posts filled (43% vacancy rate – vacant unfunded posts)
- Total Waste Management Budget R 21 950 647.63

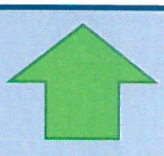
Municipalities:

- Operational R 2 010 322 584 and capital R 286 081 391

WASTE STREAMS OF SPECIAL INTEREST TO THE DEA&DP

- Organics waste produced via different waste streams 8 024 729 tons
- Construction and Demolition Waste problematic and difficult to calculate due to prevalent illegal dumping.
- No legal e-waste processors in the Western Cape.
- Wastewater/Sewage sludge last available from 2013 Green Drop reports
- 2 089 983 L of waste oil (wet volume) was collected in the Western Cape during 2015
- 225 649 tons of hazardous waste was disposed

WASTE COLLECTION

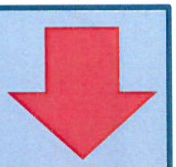


- 99% of population get weekly refuse removal services

COMPLAINTS

- 42 Complaints reported to the Department (mainly related to illegal dumping)

COST OF WASTE MANAGEMENT INFRASTRUCTURE



- Cost of compliance - **R 964 736 600**
- Cost for 20% diversion rate by 2019 - **R362 571 500**
- Cost Infrastructure needs up to 2030 - **R1 092 161 900**
- **Lack of funding** as Waste Management is **not** regarded as a **priority**

WASTE MANAGEMENT

- **55 operational** Waste Disposal facilities
- **108** WDFs licenced **for closure**
- **15 waste management licenses** issued
- Advantages and disadvantages to regionalisation as a proposed solution
- Compliance increased **7%** and Partial-Compliance increased **2%** at WMF
- **32 external audit** reports assessed
- **9 gas monitoring** reports

WASTE ECONOMY

- Support programme for small, very small and micro enterprises
- Western Cape Waste Economy Business Case: Gap Analysis (Draft 2016)
- WISP – DEAT (through GreenCape)
- Waste Economy 2017 Market Intelligence Report - GreenCape

EXECUTIVE SUMMARY

Comprehensive legislative reform of South African waste management legislation came into effect from 2009 to address the waste management challenges faced by the country. The National Environmental Management: Waste Act (NEMWA), Act 59 of 2008 and its subsequent regulations developed under NEMWA introduced the waste management hierarchal approach. Furthermore, the Act introduced waste minimisation, information management, regulation of waste management facilities, integrated waste management planning and waste management pricing. This Act and its regulations extended the mandate of municipalities to also include waste minimisation and changed the classification of waste disposal facilities which resulted in a significant cost increase for municipalities to provide waste management services.

To assist municipalities, private sector and industry with the implementation of NEMWA the Department established several governance platforms such as the Waste Management Officers Forum, Western Cape Recycling Action Group and the Industry Waste Management Forum. All 3 governance platforms function effectively and it is well supported by the various stakeholders through active participation. NEMWA also introduced the designation of Waste Management Officers (WMOs) at the 3 spheres of government to coordinated waste management matters and implement the Act. Although the majority of municipalities have designated their WMOs, it is still a challenge for certain municipalities to designate a WMO. The WMO's attend the Waste Management Officers Forum.

The importance of waste management planning is also highlighted by NEMWA and the Department has done exemplary work to capacitate industry and municipalities to develop integrated waste management plans. The Department developed an integrated waste management planning guideline, as well as a self-assessment tool to assist municipalities with integrated waste management planning. All the municipalities in the Western Cape have 1st generation integrated waste management plans and the majority of the municipalities are well on their way to finalise their 2nd generation waste management plans. The quality of the plans need improvement with regards to detail provided in the plan as well as the provision of financial and human resources to ensure the successful implementation of the plans. However, there is a steady improvement in the quality of the municipal plans.

The availability of reliable waste information is crucial to ensure effective planning for the provision of efficient integrated waste management services. The Department has developed the Integrated Pollutant and Waste Information System (IPWIS) to assist the municipalities and for the

Department to have access to reliable waste information, to improve the planning of waste management services. Waste quantification at some municipalities is still a challenge because of the absence of weighbridges. This was overcome by the Department developing and introducing a "Waste Calculator".

Irregular reporting of waste quantities by municipalities, industry and private sector needs further attention although a constant improvement was witnessed over the last year. Constant support and capacity building sessions were provided to address the challenges experienced with reporting of waste quantities. However there is an improvement geme information management in the province.

To effectively and efficiently provide waste management services, a municipality must know the quantity of waste as well as the content of the waste stream. This will ensure that the correct waste management methods and technology is implemented to provide sustainable waste management services. The Department has done exemplary work to introduce waste characterisation to municipalities and to ensure that this is included in their waste management waste information.

The majority of municipalities in the Western Cape are experiencing problems with available landfill airspace and meeting their environmental legal standards. To address the scarcity of available landfill airspace, there is a big drive towards waste minimisation, recovery of waste material, to utilise waste as a resource and the utilisation of alternative waste treatment methods such as waste to energy. The Waste diversion from landfill for the Western Cape as calculated by the information submitted to the Department has increased to 16% from 9% in 2015. It will require significant investment from municipalities to establish integrated waste management infrastructure to realise the national waste diversion target of 20% waste diverted from landfill by 2019. The DEA&DP Municipal Infrastructure Study estimates that the cost of mere compliance is in excess of R1 billion. To achieve a 20% diversion rate by 2019 it is estimated that municipalities would need to invest a further R1 billion in implementing of Alternative Waste Treatment (AWT) infrastructure.

The strict environmental standards prescribed by NEMWA for waste disposal facilities; availability and suitability of land for the establishment of waste disposal facilities have been drivers towards regional waste disposal facilities as a solution. The establishment of regional waste management facilities is a challenge because the financing of the facilities is complex and expensive. This is exacerbated by the fact that the majority of the municipalities do not charge cost reflective tariffs.

This is an area which needs urgent attention to ensure the sustainability of waste management services. Municipalities need to pursue and explore funding for these services via public private partnerships.

The recovery of waste material for the waste economy is actively encouraged by the Department as well as creating awareness and providing assistance on integrated waste management to municipalities, small and micro enterprises and recycling industry. Several waste minimisation guidelines and a generic waste management by-law has been developed by the Department to assist in this regard. The promotion of the waste economy is actively promoted by the Department. This will lead to the diversion of waste to landfill, reduce the impact of waste management on the environment and create jobs as well to improve economic growth towards a low carbon economy. There is definitely an improvement in the growth of the waste economy, job creation and the use of waste as a resource through alternative waste treatment technology.

1 INTRODUCTION

Numerous national legislation has been promulgated with stringent requirements with the main focus on protecting the environment and human health over the last decade. Compliance with these legislative requirements has huge financial implications for the municipalities and the entire waste sector.

Since the promulgation of national and provincial regulations relating to waste generators, transporters, treaters and disposers, there has been an increase in the registration and reporting of waste quantities to the department. There is however still a challenge in the registration of facilities and submission of waste data to the provincial IPWIS. The data obtained thus far is useful, however the accuracy of the data received is questionable as estimated quantities are provided to the department. The Department will pursue legal channels should noncompliance regarding waste management within the Province, continue.

Municipalities needs to submit council resolutions with regard to the adoption of the IWMP's to ensure financial commitment to implement the actions as set out in the implementation plans. Provision must be made for the procurement of weighbridges and accurate accounting of waste quantities to measure waste generation, diversion and disposal. Alternatively, waste quantification systems must be installed at waste management facilities throughout the Province. To ensure advanced municipal infrastructure planning, municipalities must ensure that annual waste characterisation studies are conducted within their municipal area, to determine waste streams and quantities.

Proper planning pertaining to integrated waste management infrastructure development to give effect the integrated waste management principles, as mandated by the Waste Act. The development of the 2nd generation WC IWMP serves to guide municipalities and industries working towards achieving national targets set in terms of the NWMS and the Waste Act. The Department intends to conduct compliance promotion inspections at industries, with the intent to address non compliances.

Municipalities need to repeal and review existing bylaws or develop new integrated waste management bylaws that do not hamper the growth of the waste economy and essentially, is aligned to NEMA, the Waste Act and related waste regulations. Landfill airspace studies must be conducted annually to determine the availability of remaining airspace at waste management facilities and simultaneously, the application of the waste hierarchy must be vigorously applied. Municipalities must ensure that the environmental authorisation issued to waste management facilities are upheld through internal and external audits, as this prevents environmental degradation and possible litigation. To avoid cross subsidisation of waste management services, municipalities must charge cost reflective tariffs to render effective and efficient waste management services to communities.

The Department provided and continually provides municipal support to municipalities and industry relating to waste management planning, information management, waste management licencing, waste minimisation and recycling.

In general, a mind-set change is required to recognise waste as a resource rather than a nuisance Managing waste in a more sustainable manner will lead to the reduction of the potential harmful impact of waste and at the same time increase the potential positive impacts such as job creation.

1.1 Purpose of the State of Waste Report (SoWR)

The SoWR provides an overview of the status of waste management within the Western Cape Province together with the implementation of National Environment Management: Waste Act, No. 59 of 2008 (NEMWA) and Western Cape Integrated Waste Management Plan (WCIWMP). This report focuses on information and data collected for the 2016 calendar year by Department and also where relevant compares it with the 2015 information. It highlights the programs and initiatives developed and implemented by the Department and municipalities to facilitate integrated waste management. The analysis of this information and data will influence interventions and measures the effectiveness of the interventions.

2 GOVERNANCE

AT A GLANCE

Governance Platforms:

- 4 x WC WMOF (average participation 60.93% of municipal WMO's)
- 4 x WC RAG
- 1 x WC IWMF

Support to Municipalities & Industry:

- Waste Characterisation Guideline and Eden District – assisted, Drakenstein Municipality - Training and Elim – Study
- Waste Information ongoing
- Waste Minimisation and Policy development of Model Waste By-law for use by Municipalities, attend Western Cape Recycling Action Group (WCRAG), WAME: Waste Management in Education, 2Wise2Waste and Waste Minimisation Training

2.1 The Legislative Framework for Waste Management in South Africa

The most pertinent and important legislative requirements in terms of waste management are contained in a number of statutes and national policies. South Africa has international obligations in terms of hazardous substances and waste and has ratified four key international Multilateral Environment Agreements. Various national and provincial legislation and international obligations are listed as follows:

2.1.1 National legislation

- Constitution of the Republic of South Africa Act, No. 108 of 1996
- Municipal Structures Act, No. 117 of 1998
- Municipal Systems Act, No. 32 of 2000
- National Environmental Management Act, No. 107 of 1998
- National Environment Management: Waste Act, No. 59 of 2008
- National Environmental Management: Waste Amendment Act, No. 26 of 2014
- National Waste Management Strategy, 2011
- White Paper on Integrated Pollution and Waste Management for South Africa, 2000 (GG No. 20978 GN. No. 227)
- Hazardous Substances Act, No. 5 of 1973
- National Health Act, No. 61 of 2003
- Health Care Waste Management Amendment Act, No. 6 of 2010
- Environment Conservation Act, No. 73 of 1989
- National Water Act, No. 36 of 1998

- National Environment Management: Air Quality Act, No. 39 of 2004
- National Domestic Waste Collection Standards, 2011 (GG No. 33935 GN. No. 21)
- Waste Classification and Management Regulations, 2013 (GG No. 36784 GN. No. R. 634)
- National Norms and Standards for the Assessment of Waste for Landfill Disposal, 2013 (GG No. 36784 GN. No. R. 635)
- National Norms and Standards for Disposal of Waste to Landfill, 2013 (GG No. 36784 GN. No. 636)
- National Norms and Standards for the Storage of Waste, 2013 (GG No. 37088 GN No. 926)
- National Norms and Standards for the Scrapping or Recovery of Motor Vehicles, 2013 (GG No. 37087 GN No. 925)
- List of Waste Management Activities, 2013 (GG No. 37083 GN. No. 921)
- National Waste Information Regulations, 2012 (GG No. 35583 GN. No. R. 625)
- Integrated Tyre Waste Management Plan, 2012 (GG No. 35927)
- Plastic Carrier Bag and Plastic Flat Bag Regulations, 2003 (GG No. 24831 GN. No. R. 625)
- National Environment Management: Waste Act, No. 59 of 2008: Waste Management Plans for Approval, 2015 (GG No. 39018 GN. No. 736)
- National Environment Management: Waste Act, No. 59 of 2008: Industry Waste Management Plans, 2013 (P.N. 365/2013)
- National Environment Management: Waste Act, No. 59 of 2008: National Pricing Strategy for Waste Management, 2016 (GG No. 40200 GN No. 904)

2.1.2 Provincial legislation

- Constitution of the Western Cape, Act No. 1 of 1998
- Western Cape Health Care Waste Management Act, No. 7 of 2007
- Western Cape Health Care Risk Waste Management Regulations, 2013

2.1.3 International conventions

- Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, 22 March 1989
- BAN Amendment to Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, 01 January 1998
- Rotterdam Convention on the Prior Informed Consent Procedure in Certain Hazardous Chemicals and Pesticides in International Trade, Rotterdam 10 September 1998
- Stockholm Convention on Persistent Organic Pollutants, Stockholm 22 May 2001
- The Montreal Protocol on Substances that Deplete the Ozone Layer, 01 January 1989

2.2 Waste Management Governance Platforms

To enable the Waste Directorate to function effective and efficiently governance platforms were established to interact with stakeholders in the waste management industry in the province. Three governance platforms were established namely the:

- Western Cape Waste Management Officers Forum (WC WMOF);
- Western Cape Recycling Action Group (WC RAG); and
- Western Cape Industry Waste Management Forum (WC IWMF).

2.2.1 WC WMOF

The Department established an Integrated Waste Management Forum in 2004, now known as the Western Cape Waste Management Officer's Forum. This name change was due to the promulgation of the NMWS, November 2011, which introduced the Provincial Waste Officers Fora. This Forum is a governance platform which allows for interaction with local government regarding integrated waste management issues. It is used as a vehicle for the implementation of the NEMWA and NWMS with its action plans as well as for the implementation the WC Integrated Waste Management Plan.

It's hosted by Department and takes place thrice a year and the venues are rotated in the province. All national, provincial, district and municipal waste management officers' meet on an annual basis to discuss opportunities and challenges with regard to waste management planning and governance, service delivery and infrastructure. This Forum is called the Waste Khoro.

The Departement hosted four forum meetings during the 2016 financial year, these forum meeting are rotated and therefore hosted in various municipal areas so as to ensure all municipalities can participate.

Forums were conucted in Worcester on the 3 and 4 March 2016, Cape Town (Kraaifontein Materials Recovery Facility (MRF)) on the 13 May 2016, Mossel Bay on the 18 and 19 August 2016, and Hermanus on the 17 and 18 November 2016.

The percentage RSVP and attendance versus participation in the Integrated Waste Management Forums were 52.17% for Worcester, 69.11% for Kraaifontein, 68.85% for Mossel Bay and 53.62 % for the Hermanus forum. The average participation for the four forums held during 2016 was 60.93%

The technical forum meeting hosted by Department on the 13 May 2016 in Kraaifontein at the City of Cape Town's MRF, allowed municipal officials from the rest of the Western Cape to view and get a practical exposure to the modern and flagship Kraaifontein MRF.

The technical forum meeting covered topics which show cased the most recent and innovative technological solutions to integrated waste management and the associated current waste

management challenges. The programme of the speakers included items of discussion such as, the use of technology in integrated waste management in the City of Cape Town, the use of lift loggers in Stellenbosch, Anaerobic digestion, Agriprotein, composting, diversion from landfill examples from Hermanus, and Pyrolysis technologies.

At present twenty (20) of the required thirty (30) municipalities have designated Waste Management Officers.

2.2.2 WC RAG

A Waste Minimisation Summit was held in 2010 and resulted in the adoption of a resolution to initiate the Western Cape Recycling Action Group (WCRAG), to address issues pertinent to the growth of recycling, key challenges in the sector and to coordinate various collaborative initiatives within the recycling industry bodies. More detail regarding the functioning of WCRAG is provided in 2.3.3.3.

2.2.3 WC IWMF

This Forum was established in October 2015 and was well supported by industry. It was established to engage with business and industry that is not functional in the waste management field and therefore not fully familiar with waste management legislation and policy. This platform is used to engage industry, create awareness, share and discuss integrated waste management best practices, technologies, new and amended legislation, policies, norms and standards in order to give business and industry, who attends, a competitive edge.

2.3 Support to Municipalities and Industry during 2016

2.3.1 Waste Characterisation

The Department assisted the Eden District Municipality (EDM) with plans to roll-out waste characterisation studies in all seven of its local municipalities i.e. Bitou, Knysna, George, Mossel Bay, Oudtshoorn and Hessequa. The EDM has an approved business plan in place, which details of the study objectives, scope, methodology, budget, implementation timeframes and stakeholder involvement. In 2016, the EDM conducted studies in the Hessequa, Knysna and Oudtshoorn municipalities (studies for Bitou and Mossel Bay were done in 2015). Furthermore, waste characterisation training took place in the Cape Winelands District Municipality (CWDM) for the Drakenstein Municipality and an actual study was conducted in Elim, which is located within the Cape Agulhas Municipality in the Overberg District Municipality (ODM).

The waste characterisation results for these municipalities show similar trends for the organic waste, particularly food waste in terms of mass and volume. The food waste made up a large component

of the waste sampled by mass but occupies a low volume. In the EDM, hard plastics appear to be the most prominent waste type by volume, whereas in the ODM (Elim, Cape Agulhas), the "Other" waste category was the most prominent by volume.

The Department has drafted a guideline for the 2016/ 2017 financial year, which outlines the waste characterisation methodology and provides guidance on –

- Diverting waste from landfill sites;
- Minimising adverse environmental and social impacts of waste management, particularly for the vulnerable;
- Obtaining updated information on the quantity of waste streams generated and an estimation of the potential for waste diversion from waste management disposal facilities;
- The use of the data and information in the development and review of IWMPs; and
- How municipalities can use the information for forward planning with respect to the design and implementation of efficient and effective –
    - Collection;
    - waste minimisation (recovery, reuse, recycling); and
    - transportation services for the various solid waste streams.

2.3.2 Waste Information

The Department has embarked on various strategies and platforms to assist municipal officials who are responsible for reporting waste information data to the Province, using the waste calculators and IPWIS for online reporting. Where insufficient and inconsistent waste reporting has taken place, the Department has liaised and corresponded via emails and letters to Municipalities. Training sessions and discussions were held with respective municipalities to address challenges with IPWIS registration and online reporting to ensure compliance with the SAWIS requirements. On-going support is still provided in the form of telephonic assistance on waste report capturing and monthly email reminders. The was a definite increase in the quantification, registration and reporting to IPWIS.

2.3.3 Waste Minimisation and Policy

2.3.3.1 *Development of Model Waste By-law for use by Municipalities*

A Regulatory Impact Assessment was undertaken by the Department of Economic Development and Tourism (2013), informed the development of a Draft By-law that would firstly ensure that regulatory requirements for waste management does not hamper economic development and secondly, that it is aligned with current national waste legislation. Municipal councils may adopt the draft by-law with or without modification or qualifications and publish it as required by the Municipal Systems Act.

As a result of the Regulatory Impact Assessment, an analysis of all municipal waste bylaws was done by the Department which highlights the following:

- The majority of municipal by-laws' definitions were not aligned to NEMWA.
- The terminology used in most cases was outdated and varied dramatically from municipality to municipality, making bilateral and regional agreements difficult. The model by-law was drafted with the underlying principle of waste as a resource and hence provisions are included that ensures that it is recovered in a manner that maximises its value as a resource and stimulating businesses involved in the re-use and recycling of recovered material.

A total of twenty-one (21) out of thirty (30) municipalities have published bylaws. Of these twenty-one (21), five (5) published municipal bylaws are aligned to the National Environmental Management: Waste Act; 2008 (Act No. 59 of 2008) (NEMWA). Two (2) published municipal bylaws are partially aligned to NEMWA and fourteen (14) published municipal bylaws are not aligned to NEMWA.

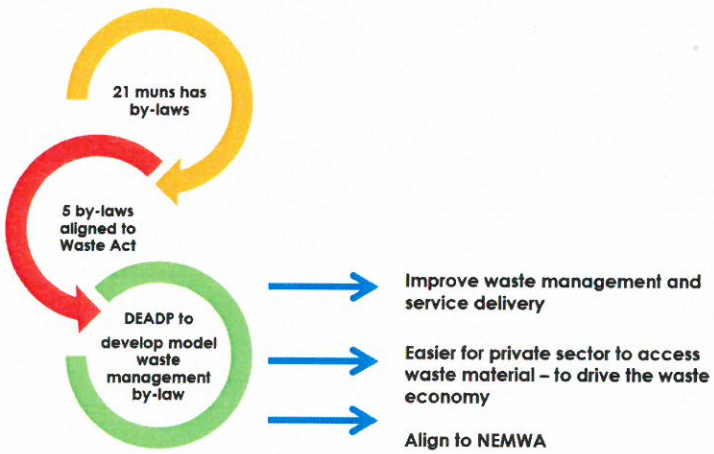


Figure 1: Need identified to develop Model By-Law to assist Municipalities

A total of nine (9) out of thirty (30) municipalities, do not have published bylaws. Seven (7) of these municipalities have no indication of a bylaw, whilst two municipalities have bylaws in draft. These are the Langeberg Municipality (2015 draft) and Eden District Municipality (2016 draft). The draft versions of these two bylaws are aligned to the NEMWA and incorporates comments from the Departments Directorate: Waste Management.

2.3.3.2 *Waste Minimisation Training 2016/2017*

Waste minimisation training was given to ten (10) recyclers, one hundred and eighteen (118) Environmental Protection and Infrastructure Programme (EPIP) workers and forty (40) Expanded Public Works Programme (EPWP) workers between the period of April to September 2016 in the

Cederberg, Overstrand, Saldanha, Drakenstein, Laingsburg and Beaufort West Municipalities. The training consisted of educating participants on topics such as:

- An introduction to waste management;
- What is recycling?;
- Business aspects of recycling;
- Value adding to waste;
- Waste minimisation systems;
- Waste minimisation awareness; and
- Aspects of the WAME programme to assist the EPIP workers with their waste awareness lessons aimed at primary schools.

These workshops were well received by all and the participants felt that they have learned a lot, especially about recycling and the value of waste.

Table 1: Waste minimisation Training within Western Cape

Date	Town	Municipal area	No. of persons trained
7 April 2016	Clanwilliam	Cederberg Municipality	Ten (10) Recyclers
18 May 2016	Hawston	Overstrand Municipality	Twenty-one (21) EPIP Workers
26 May 2016	Vredenburg	Saldanha Bay Municipality	Twenty-eight (28) EPIP Workers
30 June 2016	Paarl	Drakenstein Municipality	Twenty-seven (27) EPIP Workers
13 July 2016	Laingsburg	Laingsburg Municipality	Forty-two (42) EPIP Workers
21 Sep 2016	Beaufort West	Central Karoo	Forty (40) EPWP Workers

2.3.3.3 *Recycling Economy 2016/2017*

A Western Cape Recycling Action Group (WCRAG) meets quarterly to address issues pertinent to recycling in the province. The Department is also represented at the national recycling forum consisting of Industry and Provincial representation. The 2016 financial year started subsequent to a planning session in March 2016. Members were also surveyed to establish the way forward and through these engagements the following matters were put forward:

- A thematic approach would be followed for the (2016/2017) financial year;
- Information sharing from industry bodies and organisations like GreenCape, CSIR etc. To avoid project duplication;
- Waste to energy focus also important;
- Industry bodies needed that represent organics, Hazardous materials and builder's rubble as these are sectors with growing secondary economies; and
- More recycling industry representation.

Subsequent to the above three thematic seminars were hosted on Organic waste, SMME's and the Packaging industry respectively. Key sector stakeholders together with all WCRAG members were invited to these seminars which were very successful and well attended. A final workshop was hosted in March 2017 to plan engagements for the 2017/18 financial year.

The following is a summary of these thematic seminars highlighting the key issues that were raised at these platforms.

2.3.3.3.1 Organic Waste – 9 June 2016

The first engagement hosted by the WCRAG centred on organic waste to discuss challenges and opportunities for the diversion of organic waste from our existing waste disposal facilities.

Key issues arising from the organic seminar:

- Developing of a position paper which will present suggestions and motivation for various mechanisms to deal with Organic Waste in the province as an alternative to landfilling. Provincial targets for the diversion of organic waste is set as 50% by 2022 and 100% by 2027. These targets have also been included in the Implementation Plan for the Provincial IWMP 2016.
- Local beneficiation: Value add for organics, compost produced can be used locally by the municipality, farmers and residents. Transport of organic waste is also expensive therefore local beneficiation is favoured.
- There is sufficient local capacity to manage organics.
- A solution for smaller abattoirs with regards to information management of abattoir waste. Better reporting on abattoir waste generated and disposed needs to take place.
- Use of biogas technology as an option to value adding for organics.

2.3.3.3.2 1.2 Municipal Organics Projects

- The City of Cape Town (CoCT) initiated a home composting programme in April 2016 with 700 participants.
- In addition to this initiative 5000 (150-250 litre) containers have been purchased for distribution to home owners as well as residential tenants at no coast.
- Awareness raising in the form of an information leaflet and guidance on how to carry out composting has also been done as part of the programme.
- Reengagement with participants and feedback required as to how the programme is progressing.
- Any company involved with waste minimisation or waste generation needs to be accredited with the CoCT bylaw.

- The Eden District Municipality has requested funding for home composting from the Department of Agriculture. The municipality also has a stockpile of woodchips from sawmills which cannot be used for composting due to the residue on the wood.
- The Overstrand Municipality is diverting garden/green waste from landfill however kitchen waste is not being diverted which is a work in progress.

2.3.3.3.3 *Small Medium Micro Enterprise's (SMME's) – 24 August 2016*

The second engagement focused on the Small Medium Micro Enterprise's (SMME's) which was well supported by smaller businesses, industry and local government. Opportunities and challenges were presented that created awareness amongst the stakeholders. Challenges included not being considered for large tenders, red tape and access to land.

Key issues arising from the SMME's seminar:

- Development of a support programme for Small and Micro waste enterprises in the WC.
- Government subsidies need to be channelled through organisations like PETCO who knows how to monitor those kinds of business without the government being directly linked to it.
- Discussion conditions should be included into tenders to require the development of an SME in any discipline.
- Available land is a challenge for operation and storage of materials. Use of old infrastructure for recycling e.g. old landfill sites to deal with space issue.
- Tenders are required where smaller guys are also brought on board.
- License and regulation implementation costs are expensive.
- The focus group to convince about projects is Municipal councils, they need to be educated on waste in order to prioritise waste as they drive all decisions in a municipality.
- Small equipment developed to support small collectors e.g. Stellenbosch Municipality had a R200 000 budget for the development of a bicycle which is to be piloted in Stellenbosch.

2.3.3.3.4 *Packaging Industry - 2 November 2016*

The third engagement focused on the Packaging Industry which was well supported by industry representatives from paper, plastic, local government and retail. Discussions ensued on the development of Industry Waste Management Plans for the packaging industry, the implications these plans have on industry as well as the challenges and opportunities.

Key issues arising from the Packaging Industry seminar

- S28 Notice was Gazetted on 12 August 2016 to the Paper and Packaging Industry, Electrical and Electronic Industry and Lighting Industry to prepare and submit Industry

Waste management plans for approval. There is a 12-month period to register within. The National Pricing Strategy to cater for waste management charges.

- Section 28 does not provide clarity (no definition) around the hazardous packaging material.
- It should become everybody's responsibility to separate at source.
- Additives to be left out to improve recycling rates.
- There is a risk in the input material to human health, when does it become discarded. Markets for the unwanted plastics is needed.
- It was suggested that Government can possibly assist by being the purchaser of recycling/virgin material.
- There is a need for Industry to get more involved with the WRAG planning session to ensure the plans and discussions fit in with the concerns and interest of the Industry and current happenings.
- Data management of waste needs to be improved.
- Currently importers are not paying and the issues is around how to include and exclude people from paying the levies.
- Clarity is needed on possible solutions such as exemptions and rebates against your tax and carbon tax may create the opportunity for exclusions and exemptions.

2.3.3.4 *WAME: Waste Management in Education 2016/2017*

The Department has partnered with the Knysna, Hessequa and George local municipalities in the Eden District by hosting three (3) WAME workshops with teachers in each of these areas. Thirty (30) schools were represented at the workshops and fifty-five (55) teachers were trained. The workshops had a focus on how to use waste within the CAPS curriculum across ALL grades.

WAME training workshops have also been supplemented with an instructional video and an educator training guide, which was developed to render curriculum support directly to teachers. The instructional video showcases the CAPS objective and link, video clips showing a classroom situation and fun activity based exercises for the teachers to enjoy while championing the context of waste.

The Department has committed to:

- follow-up with schools on the use of the WAME programme material;
- provide additional WAME and other supporting material where needed; and
- assist municipalities in initiating a greenest schools' recognition programme.

2.3.3.5 2Wise2Waste 2016/2017

Managing waste as a resource in WCG buildings

The Department of Transport and Public Works (DT&PW) in collaboration with the Department of Environmental Affairs and Development Planning (DEA&DP) successfully hosted the 2Wise2Waste recycling exhibition and launch of the first phase rollout of the WCG's transversal waste separation at source programme.

Figure 2: Waste separation bins

Waste separation bins were placed on all floors in the DT&PW at no 9 Dorp street. The new 3 waste bin unit will accommodate mixed paper; (cans, glass, and plastic) and food waste. We are proud to announce that food waste will be collected for composting. An additional bin for the collection of white paper will be placed near printers and photocopy machines. It is envisaged that the new and improved waste recovery system will be rolled out incrementally to the remaining WCG buildings in the CBD.

The 2W2W Waste Minimisation Initiative includes the following:

- Waste minimisation training and capacity building of WCG staff and cleaning contractors on the new and improved waste recovery system which will include weighing and record keeping of waste volumes.
- Waste awareness raising drives/ events.
- Monitoring and reporting on the recycling performance in WCG buildings.

3 WASTE MANAGEMENT PLANNING

AT A GLANCE

- **4 x** Municipal Integrated Waste Management Plans and 1 Situational Analysis of IWMP submitted to DEA&DP for assessment
- **2nd Generation Provincial Integrated Waste Management Plan** being developed
- **1 x** Industry Waste Management Plan
- Quality of submitted IWMPs **improved.**

3.1 Waste Management Planning

In terms of NEMWA all spheres of government are required to developed integrated waste management plans. It is important that national, provincial and local government align their waste management plans to ensure coordination, implementation and achievement of targets, as set out in the NWMS and respective integrated waste management plans.

The objective of waste management planning is to:

- identify and plan for future waste management needs and requirements;
- minimize waste management costs, the adverse social and environmental impacts and the amount of waste generated;
- promote the use of waste as a resource; and
- ensure that waste is managed in accordance with the principles of NEMA.

3.1.1 Municipal Integrated Waste Management Plans

There is no single best way or approach to handle or manage the wide variety of waste generated by municipalities. The historically poor waste management practices i.e. "end of pipe management" coupled with the current reality of having to manage a full range of waste streams while considering area-specific environmental, economic and social considerations, places a huge challenge on municipalities. These challenges have given rise to the concept of IWM, which as defined in the White Paper on Integrated Pollution and Waste Management for South Africa (2000) as a holistic and integrated system and process of management over the entire waste cycle i.e. from point of generation to point of disposal ("cradle to grave").

The Municipal Systems Act (Act 32 of 2008) Chapter 5, Part 2, Section 26(d) states that the council's development strategies must be aligned to any national or provincial sector plans. Before the enactment of the National Environmental Management: Waste Act (Act No. 59 of 2008) (NEMWA), this Municipal Systems Act provided the legislative grounds for the Department to request municipalities to develop their 1st generation IWMPs and align it to the White Paper on Integrated Pollution and Waste Management for South Africa (2000). In 2016, a few municipalities drafted

their IMWPs, which included the Saldanha Bay, Swartland, Breede Valley and Swellendam municipalities. The Langeberg Municipality submitted a Situational Analysis of their IWMP. These were assessed by the Department and Assessment Reports have been drafted, which must be sent to the municipalities as feedback.

The quality of the municipal IWMPs submitted have improved greatly from second to third generation.

3.1.2 Provincial Integrated Waste Management Plan

In terms of the NEMWA, a provincial government is required to compile an Integrated Waste Management Plan (IWMP) and may incorporate the IWMP in any relevant provincial plan. A provincial department needs to report annually on the implementation of the plan. In 2011, the Department developed its 1st generation provincial IWMP (WC IWMP) through a consultative process. The Department is currently in the process of developing its 2nd generation IWMP.

The aim of the WC IWMP is to provide strategic direction for integrated waste management in the province over the short, medium and long term and is aimed at provincial government, local government, industry, commerce and civil society. It is thus the responsibility of all these stakeholders to implement the WC IWMP. The plan thus aims to facilitate the implementation of the NEMWA and the NWMS by:

- Promoting sustainable waste management, this includes; waste avoidance, cleaner production, waste minimisation, resource-use efficiency, resource recovery and recycling;
- Diverting waste from waste management disposal facilities;
- Minimising adverse environmental and social impacts of waste management, particularly for the vulnerable; and
- Providing guidance and support for both municipalities and industries in developing IWMPs, which promotes Integrated Waste Management.

A consultative process, which included public workshops and meetings, was followed throughout the development of the IWMP and stakeholders were provided with an opportunity to comment at various stages during the development of the plan. This assisted the Department in developing a comprehensive status quo of waste management in the province, identifying gaps and needs in waste management and in the development of goals, objectives and action plans. In addition to the above, the waste management policy and regulatory context, census data, district and local municipal level IWMPs and Integrated Development Plans (IDPs), as well as other relevant documents and studies were analysed. The process followed is described below for each stage of the IWMP development:

Status Quo

The situational analysis included the legal and policy context, institutional frameworks and socio-economic aspects. It also considered waste management aspects e.g. waste generation, minimisation, information, treatment and disposal, regionalisation and collection services.

Gap and need identification

Gaps and needs were largely identified by stakeholders. The Department also identified additional gaps through the review of the policy context and the 1st Generation IWMP.

The "two triangles" analytical framework, which includes the physical and governance aspects of waste management, was used to assist in the identification of gaps and the prioritisation of needs.

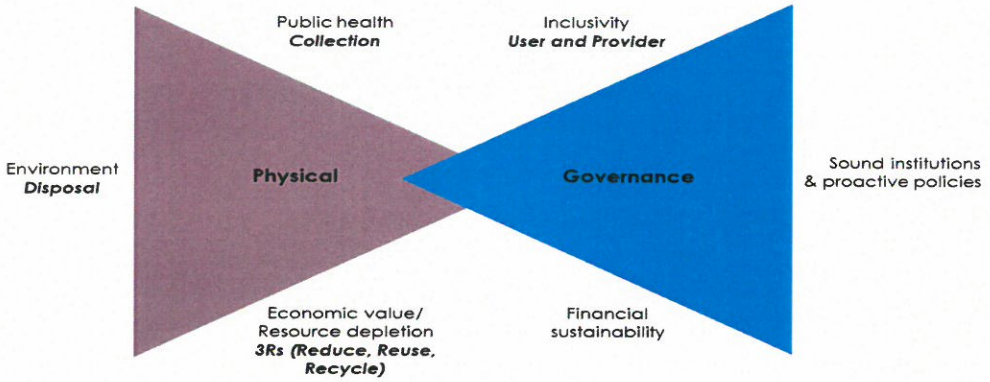


Figure 3: Two triangles representation, UNEP 2012

Formulation of goals and objectives

The formulation of goals was done by reviewing the first generation IWMP goals against the current policy context and the prioritised needs identified. The goals were rationalised and reduced from eight to four goals. Some of the previous goals remained and others were either combined to form new goals or demoted to objectives under the new goals. The previous goals and proposed goals are indicated in

Table 2. The proposed goals and objectives were workshopped with stakeholders, who also assisted in the process of developing action plans.

Table 2: Proposed new goals, WC IWMP

First generation Western Cape Integrated Waste Management Plan	National Waste Management Strategy Goals	Proposed new Goals
Goal 1: Educate, strengthen capacity and raise awareness in Integrated Waste Management	**Goal 4:** Ensure that people are aware of the impact of waste on their health, well-being and the environment	**Goal 1:** Educate, strengthen capacity and raise awareness in Integrated Sustainable Waste Management
Goal 2: Improve waste information management	**Goal 5:** Achieve integrated waste management planning.	
Goal 3: Promote sound, adequate and equitable waste management practices	**Goal 2:** Ensure the effective and efficient delivery of waste services	
Goal 4: Mainstream Integrated Waste Management planning in municipalities and industry	**Goal 5:** Achieve integrated waste management planning	
	Goal 1: Promote waste minimisation, re-use, recycling and recovery of waste	**Goal 2:** Implement Integrated Sustainable Waste Management (combines existing Goals 2, 3, 4, 5, 7 and 8)
Goal 5: Mainstream sustainable waste management practices	**Goal 1:** Promote waste minimisation, re-use, recycling and recovery of waste	**Goal 3:** Effective utilisation of resources
	Goal 3: Grow the contribution of the waste sector to the green economy	
Goal 6: Strengthen the waste regulatory system/framework	**Goal 8:** Establish effective compliance with and enforcement of the Waste Act	**Goal 4:** Ensure integrated compliance with environmental regulatory framework
	Goal 2: Ensure the effective and efficient delivery of waste services	
Goal 7: Ensure the safe an integrated management of hazardous waste.	**Goal 7:** Provide measures to remediate contaminated land	
Goal 8: Facilitate access to funds to implement Integrated Waste Management in the province	**Goal 6:** Ensure sound budgeting and financial management for waste services	

Implementation Plan

The Department is currently in the process of developing action plans in addition to those provided by stakeholders. The IWMP, which will include the proposed action plans will be distributed to stakeholders together with four (4) position papers (Construction and Demolition Waste, Regionalisation of waste management services, Waste collection services and urbanisation, and Organic waste) for comment from 16 January 2017 to 31 January 2016. The IWMP is expected to be finalised by 31 March 2017.

3.1.3 Industry Waste Management Plans

Household Hazardous Waste was identified in the Hazardous Waste Management Plan as one of the problematic waste streams that requires attention. The paints, inks, adhesives, cosmetics, pharmaceuticals and cleaning chemicals sub-sectors were prioritised as the six subsectors within the Consumer Formulated Chemicals Sector (CFCS), which contribute to household hazardous waste that ends up at WDFs affecting and exposing waste salvagers/ reclaimers to harmful chemicals and gases. One Industry Waste Management Plan (Industry WMP) from Dekro Paints (Pty) Ltd was submitted in 2016 in terms of the provincial notice published (22 November 2013) by the MEC under section 28(2) of NEMWA requesting manufacturing companies, who generate on average 20kg or more of hazardous waste per day, to prepare and submit Industry WMPs for approval. The purpose of the notice was to ensure that industry manages their hazardous waste in an environmentally responsible manner and to facilitate waste minimisation. The quality of the industry Waste Management Plan submitted was quite good and followed the requirements set in the departments guideline as well as in legislation.

4 WASTE INFORMATION MANAGEMENT

AT A GLANCE

Waste Information management:

- Population of 6 195 138 people
- 0.96 kg/capita/day as reported in IWMPs vs World bank 2 kg/ capita/day; due to inclusion of large rural areas in the provincial average.
- 4 067 982 tons' general municipal waste (28% increase)
- 664 330 tons diverted thus **diversion rate of 16%** for WC 2016
- Rates range from 0% to 45.66 %,
- 2 x municipalities 20% diversion rate namely **Bergriver** and **Overstrand**
- City of Cape Town's diversion rate 19.18% but total largest tonnage of waste diverted **592 309.72 tons**.

4.1 Population figures

In 2013, the Western Cape represented 11.4% (approximately 6 million) of the total population in South Africa. Cape Town is the capital of the province and other major cities and towns include George, Knysna, Paarl, Swellendam, Oudtshoorn, Stellenbosch, Worcester, Mossel Bay and Saldanha Bay. The majority of the population (74%) is concentrated in the Cape Metro region. High population densities are located along the coastal belt.

The Western Cape experiences a growing population largely due to in-migration of people from other provinces and international immigrations. The population is expected to grow from 5.82 million people in 2011 to 7.36 million people in 2040 (**Figure 4**). This represents an average annual population increase of approximately 0.81% (compounded growth) and by approximately 1.54 million people over this period.

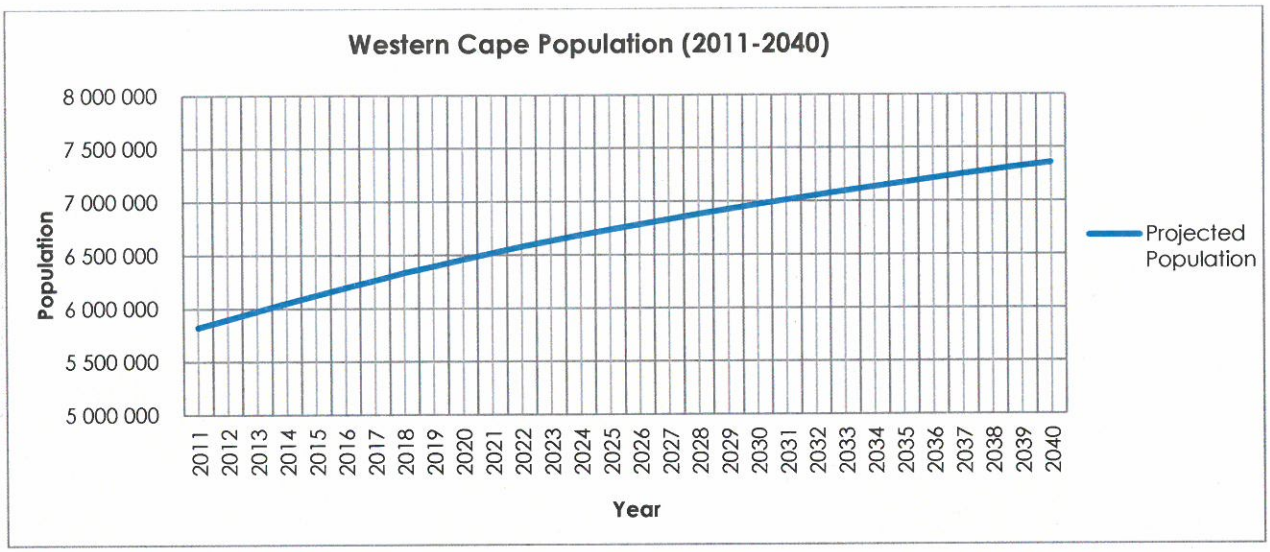


Figure 4: Population projections for the Western Cape Province: 2011 – 2040

(Source: WCG: Department of Social Development 2014)

The projected population for the Western cape by the WCG: Department of Social Development is **6 195 138** people.

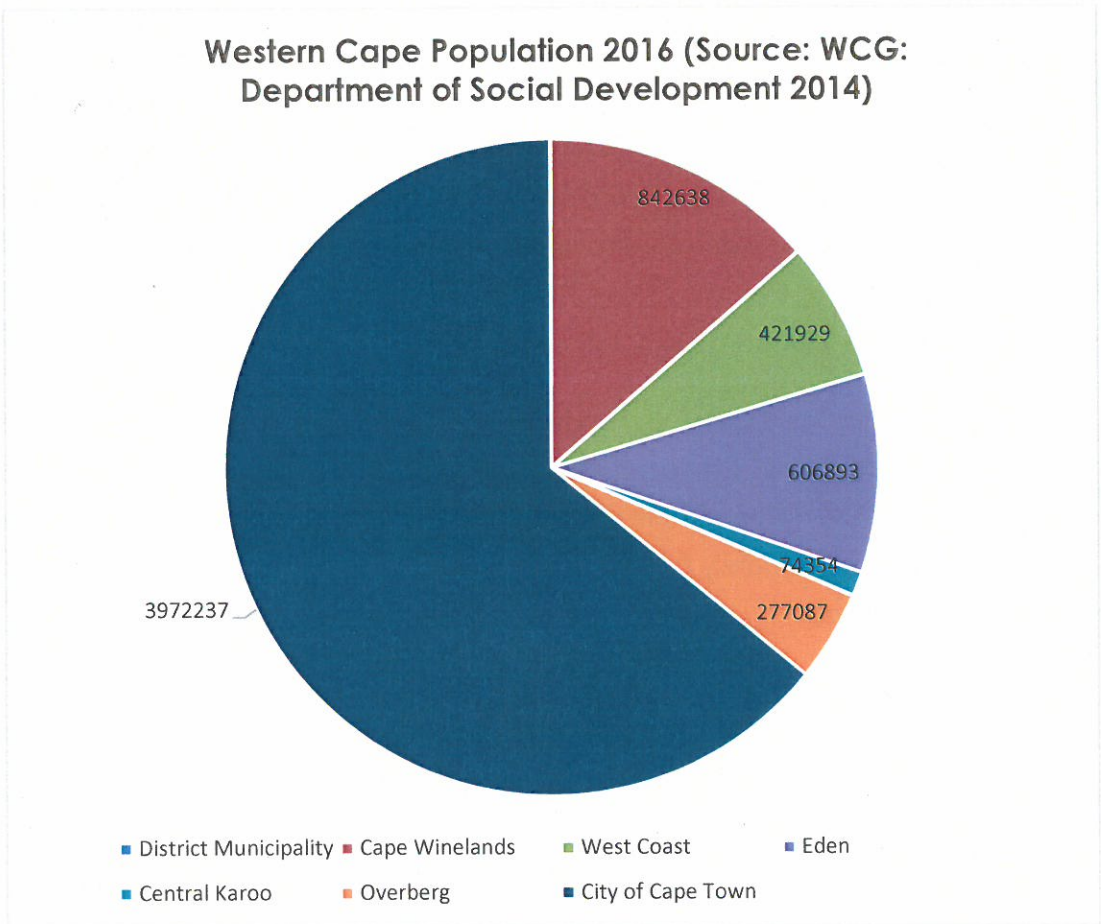


Figure 5: Western Cape Population 2016 (Source: WCG: Department of Social Development 2014)

4.2 Waste Generation Rates

The waste generation rates for the districts were obtained from the latest municipal IWMPs. They are displayed in kg/person/day. The City of Cape Town's waste generation rate was calculated based on the 2015 population data and the known waste generated quantity for 2015. This rate was used to calculate the future waste generation quantities for the outer years up until 2040. More detailed information on waste generation rates per municipality can be obtained in the Status Quo of the 2nd generation Western Cape Integrated Waste Management Plan. The table below shows the average waste generates for each district.

Table 3: Average Waste Generation rates for the Western Cape

District	Generation rates
City of Cape Town	1.67
Cape Winelands	0.87
Central Karoo	0.68
Eden	0.90
Overberg	0.74
West Coast	0.90

The average generation rate for Municipal Solid Waste for the entire province is thus 0.96 kg/capita/day.

The World Bank calculates a waste generation rate of 2 kg/ capita/day (Urban Development Series: What a Waste 2012). The generation rate from the World Bank data compares more favourably with high populated urban as can be seen from the 1.67 kg/capita/day rate reported for the City of Cape Town Metropole.

4.3 General Municipal Waste Information reported via Waste Calculators and to IPWIS

The Department initiated the development of the Integrated Pollutant and Waste Information System (IPWIS) in 2002 in order to obtain data from municipalities, industries and other relevant stakeholders. Although municipalities and industry registered on IPWIS, no waste reporting was submitted due to the lack of information and legislation pertaining to the submission of waste information. Without accurate and relevant information, it is impossible for any organization to make informed decisions. The lack of baseline information at municipalities was due to limited weighbridges, which compelled the Department to develop the Waste Calculator.

With the promulgation of the National Waste Information Regulations R. 625 in 2013, municipalities within the Province are required to register and report waste information on waste managed within

the municipality to the Department. One big challenge exists, in that not all waste management facilities have the equipment (weighbridges or scales) to document accurate waste data which leads to limited waste information at the municipality. As such Department has developed a Waste Calculator tool to assist the relevant municipalities in quantifying waste data.

The Department capacitated municipalities on the utilization of the Waste Calculator and the IPWIS, which is web based. Various training sessions have been conducted with municipalities to ensure the effective and efficient use of the Waste Calculator, the registration and reporting of waste information on IPWIS. There are some municipalities, who in the absence of weighbridges at waste management facilities have used the waste calculator to establish baseline data and identified opportunities for waste diversion from landfill. Municipalities either have accurate (weighbridge) or estimated (waste calculator) data of waste managed within the municipality and reports must be submitted to the Department, via IPWIS. Municipalities are required to submit waste reports on the waste disposed and diverted using the waste calculator sheets and weighbridge reports. Submitted reports are received from municipalities are verified by Department staff. In addition, the HCRWMR requires all generators, transporters, treaters and disposers of Health Care Risk Waste (HCRW) to register and report on IPWIS.

The following sections below depict the management and record keeping of general waste at the municipal waste management facilities. All data reflected in the sections below are based on information submitted to the Department during the 2016 calendar year either via waste calculators or IPWIS.

Based on the waste information provided to the Department by the local and metropolitan municipalities in terms of general municipal waste, **4 067 982.20 tons' general municipal waste** has been generated in the Western Cape Province for 2016. That is a **28% increase** on the 2 922189.60 tons that was reportedly generated in the Western Cape Province for 2015. Due to the abject reporting done by municipalities during 2015 this seeming increase in waste generated may not be a true reflection of the state of waste in the province, but may rather to a certain extent be due to the increased reporting and reporting accuracy from the municipalities supplying the data to Department during 2016.

Reportedly 664 330.42 tons of the general municipal waste has been diverted from landfill and therefore, 3 403 651.78 tons of general waste has been disposed at landfill (**Figure 6**). The combined general waste diversion rate for the Western Cape Province is thus **16%** for the year 2016.

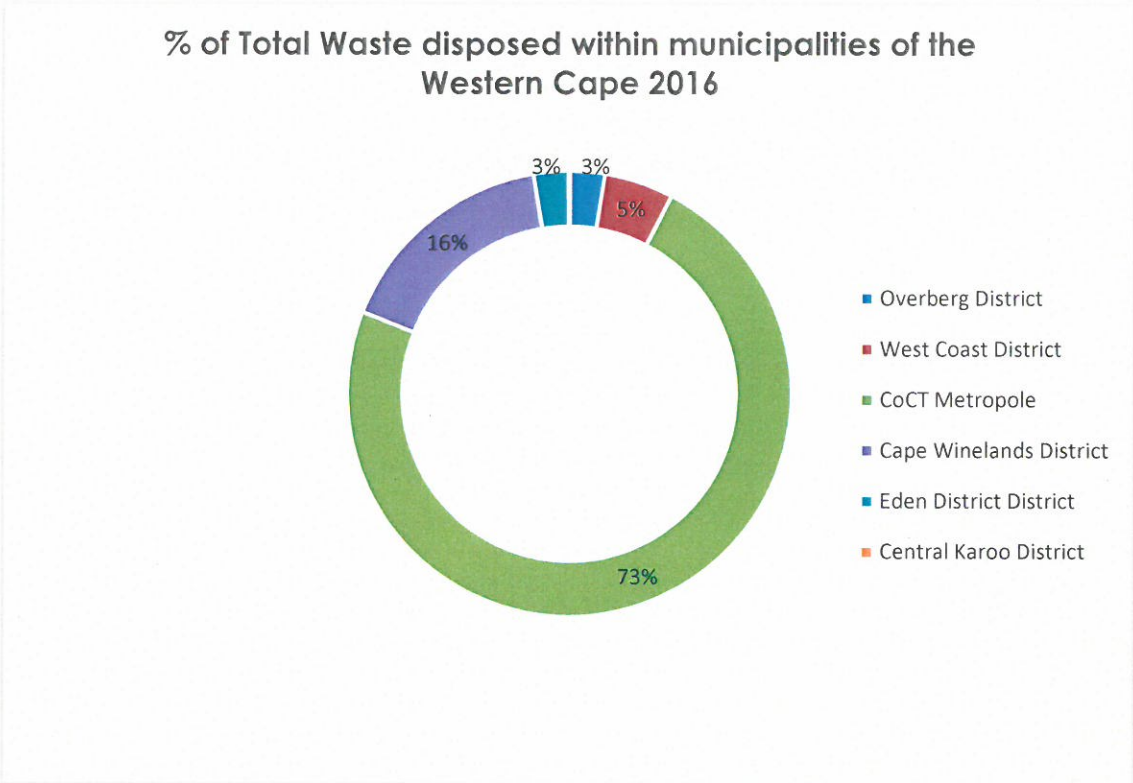


Figure 6: % of the total General waste for the Province disposed within each Municipality in 2016

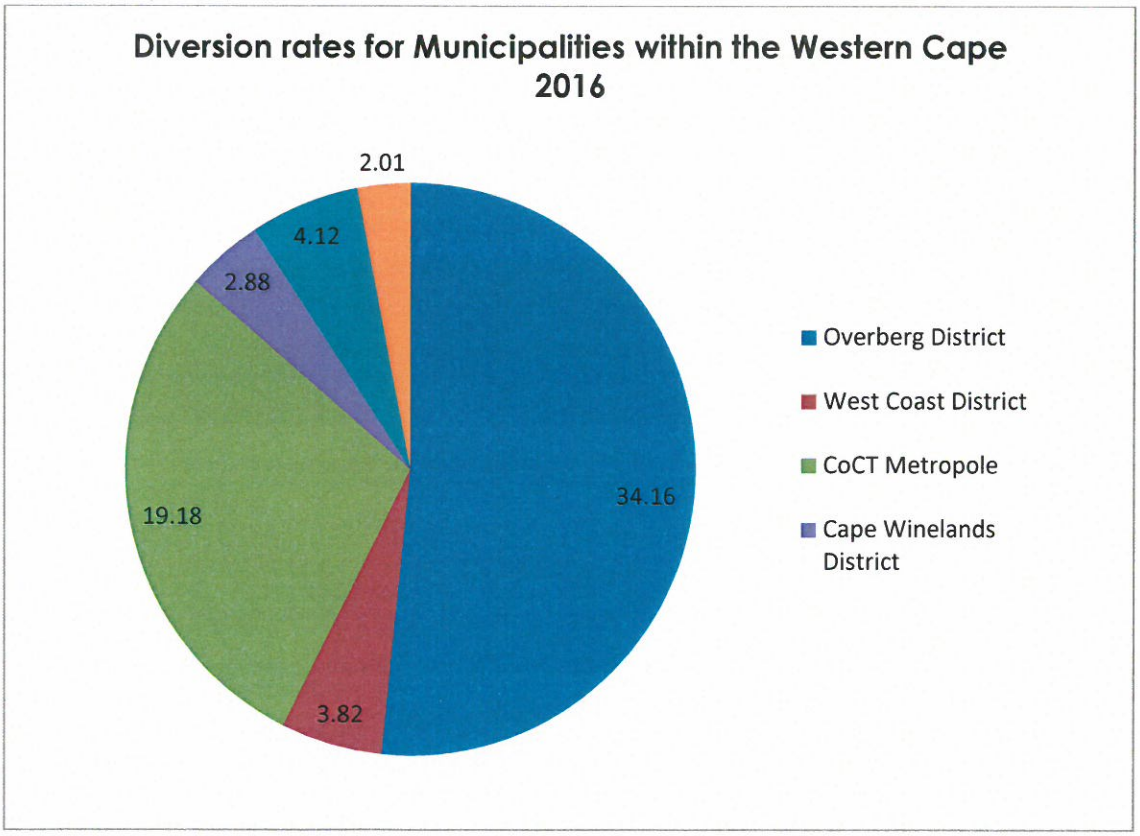


Figure 7: Waste diversion in the Province - 2016

The City contributed towards 34% of the waste diverted and reported in the Province for 2016 (**Figure 7**).

The below table is a summary of all the diversion rates calculated for the municipalities within the Western Cape from the data submitted to the Department for the year 2016. The rates range from 0% to 45.66 %, with only two municipalities obtaining the 20% diversion rate namely Bergriver and Overstrand Municipalities. The City of Cape Town's diversion rate is 19.18% for general waste and as they are the largest generation are for general waste they account for the total largest tonnage of waste diverted 592 309.72 tons.

Table 4: General Municipal Solid Waste diversions rates for 2016

Municipalities	Total Waste Diverted in Tons	% Diverted 2016
West Coast District	6895.36	3.84
Swartland	5899.25	14.55
Bergriver	221.26	**27.08**
Cederberg	0.00	0.00
Saldanha	774.84	0.58
Matzikamma	0.00	0.00
Overberg District	44756.76	34.16
Cape Algulhas	0.00	0.00
Overstrand	44756.76	**45.66**
Swellendam	0.00	0.00
Theewaterskloof	0.00	0.00
Cape Winelands District	16578.15	4.76
Drakenstein	0.00	0.00
Langeberg	5889.21	14.37
Breedevalley	735.20	0.64
Stellenbosch	9953.74	14.65
Witzenberg	0.00	0.00
Eden District	3711.14	4.12
Oudtshoorn	0.00	0.00
Kannaland	47.25	3.13
George	0.00	0.00
Mossel Bay	2198.56	3.33
Bitou	1465.33	7.44
Knysna	0.00	0.00
Hessequa	0.00	0.00
Central Karoo District	79.30	2.01
Laingsburg	0.00	0.00
Prince Albert	0.00	0.00
Beaufort West	79.30	3.77
Cape Town	592 309.72	**19.18**

The summarised information above is derived from the combination of information from the various local, metropolis and district municipalities in the province and is discussed in further detail below:

4.3.1 General waste summary for Overberg District Municipality

The Overberg District Municipality comprises four local municipalities i.e. Cape Agulhas, Overstrand, Swellendam and Theewaterskloof. The District Municipality has two (2) waste disposal facilities namely Karwyderskraal and Elim Landfill sites. The waste reporting for both facilities is being administrated by the Overstrand Municipality for Karwyderskraal Landfill and Cape Agulhas Municipality for the Elim Landfill, respectively.

The total general waste disposed in the ODM is **86 277.18 tons**, that is an increase of 12071.38 tons or 14% since 2015. This includes municipal, construction, commercial and organic waste types (Figure 8). The increase is mainly due to the increased reporting frequency of the Swellendam Municipality and the correction of waste flows within the municipalities (i.e. construction waste was incorrectly reported as waste diverted from landfill in 2015) and may not be a true reflection of increased waste disposed of within the district. The Overstrand Municipality has disposed 53 254.65 tons and as the most populated area, still contributes the most waste to the District. It should also be noted that the calculations for the Overberg District Waste Management regional facility namely Karwyderskraal Landfill, is also included for Overstrand as they are currently managing the facility and accepts waste from other municipalities.

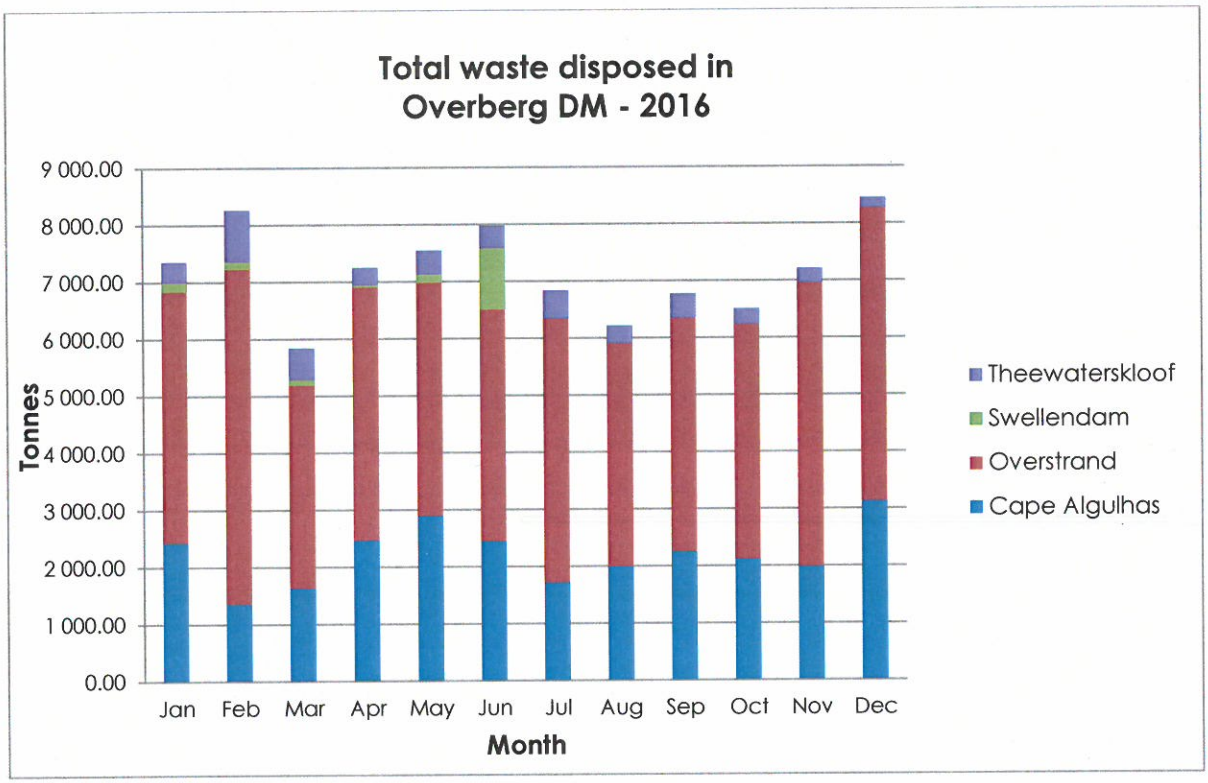


Figure 8: Total waste disposed in ODM for 2016

The total waste diverted for the ODM has increased to **44 756.76** tons in 2016 from 31 637.62 tons in 2015. The Overstrand Municipality is the only contributor to waste diversion with a diversion rate of 45.66% and this is due to various municipal and private recycling and composting activities. The

combined rate of diversion for the municipalities reporting within the District is approximately 34.16%. The Swellendam, Theewaterskloof and Cape Algulhas Municipalities did not report on any waste diverted from landfill for 2016.

The District generated **131 033.94 tons** of waste in 2016 compared to 110 157.19 tons in 2015, while Overstrand Municipality has generated 98 011.41 in 2016 compared to 79 374.38 tons in 2015. It must be noted that while the overall waste disposal amounts have only increased with 12 071.38 tons the remaining increase of waste generated in the District is mainly due to the increased amount of waste diverted from landfill in the Overstrand Municipality and the additional increased reporting by the Swellendam Municipality.

The Swellendam Municipality only reported from January to June 2016, and in 2015 they only reported for June 2015.

Overstrand, as an urban area, generates proportionally more organic waste than Cape Agulhas but most of this is diverted from landfill through chipping or composting facilities and only a small

4.3.2 General waste summary for West Coast District Municipality

There are five (5) local municipalities in this District, namely Swartland, Bergrivier, Cederberg, Saldanha Bay and Matzikama. The Piketberg and Porterville Landfills accept construction and organic waste, where it is used for cover material and chipped respectively. All the municipal waste collected at these sites is transferred to Highlands Landfill and municipal waste from the Piketberg Materials Recovery Facility (MRF) and Porterville Drop-off is disposed at Highlands Landfill. Recycling is very active within the Bergrivier Municipality.

Vredenburg Landfill and Vredenburg MRF are located on the same premises where municipal waste is recovered at the MRF and the remaining waste is disposed. Waste from the Bergrivier Municipality is also disposed at the Vredenburg Landfill.

The West Coast District Municipality disposed 172 893.99 tons which is 42 % more than the amounts (100 729.03 tons) disposed of municipal, construction, commercial and organic waste in 2015. The increase in reported tonnages for waste disposed in the district is mainly due to the increased reporting and reporting accuracy from the Saldanha Bay Municipality. The Saldanha Bay Municipality has contributed the most (132 109.44 or 76%) to the waste disposed in this District (**Figure 9**). The Bergrivier Municipality has also increased their reporting but since they export most of their waste to the Swartland and Saldanha Bay Municipalities for disposal, they do not contribute significantly to the large increase since 2015. Numerous telephonic and electronic requests have been made to Cederberg Municipality to report but no waste reports were received from them for 2016.

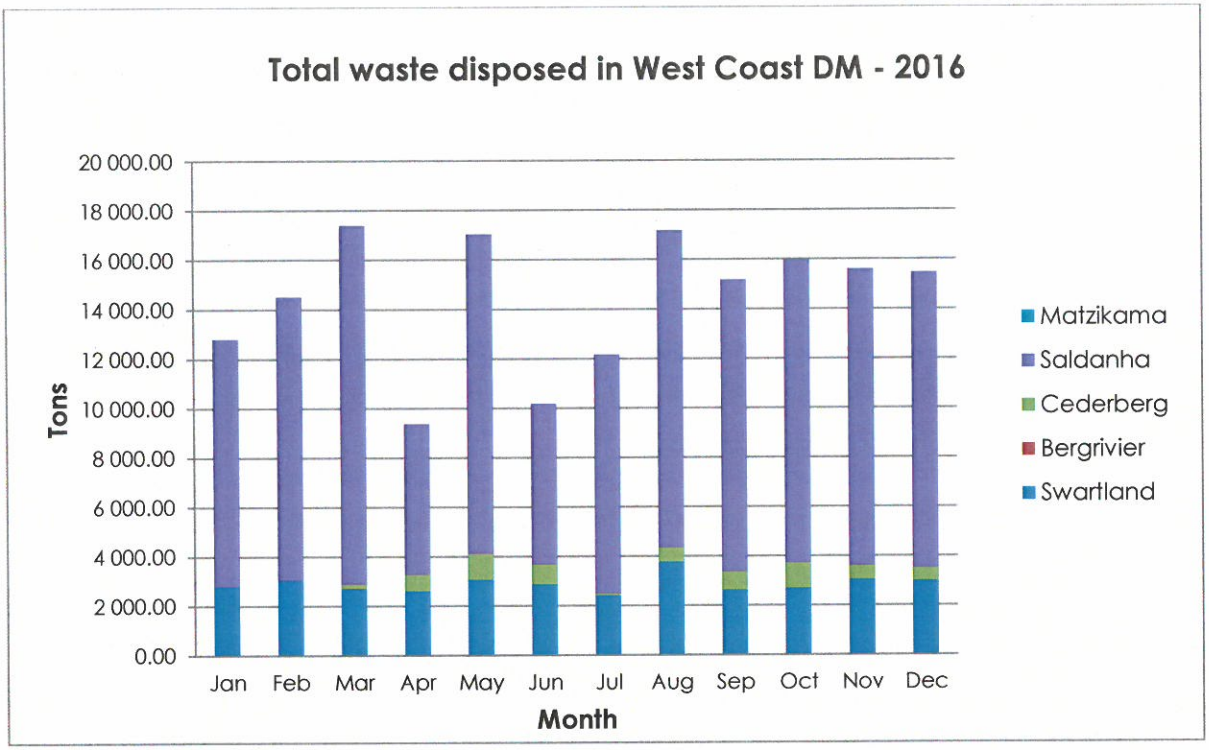


Figure 9: Total waste disposed in the WCDM for 2016

The Swartland Municipality contributes to the most tonnages of waste diverted from landfill with 5 899.25 tons or 15% of their waste diverted from land fill (**Figure 10**). The Bergriver Municipality however has the highest diversion rate namely 27% (of 817.01 tons generated), this can be attributed to the fact that they have no disposal facilities within the Municipality and have to export waste for disposal to either Saldanha or Swartland Municipalities. They thus actively pursue waste reduction as this decreased the cost of waste management within the municipality.

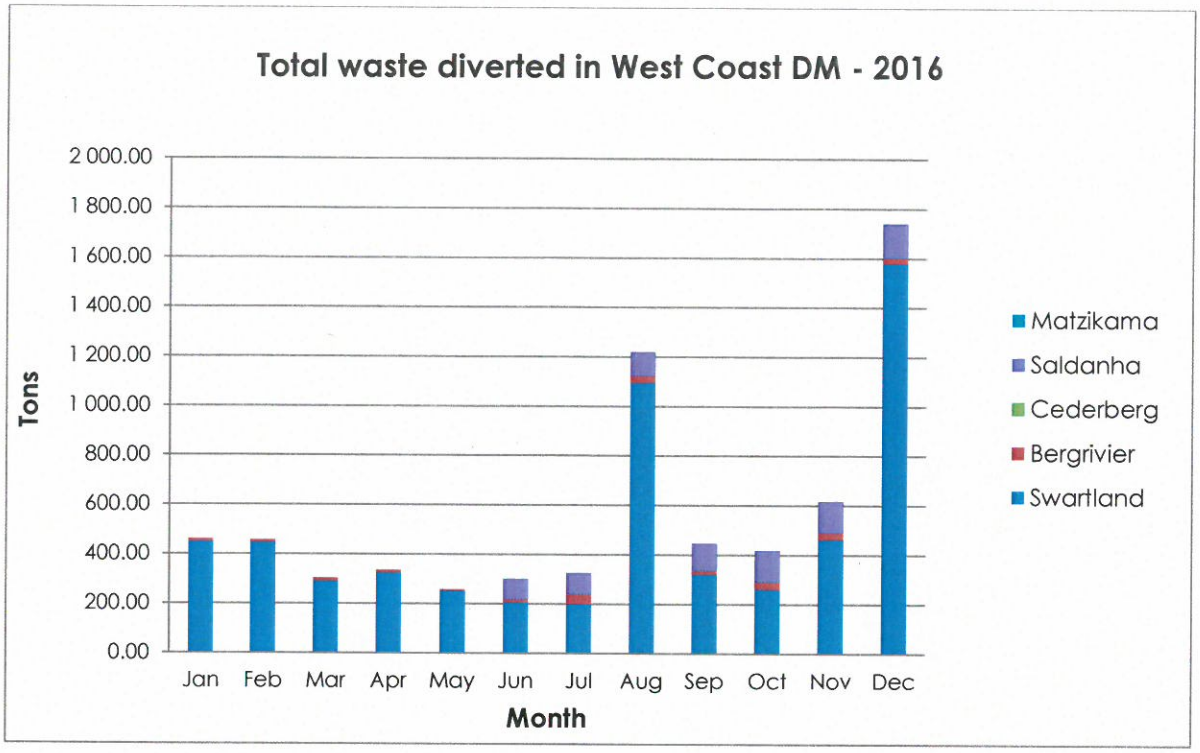


Figure 10: Total waste diverted in the WCDM for 2016

The rate of diversion for the WCDM is approximately 3.84%, where the total waste generated in the District is 6 895.36 tons. This includes municipal, construction, commercial and organic waste types.

4.3.3 General waste summary for City Of Cape Town

The City of Cape Town, often referred to as "the City", currently operates thirty (30) waste management facilities within the metropole area. The City has indicated that 2 496 138.54 tons of general waste had been disposed in the Metropole for 2016, that is 52% more waste disposed then reported in 2015 (i.e. 1 190 481.98 tons) (**Figure 11**). 592 309.72 tons has been reported as diverted via Builders Rubble (BR) stockpiled for cover, slope or roads at landfill sites, Garden Greens (GG) being chipped and various Waste Minimisation Programmes.

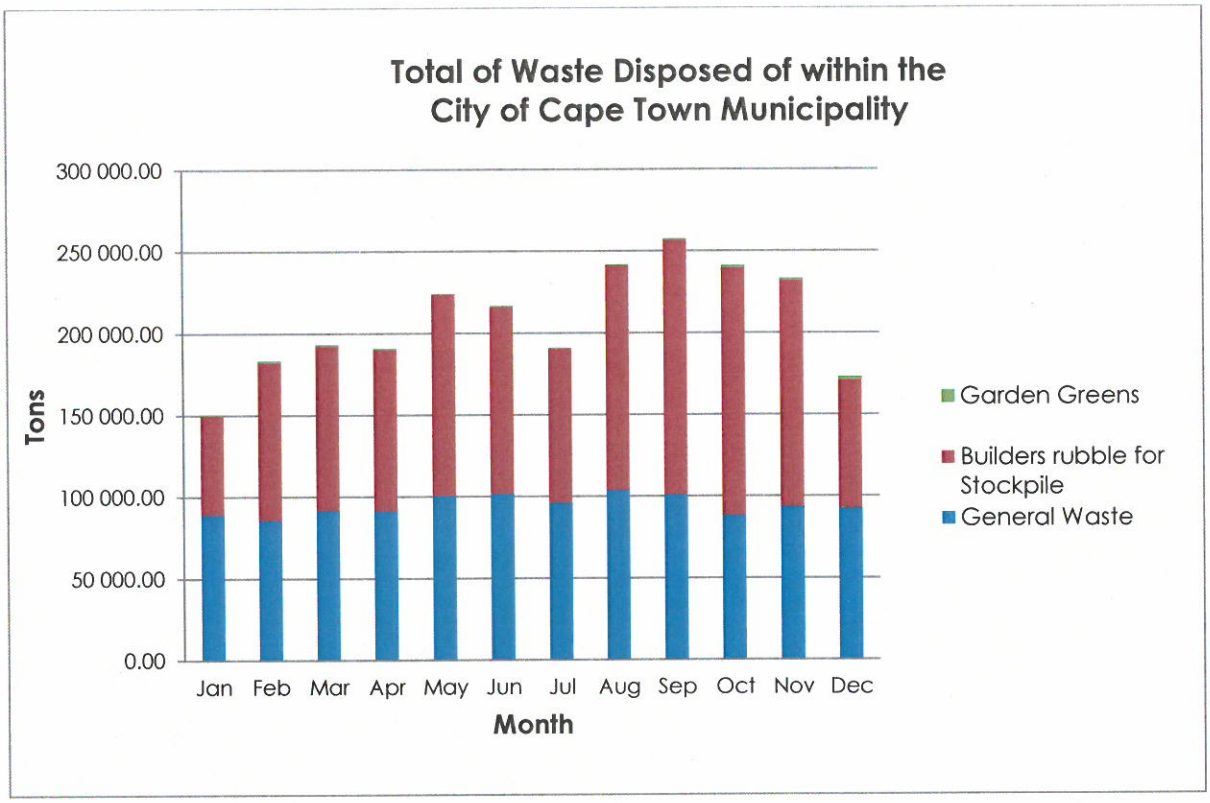


Figure 11: Waste Disposal (tons) – 2016

In total, 3 088 448.25 tons of general waste has been generated for the 2016 calendar year. The current waste diversion rate is 19% compared to 45.31% in 2015, this is mainly due to the reduced amount of historic reporting of builder's rubble that had previously been stockpiled.

4.3.4 General waste summary for Cape Winelands District Municipality

There are five (5) local municipalities in the District namely Drakenstein, Stellenbosch, Langeberg, Breede Valley and Witzenberg.

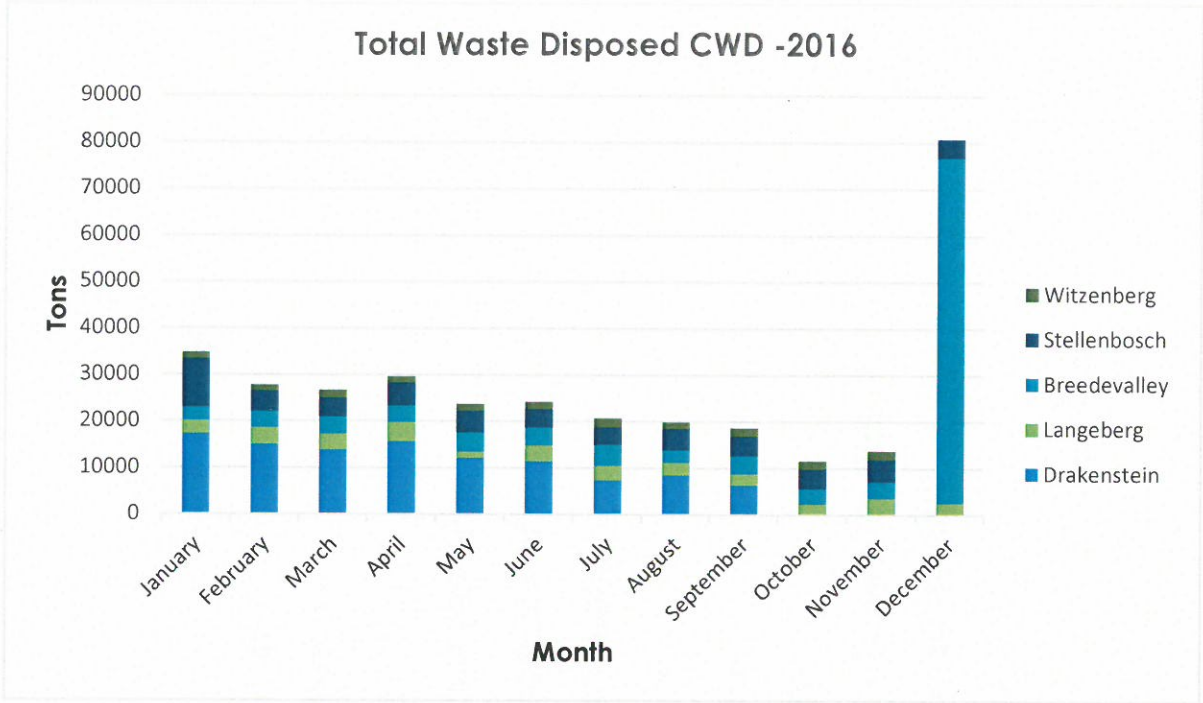


Figure 12: Total waste disposed in CWDM for 2016

The total waste disposed for the Cape Winelands District Municipality 331 460.07 tons which is 14.5% less than the amount (387 648.39 tons) of waste disposed in 2015. Of the total amount of waste disposed during 2016, 151 627.67 tons has been reported as Domestic Waste and the and for this waste type Drakenstein municipality and Stellenbosch Municipality have reported the highest figures being 43 371.07 and 44 885.28 tons respectively.

Although the overall diversion rate for the district is only 4.76 %, the individual diversion rates for the two major contributors, which is Stellenbosch and Langeberg Municipalities are 14.65% and 14.37% for respectively. For the remaining municipalities there has been zero reporting on waste diverted from landfill and in some cases waste minimization efforts do take place, however on a very small scale and is therefore under- reported. Breede Valley has the most waste disposed in the district for the year 2016. This may be attributed to regular reporting from this municipality and under or non-reporting from others and also due to small scale diversion taking place in this local municipality as their population size and area of jurisdiction are smaller in comparison to other municipalities in this district.

4.3.5 General waste summary for Eden District Municipality

There are six (6) local municipalities namely Kannaland, Mossel Bay, Knysna, Bitou, George and Oudtshoorn. PetroSA is situated in Mossel Bay Municipality and is a privately owned waste disposal facility that renders a service to certain municipalities within the EDM for the disposal of their general waste. For the year 2016 only Mosselbay and Bitou Municipality reported their waste quantities that are being disposed of at the PetroSA landfill. For three (3) of the six (6) local

municipalities namely, Hessequa, Knysna and Oudtshoorn Municipality, no waste information has been reported on IPWIS or via the Waste Calculator. Therefore, the figures covered in this section only represents 3/6 municipalities in the EDM.

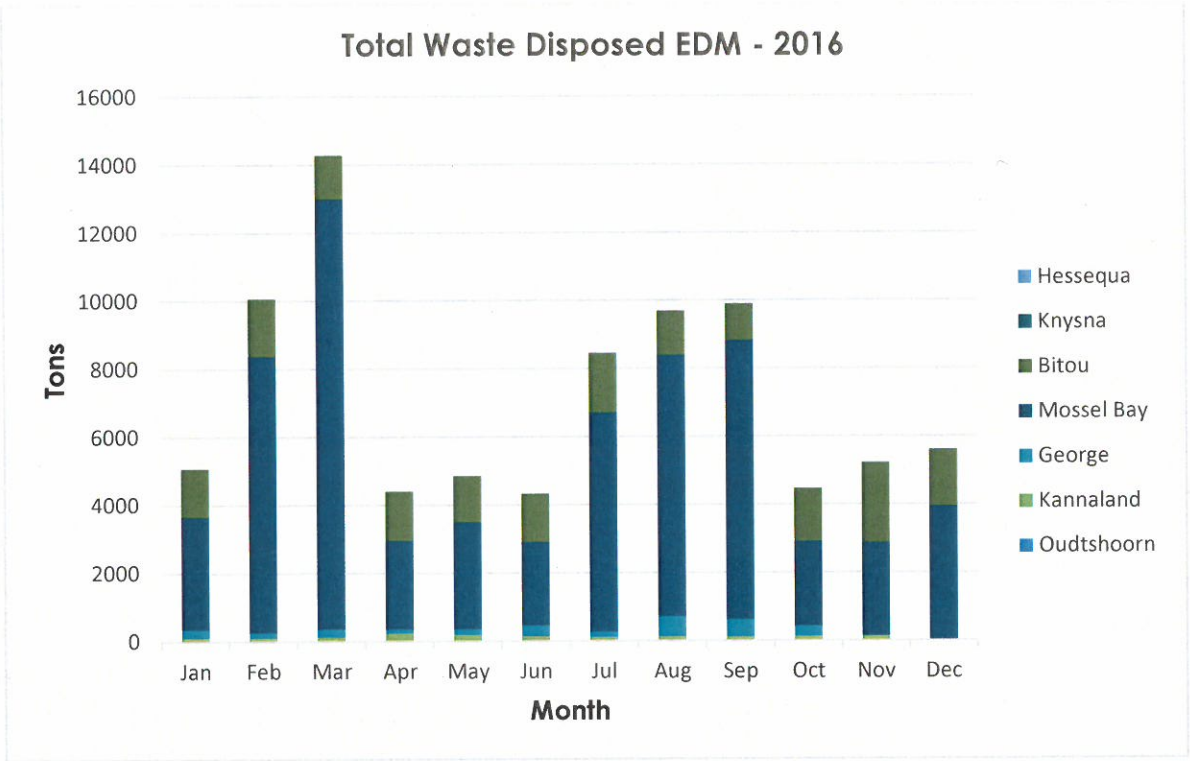


Figure 13: Total waste disposed in EDM for 2016

The total waste generated in the EDM amounts to 86 282.02 for 2016 compared to 46 398.95 tons for 2015 which indicates a 53.8% increase in the waste generated. Mossel Bay Municipality is the biggest contributor of waste disposed with 63 850.76 tons for the year. Of the total waste disposed in the EDM 3 711.14 tons were diverted. This amounts to a 4.12 % waste diversion, which is largely representative of municipal recycling and therefore is suggestive that the waste minimization initiatives are mainly geared towards a specific waste fraction.

4.3.6 General waste summary for Central Karoo District Municipality

There are three (3) local municipalities namely Beaufort West, Prince Albert and Laingsburg municipality in the District. The waste generation and disposal totals reported in the Central Karoo District shows Beaufort West Municipality, as the biggest waste contributor in the District for 2015 and 2016. Beaufort West Municipality were also the only municipality that reported on Waste Diversion, however only for the period of January to July 2016.

Following a training session with the District's Youth Jobs in Waste Personnel reporting information for the Prince Albert Municipality were initiated and the information covered in this section includes their waste figures for the period of May to November 2016.

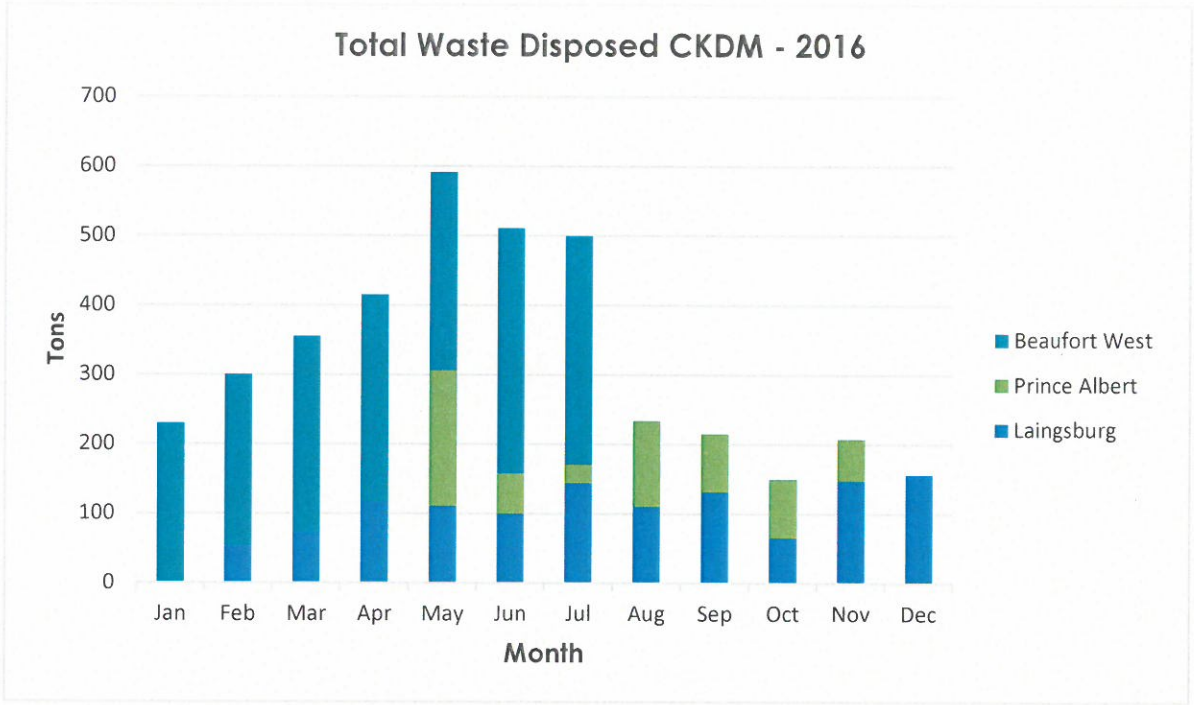


Figure 14: Total waste disposed in CKDM for 2016

The waste disposed in the CKDM amounts to 3 864.23 tons for the year. The percentage waste diverted for the CKDM is 2.01% for the year 2016 in comparison to no diversion figures being reported in 2015. Although an additional municipality contributed to the reporting of the CKDM, waste volumes have not increased, but rather decreased from 5 579.77 tons for the year in 2015 to 3 864.23 tons for the year. The exact reason for this is not known as the major contributor in this district have not reported regularly and due to missing information valid conclusion cannot be drawn from the information at hand.

5 COST OF WASTE MANAGEMENT SERVICES

AT A GLANCE

Provincial:

- 33 posts filled (43% vacancy rate – vacant unfunded posts)
- Total Waste Management Budget R 21 950 647.63

Municipalities:

- Operational R 2 010 322 584 and capital R 286 081 391

5.1 Cost of Provincial waste management services

The institutional structure of DEA&DP makes provision for 58 post of various skills levels within the Waste Management Directorate. Currently 33 post are filled thus a 43% vacancy rate. This is due to the majority of the post that are listed are not currently funded.

The tables below reflect the cost of Waste Management for the DEA&DP in the 2016 calendar year.

Table 5: Operation cost for Directorate Waste Management

Type of expenditure	Amounts
Compensation of employees	R 16 340 744.41
Goods and services	R 5 283 715.87
Payments for financial assets	R 4 078.15
Transfers and subsidies	R 0.00
Capital assets	R 120 244.00
Grand total	**R 21 748 782.43**

Together with the cost for projects, total cost of Waste Management to the Provincial Government is **R 21 950 647.63**

5.2 Cost of Municipal waste management services

The Department obtained financial OPEX and CAPEX (audited) for all local municipalities from Provincial Treasury. It should be noted that these are financial summaries of waste management services.

5.2.1 Municipal operational and capital expenditure:

The information was taken from the 2015/16 and 2016/17 financial years i.e. from January to December 2016.

The total municipal operational and capital expenditure for 2016 is **R 2 010 322 584** and **R 286 081 391** respectively. The City of Cape Town spends 59% of the total operational expenditure and 80% of the capital expenditure. All the municipalities have spent budgets on operational requirements however Beaufort West, Laingsburg and Kannaland municipalities have not spent any budgets on Capital projects.

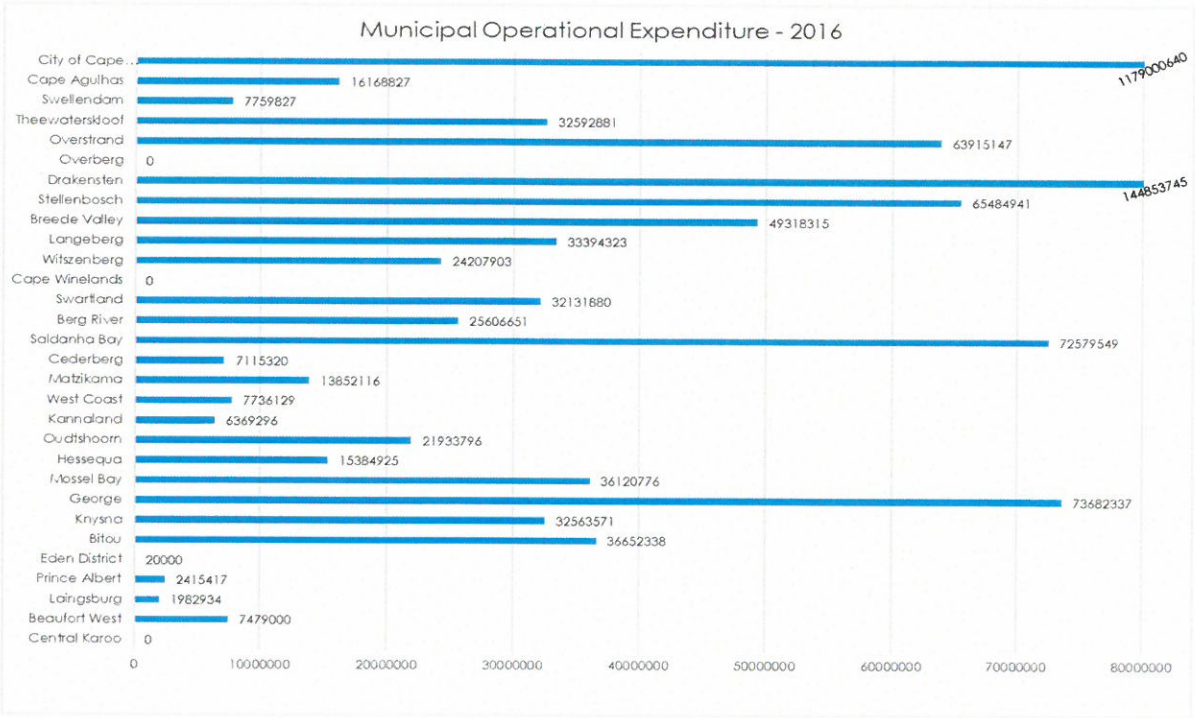


Figure 15: Municipal Operational Expenditure 2016

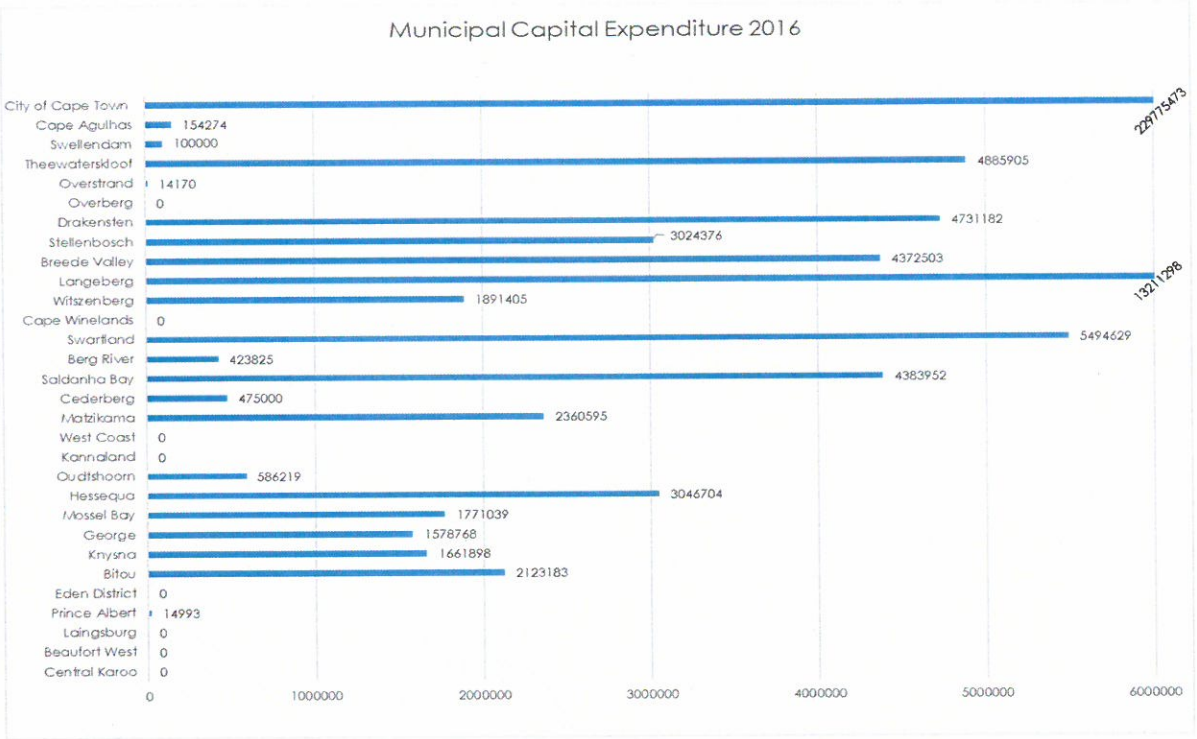


Figure 16: Municipal Capital Expenditure 2016

6 WASTE STREAMS OF SPECIAL INTEREST TO DEA&DP

AT A GLANCE

- Organics waste produced via different waste streams 8 024 729 tons
- Construction and Demolition Waste problematic and difficult to calculate due to prevalent illegal dumping.
- No legal e-waste processors in the Western Cape.
- Wastewater/Sewage sludge last available from 2013 Green Drop reports
- 2 089 983 L of waste oil (wet volume) was collected in the Western Cape during 2015
- 225 649 tons of hazardous waste was disposed

6.1 Waste streams information collated by Directorate Waste Management: Waste Minimisation and Policy

The below table has been compiled by the Directorate Waste Management: Waste Minimisation and Policy from published material and information provided by stakeholders. Access to reliable waste stream volume data is limited and unreliable.

Table 6: Generation data (tons) for waste streams of interest to DEA&DP (2016)

Organics	8 024 729.12 tons When combining all the data below the total amount of organic waste produced in the Western Cape amounts to 8 024 729.12 tons. This amounts to quite a huge portion of the waste and therefore DEA&DP have focussed on some of the components making up organics.	
Green Waste	2 216 104 tons (Potential for W2E in WC: 2040 Outlook)	This total was calculated based using the agricultural and forestry residues of the Potential for Waste to Energy in the Western Cape: A 2040 Outlook report. A Status Quo of Green Waste has been initiated in 2016. It found that 5 local municipalities are diverting wastes through various waste management processes. The document is still in progress and is expected to be complete in March 2017. It was discovered that data management systems of municipalities are non-existent which made quantification difficult.

		212 5082 – Agricultural residues 91 022 - Forestry residues
Abattoir Waste	Potential estimates of abattoir waste production per meat type: Red Meat: 24 502.11 tons Ostrich: 46 36800 tons Poultry: 76 987.06 tons	The DEA&DP has conducted a Status Quo on abattoir waste and found that most of the facilities dispose of their waste through burial. This needs to be dramatically changed and therefore a Guideline on Abattoir Waste Management is being drafted to discuss various environmentally safe treatment and disposal methods.
Wood Waste (outstanding, Simone working on)	Forestry residues (wood waste) in the Western Cape amounts to 91 022 tons per year. This total can further be broken down per District as follows: City of Cape Town: 9100 (9.99%) Cape Winelands District: 4600 (5.05%) Eden District: 63700 (69.92%) West Coast District: 4600 (5.05%) Overberg District: 9100 (9.99%) Central Karoo District: 0	GreenCape; 2017; Waste Economy: Market Intelligence Report 2017; Cape Town
Agricultural residue	2 125 082 tons (Potential for W2E in WC: 2040 Outlook)	Agricultural residues are being taken into account in the Status Quo of Green Waste. It was discovered that data management systems of municipalities are non-existent which made quantification difficult.
Food Waste	Approximately 3 483 261.95 tons	The figure produced was derived from the Status Quo of Abattoir Waste conducted in 2015. This amount takes the full food supply chain into account.

The information compiled for The Western Cape Waste Economy Business Case: Gap Analysis (Draft 2016) is illustrated in the table below for comparison. Even though the data was compiled for 2015 and very different waste streams where investigated, it provides a good comparison of the difficulty of obtaining reliable information of waste within the province.

Table 7: Comparison of Generation data (tons) for waste streams of interest to DEA&DP (2016)

Waste streams	Western Cape
Municipal Solid Waste	4 092 031
Organic waste	489 294
Other & Non-recyclable Municipal waste	685 478
Recyclables	1 212 580
Paper	295 213
Plastic	222 741
Glass	163 369
Metals	531 257
C&DW	1 704 679
Tyres	18 112
Wet sewerage sludge	295 023
Commercial & industrial waste	881 100
Agricultural residues	2 125 082
Volatile animal waste	149 681
Forestry residues	91 022
E-Waste	62 250
TOTAL CLASSIFIED WASTE	**7 714 301**

6.2 Hazardous waste

6.2.1 Construction and Demolition Waste

The Department has identified Construction and Demolition waste (C&DW) as a problematic waste stream. This is largely attributed to the large volumes of C&DW generated and the prevalent illegal dumping of this waste stream, mostly by the informal "bakkie brigades". C&DW contributes 10% by volume and 22% by mass of the waste entering WDFs within the province; these figures however exclude the large amounts of C&DW being illegally dumped (GreenCape, 2015). On average, in the CCT alone, 43 000m^3 of rubble is landfilled per month (GreenCape 2016). A large portion of C&DW can however be recovered and used in various applications. These applications include use as landfill cover, brick making and use as fill material. The biggest opportunities for builders' rubble processing and use however is in the construction and rehabilitation of roads e.g. reclaimed asphalt can be crushed and mixed with new asphalt or used in road sub-base applications. Concrete and broken bricks can be crushed and also used as fill for road sub-base. It has to however be ensured that Roads departments are willing to accept these secondary materials for road construction and rehabilitation purposes. To save landfill airspace, some municipalities in the province have undertaken or are proposing the diversion of C&DW e.g. in the CCT, 52000m^3/month of builders' rubble is crushed and re-used for various applications (GreenCape 2016). It is anticipated that an additional 40 000m^3/month of crushing capacity will be made available over the next few years as a result of planned additional capacity and further investment by the crushing industry (GreenCape 2016). Stellenbosch Municipality undertook a pilot project, in which building rubble and clay stockpiles were diverted to manufacture building blocks (Shah, 2015). The Overstrand Municipality is proposing the recovery of building rubble at the Old Hermanus garden refuse and domestic WDF, which will be used during the construction of a housing development.

6.2.2 E-waste

E-waste is one the fastest growing waste streams in South Africa. E-waste is electronic equipment that connect with power plugs, batteries which have become obsolete due to, advancement in technology; changes in fashion, style and status; nearing the end of their useful life. The Department met with South African E-waste Alliance to get a better understanding on the current state of e-waste management in the Western Cape. From a generation point of view, United Nations generation data in South Africa estimated 300 to 2 million tons (mt) of e-waste with a conservative estimate 0.35 to 0.36 mt using a 26% growth rate to do projections. There is however no data specific to the Western Cape. One area of concern is compliance with stringent regulations. Few recyclers are under the regulated threshold and are required to have a waste license as processing of e-waste is a listed activity. Considering that 95% of e-waste recycling is informal and generally consist of 2-3 people along with the high cost of attaining a waste license, it is no surprise that most of the e-waste processors in the Western Cape operate under the

legislative threshold (treatment of less than 500kg of hazardous waste per day). From a market point of view, printed circuit boards are valuable and there are some companies processing nationally however, most valuable are sent abroad and hence as a country we are not getting the benefits.

6.2.3 Wastewater/Sewage sludge

The key hazardous waste types for wastewater treatment include wastewater (effluent) and sludge. Wastewater composition is approximately 99.93 percent water and 0.07 percent total dissolved and suspended solids, half of which is organic and the other half of which is inert[1]. Constituents present in domestic wastewater include microorganisms (e.g. pathogenic bacteria, viruses and worm eggs), organic materials e.g. pesticides, fats and oils), nutrients (e.g. nitrogen and phosphorus), metals (e.g. cadmium, chromium, copper, lead, mercury and nickel) and other inorganic materials (e.g. acids)[2]. Sewage sludge contains nutrients, organic matter, pathogens, metals and organic pollutants[3]. The Greendrop Report provides quantities of wastewater entering wastewater treatment systems in each province. A total flow of 836, 47Ml/day was received at wastewater treatment facilities during 2013. This quantity does not however include the flows of 49 systems (approximately a 1/3 of facilities), which did not have information on their operational flows.

6.2.4 Waste oils

The ROSE Foundation (Recycling Oil Saves the Environment), is a national non-profit organization established to promote and encourage the environmentally responsible management of used oils and related waste in South Africa. The foundation focuses their attention on oil recycling and in more recent times drum reconditioning. ROSE conducts compliance audits of drum re-conditioners for the South African Industrial Container Reconditioners Association (SAICRA), which was formed in January 2012. According to their records, 2 089 983 L of waste oil (wet volume) was collected in the Western Cape during 2015. Waste oil collectors buy waste oils from generators and sell to ROSE approved processors. Sources of waste are from production plants, workshops and garages, effluent and residual from drums. Waste oil from the harbour is well-handled as ships pay for waste to be treated/disposed. There are some companies that operate at the harbour who are not approved collectors and hence it is unknown where this waste goes.

6.2.5 Hazardous Waste

The chemicals sector plays an important role in our economy as it is a key supplier and component to many other industries, such as, agriculture, medicine, industrial manufacturing, energy

[1] http://www.eolss.net/eolsssamplechapters/c06/e6-13-04-05/e6-13-04-05-txt-4.aspx#CHEMISTRY_OF_WASTEWATER_)
[2] Henze et al., 2001
[3] Harrison et al., 2006

extraction and generation, public health and disease vector control[4]. The Western Cape is home to 16% of the firms in the chemical sector of the country[5]. The properties and nature of some chemicals make them hazardous to both human health and the environment and is hence highly regulated.

There are only two (2) waste disposal facilities within the Western Cape Province that are authorized and capable of accepting hazardous waste for disposal namely the City of Cape Town's Vissershok Landfill site and the privately owned, Vissershok Pty Ltd, Enviroserv/Averda Vissershok Landfill site.

Figure 17 is a summary of the waste tallies received from the two entities of hazardous waste disposed over the 2016 period:

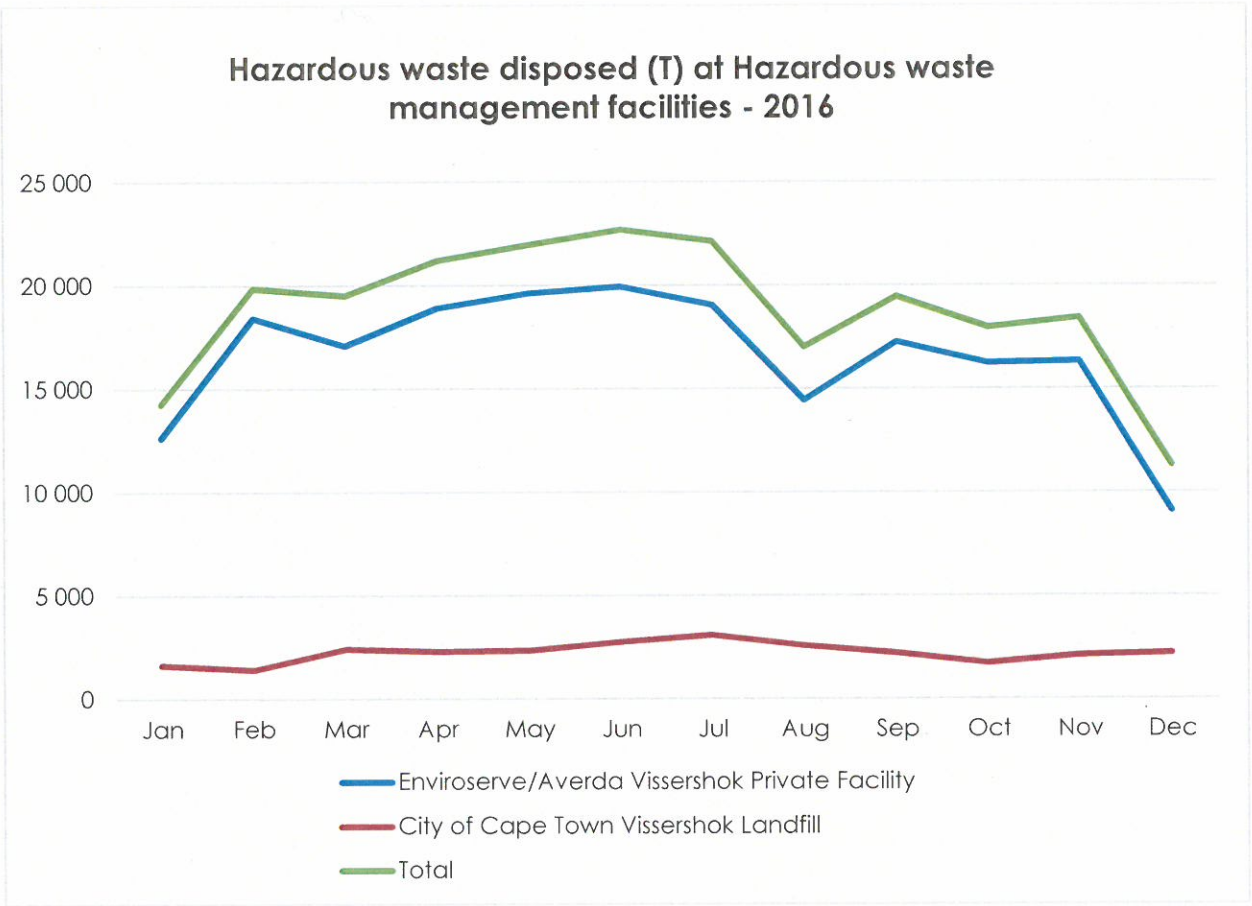


Figure 17: Hazardous waste disposed at the City of Cape Town and Enviroserv/Averda

*Information received from City of Cape Town and Enviroserv/Averda respectively.

A total amount of 225 649 tons of hazardous waste was disposed of during 2016 in Western Cape.

[4] Global Environment Outlook 5, UNEP (2012)
[5] Small Enterprises Development Agency (Seda), (2013)

Inspection of data provided for 2016 from Vissershok Pty Ltd hazardous waste management facility has shown that inorganic and organic hazardous waste, in different forms, contribute the majority of the waste that is disposed of (**Table 8**)

Table 8: Amounts of different waste types disposed of at Vissershok Pty Ltd hazardous waste management facility 2016

WASTE TYPES	SAWIS Codes	2016 (Tons)
Inorganic Waste (Solid)	HW05-02	104 802
Waste Oils	HW07-01	5 284
Sewage sludge	HW20-01	35 871
Other Organic Waste Without Halogen or Sulphur (liquid & sludge)	HW11-01	12 750
Inorganic Waste (Liquid & sludge)	HW05-01	9 351
Other Organic Waste Without Halogen or Sulphur (solid)	HW11-02	5 399
Asbestos Containing Waste	HW06-01	5 204
Health Care Risk Waste (Infectious, sharps & chemical waste)	HW19-02	1 755
Mineral Waste	HW17	2 114
Total		**182 528**

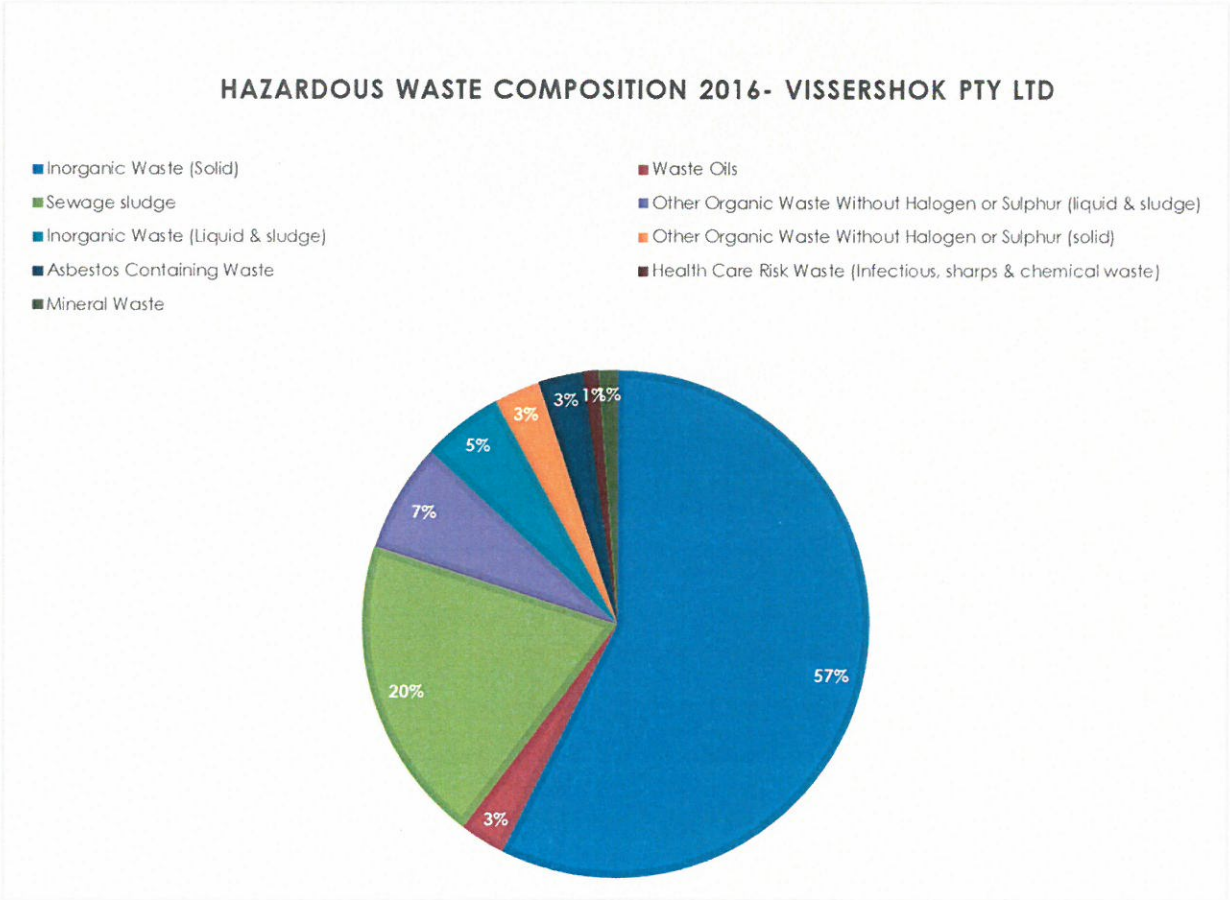


Figure 18: Vissershok Pty Ltd Waste Disposal Data 2016

6.2.6 Health Care Risk Waste Generated

Health Care Risk Waste (HCRW), being a category of Hazardous waste, generated and reported has **increase by 12%** from 2015. The City of Cape Town generated 78.62% of HCRW in the Province, while the least was generated in the CKDM area (**Figure 19: Health Care Risk Waste generated in 2016**).

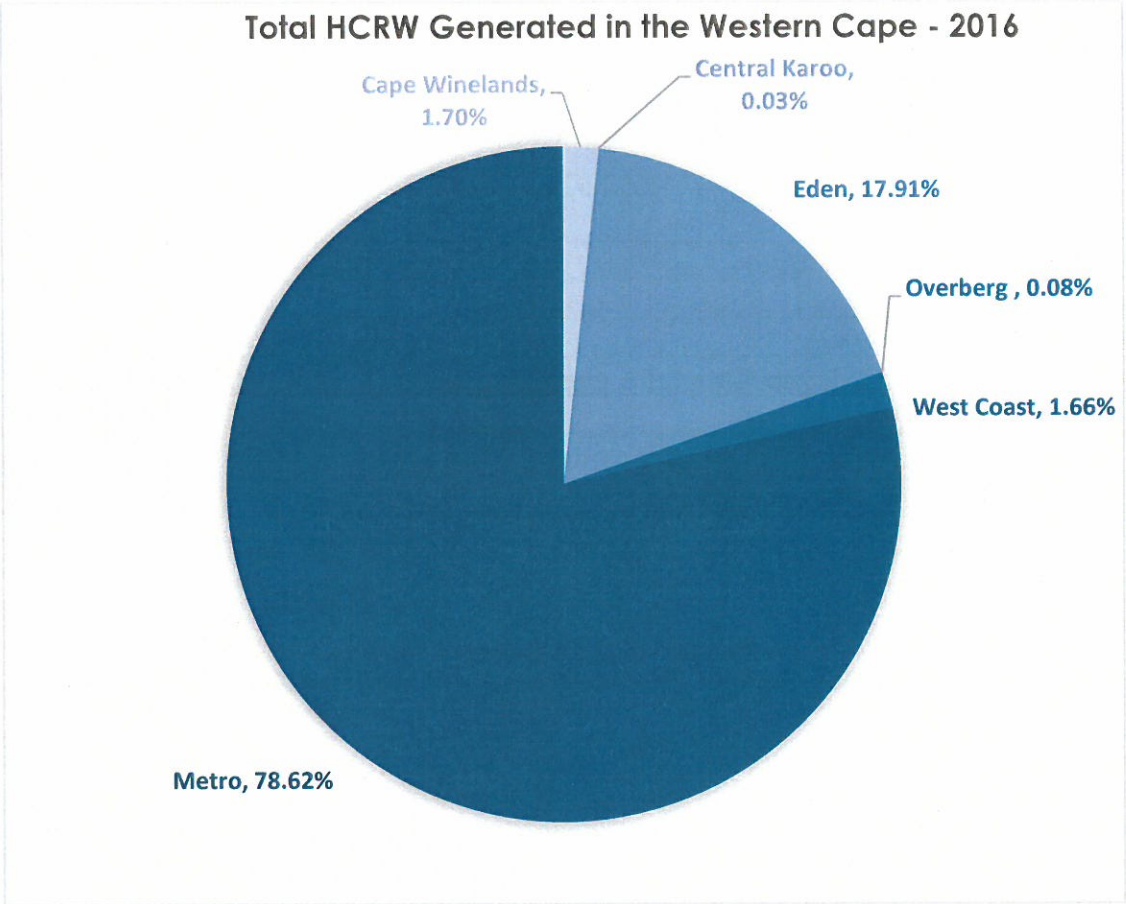


Figure 19: Health Care Risk Waste generated in 2016

7 WASTE COLLECTION

AT A GLANCE

- 99% of population get weekly refuse removal services

The GMC Integrated Waste Management Evaluation for 2016/2017 included the evaluation of waste collection systems available and implemented for business and commercial properties as well as farms, by the Municipality. The aim of evaluating this aspect was to gain an understanding of the tariff systems implemented by municipalities to recover the costs for waste collection services provided and to reward good practices observed. Through this, the urgency for systems demonstrating "pay-as-you-throw" tariffs to reduce the volumes of waste is highlighted. Evaluation of waste collection systems encourages participation in the municipal waste reduction mechanisms. This demonstrates the importance of tariff systems that encourages the implementation of programmes that will extend the lifetime of municipal waste disposal facilities. It also demonstrates the importance of the availability of effective waste collections systems, not only for households, but also for business and commercial properties as well as farms.

The information provided, was sourced from the Portfolios of Evidence submitted by all municipalities participating in the Greenest Municipality Competition.

Municipality	Frequency of collection for residential areas	Type of collection services for residences	Frequency for businesses and commercial	Type of collections services	Farms	Cost of refuse removal
Mossel Bay	Once per week	drop off sites in most holiday homes, middle/high income residential areas receive a weekly curb side collection by the municipality, skips are placed strategically in informal settlements.	ranging from 3-6 days weekly or as requested by the owner of the premises	Businesses provided their own refuse containers which are mostly wheelie bins	Farms drop their waste mostly at transfer stations, there are currently no formal arrangement	Business are charged only for the disposal of their wet waste items.

Overstrand Municipality	Collection services are provided once a week for low income residential areas as well as middle and high income residential areas. A container (bag or bin) is provided for this service. Residents in informal areas receive a service by means of a skip which is placed in a communal area which is emptied five days per week. Bags for recyclable materials are provided to residents free of charge. there is no limit to the number of full bags with recyclables that residents can have collected.	Kerbside collection is provided to residents in low, middle and high income residential areas	Business are serviced once a week. Additional services are available up to seven times per week at request. Additional costs are charged for additional services other than what is normally provided.	Collection is done at the business premises for general waste. A drop off service is provided for bulk waste items. Collection services for the removal of recycles is provided free of charge.	Farmers can dispose of household waste free of charge at Drop-offs, Transfer stations and Waste disposal facilities. Up to 1 tonne disposed free of charge; 1 tonne and more is disposed at payment.	Business are charged only for the disposal of their wet waste items.
Knysna Municipality	All residents receive a weekly kerbside collection service	Kerbside collection service is provided for general waste, recyclables and garden waste. This waste is compacted into the truck for disposal at PetroSA	A daily service is provided for business waste and events	collection is done at the business premises. Fixed increased tariff as well as pay as you throw systems are implemented for businesses.	a fixed increased tariff is charged. Pay as you throw is also implemented.	

Swellendam Municipality	All residents receive a weekly kerbside collection service	Kerbside collection service is provided for general waste.	A service is provided at a frequency of three times per week from the business premises. A private recycling company also collects material for recycling.	collection is done at the business premises.	only certain farms are on the municipal schedule to receive a waste collection service at their properties. Others have containers for recycling and the local recycling company collects it at their premises.	
Breede Valley Municipality	Residents in low, middle and high income residential areas receive a weekly collection service at their properties. Informal residential areas are serviced by means of a skip or a communal collection point. This skip is cleaned three times per week. black refuse bags are provided by the municipality to all informall dwellings.	kerbside collection for formal residential areas. Informal residential areas are serviced from a communal collection point.	a collection service is provided at request from business premises.	collection from business premises.	farms are provided with the option to dispose at municipal facilities free of charge.	
Hessequa Municipality	All residents receive a weekly kerbside collection service. Some form of containment is provided to all.	Kerbside collection service is provided.	Waste collection is done twice weekly. Businesses are billed according to the applicable tariff.	collection from business premises.	only farms next to Stilbaai and Vermaaklikheid roads are serviced.	

Saldanha Bay Municipality	Collection services are provided at a once per week frequency.	The Municipality provides waste collections services to the informal residential areas by means of a skip which is placed in a communal area. Bulk collection services of green waste and builder's rubble are also provided by means of a skip.	Business have the option to indicate the frequency of removals required and billed against the fixed tariffs for the financial year. Services are provided either by means of 240 litre green wheelie bins or 6m3 skips	A kerbside collection service is provided.	Farms situated on the regular refuse removal routes are serviced weekly. Farms that do not receive weekly waste collection services, drops off their waste at the transfer stations and waste disposal facilities. Some possibly dispose of waste on their own properties.	
Laingsburg Municipality	Collection services are provided at a once per week frequency.	The Municipality does not have any informal residential areas to service. Weekly collection services are provided to low, middle and high income residential areas by means of a container (black bag or bin). Garden waste and builders' rubble removal services are also provided to residents.	Waste collection services are provided on a weekly basis.	A kerbside collection service is provided.	No information was provided about the waste collection services provided to farms.	

Cederberg Municipality	Collection services are provided at a once per week frequency.	Informal residential receive a weekly kerbside collection service without the provision of containment for the waste collected. Low, middle and high income residential areas receive a service where a container is provided.	The Municipality provides a weekly service to business properties at an agreed time.	A fixed increased tarrif is charged for the waste collection services.	No system is currently implement for the collection of waste on farms.	
George Municipality	Services are provided once per week.	A weekly kerbside waste collection service is provided to informal, low income as well as middle and high income residential areas.	Businesses receive a once per week collection services. However, food premises, crèches, hospitals, schools and department stores are serviced thrice per week. 240 litre bins are utilised by all businesses.	Waste collection takes place at the business premises. A fixed increased tariff is charged.	Farm workers receive a once per week collection service, free of charge. Farms are charged the normal tariff for waste collection. Refuse bags are provided by the Municipality.	

Bitou Municipality	Collection services are provided at a once per week frequency.	The Municipality allows residents to have a 110 litre bin for disposal of general waste. Informal, low income, middle and high income residential areas all receive a kerbside collection service. Informal residential areas also receive a service by means of skips placed in a communal space where residents can then dispose of their waste. Within the low income residential area, only a few RDP houses do not have wheelie bins. However, black bags are provided to these residents. Middle and high income residential areas also receive black bags for the containment of their general waste. The waste collection service is provided on a weekly basis. However, during the holiday periods, the	The Municipality provides a weekly service to business properties. However, the tariff system allows for three collections per week. Collection and disposal is charged per collection per bin.	A kerbside collection is provided at a fixed increased tariff. Fees are charged based on the amount of waste disposed and the number of collections required per week.	The area of Kurland and Natures Valley Road is serviced. Farms who do not receive a collection service are allowed to dispose at the refuse transfer station. Disposal is charged based on the frequency of disposal.	Residential properties (110 litre bin): R 2889 per year for one collection per week per bin. R 5778 per year for two collections per week per bin. R 8667 per year for one collection per week per bin. Business/Commercial properties (240 litre bin): R 3177 per year for one collection per week per bin. R 6534 per year for two collections per week per bin. R 9531 per year for three collections per week per bin.

		Municipality doubles the collection frequency due to the increased amount of waste generated. Collection of recyclables is also done at kerbside. Revenue received through the tariff system combined with the benefits of the collection of recyclables enable the Municipality to provide a kerbside collection service for green waste.				

8 COMPLAINTS

AT A GLANCE

- 42 Complaints reported to the Department (mainly related to illegal dumping)

The Department has a waste regulatory function to handle waste management complaints associated with waste management facilities and the general public. Members of the public frequently report on the illegal disposal of waste to land or the mismanagement of both unlicensed and licensed waste management facilities. The Sub-Directorate: Waste Management Licensing has dealt with forty-two (**42**) complaints during the period January to December 2016 and the relevant detail (**Figure 20**). The Directorate: Environmental Governance is frequently involved in investigating and resolving the waste management related complaints. The Department is in the process to finalise their Complaints Module on the Departmental Information System where by the public can lodge environmental related complaints and where it can be streamlined to be responded faster. The Department have also set internal timeframes to process complaints and frequently formulate integrated teams to investigate complex complaints. Corrective measures are mostly put in place through implementing the legislation in terms of NEMA and NEMWA. The Department is also in the process of establishing an illegal dumping task team in conjunction with municipalities and law enforcement. Most of the complaints become the responsibility of the municipalities to clean up and in turn it puts pressure on financial and operational resources. It further depletes the landfill airspace capacity of the municipalities and can cause bigger environmental impacts. With continuously establishing close working relationships with the Department's Directorate: Environmental Governance by providing waste management legislative requirements and interpretations can assist prosecuting transgressors sending out a message that degrading or impacting the environment can have huge financial cost or imprisonment.

The municipalities need to be further encourage to provide waste management facilities such as drop off points and regularly servicing and collecting waste to avoid further illegal dumping. The municipalities should also focus on utilising and/or enclosing the open spaces within the municipal areas to avoid opportunities for illegal dumping. The municipalities should also consider increasing raising the awareness around waste management as well as penalties.

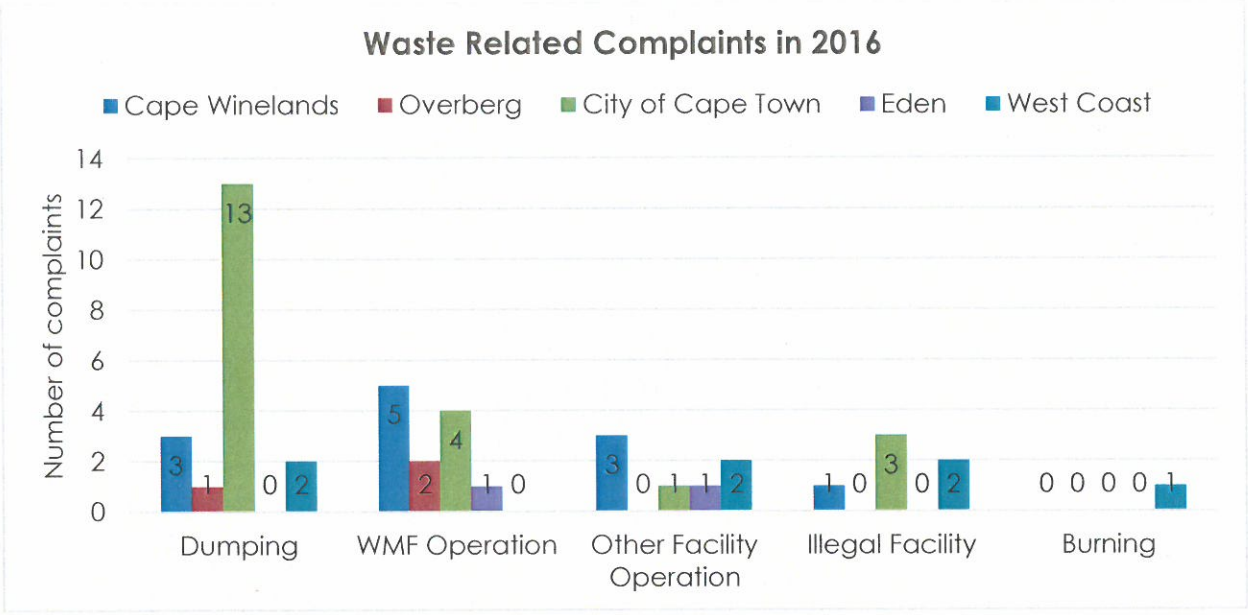


Figure 20: Complaints dealt with by the DEA&DP in 2016

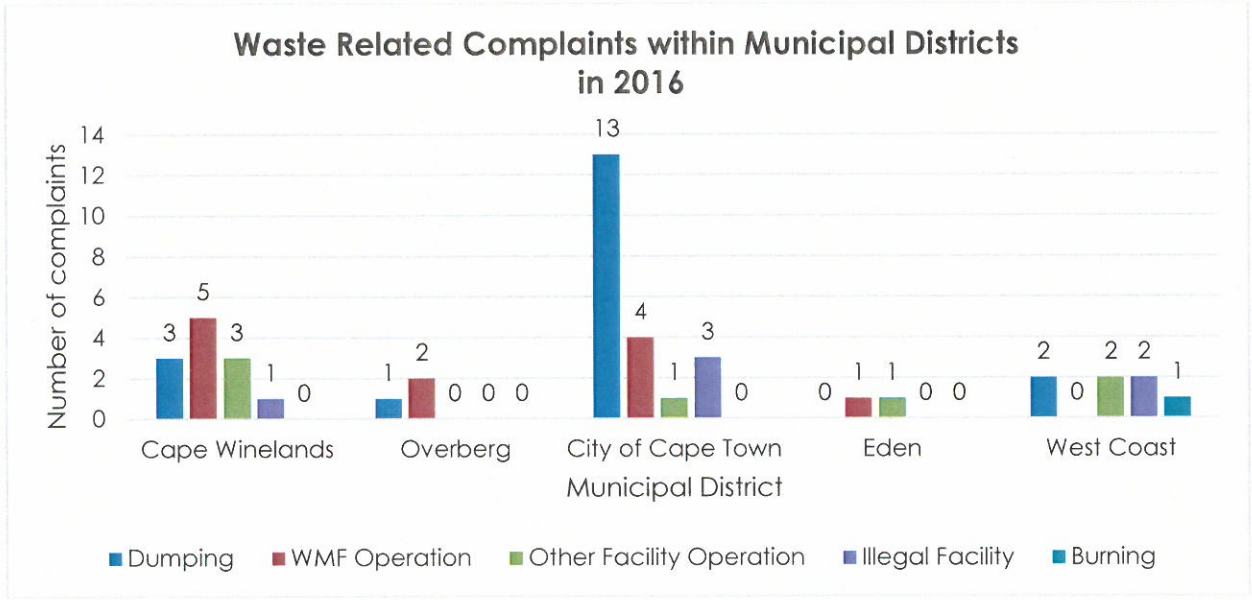
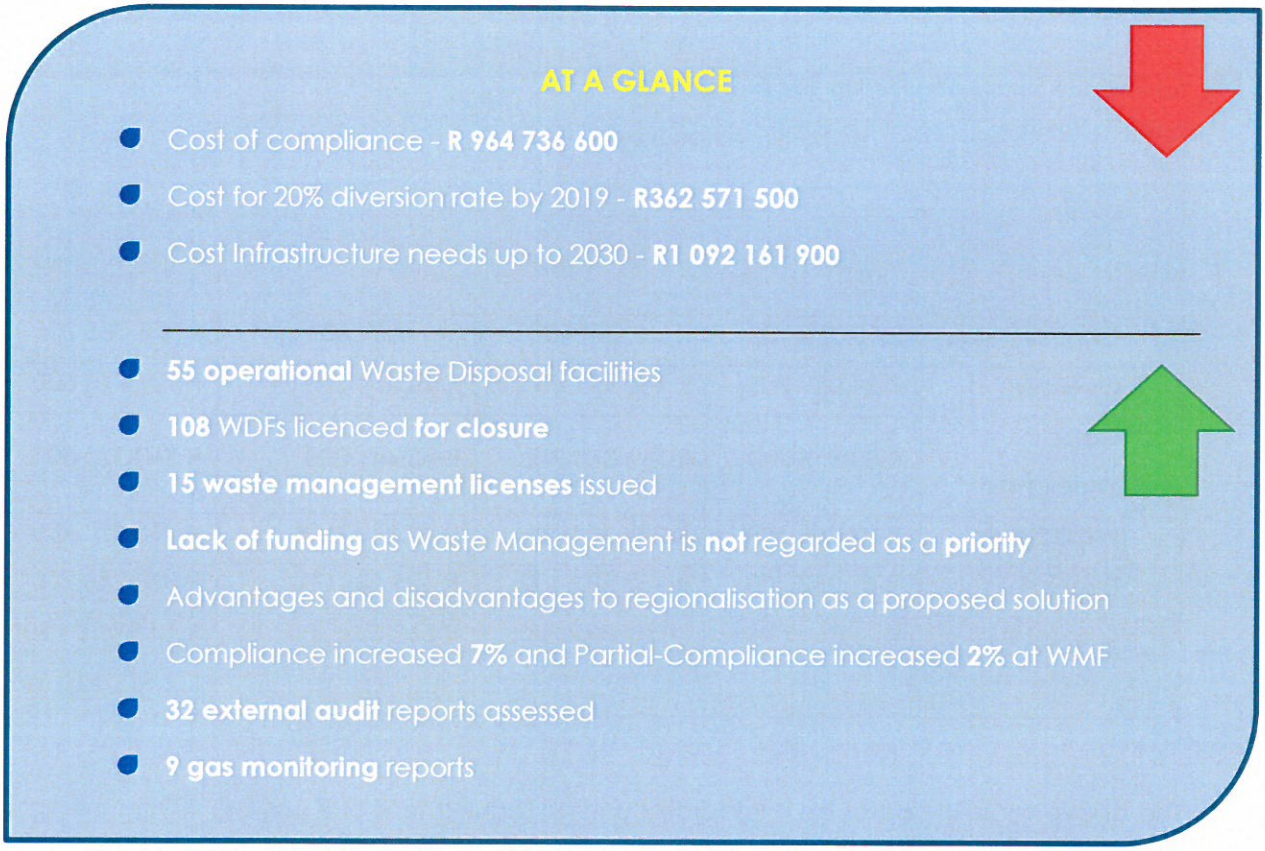


Figure 21: Complaints per Municipal District dealt with by the DEA&DP in 2016

9 WASTE MANAGEMENT INFRASTRUCTURE WITH IN THE WESTERN CAPE



9.1 Municipal Infrastructure Study

The review of the submitted 1st and 2nd generation IWMP's, fail to address the Municipal Integrated Waste Management Infrastructure (MIWMI) needs and do not quantify the financial resources required to comply with environmental authorisations.

The municipalities lack the knowledge of the integrated waste management infrastructure and financial resource information. These shortcomings therefore cause municipalities not to be able to plan efficiently and effectively. The lack of planning leads to the inadequate management and compliance with environmental authorisation conditions.

The Department commissioned a service provider to conduct the assessment and quantification of the municipal integrated waste management infrastructure needs of the five District Municipalities (Central Karoo, Overberg, Cape Winelands, West Coast and Eden), and excluded the Metropole of the City of Cape Town. The study was to establish:

1. The cost for the municipalities to comply with the environmental authorisations (permits and licences);
2. Determining the additional infrastructure required to achieve a 20% diversion of waste from Landfill by 2019, and

3. Establish what the additional infrastructure required for municipalities to remain compliant up to 2030.

Table 9: The funding required for the five districts.

District	Cost of compliance			
	Operational	Rehabilitation	20% diversion by 2019	Needs up to 2030
Central Karoo	R 18 888 100	R 5 264 700	R 6 408 000	R 76 385 700
Overberg	R 24 059 500	R 160 411 600	R 46 454 200	R 131 770 800
Cape Winelands	R 33 778 700	R 216 068 300	R 85 441 300	R 310 525 300
West Coast	R 32 865 700	R 238 264 200	R 100 702 000	R 215 093 400
Eden	R 47 253 400	R 187 882 400	R 123 566 000	R 358 386 700
Sub-Total	**R 156 845 400**	**R 807 891 200**	**R 362 571 500**	**R 1 092 161 900**
Total				**R 2 419 470 000**

The above table indicates an immediate funding requirement of R 156,845,400 for infrastructure needed to be compliant with existing Waste Management Licences for operational waste management facilities and a further R 807,891,200 for closed waste management facilities.

R 362,571,500 is required to establish the waste management infrastructure to achieve a 20% diversion from landfill in 2019.

After the above targets for diversion and compliance have been met, a further R 1,092,161,900 is required for waste management infrastructure to remain compliant up to 2030.

The entire costs associated with the infrastructure needs sum to R 2, 419, 470, 000 (Two point four one nine billion Rand) calculated in 2016.

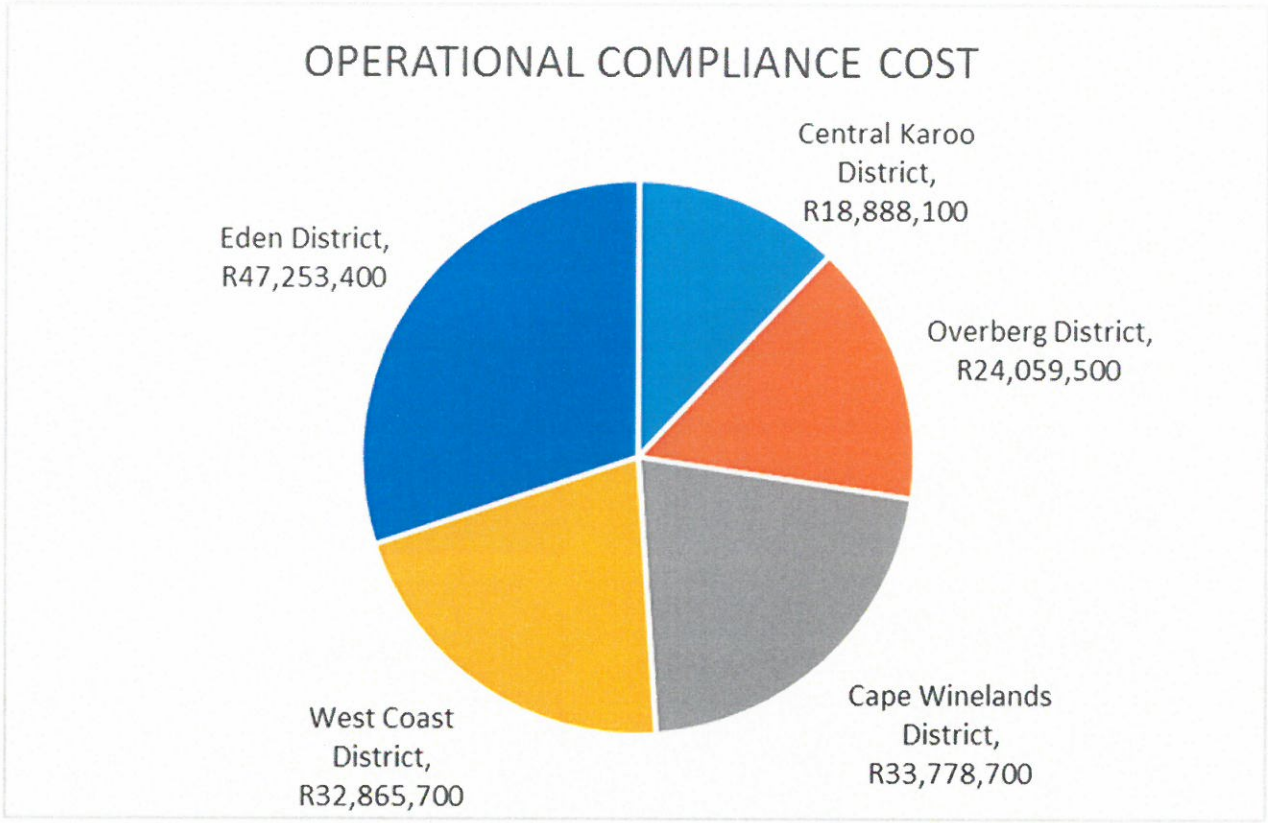


Figure 22: The cost of operational compliance per municipal district.

The Eden District has the largest cost required to meet operational cost for waste management infrastructure at present and Central Karoo District the lowest.

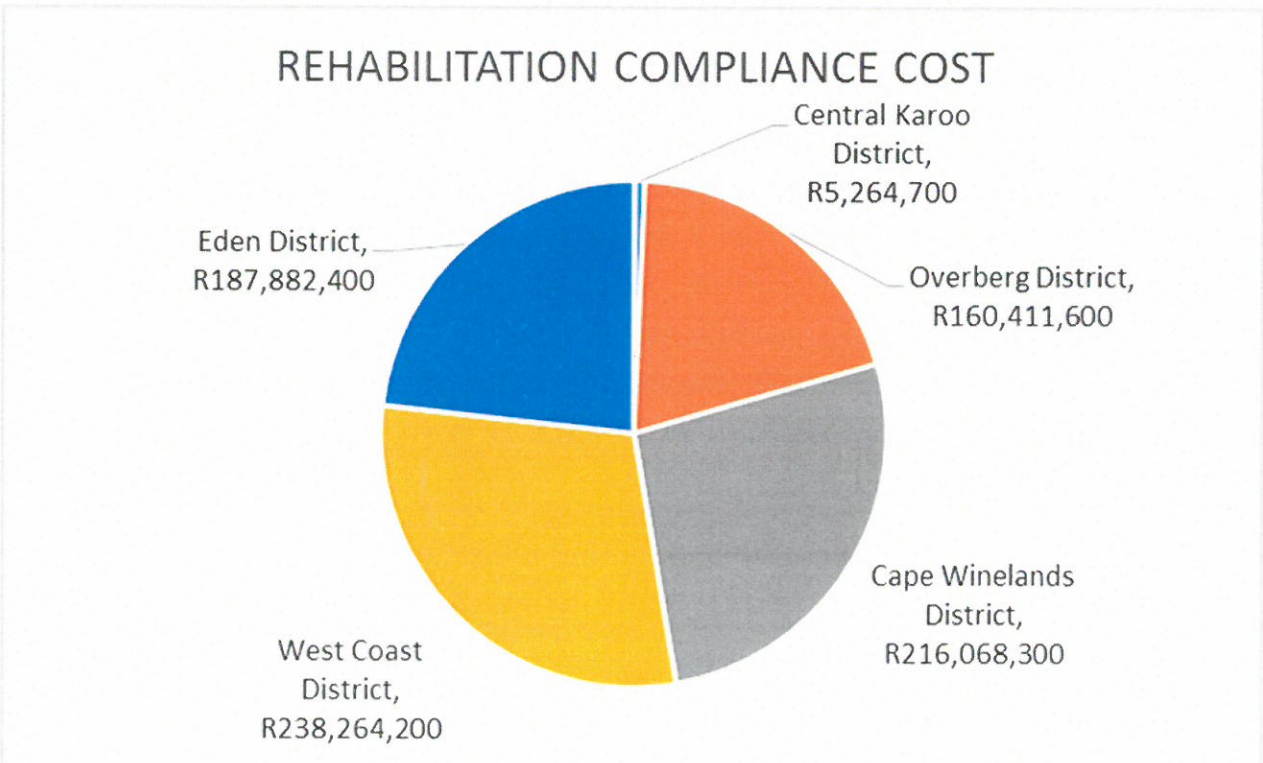


Figure 23: The cost of rehabilitation compliance per municipal district

On the other hand, the West Coast District has the largest cost to comply with rehabilitation requirement for waste management infrastructure.

Figure 24: Examples of Alternative waste management – infrastructure required

9.1.1 State of Waste Disposal Facilities in the Province

There are **55 operational Waste Disposal facilities (WDFs)** in the Western Cape. **Figure 25** depicts the percentage of operational WDFs per municipality. The West Coast District Municipality has 7 licensed operational WDFs. Central Karoo District Municipality has 6 licensed operational WDFs. Overberg District Municipality has 9 licensed operational WDFs. Cape Winelands District Municipality has 14 licensed operational WDFs. Within the City of Cape Town's municipal area, there are four (4) operational WDFs of which three (3) for City of Cape Town and one (1) WDF is privately owned), while Eden District Municipality has 15 operational WDFs. The City of Cape Town has closed most of their operational facilities as they moved towards regionalisation of waste management services.

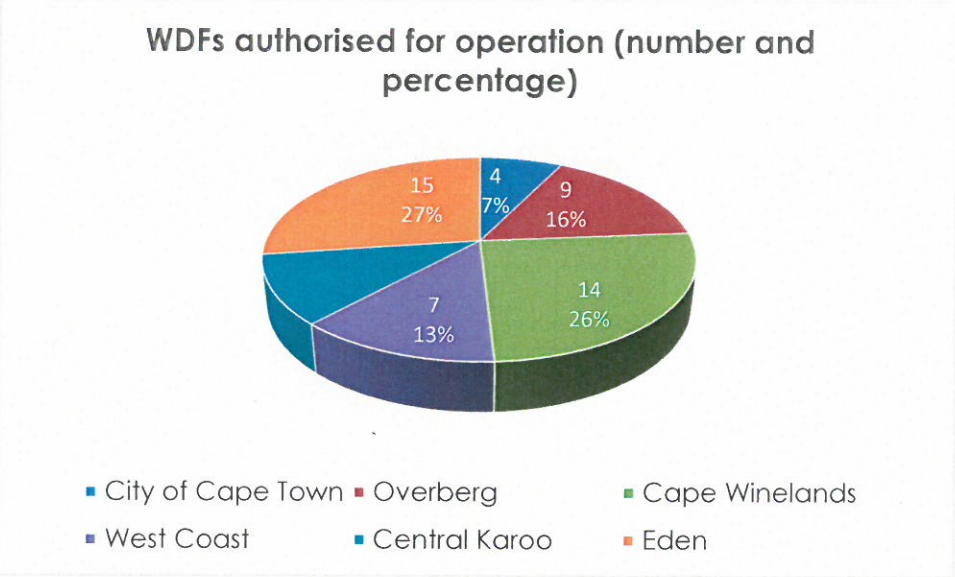


Figure 25: Percentage of operational WDFs in the Western Cape

There are **108 WDFs licensed for closure** in the Western Cape. **Figure 26** depicts the percentage of WDFs licensed for closure per municipality. Within the West Coast District Municipality there are 34, Overberg District Municipality has 20, Eden District Municipality has 15, City of Cape Town has 22, Central Karoo District Municipality has 1 and Cape Winelands has 16 WDFs licensed for closure.

In some instances, municipalities opt to close smaller landfill facilities and combine resources to fund both the licensing and operation of a regional waste management disposal facility. This approach has the benefit that municipalities can combine funding to cover the costs incurred by the licensing and operation of the regional facility, thereby decreasing the individual municipal waste management facility costs. However, large distances between the areas where waste are generated and the regional waste management facilities can incur very high transportation costs. The costs of decommissioning and closing smaller municipal waste disposal facilities can also be very high. These required waste disposal facilities also have the benefits of economics of scale. The funding of the construction and operation of these facilities is complex since multi parties are involved in the project.

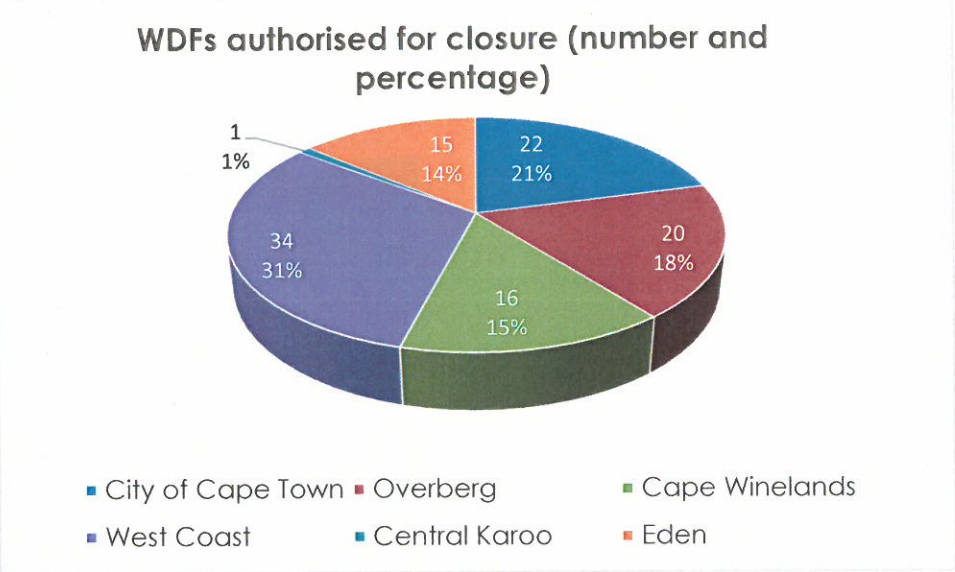


Figure 26: Percentage of closed WDFs in the Western Cape

9.1.1.1 Licensing of waste management facilities

Chapter 5 of NEMWA, as amended, makes provision for the licensing authority to issue a waste management licence upon receipt of an application with the associated Basic Assessment/Scoping and Environmental Impact Reporting processes. The licensing process is governed by the NEMA Environmental Impact Assessment Regulations, 2014 (Government Notice (GN) No. R. 982 of 4 December 2014). Activities that require a waste license are listed in GN No. 921 of 29 November 2013. Two hundred and three (203) waste management licences have been issued since 2009, when the functionality of the Provincial Department becoming the competent Licensing Authority for general waste facilities. **Fifteen (15) waste management licences** have been issued to facilities between January and December 2016.

Upon application by a permit or licence holder, conditions in both historic waste permits (permits were issued pre NEW:WA and waste management licences that have become redundant, can be amended. In such instances the Department will issue an amended licence. The Department has already entered into discussions with Overstrand, Beaufort West, Prince Albert and Laingsburg Municipalities to identify redundant permit or licence conditions.

9.1.1.1.1 Funding for waste management facilities

Licences must adhere to stringent requirements in accordance with the National Environmental Waste Act 2008 (Act No, 59 of 2008, National Norms and Standards of Disposal of Waste to Landfill (Government Notice No. R 636 of 23 August 2013). These Norms and Standards specify the types of liners and capping which is endorsed by the Department of Water and Sanitation, who have imposed these stringent capping and liner requirements in their Record of Decisions (RoDs), for the water use licences. These stringent liner requirements have increased the construction costs of

compliance exorbitantly. Waste Management is **not regarded as a priority** and therefore adequate funding is not allocated to cover the costs associated with the provisioning of waste management infrastructure, compliance of waste management facilities and the lack of necessary human capacity which places undue financial strain on municipalities.

The responsibility to obtain funding lies with the municipalities. Municipalities are encouraged to apply for Municipal Infrastructure Grant (MIG) funding (managed by the Department of Local Government) to enable them to acquire the relevant infrastructure, to effectively operate their facilities. This funding requires proper planning and alignment with their respective IWMPs and IDPs to ensure the allocation of funds for identified projects. The MIG funding is not available to District Municipalities as they do not have the mandate to service communities within their jurisdiction.

9.1.1.1.2 The regionalisation of waste management services

In some instances, municipalities decide to close smaller disposal facilities and combine resources with other municipalities to fund both the licensing and operation of regional waste management services.

This approach has many advantages and disadvantages as the District Municipalities are unable to access these funds causing financial constraints for proposed regionalisation, affecting the benefits associated with the combined funding

Advantages of regionalisation:

- By combining the resources to cover the costs incurred for the licensing and operation of the regional facilities, thereby decreasing the individual municipal contribution and ensuring compliance to the environmental authorisations of the regional waste management facilities.
- The services in the respective municipalities can be delivered at a reduced cost due to combined municipal funding resources.
- The environmental burden in terms of compliance, financial and human resources is spread equally amongst the participating municipalities.
- The feasibility of best practicable options amongst participating municipalities can be increased and proven to be more sustainable. These regional waste management facilities have the benefits of improving the cost benefits by improving the economies of scale.

Disadvantages of regionalisation:

- Depending on the selected location of the regional disposal waste management facilities, large distances between the municipal areas where waste is generated and the regional waste management facilities, can incur very high transportation costs.

- The lack of appropriate cost reflective tariffs and models. This can result in negative cost projections for of transport, collection and disposal at the regional disposal waste management facilities.
- The costs of decommissioning and closing smaller municipal waste disposal facilities can also lead to a huge capital investment.

9.1.1.2 Landfill Airspace Study

Various audits conducted since 2007 identified that there was a lack of information regarding landfill airspace. A landfill airspace study determines the capacity of how much waste can be disposed at a facility and is measured in cubic meters (m^3). It is the responsibility of the licence holder of the waste disposal facility to monitor the remaining landfill airspace at a WDF, as the airspace determines the lifespan of the facility.

Once the airspace capacity has been reached, the waste disposal facility should be closed and rehabilitated or the licence holder needs to apply for a variation of the licence to include the extension of the airspace, if the associated impacts can be mitigated. The management options applied to the WDF can prolong the longevity of the available airspace through the diversion of waste and the implementation of the correct compaction ratios at disposal sites. The management of the landfill airspace is important as it is directly linked to huge cost implications to source new waste disposal facilities in a country that has stringent geo-technical legislative requirements that governs the establishment of WDFs.

The Department appointment a service provider to conduct a survey to determine the available airspace of selected municipal waste disposal facilities within the Western Cape during 2012. The project revealed limited lifespans remains for the selected WDFs and this assisted municipality to plan and make provision for the necessary requirements in terms of implementing the correct waste management measures, financial planning and amendment to permit conditions. All new waste disposal facility operational waste management licences are issued with conditions where it stipulates the airspace available for that specific facility and that annual airspace assessments must be done to monitor the airspace capacity available. This process will allow the licence holder to know the lifespan capacity and to plan and manage accordingly.

9.1.1.3 Departmental Compliance Audits of Waste Management Facilities

The auditing methodology that was previously used, at waste disposal facilities had limitations. The existing auditing methodology was improved by the review of all operational conditions associated with the Waste Management Licence and the environmental authorisations. The revised methodology depicts the state of compliance with a quick glance, as the rate of compliance is displayed as either being green, amber or red as depicted in Tables 7 and 8 below. When these conditions are no longer practicable or contradict the legislative requirements, the Department assists the municipalities to identify the inappropriate conditions and proposes the appropriate condition variations accordingly.

The licensed waste management facilities within the Western Cape are audited against the conditions of their environmental authorisations. Each auditable licence condition is assigned a compliance score (Table 10 and 11), with the following acronyms and scoring system:

Table 10: Acronyms and scoring terminology

Acronym	Description	Compliance Score
NC	Non-compliant	0
PC	Partially compliant	1
C	Compliant	2
NA	Not audited	-

An average compliance score is then determined from which the overall compliance percentage is determined. This is typically summarised as in the following example:

Table 11: Example of audit values assigned

Overall compliance rating	Status Indicator		Action	Compliance status determination method
85 – 100 %	Green	X	Minor improvements required	84.5 ≤ X ≤ 100%
65 – 84 %	Amber	X	Improvements required	64.5% ≤ X < 84.5%
0 – 64 %	Red	X	Major improvements required	< 64.5%

Departmental audits are issued to licence holders where non-compliances to licence conditions must be addressed by submitting a detailed action plan with timeframes, responsible persons and financial resources to become compliant. The majority of compliance audits are conducted on WDFs, however this also includes other waste management facilities such as transfer stations and composting facilities within the Western Cape. The targets associated with the number of facilities audited are based on the Department's as well as the associated Departmental Strategic Planning targets. The target of eighteen (18) facilities per quarter equals seventy-two (72) facilities for the 2016/17 financial year which are based on the human resource capacity and financial constraints within the Directorate: Waste Management.

Figure 22 depicts the compliance audits conducted, per district municipality for the 2016 Annual Performance Plan. These audits revealed that 60% of facilities were non-compliant (red), 20% partially compliant (amber) and 20 % compliant (green). The Department has since prioritised these facilities that are partially and non-compliant for the 2017/18 financial year. The Department continuously provides assistance and direction, which entails giving direction on the non-compliances and promoting best operating procedures and communicating this to municipalities through comment on action plans, provided by their Solid Waste Managers or specialist reports by appointed service providers. The action plans are requested by the Department from municipalities and these action plans are drafted by the Solid Waste Managers detailing the actions and timeframes to be taken to ensure the non-compliance issues on the audit reports are addressed. Meetings are convened with senior municipal officials to discuss progress, to attain financial commitment and revise timeframes to ensure that municipalities become compliant. In addition, the amendment of permit conditions to ensure the current legislative reforms are adhered to and the associated process thereof is also discussed to assist the municipalities.

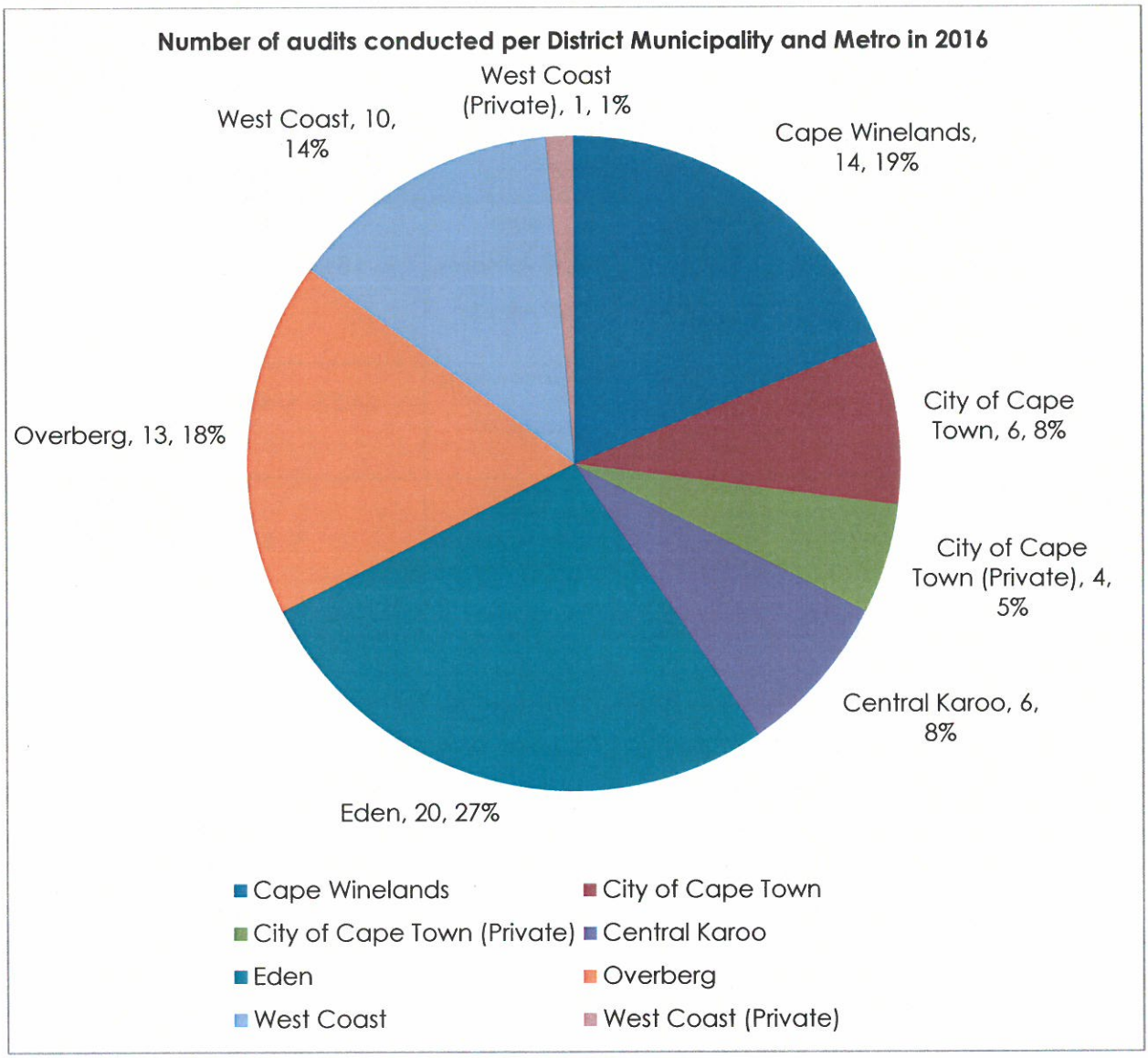


Figure 27: Waste Management Facility audits conducted during 2016

Seventy-four (74) audits were conducted in the Western Cape in 2016 in the calendar year (Jan – Dec 2016), where City of Cape Town had six (6), Cape Winelands District Municipality with fourteen (14), Central Karoo District Municipality with six (6), Eden District Municipality with twenty (20), Overberg District Municipality with thirteen (13) and West Coast District Municipality had ten (10). The remaining five (5) facilities audited were private. The common problems experienced at the municipal facilities are lack of cover material, compacted, windblown litter, fencing, storm water management, machinery and component security and operational staff.

In the 2015/2016 financial year (April 2015 – March 2016) 80 compliance audit were done with 65% obtaining a Non-Compliant rating, 20% Partially-Compliant and 15% Compliant as illustrated in the figure below.

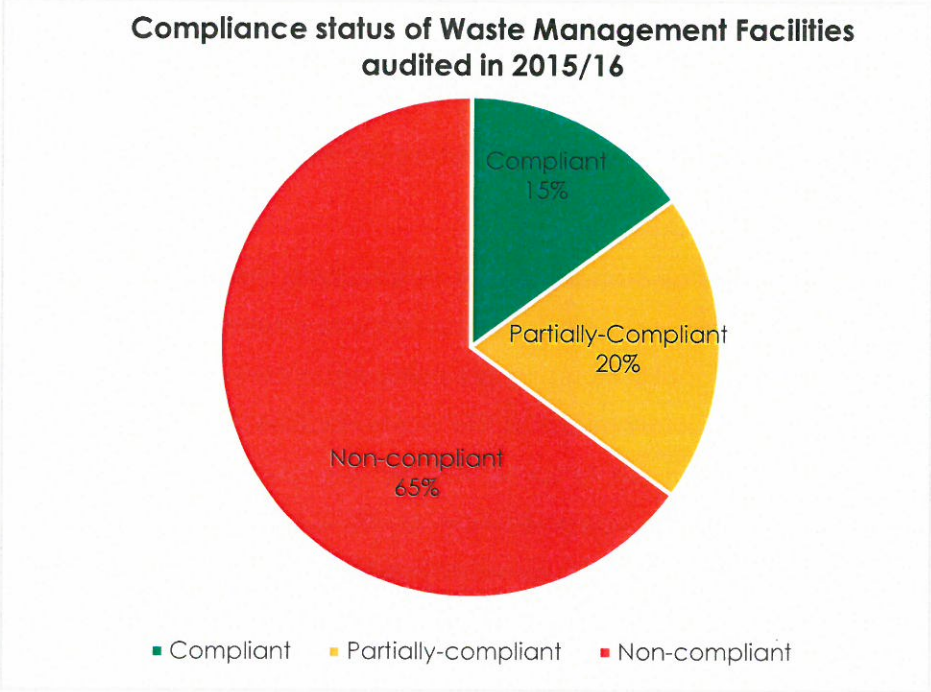


Figure 28: Compliance status of 80 Waste Management Facilities during the 2015/2016 financial year.

In the 2016/2017 financial (April 2016 – March 2017) year 72 compliance audit were done with 65% obtaining a Non-Compliant rating, 20% Partially-Compliant and 15% Compliant as illustrated in the figure below.

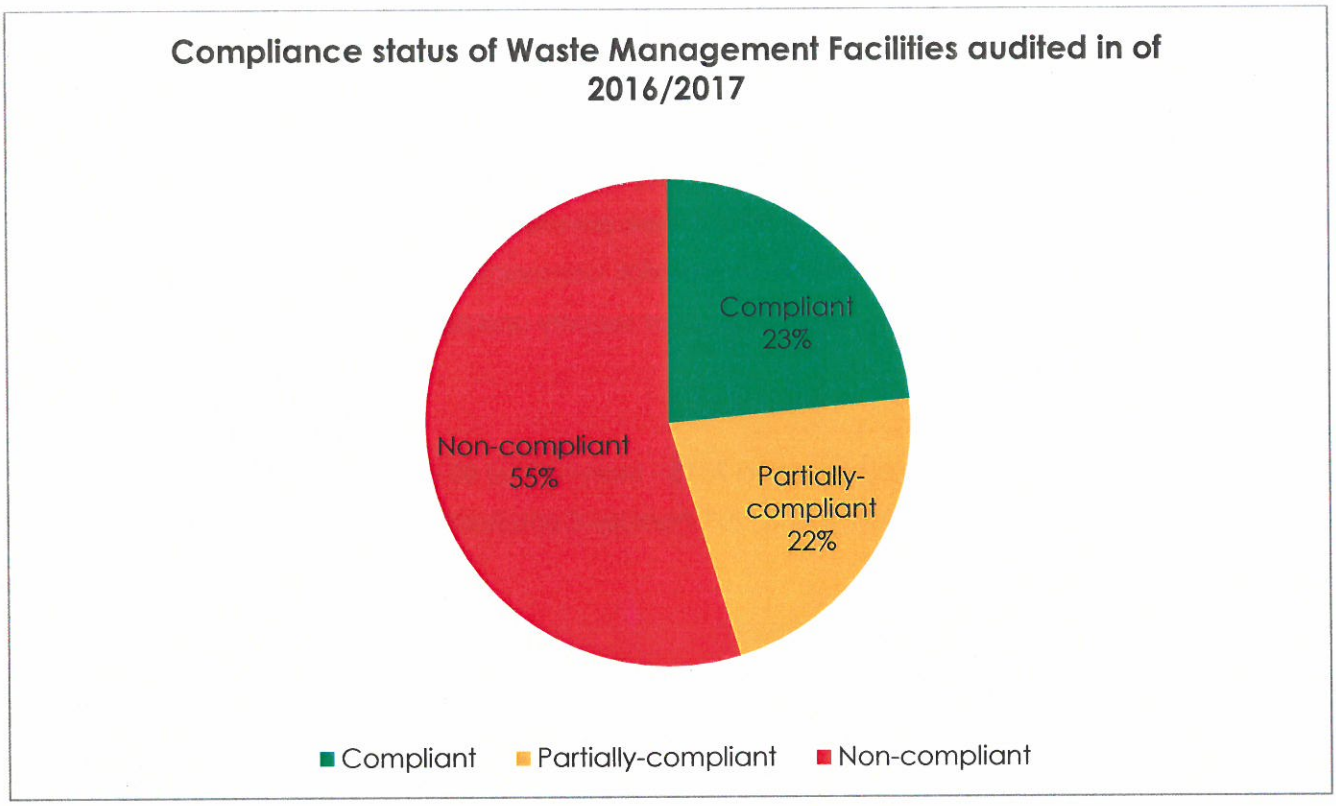


Figure 29: Compliance status of 72 Waste Management Facilities during the 2016/2017 financial year.

The Department provided assistance through emphasizing the importance of managing a waste facility as well as in providing regular training on how to operate waste facility. Further assistance provided was with MIG applications, by providing input to the authority granting the funds for assistance to rectify non-compliances at the waste facilities. The Department's last resort to get the waste facilities compliant is to follow the administrative route through enforcement. The Department is promoting the regionalisation of municipal waste facilities as the small waste disposal facilities potentially cause huge environmental impacts and due to the recent high cost requirements for waste disposal facilities, it has become impossible to maintain and operate with the small municipal waste budgets.

The **Compliance** has at **increased** with **7%** and **Partial-Compliance** as **increased** with **2%** at Waste Management Facilities from 2015/2016 to 2016/2017 financial years.

The compliance ratings of the facilities audited during 2015/16 compared to 2016/17 have thus showed more of an increase of compliant scores across all the different compliance brackets. The Non-compliant bracket remains the bigger part of the three compliant brackets even with this positive compliance rating the waste facilities have showed.

9.1.1.4 Review of external audit reports

External audits are stipulated as a requirement in the waste management licences issued by the Licensing authority to any WDFs. It is required of WDFs must conduct four (4) internal audits and

one (1) external audit report. The external compliance audit reports are compiled by an external service provider appointed by the municipality to provide an objective assessment of the compliancy against the environmental authorization conditions and submitted to the Licensing authority. The Department reviews these reports for completeness and requests the license holder, in writing, to implement the recommendations of the auditor. **Thirty-two (32) external audit reports** have been received for the 2016 financial year and assessed by the Department.

9.1.1.5 Landfill gas monitoring

Landfill gas is a major contributor to greenhouse gases and global warming. Landfill gasses are produced through bacterial decomposition, volatilization and chemical reactions of the organic waste disposed. Chemical reactions occur when different waste materials are mixed together during disposal operations. Additionally, moisture plays a large role in the speed of decomposition. Generally, the more moisture, the more landfill gas is generated, both during the aerobic and anaerobic conditions. Furthermore, methane is highly explosive and can have a major impact on occupational health and safety at the various waste disposal facilities.

The Department embarked on a project to determine the baseline data for landfill gas at waste disposal facilities in the Western Cape, where preliminary methane specific determination is done, to assist Municipalities to further investigate or implement mitigation measures. Methane (CH4) is a colourless, odourless asphyxiant, flammable, non-toxic gas that is lighter than air with a vapour density of 0.6. CH4 is explosive between the concentrations of 5% - 15% by volume in air, as per the Department of Water Affairs, Minimum Requirements for Waste Disposal by Landfill, Second Edition, 1998. This concentration range is referred to as the explosive range with the two extremes being referred to as the lower explosive limit (LEL) and upper (UEL) explosive limit respectively. CH4 levels at WDFs are determined by selecting measuring points in and around the waste body for the measurement of methane gas concentration. The measuring points are determined by establishing where older waste was disposed of, particularly in areas where the decomposition of the solid waste has already begun. The results of the landfill gas monitoring exercise were compiled into a Landfill Gas Report and the findings communicated to the relevant municipality.

Table 12 displays the landfill gas monitoring conducted at the following facilities during the 2016, where the Department has a quarterly target of nine (9) gas monitoring reports. The sites producing methane of notable levels are high-lighted in yellow.

Table 12: Methane gas levels measured at facilities

Quarter	Facility	Type	Date	Max. CH_4 level detected
January - March 2016	Elands Bay WDF	WDF	11-Feb-16	0%
	Barrydale WDF	WDF	13-Jan-16	0%
	Lamberts Bay WDF	WDF	15-Feb-16	0%
	Clanwilliam WDF	WDF	15-Feb-16	0%
	Riviersonderend WDF	WDF	03-Oct-16	0%
	Great Brak WDF	WDF	25-Jan-16	0%
	Touwsriver WDF	WDF	09-Feb-16	0%
	Porterville WDF	WDF	11-Feb-16	0%
	Riebeeck West WDF	WDF	18-Feb-16	0%
	George (Gwaing)	WDF	12-Jan-16	0%
April - June 2016	Gouritzmond	WDF	03-May-16	0%
	Old Place	WDF	04-May-16	0%
	Van Wyskdorp	WDF	05-May-16	0%
	Calitzdorp	WDF	05-May-16	0%
	Prince Albert	WDF	09-May-16	0%
	McGregor	WDF	11-May-16	0%
	Citrusdal	WDF	16-May-16	0%
	Vredendal	WDF	17-May-16	0%
	Caledon	WDF	01-Jun-16	0%

Quarter	Facility	Type	Date	Max. CH_4 level detected
July - September 2016	Beaufort West (Vaalkoppies)	WDF	25-Jul-16	0.10%
	Laingsburg	WDF	25-Jul-16	0%
	Leeu-Gamka	WDF	26-Jul-16	0%
	Ashton	WDF	27-Jul-16	0.50%
	Robertson	WDF	27-Jul-16	0.20%
	Wellington	WDF	10-Aug-16	7.20%
	Bredasdorp	WDF	15-Aug-16	3.10%
	Karwyderskraal	WDF	15-Aug-16	0.40%
	Wolseley	WDF	30-Aug-16	38%
October - December 2016	Velddrif	WDF	12-Oct-16	0%
	Albertinia	WDF	18-Oct-16	0.40%
	De Doorns	WDF	24-Oct-16	0%
	De Rust	WDF	25-Oct-16	0%
	Dysselsdorp	WDF	25-Oct-16	0.20%
	Uniondale	WDF	25-Oct-16	0.30%
	Louis Fourie	WDF	26-Oct-16	0%
	Touwsriver	WDF	24-Oct-16	0%
	Devon Valley	WDF	14-Nov-16	0.30%

9.2 Waste Management Infrastructure within the Western Cape Province

Distilled from the Municipal Infrastructure Study the DEA&DP has identified the following existing and additional required waste mangemnet facilities within the Western cape. The cost for compliance has also been indicated.

	Phase one of project					Phase two of Project				
	Central Karoo	**West Coast**	**Eden**	**Cape Winelands**	**Overberg**	**Central Karoo**	**West Coast**	**Eden**	**Cape Winelands**	**Overberg**
Recovery & recycling										
General waste	8	15	8	10	13	5	24	13	5	7
No, location & types of facilities	0 Facilities	17 Facilities	11 Facilities	12 Facilities	13 Facilities	5 Facilities	15 Facilities	13 Facilities	5 Facilities	7 Facilities
Cost of compliance	**R -**	**R 261 029 300.00**		**R 10 736 800.00**	**R 9 764 400.00**	**R 13 401 500.00**	**R 67 053 000.00**	**R 248 151 100.00**	**R 50 947 600.00**	**R 28 948 000.00**
Treatment										
General waste	0	0		2	0	0			0	0
No, location & types of facilities	-	-		2	-	-			-	-
Cost of compliance	-	-	**R 202 636 200.00**	**R 10 736 800.00**					-	-
Disposal										
General waste	8	31		20	25					
Current Average for District Disposal cost	R 180	R 339.54	R 170.94	R 537.06	R 242.00	N/A	N/A	N/A	N/A	N/A
Closed	0 Closed Facilities	6 Closed Facilities	15 Closed Facilties	12 Closed	18 Closed	2 Facilities will be closed	2 Facilities will be closed	8 Facilities will be closed	6 Facilities will be closed	2 Facilities will be closed
Operational	8 Operational Facilities	25 Operational Facilities	13 Operational Facilities	8 Operational	7 Operational	3 Facility expansions	3 Facility expansions	2 Facility expansions	1 New Facility and 1 Facility expansion	3 Facility expansions
Cost of compliance	**R 24 152 800.00**	**R 271 129 900.00**	**R 190 101 000.00**	**R 239 110 200.00**	**R 174 702 000.00**	**R 62 984 200.00**	**R 148 040 400.00**	**R 110 235 600.00**	**R 259 577 700.00**	**R 102 822 800.00**

Municipalities were requested to supply the cost of waste disposal within their Municipalities and the below table illustrates the information submitted to the Department. It must be note that this is based on the tariff charged at the gate to disposal facilities and not on the total cost of waste management to the Municipality. The Bergriver Municipality however included the transport cost as they do not have any disposal facilities within the municipality and utilised facilities within other municipalities.

Table 13: Cost of waste disposal

Municipality	Disposal cost per ton MSW
Agulhas Municipality	Not supplied
Beaufort West Municipality	Not supplied
Bergriver Municipality	**R 500.00**
Bitou Municipality	Not supplied
Breede Valley Municipality	**R 100.00**
Cederberg Municipality	Not supplied
City of Cape Town Municipality	**R 443.20**
Drakenstein Municipality	**R 301.00**
Eden District Municipality	Not supplied
George Municipality	**R 0.00**
Hessequa Municipality	Not supplied
Kannaland Municipality	Not supplied
Knysna Municipality	**R 170.95**
Laingsburg Municipality	Not supplied
Langeberg Municipality	**R 180.00**
Matzikama Municipality	Not supplied
Mossel Bay Municipality	Not supplied
Oudtshoorn Municipality	Not supplied
Overstrand Municipality	**R 242.00**
Prince Albert Municipality	Not supplied
Saldanha Bay Municipality	**R 394.25**
Stellenbosch Municipality	Not supplied
Swartland Municiaplity	**R 124.36**
Swellendam Municipality	Not supplied
Theewaterskloof Municipality	**R 868.30**
Witzenberg Municipality	Not supplied
Eden District (at PetroSA facility)	**R 170.94**

AT A GLANCE

- Support programme for small, very small and micro enterprises
- Western Cape Waste Economy Business Case: Gap Analysis (Draft 2016)
- WISP – GreenCape
- Waste Economy 2017 Market Intelligence Report - GreenCape

10.1 Support programme for small, very small and micro enterprises in the Western Cape project

The Western Cape Government (WCG) recognises the valuable contribution the waste sector makes towards the growth of the Green Economy in the Western Cape. It also recognises that small and micro recycling enterprises plays a significant role in diverting waste from landfill sites and has the potential to grow even further should a nurturing environment exist for these enterprises to flourish.

Improving the capacity of these small and micro entrepreneurs who are predominantly involved in the recovery of recyclables can improved business efficiencies and lead to improved recovery rates and the potential for job creation.

The majority of these small and micro waste entrepreneurs do not have formal entrepreneurial skills training and often lack the capacity to tender for municipal and private contracts that can secure bigger and better supplies of recyclables. These enterprises exist despite the negative receiving environment but often fail to grow. In some cases, they are forced to cease their operations due to issues of non-compliance mostly resulting from lack of knowledge, mentorship and support.

Recognising the potential for the growth of these enterprises, job creation and the potential to divert waste from overstretched landfill sites, the Department has embarked on a support programme for small and micro enterprises in the Western Cape. A pilot involving 15 small and micro waste entrepreneurs is being conducted in the 2016/17 financial year.

These "waste preneurs" were selected based on preselected criteria, from an existing database of waste collectors that operate in smaller municipalities. They also had to operate from a premises and be located within 150 -200 km from Cape Town in order to attend training programmes based in the Metro. It is envisaged that the programme will be incrementally rolled out in other regions in the ensuing years.

Framework of support provided;

- Identification of training and support programmes for SMMEs within the waste sector.
- Identification of beneficiaries.
- Conduct diagnostic and business support for SMMEs

- Develop business plan
- Conduct business mentorship
  - Provide entrepreneurial skills training to beneficiaries
- Financial management
- Human Resource
- Marketing
  - Facilitate industry support as per recommendations of business diagnostic
  - Facilitate Municipal support as per recommendations of business diagnostic
  - DEA&DP Support
- Capacitate business current compliance and waste minimisation requirements
- Register businesses on supplier database
- Assist business with their tax registration
- Provide industries with relevant information
  - Monitor beneficiaries and progress of support programme.

To date Phase one of the support Programme was initiated and a report on this intervention was concluded. The programme will be will be run over three (3) years.

10.2 Western Cape Waste Economy Business Case: Gap Analysis (Draft 2016)

The Western Cape Government Department of Economic Development and Tourism (DEDAT) appointed a team of specialists (Urban-Econ Development Economists, JPCE and EScience Associates) to investigate the status of the waste economy within the Western Cape Province, and concurrently, develop a business case for identified opportunities. The project will contribute to the strategy for the Waste Economy in the Western Cape.

Certain waste stream was identified as priority waste and for these waste the geographic distribution & volumes was investigated. A market assessment was then completed and lastly value Chain gaps were identified. The following waste streams were investigated in this manner:

- Abattoir organic effluent waste
- Food waste
- Green waste
- Construction & demolition waste
- E-waste
- Metal waste market

- Tyre waste
- Plastic waste
- Sewage waste

For the full outcome and discussion please refer to **The Western Cape Waste Economy Business Case: Gap Analysis developed for: The Western Cape Government Department of Economic Development and Tourism** Draft: 29/11/2016

10.3 Waste Economy 2017 Market Intelligence Report - GreenCape

In 2017 GreenCape undertook a Market Intelligence Report as to the potential of the waste economy within the Western Cape. The report was concluded early in 2017 and as the bulk of the investigation was conducted in 2016 a short summary of the main findings of the report is included in this report.

The report outlined the waste management landscape and how it is changing. The main aim was to identify the potential opportunities the waste management landscape presents for businesses and investors.

According to the report the current waste economy results in an industry that is estimated to be worth R15 billion in revenue and provides 29 833 people with employment. The report identified 13 waste streams that could be recycled. If 100% of these were unlocked, it would provide a further R17 billion worth of resources.

However, achieving the goal of the Roadmap by 2022 (Scenario 3) would only unlock R9.2 billion resource value into the economy (DST 2014). By 2019, South Africa is aiming to reach the target of 20% waste division (by weight) (DEA&DP 2015). For the Western Cape this means diverting 1.5 million tonnes per annum, of which 800 000 tonnes are municipal solid waste (MSW) (DEDAT 2016). DEA&DP estimates that the cost of mere compliance is in excess of R1 billion. To achieve a 20% diversion rate by 2019 it is estimated that municipalities would need to invest a further R1 billion in implementing of Alternative Waste Treatment (AWT) infrastructure.

According to the report Municipalities will have to look into innovative and alternative ways of funding these support functions. This includes partnerships with the private sector, where provincial and national government play a role in the implementation of extended producer responsibility (EPR) and allow for the levies charged to assist with some of the infrastructural and operational demands. Unlocking post-consumer waste and increase feedstock requirements for large-scale alternative waste treatment facilities (such as waste to energy) will require partnerships between private industry and municipalities.

Legislation has been passed to help unlock the potential R17 billions of material currently being landfilled that could be recycled (DST 2014). Coupled with this, Western Cape municipalities are gearing up to implement PPP that will potentially attract a further R1.3 billion and create approximately 1 600 jobs in the next five years.

GreenCape see current opportunities for businesses and investors in the waste sector in the Western Cape that are primarily focused on recyclables (plastics), organics, e-waste, and construction and demolition waste (C&DW).

For the full report and further queries please contact GreenCape's Waste Sector Desk: waste@green-cape.co.za

10.4 Western Cape Industrial Symbiosis Programme - Department of Economic Development and Tourism

The Western Cape Industrial Symbiosis Programme (WISP) develops mutually profitable links between companies from all industrial sectors, so that underutilised resources such as energy and water, and/or materials from one company can be recovered, reprocessed and re-used by others. This strategy has several economic and environmental benefits.

The programme uses actual business opportunities as the mechanism for encouraging resource efficiency and its holistic approach sees it actively dealing with ALL resources including water, energy, materials, logistics, assets and expertise. The programme is based on the highly successful national programme in the UK (NISP), which demonstrated that industrial symbiosis has the potential to significantly reduce industrial and commercial waste and comprehensively lessen the adverse environmental impacts of business.

WISP is a free facilitation service initiated by the Western Cape Government and delivered by the sector development agency GreenCape. WISP enables synergies to happen by filling the gaps that its members, especially SMEs, could experience due to the lack of time or dedicated expertise needed to identify and implement resource, waste and energy efficient practices. The diversity of the industries in which WISP operates, and the variety and size of its business members, means that WISP has the potential to generate significant economic, environmental and social benefits from the synergies and projects that it brings about.

WISP works hand in hand with leading trade associations, manufacturers and other organisations to add real value to business. We are working in collaboration with the Cape Chamber of Commerce and Industry (CCOC), National Cleaner Production Centre (NCPC), Economic Development Partnership (EDP) and the City of Cape Town (CoCT).

For further information, contact WISP at wisp@green-cape.co.za

11 SIGN OFF

I, Eddie Hanekom, hereby approve the Annual State of Waste report for 2016.

Director: Waste Management

29-03-2017

Date

12 REFERENCES

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13 NOTE ON DATA

Municipal Solid waste data should be considered with a degree of caution due to inconsistencies in definitions, data collection methodologies, and completeness of data.