CAPE WINELANDS DISTRICT MUNICIPALITY

INTEGRATED WASTE MANAGEMENT PLAN
(3rd Generation)

(*Final Report*)

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CAPE WINELANDS DISTRICT MUNICIPALITY

INTEGRATED WASTE MANAGEMENT PLAN

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ABBREVIATIONS

DEA	Department of Environment Affairs
D:EA&DP	Department of Environmental Affairs and Development Planning
DWA	Department of Water Affairs
EIA	Environmental Impact Assessment
Haz	Hazardous
HCGW	Health Care General Waste
HCRW	Health Care Risk Waste
HCW	Health Care Waste
HDPE	High Density Polyethylene
kg	kilogram
kℓ	kilolitre
ℓ	litre
m^3pa	cubic meter per annum
t/a	ton per annum
VWMF	Vissershok Waste Management Facility
CNC	Cape Nature Conservation
IWMP	Integrated Waste Management Plan
JPCE	Jan Palm Consulting Engineers
IPWIS	Integrated Pollutant and Waste Information System
NWMS	National Waste Management Strategy
WCIWMP	Western Cape Integrated Waste Management Plan
IDP	Integrated Development Plan
SDF	Spatial Development Framework
CWDM	Cape Winelands District Municipality

CAPE WINELANDS DISTRICT MUNICIPALITY

INTEGRATED WASTE MANAGEMENT PLAN

EXECUTIVE SUMMARY

INTRODUCTION AND GENERAL DESCRIPTION

The third generation of this Integrated Waste Management Plan (IWMP) has been formulated by Jan Palm Consulting Engineers (JPCE) on behalf of the Cape Winelands District. The second generation IWMP was developed in 2011 and was subsequently commented on and evaluated by the Department: Environmental Affairs and Development Planning (D:EA&DP). This update incorporates the comments and recommendations made on the 2011 IWMP as well as the latest checklist for IWMPs by the D:EA&DP.

The IWMP is a statutory requirement of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) that has been promulgated and came into effect on 1 July 2009 and that has as its goal the transformation of the current methodology of waste management, i.e. collection and disposal, to a sustainable practice focussing on waste avoidance and environmental sustainability. Implementation of this IWMP will be through municipal by-laws and in accordance with an implementation schedule. The IWMP must be incorporated as part of each Municipality's Integrated Development Plan (IDP), but is submitted as a separate document. The IWMP also shows alignment of its goals with the Western Cape IWMP and the National Waste Management Strategy (NWMS 2011).

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

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

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

The general topography, geology and hydrogeology of the area is discussed in section 1.3 and the demographic details in section 1.4. The current population estimate of the Cape Winelands is 860 671 people, based on the Census 2011 population of each local Municipality and each respective annual growth rate.

POLICY AND LEGISLATION

All applicable waste management legislation is listed and discussed under section 2 of the IWMP. The latest published legislation have been added in the IWMP update, which mainly consists of Norms & Standards published under the Waste Act since the 2011 IWMP.

EXISTING WASTE MANAGEMENT

Awareness and Education

Apart from each local Municipality's awareness and education initiatives, the District Municipality has ongoing annual awareness and education projects in the form of theatre performances, greening projects, river rehabilitation and EPWP cleaning projects.

Waste Quantities and Types

Where available, weighbridge data from the local Municipalities were included in calculating the total waste generated in the District. From areas where this information is not available, the totals were estimated from using waste generation rates per capita and applied to current and future estimated population figures.

The total waste for the District for 2015 was estimated at 317 639 tonnes with a future estimated total of 348972 tonnes for 2019. This equates to an average waste generation factor of 1.1kg/person/day.

Waste characterisation was based on the 2007 study by the D:EA&DP and the 2012 study by the Stellenbosch Municipality. The percentages and estimated total recyclables are shown below:

Municipality	Paper/Card (t/a)	Plastics (t/a)	Glass (t/a)	Metal (t/a)
Breede Valley	36%	9%	9%	6%
Drakenstein	34%	22%	11%	5%
Langeberg	33%	16%	8%	6%
Stellenbosch	16%	15%	8%	2%
Witzenberg	26%	27%	6%	7%

Municipality	Paper/Card (t/a)	Plastics (t/a)	Glass (t/a)	Metal (t/a)
Breede Valley	14995	3749	3749	2499
Drakenstein	26092	16883	8442	3837
Langeberg	10483	5082	2541	1906
Stellenbosch	17979	16856	8990	2247
Witzenberg	10707	11119	2471	2883
CWDM	80256	53688	26192	13372

The above theoretical figures give a total of approximately 173 509 tonnes per annum, which is 55% of the generated waste stream. It should be noted that this reflects the recyclable portion of the waste stream only as the mathematical representation. The full 58% cannot be seen as recoverable in the practical sense at this stage.

Waste Collection

The District does not render waste collection services as this is a function of the Local Municipalities. The IWMP gives a summary of each Local Municipal solid waste collection service and the level of free basic services rendered.

Waste Management Facilities

The District does not operate any waste management facilities at this stage. All identified waste management facilities such as transfer stations, disposal facilities and recycling facilities are discussed for each Local Municipality.

Identified Gaps

The following gaps were identified in the District

- Public Awareness and Education
- Recycling and waste minimisation
- Area cleaning
- Lack of information regarding waste generation types and volumes
- Aging collection fleet
- Law enforcement
- Disposal sites (condition and operation) and lack of disposal airspace
- Vacant positions in waste management departments

Strategic Objectives

Being a District Municipality and not “owning” any waste, these strategies are more focussed on supporting the local municipalities with their individual strategies and in the event of developing a district landfill, to develop action plans to ensure safe disposal. The District Municipality does not collect waste with the result that strategies for waste avoidance and waste reduction are not really applicable.

The Waste Management Strategic Objectives for Cape Winelands District Municipality on which this Plan is based, commits the municipality to:

- Create an atmosphere in which the environment and natural resources of the region are conserved and protected.

- Develop a communication/information/education strategy to help ensure acceptance of 'ownership' of the strategic objectives among members of the public and industry throughout the municipality and to promote co-operative community action.

- Provide solutions for the three main objectives:
  - The avoidance of waste generation
  - The reduction of waste volumes
  - The safe disposal of waste

IMPLEMENTATION

The IWMP has an implementation plan which is part of 7 main goals. These goals have each been divided into actions and years of implementation with estimated costs in order to achieve the main goals. These goals are:

Goal 1: Awareness and Education

Goal 2: Improve Waste Information Management

Goal 3: Effective Solid Waste Service Delivery

Goal 4: Promote and Ensure Waste Minimisation

Goal 5: Improve Regulatory Compliance

Goal 6: Ensure Safe and Integrated Management of Hazardous Waste

Goal 7: Ensure Sound Budgeting For Integrated Waste Management

MONITORING AND REVIEW

The IWMP acts as a planning guide and requires regular updates and reviews in order to stay relevant, especially the projects for implementation. Each project must be reviewed to measure its success, shortcomings or reasons for failure. The IWMP must be updated to reflect the progress of projects or to adapt strategies. The review will also assist in budgeting for upcoming waste management projects.

As the IWMP is a sectoral plan of the IDP, the following projects are recommended to be included in the IDP:

All implementation actions requiring Capital Expenditure not already contained in the IDP:
- The establishment of the regional integrated waste management facility following the issuing of the license

CAPE WINELANDS DISTRICT MUNICIPALITY

INTEGRATED WASTE MANAGEMENT PLAN

1. PREFACE

1.1 INTRODUCTION

The third generation of this Integrated Waste Management Plan (IWMP) has been formulated by Jan Palm Consulting Engineers (JPCE) on behalf of the Cape Winelands District Municipality to address the challenge of waste management in the District, home to some 860 660 people (Estimated 2015 population, refer to Section 1.4). The second generation IWMP was developed in 2011 and was subsequently commented on and evaluated by the Department: Environmental Affairs and Development Planning (D:EA&DP). JPCE was appointed by the Cape Winelands District Municipality to develop the third generation IWMP for 2015.

The November 2012 assessment report of the 2nd generation, 2011 IWMP is summarised as follows, which identified topics which should be addressed with the new IWMP revision:

- The Introduction and general description requires reference to recommendations made in the assessment report.
- In terms of strategic linkages, the IWMP must make reference to the municipal SDF.
- The plan must show the link with the IDP and what will be incorporated into the IDP.
- The IWMP must be aligned to the Western Cape IWMP and the National Waste Management Strategy of 2011.
- Public participation: The IWMP must follow a public participation process.
- The latest solid waste legislation must be included in the IWMP.
- The latest demographic information must be used from Census 2011.
- The IWMP must indicate the level of free basic services in the District.
- The District needs to ensure that the local Municipalities conduct waste characterisation studies.
- The organisational structure needs to be included in the IWMP.
- The IWMP must indicate how the Municipality intend to implement waste awareness and education with cost implications.
- The District must monitor the local Municipalities and ensure that they register their waste facilities and report to IPWIS.
- Gaps and needs related to solid waste management in the District must be identified.
- The implementation of the plan must show budget and human resources.
- The IWMP should include a monitoring and review programme.

The terms of reference for the development of the Cape Winelands third generation IWMP include a status quo analysis, strategic objectives and an implementation plan.

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

The development of the IWMP is necessary as it is an integral tool to identify current needs and act as a guide towards sustainable waste management. With regular updates of this document the changing needs as well as progress in the waste management field can be tracked and strategies adapted accordingly. It also provides a framework for budgeting purposes. The IWMP must be incorporated as part of each Municipality's Integrated Development Plan (IDP), but is submitted as a separate document. The IWMP also shows alignment of its goals with the Western Cape IWMP and the National Waste Management Strategy (NWMS 2011).

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

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

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

1.2 IWMP DEVELOPMENT

The planning phase of the third generation IWMP included the following:

A project meeting was held at the District offices in Worcester on 17 March 2015, which was attended by the consultant and Mr F. van Eck of Cape Winelands District Municipality. The purpose of the meeting was to discuss the scope of the project and the updating of the IWMP to the 3rd generation and to acquire the necessary information in order to update the IWMP. The scope of the IWMP will follow the D:EA&DP's checklist for Integrated Waste Management Planning. The checklist is attached as **Annexure 1**.

The public participation phase of the development of the IWMP was in the form of advertisements in the local newspapers and Die Burger. The draft document was available at the public libraries and at www.jpce.co.za for the public to view and comment on. The draft IWMP served as base on which to provide comment and input. See **Annexure 3** for the advertisements that were placed. Comment was received from Green Cape after the closure date for comments. However, comments applicable to a District IWMP will be addressed during and as part of the annual IWMP review report.

The participants in the Cape Winelands District IWMP third generation process are Mr F van Eck (Executive Director: Technical Services, Cape Winelands District Municipality), Solid Waste Managers and Waste Management Officers of the local municipalities and Jan Palm Consulting Engineers (Consulting Civil Engineers specializing in Solid Waste Management). During the public comment phase, other participants have the opportunity to contribute to the IWMP development before the release of the final document, e.g. NGO's. The IWMP will form part of the Integrated Development Plan of the Municipality and will have to be approved by Council.

The waste streams and quantities discussed in this IWMP include household waste, garden (green) waste, commercial and industrial waste and builder's rubble. Medical waste and hazardous wastes are also discussed, but quantities are unknown.

1.3 GENERAL DESCRIPTION

Cape Winelands District Municipality is the eastern neighbour of the City of Cape Town and the West Coast District Municipality. It is an area noted for its vineyards, veld flowers, fruit farming and sheep farming.

The Cape Winelands area hosts many industries, but the agriculture and agriculture related industries are the main streams. Tourism is also a fast growing industry in the Cape Winelands.

The Cape Winelands District Municipality was established in December 2000 and includes the local municipalities of Stellenbosch, Drakenstein, Breede Valley, Langeberg and Witzenberg.

Refer to Figure 1-1 for a Plan of the Study Area.

1.3.1 Topography and Climate

The municipal area consists of mountainous topography in the central and eastern regions.

The area falls within the Western Cape Mediterranean climate zone and is known for its hot and dry summer days. Average annual rainfall, mainly during the winter months, is approximately 500 mm.

Winds are seasonal and generally North-west or South-east.

1.3.2 Geology and Hydrogeology

1.3.2.1 Geology

(Refer Figure 1-2)

Figure 1-1 shows the extent of the above area, major towns, roads and surface water features. Paarl and Worcester are the main towns and the Berg and Breede Rivers and Brandvlei Dam are the main surface water features in the area.

Figure 1-2 is a simplified geological map adapted from the 1:500 000 scale hydrogeological map Cape Town (Department of Water Affairs and Forestry). There are seven geological formations present in the area. From oldest to youngest in age these are the Malmesbury Group, intruded by the Cape Granite Suite, Table Mountain, Bokkeveld and Witteberg Groups, Karoo Supergroup and superficial alluvial deposits.

The Malmesbury Group rocks are very old (>600 million years) and have been extensively deformed and reconstituted (metamorphosed). They comprise shale, phyllite and impure sandstones. Some minor dolerite and granitic intrusions (dykes) are present. These rocks give rise to low, undulating topography. Granites of the Cape Granite Suite have intruded into these rocks and form elevated topography such as Paarl Mountain, for example.

The Table Mountain Group (TMG) rocks consist predominantly of resistant quartzitic sandstones and form the characteristic grey, craggy mountains of the Western Cape. Two main formations are present, the upper Nardouw Subgroup and the lower Peninsula Sandstone Formation. These are separated by the Cedarberg Formation, a shaley more easily weathered horizon that forms a prominent green to brown (seasonal) marker band between the grey sandstones. These rocks form the mountainous areas in the central and eastern parts of the study area.

The Bokkeveld and Witteberg Groups comprise alternating shale and sandstone horizons, with shale being more dominant in the former and the latter being generally more quartzitic.

The lower formations of the Karoo Supergroup occur in the north-northwest of the area and comprise rocks of Ecca and Dwyka age. These are mainly shaley and also comprise tillite in the case of the latter.

Alluvial deposits occur mainly along the course of the Berg River from Franschhoek to Hermon and Breede River from south of Ceres to east of Robertson. These reach up to 30 m in thickness and comprise clay, silty sand, sand and boulders.

The study area straddles the western N-S trending and eastern, E-W trending limbs of the Cape Fold Belt. The convergence zone or syntaxis of these two limbs is in the Ceres area. A series of sub-parallel faults trending NW-SE cut across the western part of the area, some of which extend >100 km into the Saldanha and Piketberg areas. In the eastern areas, faulting is predominantly E-W, with the regionally important Worcester Fault bisecting the area.

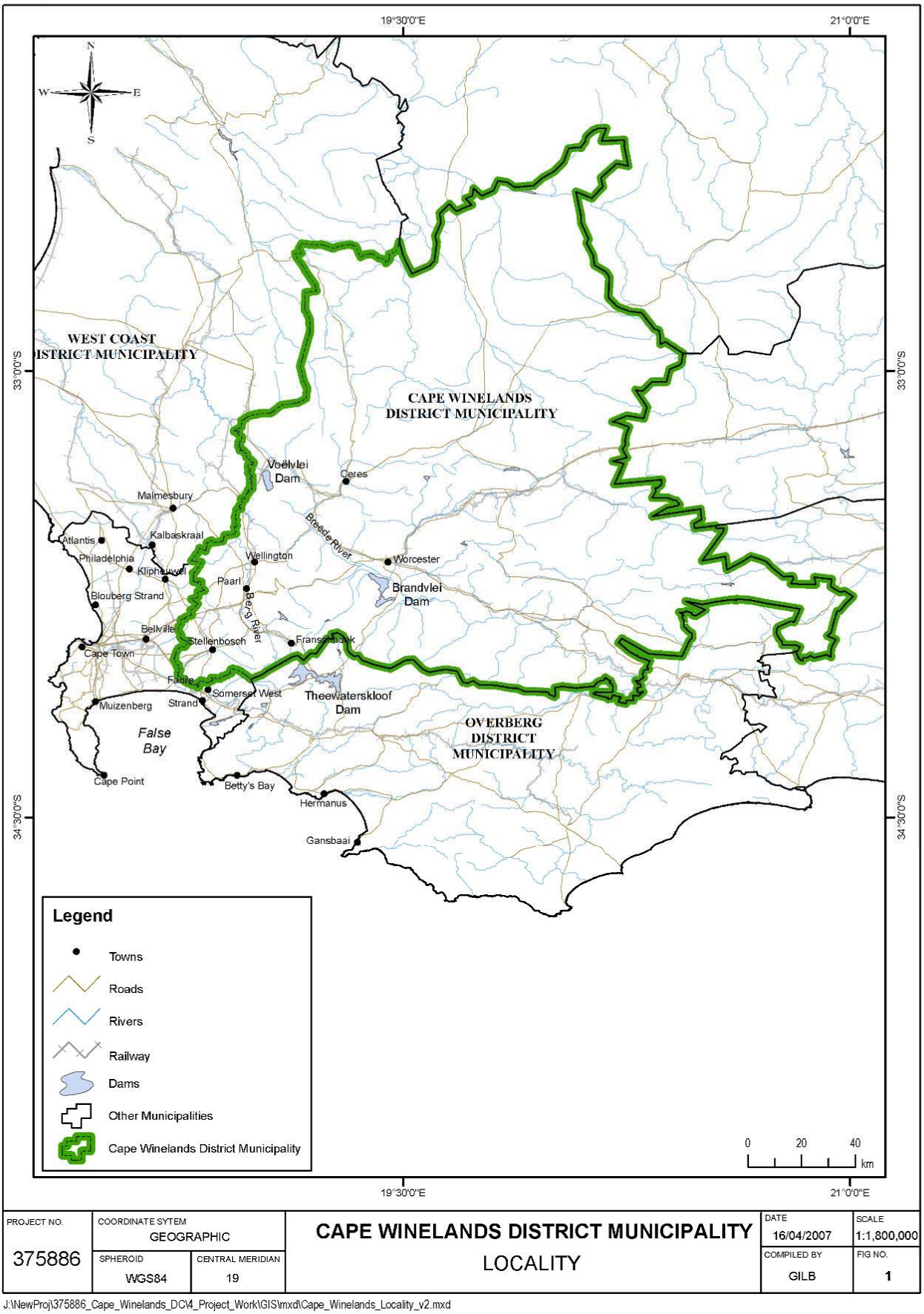
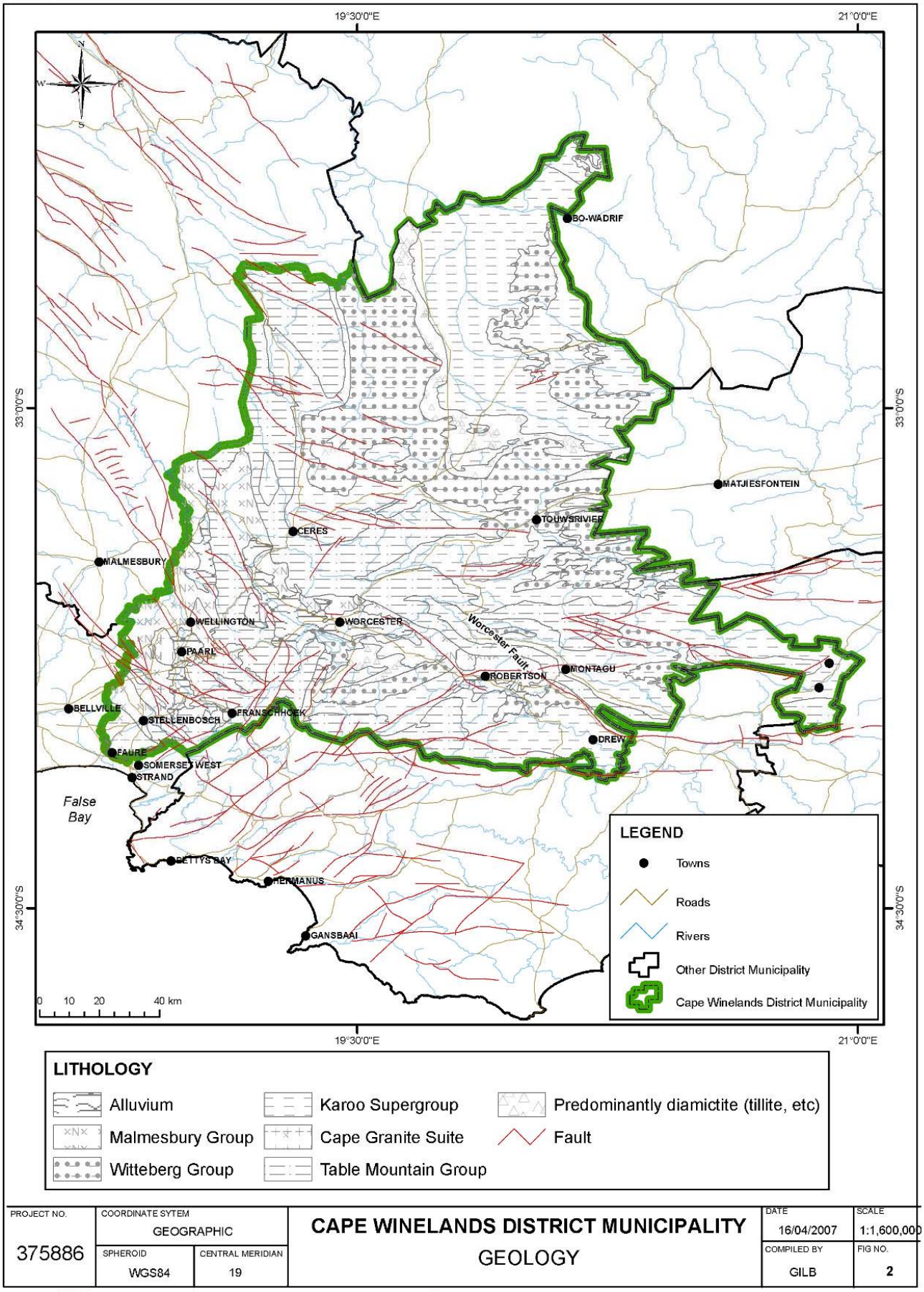


Figure 1-1: Study Area – Cape Winelands District Municipal Area

SRK Consulting
Engineers and Scientists



PROJECT NO.	COORDINATE SYTEM		CAPE WINELANDS DISTRICT MUNICIPALITY	DATE	SCALE
375886	GEOGRAPHIC		GEOLOGY	16/04/2007	1:1,600,000
	SPHEROID	CENTRAL MERIDIAN		COMPILED BY	FIG NO.
	WGS84	19		GILB	2

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Figure 1-2: Geology of Cape Winelands District Municipal Area

1.3.2.2 Groundwater

(Refer to Figure 1-3 and Figure 1-4)

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

In broad terms, any aquifers developed in rocks of the Malmesbury, Table Mountain, Bokkeveld, Witteberg and Karoo rocks will be of the fractured or secondary type. These are shown as shades of green on Figure 1-3. Aquifers developed in the alluvium will be of the intergranular or primary type. These are shown as shades of violet on Figure 1-3. Aquifers developed in the Cape Granite Suite are a combination of fractured and weathered (intergranular) zones and are coloured yellow on Figure 1-3.

The Malmesbury, Karoo and Cape Granite Suite rocks generally have the lowest potential, generally being classified as B2 and D2, respectively, which implies a median borehole yield of 0.1 to 0.5 ℓ/s. However, some very high yielding boreholes have been established in the Malmesbury Aquifer at the Pearl Valley and Val de Vie developments between Paarl and Franschhoek. Sustainable yields of up to 15 ℓ/s have been obtained here.

The Table Mountain Group (TMG) is usually regarded as the major regional aquifer of the Western Cape. In the study area it is uniformly classified as B4, i.e. a median borehole yield of 2.0 to 5.0 ℓ/s. However, much of this aquifer is inaccessible for drilling and exploitation. One of the strongest flowing (125 l/s) and hottest (62^0C) springs emerges from a fault zone in this aquifer at Brandvlei.

The TMG Aquifer of the Wemmershoek area is being investigated by the City of Cape Town to augment water supply to Cape Town. This is designated as Target Area W7. Yields of 100 ℓ/s per borehole have been put forward as being feasible, but it is unlikely that such yields would be sustainable or not cause unacceptable environmental impacts.

The Bokkeveld Group forms locally important aquifers in the Hex, Ceres and Agter Witzenberg Valleys but is a poor aquifer elsewhere. Approximately 20 million m^3/a are abstracted in the Hex Valley. The Witteberg Group generally forms a moderate to poor aquifer.

The alluvial aquifer is well developed in the Rawsonville area to the west of Worcester and ~20 million m^3/a is abstracted from this aquifer. On a local scale the very shallow water table causes problems of waterlogging, e.g. on the east bank of the Berg River between Paarl and Franschhoek. Subsurface drainage systems have had to be installed at developments in this area such as Pearl Valley and Val de Vie.

Groundwater quality is mostly good on account of the relatively high rainfall and therefore recharge and the influence of the TMG Aquifer. Consisting mostly of silica, these rocks contain very pure groundwater with electrical conductivity (EC) mostly <10 mS/m. The drawback with such unbuffered groundwater is that it has a low pH, usually <6, which is aggressive and corrosive. High iron content is also a characteristic aesthetic problem. Over most of the area EC is <70 mS/m, increasing above this in the Malmesbury and Granite Aquifers to the west, i.e. away from the TMG, and also to the east as rainfall and recharge decrease and under the influence of more shaley lithologies.

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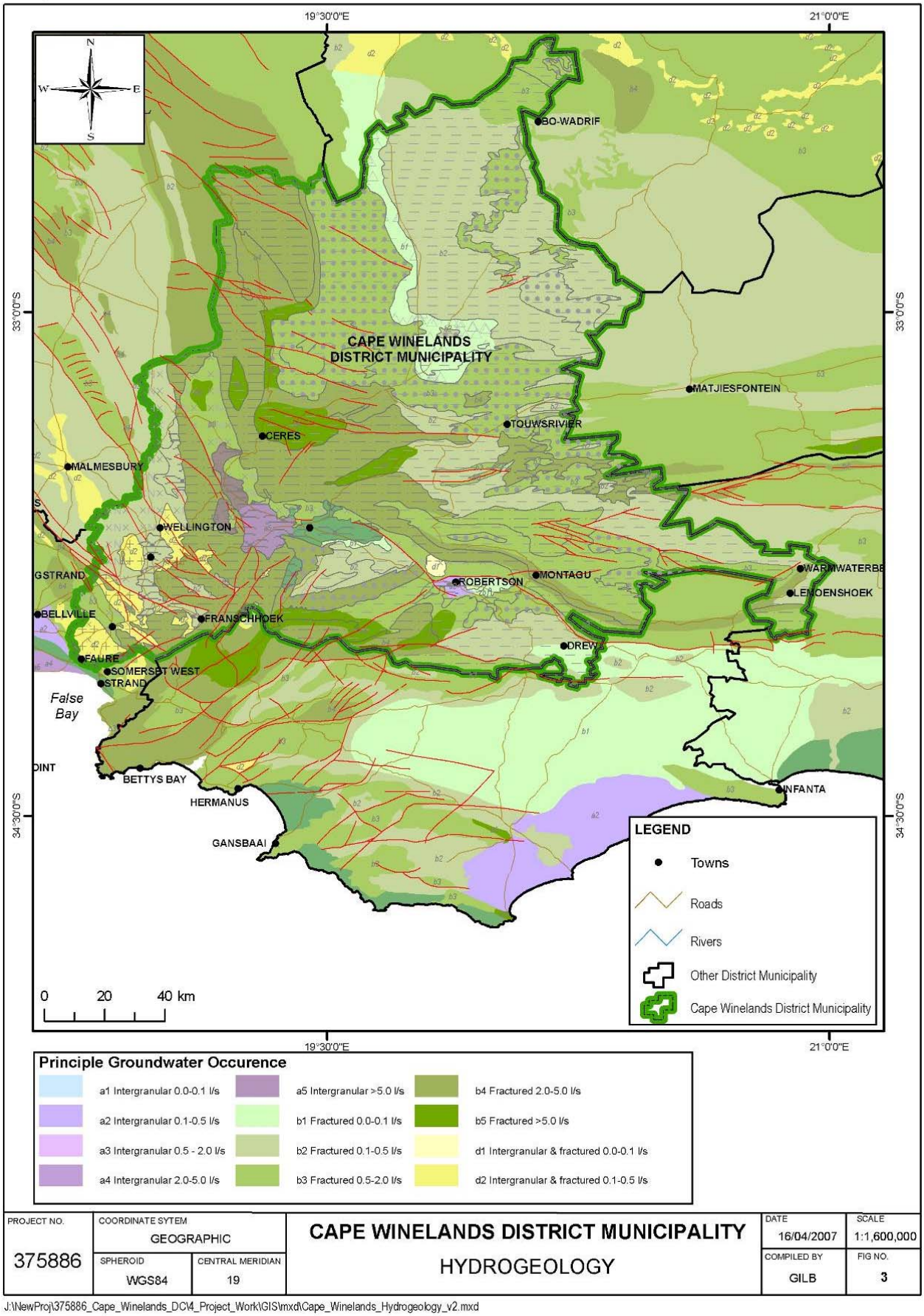


Figure 1-3: Hydrogeology of Cape Winelands District Municipal Area

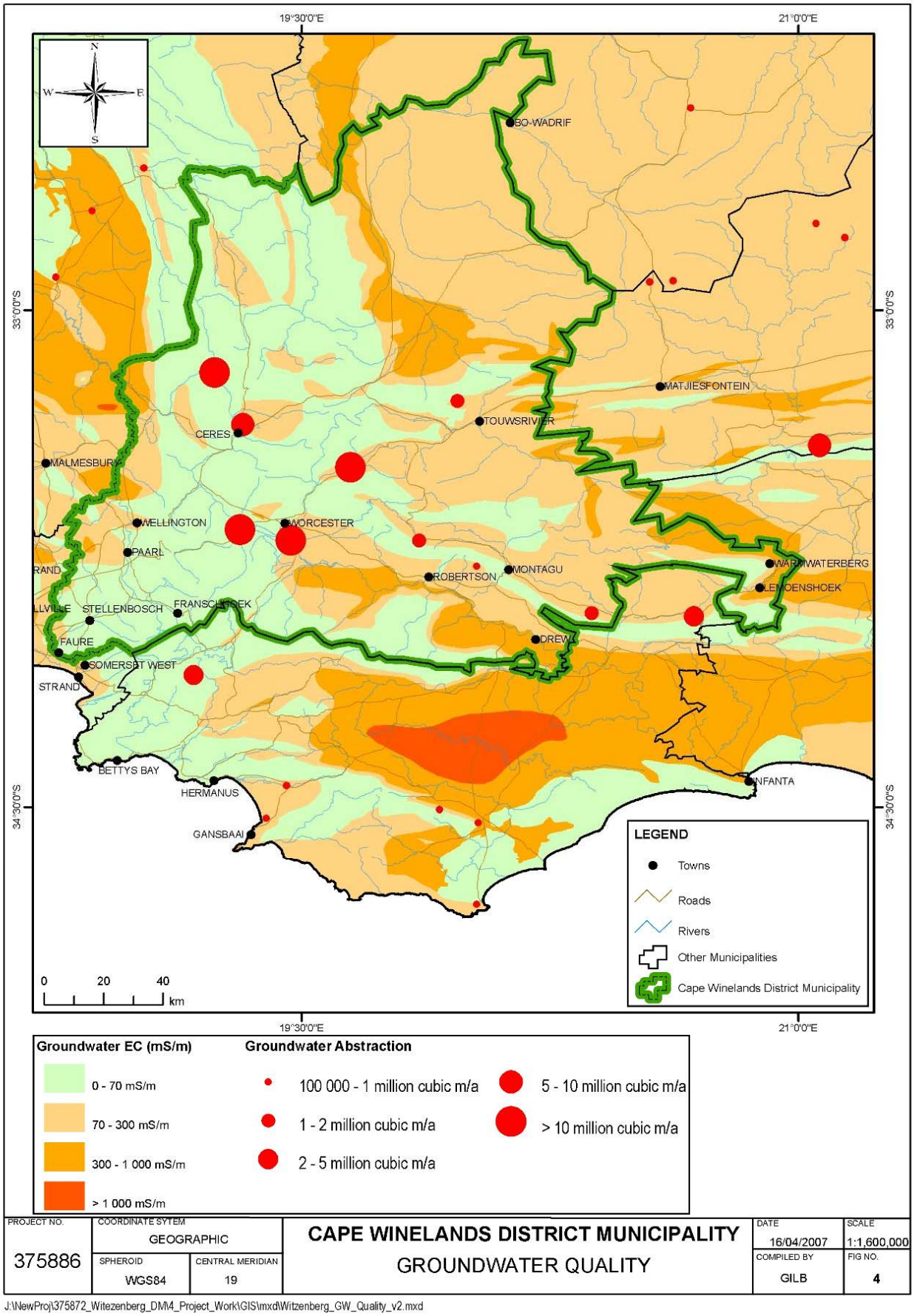


Figure 1-4: Groundwater Quality of the Cape Winelands District Municipal Area

1.4 DEMOGRAPHICS

The statistics relating to population were taken from Statistics SA. The latest 2011 Census population figures were used. The total population of each local municipality with its respective annual growth rate since 2001 is shown in Table 1-1 below. The growth rates were applied to each total to estimate the current and future population of each municipality and the total population for the District.

Table 1-1: Population Figures

Municipality	Growth rate (%)	2011	2015	2020
Breede Valley	1.31%	166836	175751	187569
Drakenstein	2.56%	251268	278003	315456
Langeberg	1.79%	97728	104915	114648
Stellenbosch	2.71%	155733	173313	198105
Witzenberg	2.64%	115950	128688	146595
CWDM		**787506**	**860661**	**962362**

The 2015 number of households in Table 1-2 were estimated from the 2011 figures, with the assumption that the average household size per sub-area would remain constant.

Table 1-2: Population Profile according to Household Income

Municipality	No of Households (2015)	Population (2015)	Average Persons per Household	Very Low and Low Income	Middle Income	High and Very High Income
Breede Valley	44 839	175 751	3.9	53.81%	18.96%	27.23%
Drakenstein	66 046	278 003	4.2	45.70%	18.39%	35.91%
Langeberg	26 995	104 915	3.9	56.86%	19.97%	23.18%
Stellenbosch	48 269	173 313	3.6	52.89%	15.55%	31.56%
Witzenberg	30 444	128 688	4.2	56.65%	20.86%	22.49%
CWDM	**216 593**	**860 671**	**4.0**	**53.18%**	**18.74%**	**28.07%**

From the graph below it can be seen that the population is divided 52% in the Cape Winelands West (Stellenbosch & Drakenstein) and 48% in the Cape Winelands East (Breede Valley, Witzenberg & Langeberg)

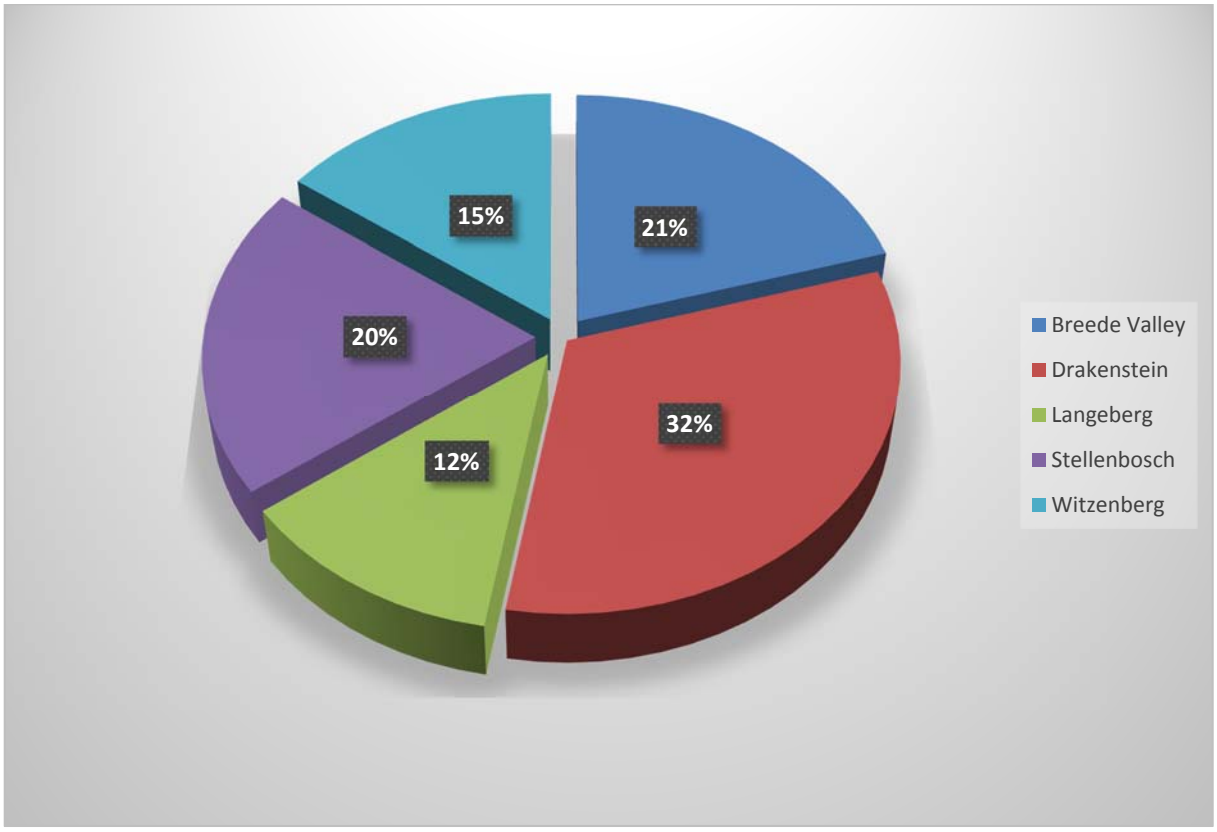


Figure 1-5: Graphical Display of Population Distribution

The Human Development Index for the Cape Winelands District compared to that of the Western Cape and the whole of South Africa is shown in Table 1-3 below.

Table 1-3: Human Development Index

Population Group	Cape Winelands	Western Cape	RSA
Black	0.52	0.58	0.50
White	0.86	0.87	0.88
Coloured	0.66	0.66	0.66
Asian	0.76	0.79	0.76
Total	0.65	0.71	0.59

Source: Cape Winelands District IDP 2014-2015; HIS Global Insight Regional Explorer, 2013

1.5 TRANSPORT INFRASTRUCTURE

The major routes in the Cape Winelands District are the N1, R44, R46 and R60. The R44 connects Stellenbosch with Drakenstein. The N1 connects Drakenstein with Breede Valley. The R60 connects Breede Valley and Langeberg and the R43 connects Breede Valley with Witzenberg. All waste is transported by road.

1.6 STRATEGIC LINKAGES

Western Cape IWMP	NWMS (2011)	CWDM IWMP	CWDM SDF	CWDM IDP
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: Public Awareness & Education	To promote sustainable resource use and responsible rural development	SO1: 1.1.4: A well informed local government that will be able to make evidenced-based decision-making with regard to sectoral interventions
Goal 2: Improve waste information management	Goal 5: Achieve integrated waste management planning	Goal 2: Waste Quantification & Information		
Goal 3: Promote sound, adequate and equitable waste management	Goal 2: Ensure the effective and efficient delivery of waste services	Goal 3: Effective Solid Waste Service Delivery		SO2: Promoting sustainable infrastructure services and transport system which fosters social and economic opportunities
				2.2.1.3: Investigate and planning of regional solid waste disposal sites
				2.2.1.4: Developing/maintain of regional solid waste disposal sites
Goal 4: Mainstream Integrated Waste Management Planning in municipalities and industry	Goal 5: Achieve integrated waste management planning	Goal 4: Promote and Ensure Waste Minimisation	To promote sustainable resource use and responsible rural development	
	Goal 1: Promote waste minimisation, re-use, recycling and recovery of waste	Goal 1: Public Awareness & Education		

Western Cape IWMP	NWMS (2011)	CWDM IWMP	CWDM SDF	CWDM IDP
Goal 5: Mainstream sustainable waste management practices	Goal 1: Promote waste minimisation, re-use, recycling and recovery of waste	Goal 4: Promote and Ensure Waste Minimisation		
	Goal 3: Grow the contribution of the waste sector to the green economy	Goal 3: Effective Solid Waste Service Delivery		
Goal 6: Strengthen the waste regulatory system/framework	Goal 8: Establish effective compliance with and enforcement of the Waste Act	Goal 5: Improve Regulatory Compliance	To improve and conserve the district's natural environment	SO1: 1.1.2 To ensure effective environmental pollution control via the identification, evaluation, monitoring and prevention of the pollution of soil, water and air, in as far as it relates to health; and to institute remedial action accordance with Regulation 37 of the CWDM Municipal Health By-Law.
	Goal 2: Ensure the effective and efficient delivery of waste services			
	Goal 7: Provide measures to remediate contaminated land			
Goal 7: Ensure the safe and integrated management of hazardous waste	Goal 7: Provide measures to remediate contaminated land	Goal 6: Ensure the safe and integrated management of hazardous waste	To improve and conserve the district's natural environment	SO1: 1.1.2 To ensure effective environmental pollution control via the identification, evaluation, monitoring and prevention of the pollution of soil, water and air, in as far as it relates to health; and to institute remedial action accordance with Regulation 37 of the CWDM Municipal Health By-Law.
		Goal 5: Improve Regulatory Compliance		
		Goal 1: Public Awareness & Education		
Goal 8: Facilitate access to funds to implement Integrated Waste Management	Goal 6: Ensure sound budgeting and financial management for waste services	Goal 7: Ensure sound budgeting for integrated waste management	To foster the inclusion of an economic perspective in land use management and land development	SO3: To provide an effective and efficient financial and strategic support services to the Cape Winelands District Municipality

2. BACKGROUND POLICY AND LEGISLATION

The fragmented and uncoordinated way pollution and waste has been dealt with, as well as insufficient resources to implement and monitor existing legislation, contributes largely to the unacceptably high levels of pollution and waste in South Africa. Through the promulgation and implementation of various pieces of policies, legislation, standards and guidelines as well as the implementation of co-operative governance as envisaged in the Constitution this situation will be improved. The current fragmentation, duplication and lack of co-ordination will be eliminated.

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

2.1 CONSTITUTION OF THE REPUBLIC OF SOUTH AFRICA

In 1996 the new Constitution created the right to the environment as a fundamental right. This fundamental right to the environment ensures everyone's right to an environment that is not harmful to their health or well-being. South African law, the environment and all South Africans have a constitutional right to have the environment protected for present and future generations.

This means that there must be reasonable legal and other measures to prevent ecological degradation, promote conservation and secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.

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

- **Section 24(a)**

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

- **Section 24(b)**

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

- **Section 25**

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

- **Section 32**

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

- **Section 38**

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

- **Section 41**

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

"The objects of local government are:

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

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

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

Sovereign

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

The Bill of Rights

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

"Everyone has the right

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

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

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

2.2 NATIONAL ENVIRONMENTAL MANAGEMENT ACT

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

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

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

NEMA contains the following environmental principles:

- Environmental management must put people and their needs at the forefront, and must serve their interest fairly.

- Development must be socially, environmentally and economically sustainable. This means that the following things must be considered before there is development:

  a) Disturbance of ecosystems and loss of biodiversity
  b) Pollution and degradation of the environment
  c) Disturbance of landscapes and sites where the nation's cultural heritage is found
  d) Non-renewable resources must be used responsibly
  e) The precautionary principle must be applied
  f) Negative impacts must be anticipated and prevented and if they can't be prevented they must be minimized or remedied.

- Environmental management must be integrated. The best practical environmental option must be pursued.
- Environmental justice must be pursued so that there is not unfair discrimination in the way that negative environmental impacts are distributed
- There should be equitable access to environmental resources, benefits and services to meet basic human needs. Special measures may be taken to ensure access for persons disadvantaged by unfair discrimination.
- Responsibility for environmental health and safety of any policy, programme or project must continue throughout the life cycle of a project
- Public participation in environmental decision-making must be promoted. The participation of vulnerable and disadvantaged groups must be ensured
- Decisions must take into account the interests, needs and values of all interested and affected parties. This includes recognizing all forms of knowledge including traditional and ordinary knowledge
- Community well-being and empowerment must be promoted through environmental education
- The social, economic and environmental impacts of the activities must be assessed
- The rights of workers to refuse to do work that is harmful to human health or the environment and to be informed of dangers must be respected
- Decisions must be taken in an open and transparent manner and access to information provided in accordance with the law
- There must be inter government co-ordination and harmonization of policies and laws
- Actual or potential conflicts of interest between organs of state must be resolved through conflict resolution procedures
- Global and international responsibilities relating to the environment must be discharged in the national interest
- The environment is held in a public trust for the people and the use of environmental resources must serve the public interest, and be protected as the people's common heritage
- The polluter must pay for the costs of remedying pollution, environmental degradation and adverse health impacts
- The vital role of youth and women in environmental management must be recognized and their full participation promoted
- Sensitive or stressed ecosystems must receive special attention in planning which might affect them especially when they are subject to significant resource usage and development pressure.

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

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

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

The NEMA Environmental Impact Assessment Regulations

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

The 2006 Regulations were repealed by the June 2010 EIA Regulations (GN R543). The purpose of the Regulations is to regulate the procedure and criteria as contemplated in Chapter 5 of the Act relating to the submission, processing and consideration of, and decision on, applications for environmental authorisations for the commencement of activities in order to avoid detrimental impacts on the environment, or where it can con be avoided, ensure mitigation and management of impacts to acceptable levels, and to optimise positive environmental impacts, and for matters pertaining thereto.

2.3 NATIONAL ENVIRONMENTAL MANAGEMENT ACT: FEES FOR CONSIDERATION AND PROCESSING OF APPLICATIONS FOR ENVIRONMENTAL AUTHORISATIONS AND AMENDMENTS THERETO (GOVERNMENT NOTICE 28 FEBRUARY 2014)

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

Application	Fee
Application for an environmental authorisation for which basic assessment is required in terms of the Environmental Impact Assessment Regulations	R2000.00
Application for an environmental authorisation, for which a S&EIR is required in terms of the Environmental Impact Assessment Regulations	R10000.00
Application dealt with in terms of section 24L of the Act	(a) 100% of the most expensive application, namely, R10 000 (Ten Thousand Rand) if S&EIR is triggered and R2000 (Two Thousand Rand) if the basic assessment is triggered;
	(b) 50% of the other application, namely, R5000 (Five Thousand Rand) if the S&EIR is triggered or R1000 (One Thousand Rand) if the basic assessment is triggered)
Amendment of an environmental authorisation on application by the holder of an environmental authorisation.	R2000.00

2.4 ENVIRONMENT CONSERVATION ACT, 1989 (ACT NO. 73 OF 1989)

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

The Environment Conservation Act, 1989 Waste Tyre Regulations (2009) which were published on 13 February 2009 came into effect on 30 June 2009, and makes provision for effective and integrated management of waste tyres in the country. It provides regulations for tyre producers, tyre dealers and waste tyre stockpile owners.

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

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

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

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

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

Under this Act a Municipality must:

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

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

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

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

2.6 THE WESTERN CAPE HEALTH CARE WASTE MANAGEMENT AMENDMENT ACT, 2007: WESTERN CAPE HEALTH CARE RISK WASTE MANAGEMENT REGULATIONS, 2013

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

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

All addressed forms in the regulations are given in the Annexures:
Annexure 1: Minimum Requirements for health care risk waste containers
Annexure 2: Minimum Requirements for storage of health care risk waste in terms of regulation 3
Annexure 3: Form 1, Minimum Requirements for a tracking document
Annexure 4: Minimum Requirements for information to be contained in a Health Care Waste Management Plan
Annexure 5: Form 2.1, IPWIS registration form for health care risk waste generators, transporters, treaters and disposers

Annexure 6: Form 2.2, Registration Certificate; Form 3.1, Monthly record keeping form for generators; Form 3.2 Monthly record keeping form for transporters, treaters and disposers
Annexure 7: Form 4.1, Compliance Notice; Form 4.2, Compliance certificate

2.7 NATIONAL WATER ACT (ACT NO. 36 OF 1998)

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

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

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

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

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

2.8 NATIONAL ENVIRONMENT MANAGEMENT: AIR QUALITY ACT 2004 (ACT NO. 39 OF 2004)

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

The object of this Act is:

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

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

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

2.9 NATIONAL WASTE MANAGEMENT STRATEGY

The National Waste Management Strategy (2011) presents Government's strategy for integrated waste management for South Africa and is a legislative requirement of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) The purpose of the Strategy is to achieve the objectives of the Waste Act.

The National Waste Management Strategy presents a long-term plan (up to the year 2016) for addressing key issues, needs and problems experienced with waste management in South Africa. The strategy gives effect to the Bill of Rights, Constitution of South Africa, Act 107 of 1998, on the basis of which the people of South Africa have the right to an environment that is not detrimental to their health. Furthermore, the strategy translates into action Government's policy on waste as set out in the Draft White Paper on Integrated Pollution and Waste Management for South Africa (published in 1998).

The objective of integrated pollution and waste management is to move away from fragmented and uncoordinated waste management to integrated waste management. Such a holistic and integrated management approach extends over the entire waste cycle from cradle to grave, and covers the prevention, minimisation, generation, collection, transportation, treatment and final disposal of waste. Integrated waste management thus represents a paradigm shift in South Africa's approach to waste management, by moving away from waste management through impact management and remediation and establishing instead a waste management system which focuses on waste prevention and waste minimisation.

The Strategy is built around a framework of eight goals, as listed below, along with specific goals that must be reached by 2016. All listed targets must be reached by 2016:

Goal 1: Promote waste minimisation, reuse, recycling and recovery of waste.
- 25% of recyclables diverted from landfill sites for re-use, recycling or recovery.
- All Metropolitan Municipalities, secondary cities and large towns have initiated separation at source programmes.

Goal 2: Ensure the effective and efficient delivery of waste services.
- 95% of urban households and 75% of rural households have access to adequate levels of waste collection services.
- 80% of waste disposal sites have permits.

Goal 3: Grow the contribution of the waste sector to the green economy.
- 69 000 new jobs created in the waste sector.

Goal 4: Ensure that people are aware of the impact of waste on their health, well-being and the environment.
- 80% of municipalities running local awareness campaigns.
- 80% of schools implementing waste awareness programmes.

Goal 5: Achieve integrated waste management planning.
- All Municipalities have integrated their IWMPs with their IDPs and have met the targets set in the IWMPs.
- All waste management facilities required to report to SAWIS have waste quantification systems that report information to WIS.

Goal 6: Ensure sound budgeting and financial management for waste services.
- All municipalities that provide waste services have conducted full-cost accounting for waste services and have implemented cost reflective tariffs.

Goal 7: Provide measures to remediate contaminated land.
- Assessment complete for 80% of sites reported to the contaminated land register.
- Remediation plans approved for 50% of confirmed contaminated sites.

Goal 8: Establish effective compliance with and enforcement of the Waste Act.
- 50% increase in the number of successful enforcement actions against non-compliant activities.
- 800 EMIs appointed in the three spheres of government to enforce the Waste Act.

The strategy aims to reduce both the generation and the environmental impact of waste. It presents a plan for ensuring that the socio-economic development of South Africa, the health of its people and the quality of its environmental resources are no longer adversely affected by uncontrolled and uncoordinated waste management. It establishes a waste management system that concentrates on avoiding, preventing and minimising waste and makes provision for waste management services for all by extending an acceptable standard of waste collection, as well as transportation, treatment and disposal services to all communities.

While the long-term objective of the strategy is waste prevention and minimisation, a number of remedial actions such as improved waste collection and waste treatment are required in the shorter term due to prevailing inadequate waste management practices.

The Strategy is an institutionally inclusive strategy because its achievement relies on participation by numerous role-players in the public sector, private sector and civil society.

To implement the Waste Act, government must:
- Draft legislation, regulations, standards and Integrated Waste Management Plans.
- Regulate waste management activities through licenses and enforce their conditions.
- Implement the South African Waste Information System (SAWIS)
- Coordinate waste management activities using a system of Waste Management Officers.
- Give effect to multilateral agreements and ensure proper import and export controls.
- Progressively expand access to at least a basic level of waste services and plan for future needs.
- Facilitate the establishment of a national recycling infrastructure.
- Provide the framework for the remediation of contaminated land.
- Work in partnership with the private sector and civil society.

2.10 WHITE PAPER ON EDUCATION AND TRAINING (1995)

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

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

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

2.11 THE MUNICIPAL SYSTEMS ACT (ACT 32 OF 2000)

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

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

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

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

2.12 THE MUNICIPAL STRUCTURES ACT, 1998 (ACT NO. 117 OF 1998)

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

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

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

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

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

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

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

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

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

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

Municipalities must in terms of their by-laws:

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

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

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

Municipalities must also in terms of the Act:

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

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

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

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

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

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

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

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

2.14 NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT, 2008 (ACT NO. 59 OF 2008): LIST OF WASTE MANAGEMENT ACTIVITIES THAT HAS, OR IS LIKELY TO HAVE A DETRIMENTAL EFFECT ON THE ENVIRONMENT. GOVERNMENT NOTICE 37083, 29 NOVEMBER 2013

This notice replaces the 3 July 2009 list of activities that trigger a waste license requirement and because of its impact on financial budgets and budget scheduling, all the activities, quoted verbatim (except where grammatically corrected) from the notice, are listed below:

"GENERAL

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

CATEGORY A

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

Storage of waste

(1) The storage of general waste in lagoons.

Recycling or recovery of waste

(2) The sorting, shredding, grinding, crushing, screening or baling of general waste at a facility that has an operational area in excess of 1000m^2 .

(3) The recycling of general waste at a facility that has an operation area in excess of 500m^2, excluding recycling that takes place as an integral part of an internal manufacturing process within the same premises.

(4) The recycling of hazardous waste in excess of 500kg but less than 1 tonne per day calculated as a monthly average, excluding recycling that takes place as an integral part of an internal manufacturing process within the same premises.

(5) The recovery of waste including the refining, utilisation, or co-processing of the waste in excess of 10 tonnes but less than 100 tonnes of general waste per day or in excess of 500kg but less than 1 tonne of hazardous waste per day, excluding recovery that takes place as an integral part of an internal manufacturing process with in the same premises.

Treatment of waste

(6) The treatment of general waste using any form of treatment at a facility that has the capacity to process in excess of 10 tonnes but less than 100 tonnes.

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

(8) The remediation of contaminated land.

Disposal of waste

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

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

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

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

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

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

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

CATEGORY B

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

Storage of hazardous waste

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

Reuse, recycling and recovery of waste

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

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

Treatment of waste

(4) The treatment of hazardous waste in excess of 1 tonne per day calculated as a monthly average; using any form of treatment excluding the treatment of effluent, wastewater or sewage.

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

(6) The treatment of general waste in excess of 100 tonnes per day calculated as a monthly average, using any form of treatment.

Disposal of waste on land

(7) The disposal of any quantity of hazardous waste to land.

(8) The disposal of general waste to land covering an area in excess of 200m^2 and with a total capacity exceeding 25 000 tonnes.

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

Construction of facilities and associated structures and infrastructure

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

CATEGORY C

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

(a) Norms and Standards for Storage of Waste, 2013 or

(b) Standards for Extraction, Flaring or recovery of Landfill Gas, 2013; or

(c) Standards for Scrapping or Recovery of Motor Vehicles, 2013.

Storage of waste

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

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

(3) The storage of waste tyres in a storage area exceeding 500m^2.

Recycling or recovery of waste

(4) The scrapping or recovery of motor vehicles at a facility that has an operational area in excess of 500m^2.

(5) The extraction, recovery or flaring of landfill gas."

2.15 NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT, 2008 (ACT NO. 59 OF 2008): NATIONAL DOMESTIC WASTE COLLECTION STANDARDS, GOVERNMENT NOTICE 33935, 21 JANUARY 2011

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

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

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

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

Existing Occupational Health and Safety legislation must be adhered to and the general health of waste collection workers must be addressed by ensuring they receive:
(i) regular medical check-ups to ensure their health and well-being;
(ii) appropriate personal protective equipment e.g. gloves, masks, overalls and raincoats, gumboots; and
(iii) on-going training on health and safety issues.

The role of the Waste Management Officer regarding waste awareness and the handling of complaints are prescribed. The municipality must create awareness amongst households about the following:
(i) the types of waste collection services provided;
(ii) separation at source - the removal of recyclables and re-usable waste from the general household waste;
(iii) the potential of composting of some of the household waste and the benefit of such to the household;
(iv) the unacceptability of illegal dumping and littering;
(v) measures to be taken against individuals that litter and dump waste illegally;
(vi) the cost of cleaning up illegal dumping and littering, and the implications on household waste collection rates; and
(vii) the advantages of reporting illegal dumping activities.

The municipality must provide clear guidelines to households about the following:
(i) the different types of waste generated in households;
(ij) separation of non-recyclable and non-reusable household waste from compostable waste and recyclable waste;
(iii) appropriate containers for each type of waste;
(iv) removal schedules for each type of waste; and
(v) what to do with waste other than those waste forming part of the regular schedule of waste collection services.

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

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

2.16 NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT, 2008 (ACT NO. 59 OF 2008): NATIONAL WASTE INFORMATION REGULATIONS, GOVERNMENT NOTICE 35583, 13 AUGUST 2012

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

The Regulations apply uniformly to all persons conducting an activity listed in Annexure 1 of the Regulations. A person who conducts an activity in a province that has an established waste information system in terms of section 62 of the Act and collects the minimum information required by the Regulations must submit the information to the provincial waste information system.

Where a province has developed waste information regulations that are compatible with the Regulations, a person who conducts an activity contemplated in Annexure 1 to the Regulations must comply with the provincial waste information regulations.

2.17 NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT, 2008 (ACT NO. 59 OF 2008): WASTE CLASSIFICATION AND MANAGEMENT REGULATIONS, GOVERNMENT NOTICE 36784, 23 AUGUST 2013

The purpose of the Regulations is to regulate the classification and management of waste in a manner which supports and implements the provisions of the Act; to establish a mechanism and procedure for the listing of waste management activities that do not require a Waste Management License; to prescribe requirements for the disposal of waste to landfill; to prescribe requirements and timeframes for the management of certain wastes and to prescribe general duties of waste generators, transporters and managers.

Chapter 2 of the Notice covers Waste Classification and Safety Data Sheets. Chapter 3 covers Waste Management in General, Waste Treatment and Waste Disposal to Landfill. Chapter 4 covers Waste Management Activities that do not require a Waste Management License. Chapter 5 covers the Record Keeping and Waste Manifest System. Chapter 6 covers General Matters which includes Implementation and Transitional Provisions and Offences and Penalties.

Chapter 7 contains the following Annexures:
Annexure 1: Wastes that do not require Classification or Assessment
Annexure 2: Waste Manifest System Information Requirements

2.18 NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT, 2008 (ACT NO. 59 OF 2008): NATIONAL NORMS AND STANDARDS FOR THE ASSESSMENT OF WASTE FOR LANDFILL DISPOSAL, GOVERNMENT NOTICE 36784, 23 AUGUST 2013

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

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

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

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

2.19 NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT, 2008 (ACT NO. 59 OF 2008): NATIONAL NORMS AND STANDARDS FOR DISPOSAL OF WASTE TO LANDFILL, GOVERNMENT GAZETTE NO 36784, 23 AUGUST 2013

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

Chapter 2 describes and illustrates the Landfill Classification and corresponding minimum engineering design requirements for the Containment Barriers. These are for Class A to Class D landfills. The requirements that are to be included in an application for a waste management license are stipulated.

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

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

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

Waste listed in section 2(a) of Annexure 1 to the Regulations must be disposed as follows:

Listed Waste	Landfill Disposal Requirements
Domestic waste. Business waste not containing hazardous waste or hazardous chemicals. Non-infectious animal carcasses. Garden waste.	Disposed at Class B landfill or G:L:B+ landfill as specified
Post-consumer packaging. Waste tyres.	Disposed at Class C landfill or G:L:B+ landfill as specified
Building and demolition waste not containing hazardous waste or hazardous chemicals. Excavated earth material not containing hazardous waste or hazardous chemicals.	Disposed at Class D landfill or G:L:B- landfill as specified

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

Listed Waste	Landfill Disposal Requirements
Asbestos waste; Expired, spoilt or unstable hazardous products; PCBs; General waste, excluding domestic waste, which contains hazardous waste or hazardous chemicals; Mixed, hazardous chemical wastes from analytical labs and labs from academic institutions in containers less than 100 litres.	Disposed at Class A landfill or H:h/H:H landfill as specified

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

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

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

2.20 NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT, 2008 (ACT NO. 59 OF 2008): FEE STRUCTURE FOR CONSIDERATION AND PROCESSING OF APPLICATIONS FOR WASTE MANAGEMENT LICENSES, TRANSFER AND RENEWAL THEREOF, GOVERNMENT GAZETTE NO 37383, 28 FEBRUARY 2014

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

Application	Fee
Application for a waste management license for which basic assessment is required in terms of the Act.	R2000.00
Application for a waste management license for which S&EIR is required in terms of the Act.	R10000.00
Application for a transfer of a waste management license in terms of section 52(2) or for the renewal of a waste management license in terms of section 55(2) of the Act.	R2000.00

2.21 NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT, 2008 (ACT NO. 59 OF 2008): NATIONAL NORMS AND STANDARDS FOR THE EXTRACTION FLARING OR RECOVERY OF LANDFILL GAS, GOVERNMENT GAZETTE NO 37086, 29 NOVEMBER 2013

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

2.22 NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT, 2008 (ACT NO. 59 OF 2008): NATIONAL NORMS AND STANDARDS FOR THE SCRAPPING OR RECOVERY OF MOTOR VEHICLES, GOVERNMENT GAZETTE NO 37087, 29 NOVEMBER 2013

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

2.23 NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT, 2008 (ACT NO. 59 OF 2008): NATIONAL NORMS AND STANDARDS FOR THE STORAGE OF WASTE, GOVERNMENT GAZETTE NO 37088, 29 NOVEMBER 2013

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

2.24 NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT, 2008 (ACT NO. 59 OF 2008): NATIONAL NORMS AND STANDARDS FOR ORGANIC WASTE COMPOSTING, GOVERNMENT GAZETTE NO 37300, 7 FEBRUARY 2014

These Norms and Standards is applicable to organic waste composting facilities that have the capacity to process in excess of 10 tonnes but less than 100 tonnes of compostable organic waste per day and describes how such a facility must be designed, operated, monitored and decommissioned.

2.25 NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT, 2008 (ACT NO. 59 OF 2008): NATIONAL NORMS AND STANDARDS FOR THE REMEDIATION OF CONTAMINATED LAND AND SOIL QUALITY, GOVERNMENT GAZETTE NO 37603, 2 MAY 2014

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

2.26 NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT, 2008 (ACT NO. 59 OF 2008): LIST OF WASTE MANAGEMENT ACTIVITIES THAT HAS, OR IS LIKELY TO HAVE A DETRIMENTAL EFFECT ON THE ENVIRONMENT. GOVERNMENT NOTICE 37604, 2 MAY 2014

The Waste Management Activities List under paragraph 2.15 above has been amended by the deletion of Category B activity 3 (8).

2.27 NATIONAL POLICY FOR THE PROVISION OF BASIC REFUSE REMOVAL SERVICES TO INDIGENT HOUSEHOLDS. GOVERNMENT NOTICE 34385, 22 JUNE 2011

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

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

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

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

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

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

2.28 WHITE PAPER: POLICY ON POLLUTION PREVENTION, WASTE MINIMISATION, IMPACT MANAGEMENT AND REMEDIATION (MARCH 2000)

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

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

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

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

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

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

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

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

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

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

The role of Local Government

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

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

2.29 PLANNING DOCUMENTS

The Provincial Spatial Development Framework (November 2005)

The PSDF states that there is a concern that a number of waste landfill sites are not properly managed. In addition to the challenges of managing increasing waste volumes and decreasing land available for waste disposal, the Western Cape, along with other Provinces, has to deal with waste management problems caused by inequitable development and inadequate service delivery. Waste issues are often closely associated with poverty, environmental health and social justice issues. The following Policies have particular reference:

RC32 All municipalities shall follow an integrated hierarchical approach to waste management consisting of the following, avoidance/reduce, reuse, recycle, composting, treatment and final disposal. The Waste Management System shall consist of a collection service from the source, (domestic, office or factory) transfer stations and waste disposal sites. (M)

RC33 Waste separation at source shall be mandatory in all domestic households and institutions and businesses including high density and multi-storey buildings from a date to be announced. Initially only organic (vegetable and plant matter) and inorganic (usually dry, cardboard, glass, plastics, paper, builders' rubble) waste shall be separated. (M)

RC34 Material Recovery Facilities shall be established at all Transfer Stations. (M)

RC35 Engage with the raw material and packaging industries and reach agreement to ensure demand for recycled products. (G)

RC36 Every urban settlement should have a Transfer Station within a maximum of 5kms from the town centre, inside the Urban Edge. These Transfer Stations shall be properly managed according to best practice so as to minimise nuisance to surrounding neighbours. They should also be open after hours and on the weekends and their locations shall be well publicised so as to ensure that the community uses them. Furthermore, charges should not be levied on loads brought to transfer stations. Micro enterprises wanting to process waste and trade second hand materials on site should be encouraged. (G)

RC37 Every municipality shall have a Waste Disposal facility site located and operated according to DWAF's minimum requirements that will service the Transfer stations in the urban settlements in that municipality. These sites may or may not be located within the Urban Edge of urban settlements. The main criteria for their location will be to meet satisfactory environmental and transport requirements. (M)

It is the intention of the Western Cape Government to make relevant policies contained in the WCPSDF mandatory in terms of legislation and to include these policies in appropriate legislation. These policies are indicated with a 'M' next to the applicable policy in Chapter 8 of this report. The balance of the policies is indicated with a 'G' to indicate that they are guiding principles. The distinction should be understood as follows:

Mandatory (M) measures refer to policies that are regarded as being of sufficient social, economic or environmental importance as to demand that every effort possible should be made to effectively implement that policy.

Guidelines (G) refer to policies that are intended as general developmental goals and whose detailed implementation may vary due to place specific conditions and therefore requiring a certain amount of flexibility in their application.

NOTE THAT THIS SECTION MUST BE UPDATED WHEN THE CURRENT DRAFT PROVINCIAL SPATIAL DEVELOPMENT FRAMEWORK (OCT 2013) IS FINALISED

2.30 INTERNATIONAL TREATIES

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

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

2.30.1 The Basel Convention

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

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

DEA is considering accession to the amendments to the Basel Convention that ban the import and export of hazardous wastes. DEA is also currently developing a policy on imports and exports of waste that will address this.
DEA and DTI are jointly addressing the import and export control aspects of the Basel Convention, together with the chemical conventions. Control will happen through ITAC permits and SARS tariff codes.

2.30.2 The Montreal Protocol

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

will provide for the phasing out of specified substances and their safe disposal. These will be gazetted for public comment in 2012.

2.30.3 The Rotterdam Convention

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

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

2.30.4 The Stockholm Convention

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

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

A National Implementation Plan has been developed and it will be reviewed in light of the Waste Act and finalised in 2012.

Furthermore, a study has been initiated to investigate the extent of manufacture, use, import and export of new POPs listed in this convention. The study will determine if South Africa should ratify the newly added POPs. This document will be finalised in 2012.

2.31 MUNICIPAL BY-LAWS

Breede Valley:

In terms of Section 13 of the Local Government Systems Act 2000, (Act 32 of 2000) Breede Valley Municipality made a solid waste by-law dealing with the containment and disposal of solid waste. The by-law was published in the Provincial Gazette Extraordinary 6560 of Wednesday, 22 October 2008.

This by-law needs to be updated to an integrated waste management by-law. This has been recommended in the Breede Valley 2015 IWMP implementation.

Drakenstein:

The Drakenstein Municipal By-laws relating to solid waste management were reviewed since the previous IWMP generation and replaced with their Integrated Waste Management By-law. The Drakenstein Municipality enacted their Integrated Waste Management By-law which was published in the Provincial Gazette Western Cape: 7184 on 4 October 2013.

No by-law revision for Drakenstein is recommended or necessary.

Langeberg:

The Langeberg Municipality's By-laws for the Prevention and Suppression of Nuisances and the Removal of Refuse and Control of Disposal Site was published in the Provincial Gazette Western Cape on 28 May 2010. It is recommended that the Langeberg develop and publish integrated solid waste by-laws.

Stellenbosch:

The Stellenbosch Municipality needs to compile and publish integrated waste management by-laws.

Witzenberg:

It is recommended that the current solid waste by-law of Witzenberg Municipality should be revised to integrated waste management by-laws.

CWDM:

The Cape Winelands District Municipality does not manage waste collection or disposal; therefore do not have Solid Waste By-laws. However, Chapter 8 of the Municipal Health By-laws of the Cape Winelands District Municipality published in the Government Gazette Extraordinary on Monday 15 February 2010 relates to Waste Management and reads as follows:

*"**Part 1: General provisions regarding recovery, storage and disposal of waste***

25. Recovery, storage and disposal of waste

(1) Waste must be recovered, stored, transported and disposed of –
(a) without endangering human health
(b) without the use of processes or methods likely to harm or pollute the environment; and
(c) in a manner that does not create a health nuisance.

(2) A person who contravenes subsection (1) commits an offence.

Part 2: Hazardous Waste

26. Applicable legislation

The Municipality, taking cognizance of the provisions of the Environment Conservation Act, 1989 (Act No. 73 of 1989) the Hazardous Substances Act, 1973 (Act 15 of 1973), the National Health Act, 61 of 2003, and the regulations made under these Acts, adopts the provisions in this Part.

27. Storage of hazardous waste

(1) An empty container in which hazardous waste such as, but not limited to, pesticides was stored is to be treated as hazardous waste, and –

(a) must be stored in such a manner that –
(i) no pollution of the environment occurs at any time
(ii) no health nuisance is created at any time

(b) while being stored on site, must be clearly marked or labelled with the words "Hazardous Waste";

(c) the owner or occupier of the land must fence off the storage area to prevent unauthorised access; and

(d) shall be dealt with as Class 6 waste as described in the Minimum Requirements for the Handling, Classification and Disposal of Hazardous Waste (Second Edition, 1998) as published by the Department of Water Affairs and Forestry and as amended from time to time.

(2) A person who contravenes a provision of subsection (1)(a) to (d) commits an offence."

It is recommended that the District Municipality oversees the development and revision of the local Municipalities' solid waste by-laws (if outdated) into integrated solid waste management by-laws.

3. EXISTING WASTE MANAGEMENT IN CAPE WINELANDS DISTRICT MUNICIPALITY

3.1 AWARENESS AND EDUCATION

The lack of public awareness of the gravity of the problem of sustainable waste management has a significant impact on the effectiveness of the management of waste.

Our poor history of waste management in South Africa means that we pay little attention to our lifestyle insofar as how it affects the environment. However, when an environmental problem is noted and the public are made aware of the need for action, there is no stronger lobby. This has been evident with the Eskom power crisis in recent years. This situation has caused that people in South Africa have looked to alternative sources of electricity from small- to large scale. It is now an almost every-day sight to see people applying electricity saving practices at home. For example, solar panels are frequently seen on roofs (and these panels are becoming more efficient) and hot water geysers are fitted with timers so as not to consume electricity throughout the whole day or are simply switched on and off as needed. Creating awareness of the issue of sustainable waste management may have a similar outcome. With landfill airspace becoming more and more restricted, alternative options minimising or avoiding the need for disposal becomes necessary.

The successful implementation of the Cape Winelands District IWMP will require that all persons within the Municipal boundaries are aware of waste issues as an integral part of the creation of a healthy environment. They should be empowered to play their specific role in the development and implementation of the waste management initiatives.

Public participation is closely linked with education and public awareness. The significant difference between awareness programmes and public participation is that public awareness focuses on disseminating information, whereas public participation aims at obtaining participation, comment, input and feedback from the public.

3.1.1 Public Awareness and Education in the Cape Winelands District Municipality

Apart from each local Municipality's awareness and education initiatives, the following table illustrates the District's planned projects which will create awareness and educate the public about environmental health. Although some of the projects do not address education directly, the planting of trees and river rehabilitation for example, will create awareness and instil environmental consciousness with the public.

Project name	Budget	Unit of measurement	Baseline	Target 2014/2015	Target 2015/2016	Target 2016/2017
Environmental Health Education	R400 000.00	No. of theatre performances	100	80	80	80
Greening Project	R250 000.00	No. of trees planted	1500	1500	1500	1500
River Rehabilitation	R350 000.00	Hectares cleared	New	50	50	50
EPWP Invasive Alien Management Programme	R1 030 000.00	No. of hectares cleared	600	300	300	300

3.2 WASTE QUANTITIES AND TYPES

3.2.1 Methodology for General Waste Survey

The waste quantities in the Cape Winelands District were determined by using weighbridge data (where available) and/or using the latest population statistics with waste generation rates per capita. These factors were applied to the estimated future population figures of each local Municipality to estimate the future waste generation quantities.

3.2.2 Volumes of General Waste generated

Weighbridge data from the Drakenstein, Langeberg and Stellenbosch Municipalities have been used in the waste generation calculations. The Breede Valley and Witzenberg Municipalities will install weighbridges with future developments. Their current waste totals were determined from the population statistics.

The waste generation and quantities in the Cape Winelands District Municipality can then be shown as in **Table 3-1.**

Table 3-1: Waste tonnages calculated for the Cape Winelands District

Municipality	Population (2015)	Waste Gen in Ton/year (2015)	Population (2016)	Waste Gen in Ton/year (2016)	Population (2017)	Waste Gen in Ton/year (2017)	Population (2018)	Waste Gen in Ton/year (2018)	Population (2019)	Waste Gen in Ton/year (2019)	Average Waste Generation Factor for Area in kg/p/d
Breede Valley	175751	42928	178054	43490	180386	44060	182749	44637	185143	45222	0.67
Drakenstein	237150	83950	243221	86100	249448	88304	255834	90564	262383	92883	0.97
Langeberg	73469	33022	74784	33613	76123	34215	77485	34827	78872	35451	1.23
Stellenbosch	173313	115223	178010	118346	182834	121553	187789	124847	192878	128230	1.82
Witzenberg	128688	42516	132085	43638	135572	44790	139151	45973	142825	47186	0.91
CWDM	**788372**	**317639**	**806154**	**325187**	**824363**	**332922**	**843009**	**340849**	**862102**	**348972**	**1.10**

3.2.3 Recoverable Material Volumes

The Department of Environmental Affairs and Development Planning (DEA&DP) commissioned a study in 2007 to determine the characterisation of the disposed waste at various landfills in the Cape Winelands District. From that study, the anticipated average waste composition of each Municipality in the Cape Winelands District can be derived to include the following recyclable materials (by mass):

Table 3-2: Recyclables in waste stream

Municipality	Paper/Card (t/a)	Plastics (t/a)	Glass (t/a)	Metal (t/a)
Breede Valley	36%	9%	9%	6%
Drakenstein	34%	22%	11%	5%
Langeberg	33%	16%	8%	6%
Stellenbosch	16%	15%	8%	2%
Witzenberg	26%	27%	6%	7%

Note that the Stellenbosch Municipality has conducted a waste characterisation study in 2012 and the results are shown in the table above. It is therefore recommended that the other Municipalities in the District conduct waste characterisation studies, based on the method below, or similar to the Stellenbosch study.

The Sustainable Cities Institute (United States) and California Department of Resources Recycling and Recovery recommend that the ASTM standards are followed when collecting samples for waste characterisation to be statistically representative. Their proposed method was developed to obtain characterisation from the disposed waste stream. For Disposal Facility type sampling, which was the case in the above study, a minimum total of 30 samples of 90kg each for the residential sector or 40 samples of 90kg each for the non-residential sector should be used. Another requirement is that the samples to be taken are spread over at least two seasons.

To align a new waste characterisation study for each Municipality with the above guidelines, the following is recommended:

- 30 samples of 90kg each are to be sampled randomly at a disposal facility spread over the year.
- The following schedule is proposed to obtain representative samples from the waste stream: One sample per day, Monday to Saturday, for one week of every second month, starting in January as the first month and November as the last. This will amount to a total of 36 samples spread over all four seasons and every day of the week.
- The requirement for this exercise per disposal facility will then be 5 workers to take samples and categorise waste, employed for a total of 36 days throughout the year. They can be employed as part of the Extended Public Works Programme or the Youth Jobs in Waste where applicable. Working with an average of R120 per person per day, this totals R21,600.00. The team can be led by the Municipality's waste manager and also be trained by him or someone delegated by him. A total of R5,000.00 is estimated if a consultant then reworks the data and reports on the gathered data. This can also be done in-house to limit additional costs.

The 2007 characterisation report is still the best available representation of the Cape Winelands waste stream (with the exception of Stellenbosch). To conduct a waste characterisation study that meets the above statistical requirements will require data collected over an entire year. Until such a study is commissioned and completed, the existing report is used for the purposes of this IWMP.

From the waste composition as reflected in the 2007 report, it can be calculated that the total volume of recoverable materials that are theoretically available in the waste stream will be as indicated in Table 3-3. These characterisation percentages were applied to the waste stream of the permanent population.

Table 3-3: Quantities of Available Recoverable Materials

Municipality	Paper/Card (t/a)	Plastics (t/a)	Glass (t/a)	Metal (t/a)
Breede Valley	14995	3749	3749	2499
Drakenstein	26092	16883	8442	3837
Langeberg	10483	5082	2541	1906
Stellenbosch	17979	16856	8990	2247
Witzenberg	10707	11119	2471	2883
CWDM	80256	53688	26192	13372

The above theoretical figures give a total of approximately 173 509 tonnes per annum, which is 55% of the generated waste stream. It should be noted that this reflects the recyclable portion of the waste stream only as the mathematical representation. The full 58% cannot be seen as recoverable in the practical sense at this stage.

Due to the methods of collection, i.e. the collection of mixed un-separated household waste, a large amount of deterioration and contamination of potentially recoverable material takes place. Post-collection recovery (as is currently the norm in South Africa) implies that only a part of the above tonnages are available for recovery and recycling, due to contamination. For that reason separation at source is considered to be the preferred methodology to increase the volumes and value of recovered materials. Even with source separation some contamination still takes place, but less than mixed bag waste. The Municipalities in the Cape Winelands District implement source separation and are expanding on this service.

Although experience has shown that participation by the public is largely economy driven, the current trend is that separation at source, which implies that recoverable materials are separated by the home owner and "given" to the municipality (or Service Provider) for free, is mainly supported by the middle and higher income groups, whereas the low and very low income groups support buy-back centres or swop-shops where recoverable materials are bought/traded from the residents.

However, recently acquired data (measured quantities in Drakenstein Municipality over 5 years, Overstrand Municipality over 3 years and Swartland Municipality over 10 years) illustrates that the implementation of source separation only leads to a 1% increase in over-all recovered material volume. This small increase may be attributed to the fact that source separation was only implemented in a certain group of neighbourhoods and not throughout the whole of the area where the data was received. If one looks at the statistics per neighbourhood, the increase in material recovery is reportedly 15%. With these relatively small gains in recovery, the Municipality should evaluate the economic feasibility of implementing a source separation system. It is still the preferred collection method, but expensive to implement and would probably receive lower priority as opposed to alternative strategies and action plans that need to be executed by the Municipality in the upcoming years.

Recent statistics obtained from the Drakenstein Municipality show that participation rates are as following: The Middle income group participation rates vary between 12-25% and the High income group participation vary between 35-40%. The low and very low income groups participate at an average of 11-15%.

With the assumed strategy of source separation and "clean" Material Recovery Facilities where the source separated materials are sorted into its various groups and sub-groups, and assuming that middle and high income groups participate at a 45% average and low and very low income groups participate at a 15% average, it can be calculated that the current (2015) recovery volumes will be as indicated in **Table 3-4. Note that these quantities represent what can be expected if only the source separated portion of the waste stream is processed at a "clean" MRF.**

Table 3-4: Calculated Volumes of Recovery of Source Separated Materials

3.2	Participating Waste (t/a)	Paper/Card (t/a)	Plastics (t/a)	Glass (t/a)	Metal (t/a)
Breede Valley	15137	1144	82	599	91
Drakenstein	27047	1931	357	1309	135
Langeberg	18454	1279	177	650	111
Stellenbosch	39057	1312	352	1375	78
Witzenberg	14571	796	236	385	102
CWDM	**114265**	**6462**	**1203**	**4318**	**517**

Assumptions for Source Separation: *45% participation Mid & High Income groups*
15% participation Low & Very Low Income groups

Recovery % actual data from WastePlan: *21% recovery of available Paper and Cardboard*
6% recovery of available Plastics
44% recovery of available Glass
10% recovery of available Metals

3.2.3.1 Paper and Cardboard

Paper and Cardboard form the foundation for any recovery venture, due to the relative stable demand and numerous recycled products made from recovered paper.

Waste paper is transformed from one type to another during the recycling process. The supply and demand for waste paper, although stable, is cyclical in nature, and therefore marketing patterns have to be adapted accordingly.

Some of the factors that contribute to this cyclical demand for recovered paper are:

- difficulty for mills to carry large stock
- periodic mill shut-downs result in fluctuations in demand
- paper stock is considered perishable and thus hazardous to store
- space for storage of stock is limited and costly

Some materials produced with recycled paper pulp include: newspapers, packaging, bags, tissue and towels, corrugated boxes, shoe boxes and files, egg cartons and fruit packing layers.

If paper and cardboard products are clean and separated into different types, significantly higher prices are fetched for the recovered materials.

3.2.3.2 Glass

Glass recovery for recycling has had a very erratic history, due to only one recycler having a monopoly in the market. When the capacity of the kilns is full, the price used to drop dramatically due to an over-supply and no demand. Fortunately this situation has stabilized and a constant market for recovered glass is currently prevailing.

The separation of glass is very successful in separation at source activities since it is easy to identify by the home owners. Recent experience in the City of Cape Town has shown that most home owners whom participate in separation at source also wash their glass products before putting it in the recyclables bag.

3.2.3.3 Plastic

Several types of plastics are typically recycled, i.e. PET (transparent plastic bottles e.g. 2 litre cool drink bottles), HDPE (milk containers), LDPE and mixed plastics. Recycled PET is used in the manufacture of small moulded products, such as handles, sporting goods and furniture. Recycled HDPE is used for producing flowerpots, dustbins and a variety of other containers. Mixed plastics are normally used for the manufacture of outdoor furniture, pallets, and plastic timber.

The recent introduction of a levy on shopping bags has caused the amounts arriving at the landfill to reduce dramatically. Less plastic bags are disposed of, as they are recovered and are now manufactured of better quality and thicker plastic.

In order to recycle plastics using current traditional methodology, it has to be sorted into the various categories, and washed if contaminated by the other wastes. Alternative technologies are currently being evaluated (also in South Africa) that could eliminate the need for sorting of plastics.

3.2.3.4 Metal

Metals are the single most recoverable item in the waste stream. Very little degradation takes place during collection. It follows that a relatively small amount ends up in the waste stream, as all types of metal are removed for re-sale at various stages of the waste handling process.

One of the major components of ferrous wastes is the steel can (95% of all cans in the Metropolitan Areas). Non-ferrous metals such as Aluminium and Copper are very scarce in our waste streams, due to its extremely high salvaging value. These are usually removed at source.

3.2.3.5 Economic Sustainability of Waste Recovery

Although the recovery of materials of value from the waste stream for recycling or re-use is one of the basic operations in future integrated waste management, the question regarding its financial and economical sustainability should always be asked and answered.

Local experience over the last decade has shown that the South African recycling market, or rather the recycled product market, is very small and very susceptible to unforeseen activities, e.g. if one paper mill burns down, the effect on the waste paper market, and the prices, is significant. The South African "market" is simply too small to absorb these types of set-backs.

For this reason it is commendable that D:EA&DP had a study conducted into sustaining the local recycling industry.

But one must consider the economical sustainability and not only the financial sustainability. Economic sustainability considers the whole life-cycle cost and not only the rands and cents of a specific financial year and taking into consideration the avoided costs of airspace saving and also the cost on the environment for the resultant smaller utilisation of virgin resources. An interesting stipulation in the Waste Act, Section 17 (1) (a), is that one may not recover materials from waste if it costs more environmental resources to recover, than it would to dispose of that material – a good example of the total or life-cycle costing principle.

Prices for recovered materials vary greatly from city to city and province to province, from baled to unbaled, from dirty to clean and from material type. External factors also play a significant role such as the oil price, e.g. due to a previous low crude oil price of approximately US$43 per barrel had caused new plastic to be cheaper than recycled plastic – cheaper, not necessarily more economical. The result was that recyclers at that moment (January 2009) could not even give their LDPE plastic away where only a month before it was sold for R1500/tonne.

The above does not imply or insinuate that recovery should not be supported, but that both recovery AND the establishment of a recycled goods market should be supported. This is an aspect that cannot be addressed on a local authority level, but must be addressed on a Provincial and/or National level to optimise economy of scale.

Benefits must also be shared. For example, if a municipality saves airspace and transport cost due to recovery, a portion of that saving (avoided costs) should be passed on to the recovery effort to ensure that it is sustainable. If not, as was proven in SA previously, the recovery effort closes down and the municipality loses its avoided cost saving.

The January 2015 prices for recovered materials delivered in Cape Town are displayed in Table 3-5.

Table 3-5: January 2015 Prices of Recovered Materials in Waste Stream

MATERIAL	PRICE IN RAND/TON FOR BALED MATERIAL
Card board	1000
White Paper	1300
Newsprint	750
Glossy Paper	450
Mixed Paper	580
Metals (Mainly cans)	1300
Glass (All colours, Crushed)	400
Plastic (PET, No 1, White, Blue, Green)	3600
Plastic (PET, No 1, Brown)	1000
Plastic (HDPE, No 2)	3000
Plastic (LDPE, No 4)	2000
Plastic (Polypropylene, No 5)	2500
Plastic (Polystyrene, No 6)	1300

3.3 PRIORITY WASTE STREAMS

3.3.1 Tyres

In accordance with the recently published Norms and Standards of 23 August 2013, no whole waste tyres may be landfilled, effective from the publication date. Tyres that are landfilled, must be quartered. After five years from the publication date no tyres, quartered or otherwise, may be landfilled. The Municipality does not accept waste tyres at the disposal facilities.

3.3.2 Hazardous and Health Care Risk Waste

Little to no recent information on hazardous and health care waste generation, characterisation and disposed/treated quantities are available in the District. It is recommended that in a revision of local by-laws, provision is made for hazardous and health care risk waste generators and transporters to register at the local municipalities and report relevant quantities regularly. Pending the availability of funds, studies need to be conducted to identify hazardous waste generators in the industry in the District to ensure that these types of wastes are correctly handled.

3.4 WASTE AVOIDANCE

3.4.1 Waste Avoidance Background

The following diagram illustrates a simplified version of the well-known waste hierarchy with Avoidance being the most favourable and Disposal the least favourable:

Waste avoidance refers to a pro-active approach by industrial as well as domestic waste producers to minimize the volume of waste, by not creating the waste in the first place.

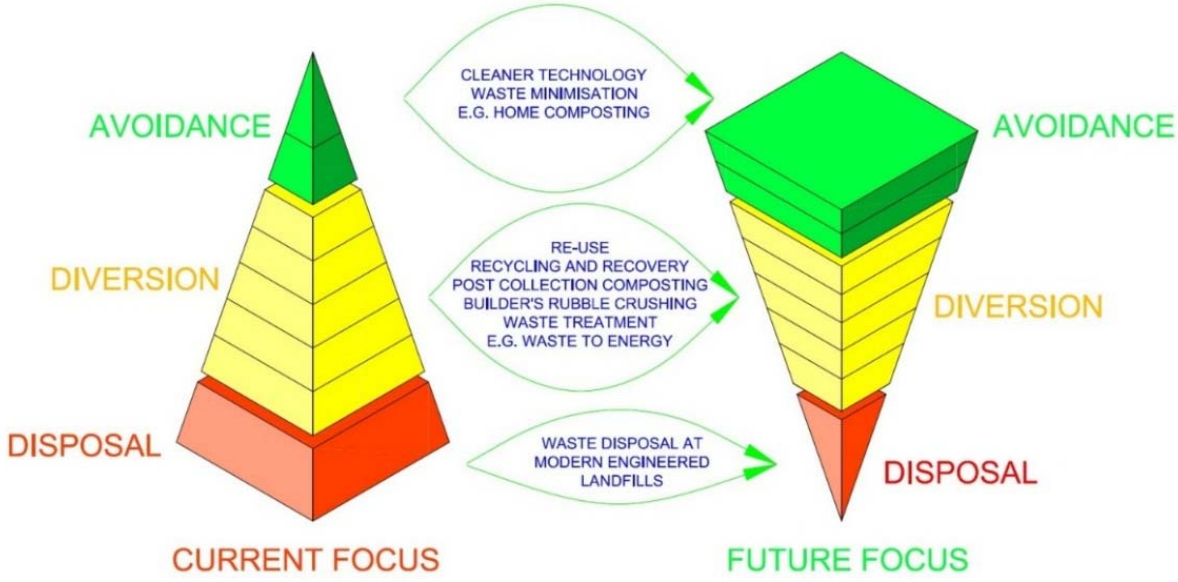


Figure 3-1: Waste Hierarchy

Waste avoidance is a “beginning of the pipe” action that can only work when people understand the full process depicted above.

At the moment waste minimisation through recovery (second tier) is considered a priority in South Africa. Once that can be successfully implemented and the people are educated in the importance of waste reduction, recovery at source (third tier) can be implemented with a reasonable chance of success.

It therefore follows that waste avoidance will be the ultimate and final step in this education process.

On a governmental / legislative level, the introduction of a levy on plastic shopping bags has spurred the production of alternative types of bags, which are re-useable and therefore avoiding the cheap and nasty waste bag that ends up littering our surroundings. However, along with such initiatives must come the required public education surrounding the proper use and impacts of new practices. For example, recent studies have shown that when re-usable bags are used by shoppers, these bags must be regularly washed/cleaned at least once per week. The users of these bags are not in the habit of washing their shopping bags because it was never necessary in the past as the bags were thrown away. Now with the re-usable bags, which are usually left in the car for convenience, that are not cleaned can contain traces of old food and or blood from meat parcels that quickly become breeding grounds for organisms that cause food poisoning. When these unwashed bags are then used to load new groceries into, the food becomes contaminated by the bag and may cause food poisoning in the

persons who eat this food. It is therefore necessary to keep the public aware of such issues to maintain their health while adopting new practices.

In the home, waste avoidance can be practiced by similar efforts where items are used for different purposes than the original intent, possibly suggesting that one purchases alternative products to the norm. Home composting is also considered waste avoidance, as the waste material is converted into a useful gardening resource whilst avoiding the raw product entering the waste stream.

Presently the avoidance of waste in industry has a financial detrimental implication in most cases (e.g. alternative raw products), and only large companies are able to take the leading role through their international experience in this field. Regulatory controls will only be effective if fines result in legal compliance being cheaper than non-compliance. In South Africa, resource and disposal costs are low, providing no financial incentive to reduce consumption or waste in industry. It follows that regulatory instruments are required for implementation on a Municipal level to govern the avoidance of industrial waste in the District.

Regular audits should be conducted by an independent entity on the avoidance practices, to form a basis for applying incentives / penalties.

An important tool for monitoring purposes is a proper Waste Information System (WIS). The District Municipality should ensure that all the local Municipalities report to the IPWIS.

Without a doubt, waste avoidance will become a real and enforced issue in South Africa in the near future, and must be addressed in any Municipal Waste Strategy.

3.4.2 Existing Waste Avoidance in Cape Winelands Municipality

In Cape Winelands, the best place to start implementing waste avoidance would be at the well-established industries on a voluntary basis. A joint venture effort between such industries and the Municipality may be mutually beneficial.

The industry will receive positive advertising of these “green” initiatives through the media, whilst the Municipality will be taking a leading role in South Africa through pro-actively spawning waste avoidance to the benefit of the community and the environment.

The Municipalities can promote waste avoidance by leading by example. Many opportunities exist where small changes can result in waste avoidance. One example is the option to have paperless meetings. If officials have access to laptops or tablets they need not receive the agenda on paper and can keep track and make notes digitally. Wherever it is not necessary to print and use paper, it can be avoided.

Successful waste avoidance will result in further lowering of the demand on the Cape Winelands waste management infrastructure and the functions of collection, recovery and disposal will be done more efficiently by the local municipalities.

Awareness and education plays a crucial role in waste avoidance. Today’s consumerism focussed society causes that waste is created in the home without thinking of the consequences before buying. A very large part of our waste streams can be avoided by an educated and aware public, focussing on the avoidance of waste before minimisation and eventually disposal.

3.5 COLLECTION SYSTEMS

The District Municipality does not render waste collection services to households. An overview of the local Municipalities is given below.

3.5.1 Municipal Waste Collection

It is recommended that all Municipalities in the District review their respective collection fleets regularly so that vehicles that are operating beyond their economic lifetimes can be identified and provision can be made in the budget to replace these vehicles.

The levels of service have been obtained from the Department of Local Government. The latest numbers are currently in draft (December 2014), but will be replaced by the final numbers when they are released. We cannot ascertain the accuracy of the numbers or how they were determined.

3.5.1.1 Breede Valley

The Breede Valley Municipality provides a weekly collection service to its residents in all towns. Waste is collected in black bags and Worcester has started using wheelie bins.

Waste in Touwsrivier is first transported to the MRF and the tailings hauled for disposal to the Worcester landfill on a weekly basis. Waste from De Doorns, Rawsonville and Worcester and its surrounds are transported directly to the Worcester landfill for disposal. Worcester has started practising source separation in one neighbourhood and this is planned to be expanded to more neighbourhoods in 2015.

All formal residential households receive waste collection services. Commercial waste and non-hazardous industrial waste is collected on the same scheduled rounds as above. Household collection is once per week and business waste can be collected more frequently.

Informal housing areas are serviced once per week or more frequently if necessary. The Municipality reports 100% service to these areas. As door-to-door collection is difficult, communal skips are placed at central points from where the private company Mr Skip Hire removes the $3m^3$ skips on a weekly basis. They also provide the $3m^3$ skips. $5m^3$ skips are placed and emptied by Municipal trucks and a tractor.

As a result of the inefficiency of open skips as drop-off points due to their height and being hard to reach for some people to properly dispose their waste into the skip and the problem with wind-blown litter, the Municipality is in the process of replacing the skips with “Mini Drop-offs” that will be enclosed structures built with concrete and polywood. These drop-offs will house skips and bins for waste to be offloaded within easy reach on ground-level and being enclosed, will limit wind-blown litter.

The “Solid Waste and Area Cleaning Block System” is also being planned by the Municipality to implement in the informal settlements. Informal settlements will be divided into different blocks, consisting of 400 to 600 houses each. This system will make use of appointed foremen, via formal quotation or tender, in each block of the settlement. This appointed person will then be responsible for the waste collection and cleansing of the block to which he/she was appointed. The work will include distributing refuse bags, collecting full bags weekly and placing them at the mini drop-offs for collection, cleaning streets, cleaning mini drop-offs and planting trees where requested.

There is currently no collection service to farmers and rural households due to the problem of transport distances and accessibility. Farmers offload their waste at the disposal sites free of charge. In summary, the unserviced areas in the Municipality are the rural areas and farms.

Level of Free Basic Service

Received figures indicate that 7190 out of the 7 315 indigent households receive free basic refuse removal, which is 98%.

3.5.1.2 Drakenstein

Drakenstein has been divided into collection areas that have a fixed day per week when waste is collected. All formal residential households receive waste collection services. Commercial waste is collected on the same scheduled rounds.

At the residences wheelie bins are used with different lid colours to simplify identification of the scheduled collection day. The collection frequency is once per week.

Residences practice source separation. Drakenstein Municipality makes use of a two-bag system and clear bags are used for recyclable waste. The clear bag is filled with mixed recyclables and is collected separately for processing.

Informal housing areas are serviced twice per week. The Municipality reports 100% service to these areas. The refuse bag system is used. Collection of the bags is done as part of EPWP and moved to a central collection point from where it is transported to landfill.

In the rural areas and farms there are three scenarios: If the farm is on a collection route, the farm waste is placed by the owner outside his property boundary from where it is collected by the Municipality. Farmers also transport and offload their waste themselves to the Paarl Transfer Station

or the Wellington Landfill and they make use of the coupon system. Farmers can also apply for the use and service of a waste skip that is placed on his property. He pays a monthly fee and the Municipality collects the filled skip when they are notified.

Level of Free Basic Service

Received figures indicate that 12 429 out of the 12 429 indigent households receive free basic refuse removal, which is 100%.

3.5.1.3 Langeberg

Currently a waste collection service is provided by the municipality for all residents in urban areas. All formal residential erven are receiving a weekly door-to-door collection service. Langeberg practices source separation with the two-bag system. Clear bags are used for recyclables and black bags for general waste.

Residents are required to place their waste in bags or wheelie bins on the sidewalk for weekly collection. The farming community delivers their own waste to landfill, as it is not economically feasible for the Municipality to collect waste at these remote locations.

Level of Free Basic Service

Received figures indicate that 6 932 out of the 7 413 indigent households receive free basic refuse removal, which is 94%.

3.5.1.4 Stellenbosch

All formal residences receive a weekly door-to-door waste collection service. The informal settlements have been provided with mini drop-off facilities to offload their waste and this is collected by the Municipality.

Level of Free Basic Service

Received figures indicate that 4 217 out of the 4 217 indigent households receive free basic refuse removal, which is 100%.

3.5.1.5 Witzenberg

A waste collection service is provided by the municipality for all residents in urban areas. All formal residential erven are receiving a weekly door-to-door collection service.

The Municipality does not collect waste at the remote farming communities, as this would be economically unsustainable. Farming communities deliver their own waste

Level of Free Basic Service

Received figures indicate that 4 572 out of the 4 572 indigent households receive free basic refuse removal, which is 100%.

3.5.2 Public Cleansing

Public Cleansing involves the cleansing of streets (kerbs and gutters), public open spaces (other than parks and storm water ditches) and areas of illegal dumping.

All the local Municipalities in the District provide public cleansing services.

3.5.3 Public Complaints

The contact numbers for complaints for each Municipality are listed below:

Breede Valley: 086 012 1212
Drakenstein: 021 807 4715; 021 807 4751
Langeberg: 023 614 8000
Stellenbosch: 021 808 8111
Witzenberg: 023 316 1854
District Municipality: 086 126 5263

The CWDM records and delegates the incoming complaints to the responsible persons who then report back and this is recorded on the register. The table below provides a summary and translation of the detailed complaints register received at the CWDM for the 2014/2015 financial year. The names of persons involved have not been included in the summary.

Date Created	Date of Incident	Corrective Action Date	Municipality	Category	Complaint Detail Note	Findings
2014/08/06	2014-08-05	2014-08-15	Witzenberg	General Waste	Domestic waste dumping.	Several areas of unsightly conditions within town of Ceres exist. A letter was drafted, accompanied with photos and sent to Witzenberg municipality.
2014/10/20	2014-10-20	2014-10-20	Drakenstein	Illegal Dumping & Littering	Illegal Dumping of Medical waste, household waste and horse manure which are causing bad odours and fly breeding (Health nuisance)	During the investigation the complaint were found to be valid. Photos were taken of the medical waste as well as the improper ways of which they dispose of their household waste and the heaps of straw and manure that were dumped on the fence near Westland farm. The co-owner was present at the time of the investigation and did react to the complaint as follows: (i) Immediately all medical waste was safely collected and removed from the area. (ii) Household waste were picked up (iii) The horse manure with straw to be removed away from the fence and the worker houses and worked into his land. Full co-operation were received from the owner and the area was cleaned within 24 hrs since the complaint was received.

Date Created	Date of Incident	Corrective Action Date	Municipality	Category	Complaint Detail Note	Findings
2014/11/24	2014-11-24	2014-12-05	Witzenberg	General Waste	Homeless persons tearing refuse bags on collection day and leaving the bags open and/or creating littering.	These complaints must be taken up with the Witzenberg Municipality, it is not a District function.
2014/11/27	2014-11-27	2014-11-27	Stellenbosch	General Waste	Waste next to the complainant's property causing odours and flies.	Inspection conducted. Refuse area in a reasonably acceptable condition. Otto refuse containers were too full and refuse in bags were observed on the refuse area floor. Insufficient number of refuse containers contributed to the problem. No perceivable odours were observed during the inspection, but some flies were observed next to the complainant's home. The owner of the property was contacted and he committed to acquiring additional refuse containers to ensure waste was stored in lidded containers at all times.
2014/12/04	2014-10-21	2014-12-17	Breede Valley	General Waste	Complaint regarding refuse not being collected.	The owner was contacted and she assured that the waste will be removed.
2014/08/12	2014-08-11	2014-09-10	Witzenberg	Illegal Dumping & Littering	Heap of rotten potatoes causing odours and flies.	The owner was contacted and agreed to remove the heap before Friday 15 August.
2014/12/08	2014-11-25	2014-12-08	Breede Valley	Building Material	Complaint regarding the backyard of the KFC filled with builder's rubble and black bags.	Complaint was received on 1 Dec 2014. Upon inspection all rubble and refuse was already removed.
2014/08/05	2014-07-31	2014-08-05	Breede Valley	General Waste	Homeless persons sleeping on doorstep of flats, littering and using the area as toilet.	Homeless persons sleep on property of Da Vinci flats and litter on said property. BVM were notified for action on the sidewalks and the owner and body corporate were notified for action on the property.
2014/07/02	2014-07-01	2014-07-02	Witzenberg	Illegal Dumping & Littering	Alleged dumping of sewage from mobile toilets on vacant land on the Farm Klein Pruise.	No dumping of sewage found on the vacant land of the premises.
2014/07/09	2014-06-26	2014-10-06	Stellenbosch	General Waste	Municipal ERF is being used as a dumping site.	Report issued to local municipality.
2014/07/11	2014-05-21	2014-07-11	Breede Valley	Burning waste/Tyres	Complaint regarding thick smoke caused by the burning of tyres.	Two persons were found burning tyres in order to collect the metal contained inside. Persons were informed about the pollution, dangers and unlawfulness of the burning. The firefighters were called to extinguish the fire.

Date Created	Date of Incident	Corrective Action Date	Municipality	Category	Complaint Detail Note	Findings
2014/07/22	2014-07-03	2014-07-22	Drakenstein	Illegal Dumping & Littering	Shop's refuse bins were knocked over by the public, causing nuisance on the neighbour's property.	The shop owners were confronted regarding the situation and instructed to prevent access to the refuse bins by the public and also not to endanger public health in any way.
2014/07/25	2014-07-15	2014-07-25	Drakenstein	Illegal Dumping & Littering	Builder's rubble and other waste being dumped by various persons on open ground.	Builder's rubble was found during inspection. This complaint was given over to the law enforcement official of Drakenstein. The property owner as well as perpetrators were contacted. The CWDM requested the law enforcement official to install "NO DUMPING" signs at the property.
2015/02/09	2015-01-13	2015-02-09	Drakenstein	General Waste	Owner complains that cockroaches are creating a nuisance in front of her property from the drain.	This complaint was forwarded to the Drakenstein Municipality of which the pest control were dispatched to clean the drain.
2014/09/03	2014-09-02	2014-09-17	Stellenbosch	General Waste	Complainant's neighbour's property is overgrown with grass and bushes. Dumping ground for builder's rubble and garden waste. Conditions likely to create nuisances.	Conditions noted as per complaint.
2015/03/06	2015-01-29	2015-03-06	Breede Valley	General Waste	Refuse from the Game Reserve create extremely bad odours and are infected with worms. Removed only once per week.	Meetings with the owners were held and the CWDM and BVM attended meetings. The possible solution to the problem was that the Game Reserve take the waste on Mondays, Wednesdays and Fridays to the transfer station.
2015/03/16	2015-03-13	2015-03-16	Drakenstein	General Waste	The property does not have enough waste containers, causing waste to accumulate outside the containers.	Upon inspection it was confirmed that too little containers were available for the amount of units at the flat complex.
2014/09/10	2014-09-09	2015-02-19	Breede Valley	Illegal Dumping & Littering	That a health nuisance is created on the premises by the occupants. She is the owner of the house. NB. See attached inspection report for the complainant’s attention. No health is constituted.	No health is constituted.

Date Created	Date of Incident	Corrective Action Date	Municipality	Category	Complaint Detail Note	Findings
2014/09/15	2014-09-02	2014-09-15	Langeberg	Illegal Dumping & Littering	A person operates a recycling business from her home within residential area. Neighbours complain that the premise is unsightly and attracts rats to premise and surrounding area.	An inspection was conducted to the premise, accompanied with the councillor on 3 September 2014. The person was informed about the contravention ie. health nuisance. She was given (14) days to minimize the health nuisance by means of the best available method. A follow-up inspection will be conducted on 1 October 2014.

3.6 WASTE REDUCTION

The Polokwane Declaration was formulated in 2001 by members of Government, whereby a commitment to waste reduction, re-use and recycling was made towards achieving the following goals:

- 50% reduction in waste generation and 25% reduction in waste disposal by 2012
- A plan for Zero waste by 2022

In the January 2011 draft Provincial IWMP for the Western Cape it is stated:

"Consequently, since they have the power to adapt the targets in the Western Cape IWMP, DEA&DP has adjusted the unrealistic "25% of waste diverted from landfill sites by 2012", to a more realistic "15% of waste by 2015"."

It is therefore recommended that all Municipalities in the District strives to achieve 15% of waste diversion by 2015.

Waste reduction can be divided into four main categories, i.e.

1) Separation at source
2) Recovery for recycling from post-collected waste
3) Composting of post collected garden waste, and
4) Crushing of builder's rubble

The efficiency of waste minimisation can only be determined through the implementation of a proper WIS as mentioned above. This is necessary to in turn populate the Provincial IPWIS.

This WIS should provide information on an on-going basis regarding the following:

- The quantity, type, quality and sources of materials recovered
- The quantity and quality of compost produced and garden waste processed
- Industrial waste types and volumes, and possible opportunities for waste exchange
- Public education initiatives and data on available literature at public facilities (e.g. libraries, waste minimisation clubs and projects)
- Household awareness campaigns on recycling opportunities
- Waste education (schools level) and training programmes available for the general public, waste workers and officials

3.6.1 Recovery for Recycling

3.6.1.1 Breede Valley

The Breede Valley Municipality operates the Touws River Transfer Station and Material Recovery facility (MRF) in Touws River. The operation of the MRF is done by Beirowplas Recycling CC and they have been awarded the operational contract via a public tender process which expires in 2017.

Beirowplas also collects the source separated recyclables in the Worcester neighbourhood, Paglande, where source separation has been implemented. This service will be expanded to other neighbourhoods from 01/02/2015 when the Beirowplas collection contract has expired. The new service will be rendered by the Municipality.

The clear bags will be provided for free by the Municipality and one clear bag is to be exchanged for a filled clear bag on collection day. The service will initially be expanded to the following neighbourhoods:

- Johnson Park 1, 2
- Worcester West
- Panorama
- Fairway Heights
- Bloekombos
- Van Riebeeck Park
- Hex Park
- Langerug

Residents will each receive a clear bag, pen, fridge magnet and a recycling information pamphlet. Bags will also be available from the solid waste department offices.

After a few months the Municipality will review the service in order to ensure a successful and sustainable implementation process. Based on the review, new neighbourhoods will be identified to where the service can be expanded.

The following is a list of private recyclers in the Breede Valley Municipality:

- Beirowplus Recycling: Petro van Wyk (023) 342 6345
- Mr. Paper: Yolandy Goosen (023) 342 3667
- APD (Association for persons with disabilities): (023) 347 2002

3.6.1.2 Drakenstein

The Drakenstein Municipality operates the Paarl Material Recovery Facility (MRF) adjacent to the Paarl Transfer Station. The Paarl MRF was operated by a private contractor until late in 2013. The Municipality took over the operations since then and plans are in place to appoint a private contractor during 2014/2015. Some recycling also takes place at the Wellington Landfill and is done by the Municipality. The recyclables are sold to various private recyclers. Recycling alone in Drakenstein contributes to 5.6% diversion. This diversion rate excludes garden waste chipping and builder's rubble crushing. Total diversion currently stands at 12% per annum.

The following is a list of private recyclers in the Drakenstein Municipality:

COMPANY	CONTACT PERSON	ADDRESS
Boland Waste	Anelda van Zyl	P O Box 723, Wellington
C.P.Weyers Dienste	Neels	8 Koning Street, Paarl
Cape Waste	Tich Middleton	Donkervliet Street
CL Waste & Scrap Metal	Natasha Parker	5 Planken Street, Plankenburg, Stellenbosch
Enviro Paper & Pulp Suppliers CC	Lee-Ann Ehrenreich	25-27 Alkmaar Street, Dal Josaphat, Paarl
Enviro Smart Waste Management	Sonia Frans	36 Murray Street, Paarl
Green Clean Bin	Pieter De Wit	12 Peter Street, Paarl North
JNA Roofing Boland (Pty)LTD t/a Lucas Thatchers	Janine Thiart	2 Reiger Street, Stellenberg (P O Box 2606)
Len's Metals CC	Michael Rhode	18 EK Green Street, Paarl
Louis	William Louis Deminey	2 Vyfster Hof, Plein Street, Paarl
M Talip	Mogamat Talip	21 Barbarossa Street, Paarl
Ponderosa Pine Trading 34 CC	Dentzel Bocks	
R Chippendal	Riedewaan Chippendale	4 St Omer Street, Charleston Hill, Paarl
Regular Trading 63	Victor Mpela	
Smartwaste	Reg Barichievy	Wegelee Plein
Tanya's Construction and Services	Tanya Tisana	A54 Jabulani Street, Mbekweni, Paarl
Taraka Transport and Recycle	Anzol Pietersen	Drommerdaris Park, Unit 12, Drommedaris Str, Dal Josaphat, Paarl
Thermo Plastics	Frikkie Viviers	Oostbosch Street
Victory Parade Trading (Zeebins)		P O Box 1341, South Paarl
VS Tech CC	Sharline v Schalkwyk Gerhard v Schalkwyk	32 Donkervliet Street
Waste Corp Recycling	Mohammed Fahiem Khan	6 Mont View Avenue, Paarl
Wasteman Holdings (Pty) Ltd	Jeanie Seale	P O Box 219, Eppindust (Wingfield House, Mobile Rd, Airport Industria, CT)
Wasteplan Holdings	-	Sandringham Road, Kraaifontein Industrial Area

COMPANY	CONTACT PERSON	ADDRESS
Wellington Sakekamers	Christine van Wyk	
Xoliswa C Nkala	Xoliswa Nkala	3363 Zingisani Street, Pola Park, Mbekweni, Paarl

3.6.1.3 Langeberg

Recycling is done by the Municipality at the Material Recovery Facilities and through source separation as well as private entities such as Parmalat and Breërivier Recycle. Recycling activities alone currently account for 3% of waste stream diversion. In combination with the composting at the Robertson composting facility, a total of 15% of waste is diverted in Langeberg according to the weighbridge data.

3.6.1.4 Stellenbosch

The Municipality collects source separated waste in Stellenbosch. Recycling is done at the Kraaifontein waste facility and by the private institution for disabled persons Huis Horison. Currently recycling attributes to 1% diversion.

3.6.1.5 Witzenberg

The Witzenberg has no formal waste recovery facilities yet, except the separately fenced recycling area at the Tulbagh landfill. There is however a private company operating a materials recovery facility between Ceres and Prince Alfred Hamlet, sorting source separated wastes and baling it for transport to Cape Town as well as a number of smaller recyclers operating in the Tulbagh area. The private companies in total recover approximately 11% of Witzenberg's waste stream.

3.6.2 Composting

3.6.2.1 Composting Facilities in Cape Winelands

Composting of garden waste at a centralised composting facility requires approximately 350 tons of garden waste per month in order to achieve stand-alone economical sustainability. Composting facilities have been established in Langeberg and Stellenbosch. The other municipalities are currently chipping garden waste.

Organic material that is disposed by landfill and not composted decomposes in the absence of oxygen, that is, anaerobically, and produces methane gas and carbon dioxide while decomposing. These gases are greenhouse gases and must be minimised. Methane is 23 times as effective (bad) as carbon dioxide as a greenhouse gas and all attempts must be made to prevent its generation. During the composting process the decomposition takes place in the presence of oxygen (aerobic) resulting in no methane gas being generated. If the garden waste is simply chipped and used as mulch, it is preferable above disposal by landfill since it will decompose in the presence of oxygen.

3.6.2.2 Home Composting

Home composting in South Africa has traditionally been practiced for the purpose of having an inexpensive and reliable source of compost for the garden. More recently, the realization that composting is a means of conserving resources, saving landfill airspace and the recycling of organic matter, has become the driving force for composting under individuals as well as clubs / associations.

It has been shown that home composting can reduce the waste stream by 20% to 30% if carried out properly. This is a prime example of "reduction at source" or waste avoidance.

This represents probably the only feasible means of composting kitchen waste, as large-scale post-collection composting has proven ineffective on many occasions in South Africa.

Due to a lack of general information conveyed to the private composter in the past, many perceptions of home composting has become that of a stinking pile somewhere in the corner of the garden.

This (and a change in lifestyles) has led to compost becoming a shopping list item to be bought at the supermarket.

Leaflets or other methods of information should be made available to inform the general public of the advantages and "recipe" for making good quality home compost. This should include:

- Bins / container design
- Raw products
- C:N ratio
- Minimum volume
- Preparation
- Moisture content
- Aeration
- Monitoring
- Trouble-shooting

Home composting bins can be bought at selected nurseries throughout the Western Cape. These are normally one of two types. The first type is a moulded plastic bin which comes in two sizes as follows:

- Small – volume approximately 500 litres
- Medium – volume approximately 1000 litres

The second type is one made from chicken wire around a plastic framework. This one is also of approximately 1000 litre capacity. The disadvantage to the chicken wire model is the possibility of leaching, flies and foul odours.

However, it does allow for good aeration, whereas the plastic model may tend to result in anaerobic conditions (rotting) if not manually aerated by turning.

3.6.2.3 Vermicomposting

Vermicomposting refers to the deliberate introduction of earthworms (typically) during early stages of the composting process. These would appear naturally at an advanced stage of natural composting, which would be after stabilization, where macrofauna use some of the microflora as a substrate.

The earthworms have the following beneficial effects on the composting process:

- Reduction of particle size
- Removal of old bacteria, stimulating the growth of new bacteria
- Enriching the compost by excretions high in Nitrogen
- Promotes penetration of oxygen into the compost
- Increases pathogen control
- Produces worm castings, a good soil amendment

Vermicomposting lends itself well to household-sized ventures, as it requires very careful control, but produces very high quality compost in a relative short period of time.

It is a very clean process which does not attract flies.

This type of composting is typically done inside special bins designed for the purpose.

Most kitchen-type wastes can be composted in this manner, although onions, citrus & other acidic foods should be avoided as they can be toxic to the worms.

The worms are also quite sensitive to extreme temperatures, humidity and rain.

Therefore this process does not lend itself to large-scale industrial composting.

Also the ratio of worms: substrate is approximately 1:4; therefore very large amounts of worms are required for the process. The worm mass doubles in approximately 12 weeks.

3.7 WASTE DISPOSAL

3.7.1 Operating Landfills

3.7.1.1 Breede Valley

Breede Valley Municipality currently operate two landfills, the Worcester Landfill (S33°40'49.3'', E19°28'11.0'') south-east of Worcester and the De Doorns Landfill (S33°29'08.0'', E19°41'43.0'') east of De Doorns.

Worcester landfill

The Worcester landfill is permitted in terms of Section 20 of the Environment Conservation Act (Act 73 of 1989) with Permit number B33/2/800/12/P70. The permit states "Class 2" in terms of the Minimum Requirements first edition, but would translate to G:S:B- in terms of the 1998 Minimum Requirements, 2nd Edition or Class B in terms of the Waste Act.

The landfill is operated by the Municipality. No recent audit information about the operation is available, but the Municipality plans to conduct an external audit early in 2015.

Figure 3-2: Google Earth Image of the Worcester Waste Disposal Facility

The site receives general household waste, general commercial and industrial waste, garden waste and builder's rubble. The site does not have a weighbridge at this stage, but the Municipality will start making use of a weigh pad in 2015 to more accurately measure the incoming waste loads for data collection purposes.

The site has many informal salvagers on a daily basis. Efforts to stop this in the past have been problematic. It has since been decided by the Municipality to rather support these individuals. They have been given safety training as well as safety equipment which they must use when they are on site. With the proposed development of a MRF at the landfill, this will be formalised. They are currently managed by:

- Providing them with reflective jackets to be more visible on site
- Providing them with rubber gloves
- Children younger than 18 are not allowed on site
- No dogs, alcohol, etc. are allowed on site
- A register must be signed upon entering the site in the morning

The Municipality plans to erect a boom gate at the site entrance to ensure proper access control. From then on the incoming waste loads will be directed in order to separate garden/green waste, builder's rubble, mixed waste and recyclables into different offloading areas. During September 2014 information letters were distributed to users of the site to inform them of the Municipality's new Integrated Waste Management approach.

Worcester Waste Disposal Facility
Summary Table

Type of facility	Waste Disposal Facility
Licensed/Permitted?	Yes
License/Permit Number	B33/2/800/12/P70
Classification	G:S:B-
Location	S33°40'49.3'', E19°28'11.0''
Estimated Remaining Lifetime	Latest estimate in the 2014 closure provisions report indicate remaining airspace to approximately 2017. This is to be re-evaluated in 2015 with the help of a new topographical survey.
Access Control and signage?	Yes
Externally audited?	No, but planned for 2015
Waste Types Received	General household, commercial and industrial waste, garden waste, builder's rubble

De Doorns landfill

The De Doorns landfill has recently received an operating license as part of the D:EA National Outcome to license all unlicensed facilities. The operation of this facility is poor, no on-site cover material is available and must be purchased and imported and informal salvagers set waste alight daily. Therefore the Municipality plans to close and rehabilitate the facility and replace it with a transfer station/material recovery facility.

Figure 3-3: Google Earth Image of the De Doorns Waste Disposal Facility

The site receives general household waste, general commercial and industrial waste, garden waste and builder's rubble. Accurate disposal quantities are not available.

De Doorns Disposal Facility
Summary Table

Type of facility	Waste Disposal Facility
Licensed/Permitted?	Yes
License/Permit Number	19/2/5/1/B2/3/WL0026/14
Classification	Class B
Location	S33°29'08.0'', E19°41'43.0''
Estimated Remaining Lifetime	Estimated 20 years airspace, but marked for closure due to operational issues.
Access Control and signage?	No
Externally audited?	No, but planned for 2015
Waste Types Received	General household, commercial and industrial waste, garden waste, builder's rubble

Touws River

During the DEA National Outcome 10 to license all unlicensed facilities, a site not used by the Municipality as a disposal site, located to the south of Touws River has been issued with an operating license and classified as a Class B facility. According to the co-ordinates on the issued license, this site is located within 50 metres of the formal residential area and right next to the informal settlement. The license also states that a buffer zone of 200 metres must be established around the site. It is not certain whether this is a mistake in the license, but for this reason alone the Municipality will not be able to be compliant with the license without moving the residential area. This is also not an operated disposal site by the Municipality, but rather an illegal dumping ground. No plans or funds are in place to operate or further develop this site, therefore the way forward will be discussed with the D:EA&DP in order to close and rehabilitate or clear the area of waste.

3.7.1.2 Drakenstein

Drakenstein Municipality currently operates only one landfill, the Wellington Landfill (S33°39'14.8'' E18°59'02.9'') west of Wellington. This landfill was previously developed and used by the former Wellington Municipality. Cell 6, the current cell, was commenced with in August 2000 under the former Wellington Municipality. A permit amendment has since been approved to increase the maximum height of the site to 12m above ground level.

The height has since been increased, but the final phase has not been reached. It is currently estimated that the site will reach capacity in 2019/2020.

Operation of this landfill, which is operated by the municipality, is generally good. Jan Palm Consulting Engineers conducted an external compliance audit in July 2014 to determine if the facility is in compliance with license conditions. Internal monthly audits are conducted by the Municipality. The external audit identified the following partial and non-compliances:

The Wellington Landfill has an operating permit (no. 16/2/7/G100/D4/Z1/P263) from the Department of Water Affairs and Forestry in accordance with the Environmental Conservation Act and has been classified as a G:S:B^+ waste disposal facility. A Waste Management License in terms of Section 20(b) of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) for the height extension as well as to operate a drop-off area, builder's rubble area, recycling area and chipping and composting area on the existing facility was issued to the Drakenstein Municipality in 2012. License Number E13/2/10/1-B3/36-WL0045/10.

Figure 3-4: Google Earth Image of the Wellington Waste Disposal Facility

The site receives general household waste, general commercial and industrial waste, garden waste and builder's rubble. There is a weighbridge at the site and the recorded waste quantities were provided by the Municipality (Discussed under section 3.2.2 of this document). The security has also been improved with the recent completion of the new fencing contract which upgraded the fencing for the Wellington landfill, but informal salvagers still gain access by damaging the security fence and gates.

Wellington Waste Disposal Facility
Summary Table

Type of facility	Waste Disposal Facility, Recycling, Crushing, Composting
Licensed/Permitted?	Yes
License/Permit Number	16/2/7/G100/D4/Z1/P263; E13/2/10/1-B3/36-WL0045/10
Classification	G:S:B+
Location	S 33° 39' 14.8'', E 18° 59' 02.9''
Estimated Remaining Lifetime	Until 2019/2020
Access Control and signage?	Yes
Operating Hours	Monday - Thursday: 08:00 - 16:00. Friday - Saturday: 08:00 - 15:30. Sundays and Public Holidays closed
Externally audited?	Yes
Waste Types Received	General household, commercial and industrial waste, garden waste, builder's rubble

CONDITION	NON-COMPLIANCE /PARTIAL COMPLIANCE	ACTION	TARGET DATE
1.2	The footprint of the garden waste stockpile is not within the Licensed area.	Reduce the garden waste stockpile and use the chippings for erosion protection on the outer landfill slopes.	a.s.a.p.
3.1	The SOP/EPP is not comprehensive.	Update the SOP/EPP according to the requirements as indicated in the License.	a.s.a.p.
6.1.1 (i)	The license holder has not set recycling recovery targets.	Set recycling targets.	a.s.a.p.
7.1.1	The facility perimeter fence is continuously damaged by informal salvagers thereby gaining access to	Improve the site security by employing dog patrols along the fence.	a.s.a.p.

	the site.		
7.2.10	Informal salvagers are reclaiming disposed waste.	Improve the site security by employing dog patrols along the fence.	a.s.a.p.
7.2.12	The site perimeter road is severely damaged during the rainy season.	Improve surface water drainage on site.	When budget is available.
7.2.13	The composting area has not yet been formalized.	Formalise licensed chipping and composting area.	Next financial year.
7.2.14	Ponding occurs on the composting and builder's rubble areas, because they have not yet been formalised.	Formalise composting and builder's rubble areas.	Next financial year.
7.2.22	Some of the outside slopes of the landfill are experiencing erosion due to the elements and foot traffic.	Cover these slopes with garden waste chippings.	a.s.a.p.
9.1.2 (c)	Air quality is not monitored.	Air quality monitoring will be included in future monitoring sessions.	Next monitoring session.
9.2.3	Ground water levels are not recorded during every sampling session.	Record ground water levels during each sampling session.	Next monitoring session.
9.2.5	Ground water samples are not analysed for all the required variables.	Analyse ground water samples for all the required variables.	Next monitoring session.
9.2.7	Leachate samples are not analysed for all the required variables.	Analyse leachate samples for all the required variables.	Next monitoring session.
11.1.1	Internal audits are not submitted to the Director.	Submit internal audits to the Director.	Next audit.

3.7.1.3 Langeberg

Ashton

Langeberg Municipality's municipal solid waste stream is disposed at the licensed G:S:B^- landfill at Ashton (S33 50 10.4 E20 06 04.9). The Landfill was permitted in 1999. The permit number is 16/2/7/H300/D41/Z1/P332.

The Ashton Landfill does not have sufficient capacity and should reportedly reach capacity in 2015. This is taking into account that Langeberg Municipality is currently providing a separation at source service (2-bag system) in all towns as well as a material recovery facility and composting plant to save as much landfill airspace as possible.

Langeberg Municipality commissioned an investigation into the identification of a new municipal site and environmental authorisation was obtained for a location near Bonnievale (farm Stockwell). However, since the Cape Winelands District Municipality also commissioned an investigation into the identification of a regional landfill to serve Breede Valley, Langeberg and Witzenberg municipalities, Langeberg Municipality decided, based on an economic analysis, to support the regional initiative.

Figure 3-5: Ashton Landfill

Ashton Waste Disposal Facility
Summary Table

Type of facility	Waste Disposal Facility, Recycling
Licensed/Permitted?	Yes
License/Permit Number	16/2/7/H300/D41/Z1/P332
Classification	G:S:B-
Location	S33°50'10.4'', E20°06'04.9''
Estimated Remaining Lifetime	Until 2014/2015
Access Control and signage?	Yes, but no signage
Operating Hours	Monday - Fridays: 08:00 - 16:30. Saturdays and Public Holidays: 08:00 – 13:00.
Externally audited?	Yes
Waste Types Received	General household, commercial and industrial waste, garden waste, builder's rubble

Bonnievale

The Bonnievale disposal facility is permitted in terms of ECA 1989. The permit number is 16/2/7/H500/D79/Z1/P304 and was issued 31-07-1998. The classification is G:S:B-.

Figure 3-6: Bonnievale Landfill

Bonnievale Waste Disposal Facility
Summary Table

Type of facility	Waste Disposal Facility
Licensed/Permitted?	Yes
License/Permit Number	16/2/7/H500/D79/Z1/P304
Classification	G:S:B-
Location	S33°55'33.89'', E20°04'50.58''
Estimated Remaining Lifetime	Unknown
Access Control and signage?	Yes
Operating Hours	Monday - Fridays: 08:00 - 16:30. Saturdays and Public Holidays: 08:00 – 13:00.
Externally audited?	Yes
Waste Types Received	Garden waste, builder's rubble

Montagu (Bessiekop)

The Montagu landfill is permitted in terms of ECA 1989 with permit number B33/2/800/45/S/P169 and classification G:S:B-. The permit was issued 27-03-1995.

Figure 3-7: Montagu Landfill

Montagu Waste Disposal Facility
Summary Table

Type of facility	Waste Disposal Facility
Licensed/Permitted?	Yes
License/Permit Number	B33/2/800/45/S/P169
Classification	G:S:B-
Location	S33°47'38.42'', E20°08'04.61''
Estimated Remaining Lifetime	Unknown
Access Control and signage?	Yes
Operating Hours	Monday - Thursday: 08:00 - 16:00. Friday - Saturday: 08:00 - 15:30. Sundays and Public Holidays closed
Externally audited?	No
Waste Types Received	Builder's rubble

3.7.1.4 Stellenbosch

The Stellenbosch Municipality operates one licensed landfill with permit number 16/2/7/G203/D16/Z1/P331 and classified as G:M:B+. A height extension was subsequently issued as an amendment to the permit.

Cell 3 was constructed in 2012 and is currently operational with cell 1 and 2 having reached capacity. It is estimated that the landfill will reach capacity in approximately 4 years (from 2015), depending on the waste diversion measures applied. The process of obtaining a closure license for the site is currently under way.

The Stellenbosch Municipality has received a license to establish an integrated waste management facility directly to the south of the landfill. This facility will include a public drop-off, a material recovery facility and transfer station, a garden waste chipping and builder's rubble crushing area and an area for the temporary storage of household hazardous waste.

Figure 3-8: Google Earth Image of the Stellenbosch Waste Disposal Facility

The site receives general household waste, general commercial and industrial waste, garden waste and builder's rubble.

Stellenbosch Disposal Facility
Summary Table

Type of facility	Waste Disposal Facility
Licensed/Permitted?	Yes
License/Permit Number	16/2/7/G203/D16/Z1/P331
Classification	G:M:B+
Location	S33°56'33.38'', E18°49'12.52''
Estimated Remaining Lifetime	Estimated 4 years
Access Control and signage?	Yes
Externally audited?	Yes
Waste Types Received	General household, commercial and industrial waste, garden waste, builder's rubble

3.7.1.5 Witzenberg

The Witzenberg Municipality operates four licensed landfills. They are the Wolseley, Tulbagh, Prince Alfred Hamlet and Op-die-berg landfills.

Wolseley

The Wolseley permit expired in June 2013 and an application to extend the permit validity was submitted (license variation). However, the 250m buffer around the site was not maintained, with formal and informal housing established inside the buffer. Subsequently, along with the extended permit validity, the operational footprint of the Wolseley landfill was reduced, also reducing the remaining airspace.

Wolseley landfill has not been operational since 2013 and the site infrastructure (fence, entrance control building, etc.) have been destroyed or removed, possibly by the surrounding community not in favour of the landfill.

It is estimated that the Wolseley landfill will have approximately 2 years of operational life left if operations start again.

Figure 3-9: Google Earth Image of the Wolseley Waste Disposal Facility

The site received general household waste, general commercial and industrial waste, garden waste and builder's rubble.

Wolseley Disposal Facility
Summary Table

Type of facility	Waste Disposal Facility
Licensed/Permitted?	Yes
License/Permit Number	16/2/7/H101/D34/Z1/P496
Classification	G:S:B+
Location	S33°24'52.70'', E19°11'02.14''
Estimated Remaining Lifetime	Approximately 2 years from start of operations
Access Control and signage?	When it was operational yes. Requires new fencing and access control.
Externally audited?	When it was operational yes.
Waste Types Received	General household, commercial and industrial waste, garden waste, builder's rubble

Tulbagh

The Tulbagh landfill (33°16'30.27''S, 19°07'56.45''E) is permitted in terms of Section 20 of ECA 1989 and is classified as G:S:B+ with permit number 16/2/7/G100/D6/Z1/P305.

Figure 3-10: Google Earth Image of the current Tulbagh Waste Disposal Facility Footprint

The site is externally audited and the non-compliances are being addressed by the municipality. Groundwater monitoring boreholes have been installed and the height of the waste body has been lowered to comply with the permit. A consultant has been appointed to develop a site management and operation plan in 2015.

Tulbagh Disposal Facility
Summary Table

Type of facility	Waste Disposal Facility
Licensed/Permitted?	Yes
License/Permit Number	16/2/7/G100/D6/Z1/P305
Classification	G:S:B+
Location	33°16'30.27''S, 19°07'56.45''E
Estimated Remaining Lifetime	To be determined
Access Control and signage?	Yes
Externally audited?	Yes
Waste Types Received	General household, garden waste, builder's rubble

Prince Alfred Hamlet

The Prince Alfred Hamlet landfill (33°16'34.82''S, 19°19'29.11''E) is licensed in terms of the Waste Act of 2008 and is classified as G:C:B- with license number 19/2/5/1/B5/11/WL0088/14. The license was issued 02/07/2014.

The license stipulates that garden waste and builder's rubble is allowed to be disposed, recovered or stored at this facility. Skips must be provided at the site where waste that is not allowed to be disposed at the site is to be stored until it is removed and disposed at the appropriate licensed disposal facility.

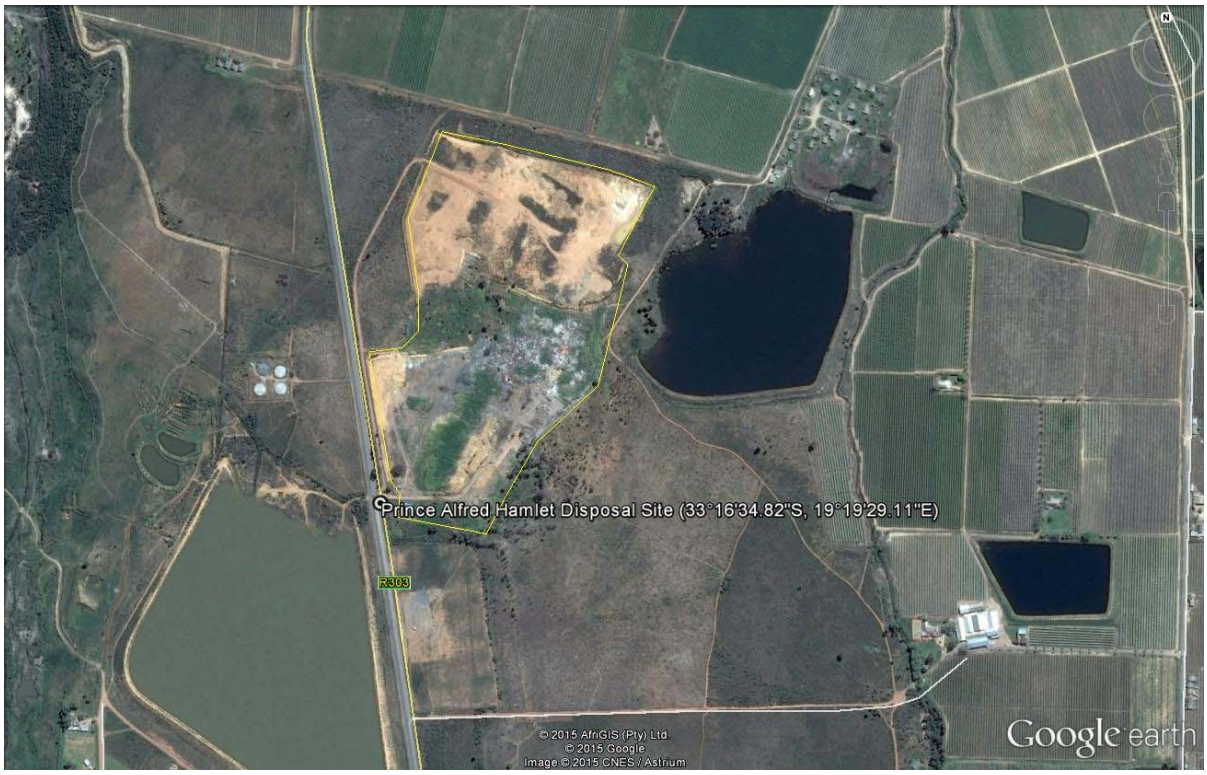


Figure 3-11: Google Earth Image of the Prince Alfred Hamlet disposal facility

Prince Alfred Hamlet Disposal Facility
Summary Table

Type of facility	Waste Disposal Facility
Licensed/Permitted?	Yes
License/Permit Number	19/2/5/1/B5/11/WL0088/14
Classification	G:C:B-
Location	33°16'34.82''S, 19°19'29.11''E
Estimated Remaining Lifetime	To be determined
Access Control and signage?	Yes
Externally audited?	No
Waste Types Received	General household, garden waste, builder's rubble

Op-Die-Berg

The Op-die-berg landfill (33°03'51.3''S, 19°20'00.18''E) is permitted in terms of the ECA 1989 and is classified as G:C:B+ with permit number 16/2/7/H200/D100/Z2/P325.

Figure 3-12: Google Earth Image of the Op-die-berg disposal facility

Op-die-berg Disposal Facility Summary Table

Type of facility	Waste Disposal Facility
Licensed/Permitted?	Yes
License/Permit Number	16/2/7/H200/D100/Z2/P325
Classification	G:C:B+
Location	33°16'34.82''S, 19°19'29.11''E
Estimated Remaining Lifetime	To be determined
Access Control and signage?	Yes
Externally audited?	Yes
Waste Types Received	General household, garden waste, builder's rubble

3.7.1.6 Cape Winelands District

The Cape Winelands District Municipality is in the process to establish a regional landfill for the eastern portion of the Cape Winelands District. This includes the Municipalities of Breede Valley, Langeberg and Witzenberg. The preferred location for the regional site is adjacent to the Worcester landfill.

The license application has been submitted to D:EA&DP and D:WA has issued a Technical Record of Decision, but the District is awaiting the outcome of the application. It is estimated that if approved, the regional landfill will be operational within the next 5 years. This will be a Class B landfill and no hazardous waste will be accepted for disposal.

It is planned that this facility will have a material recovery facility, garden waste chipping area, builder's rubble crushing area, weighbridges and offices. This facility will be registered on and report to IPWIS.

A location for a similar regional disposal facility that would serve the western portion (Drakenstein and Stellenbosch) was investigated, but all proposed sites were rejected as candidates. A solution for the disposal of these two Municipalities must be sought as the Stellenbosch and Wellington landfills are the only operating landfills in this area and no alternatives are available once capacity is reached. The District can co-ordinate alternative disposal options for this part of the District, for example an agreement with the City of Cape Town.

3.7.2 Closed Landfills

The following closed landfills are located in the Cape Winelands District. Each Municipality in the District must ensure that all sites are issued with closure licenses and that rehabilitation provision is made in their respective budget. The rehabilitation cost estimates must be updated annually by each municipality in order to keep up to date with relevant legislation and rehabilitation requirements.

3.7.2.1 Breede Valley

The old Touws River landfill site has been closed and rehabilitated.

The Worcester and De Doorns disposal facilities are still operational, but will need to be closed and rehabilitated in the future.

3.7.2.2 Drakenstein

The following closed disposal sites are located in the Drakenstein municipality. All sites have been issued with closure licenses, except the Boy Louw closed site of which the closure license application is under way. Each site requires to be rehabilitated except the Klapmuts landfill that was rehabilitated according to its closure license.

Gouda

License number: 19/2/5/1/B3/14/WL0031/14
Location: 33°17'55.6''S, 19°01'32.6''E

Figure 3-13: Gouda Landfill

Saron

License number: 19/2/5/1/B3/32/WL0028/14
Location: 33°12'23.4''S, 19°00'37.4''E

Figure 3-14: Saron Landfill

Hermon

License number: 19/2/5/1/B3/40/WL0030/14
Location: 33°26'03.7''S, 18°57'40.1''E

Figure 3-15: Hermon Landfill

Dal Josafat

License number: 19/2/5/1/B3/7/WL0027/14
Location: 34°42'24.7''S, 18°58'38.9''E

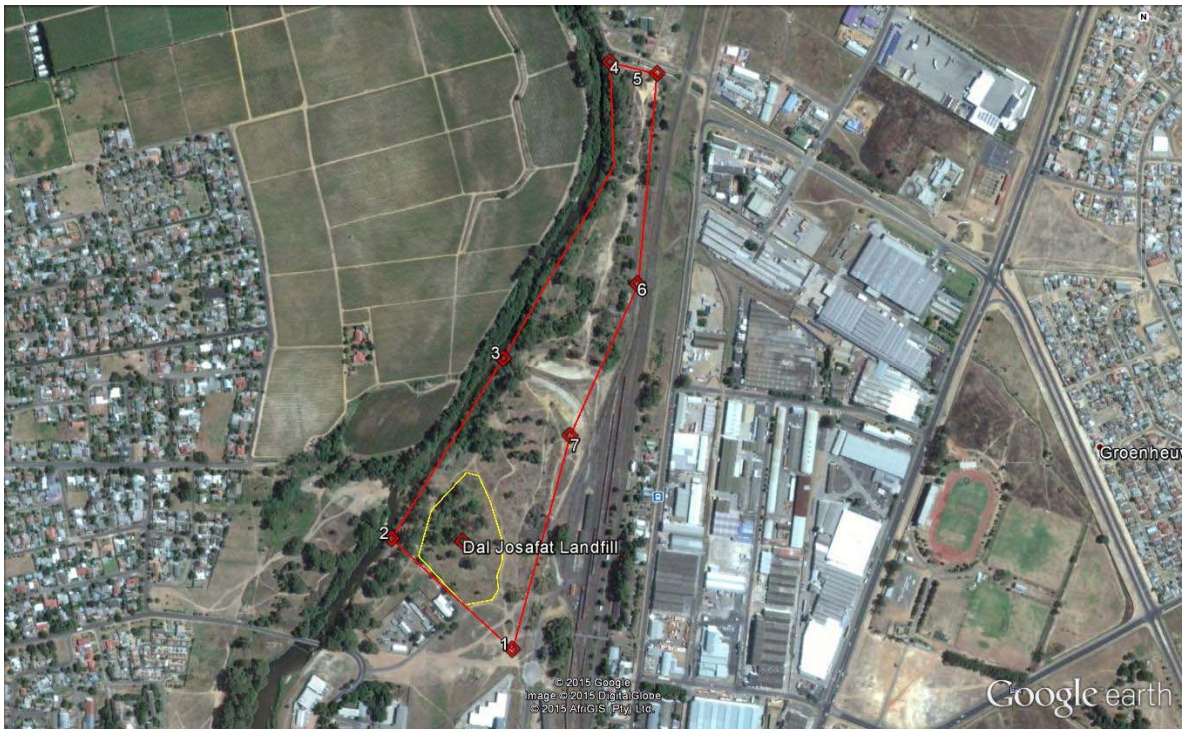


Figure 3-16: Dal Josafat Landfill

Note that the red border is as the site extents are described in the closure license and the yellow border is the actual old waste body.

Orleans

License number: 19/2/5/1/B3/29/WL0029/14
Location: 33°43'13.6''S, 18°59'32.6''E

Figure 3-17: Orleans Landfill

Boy Louw

License number: Application under way (2015)
Location: 33°43'03.8''S, 18°58'19.2''E

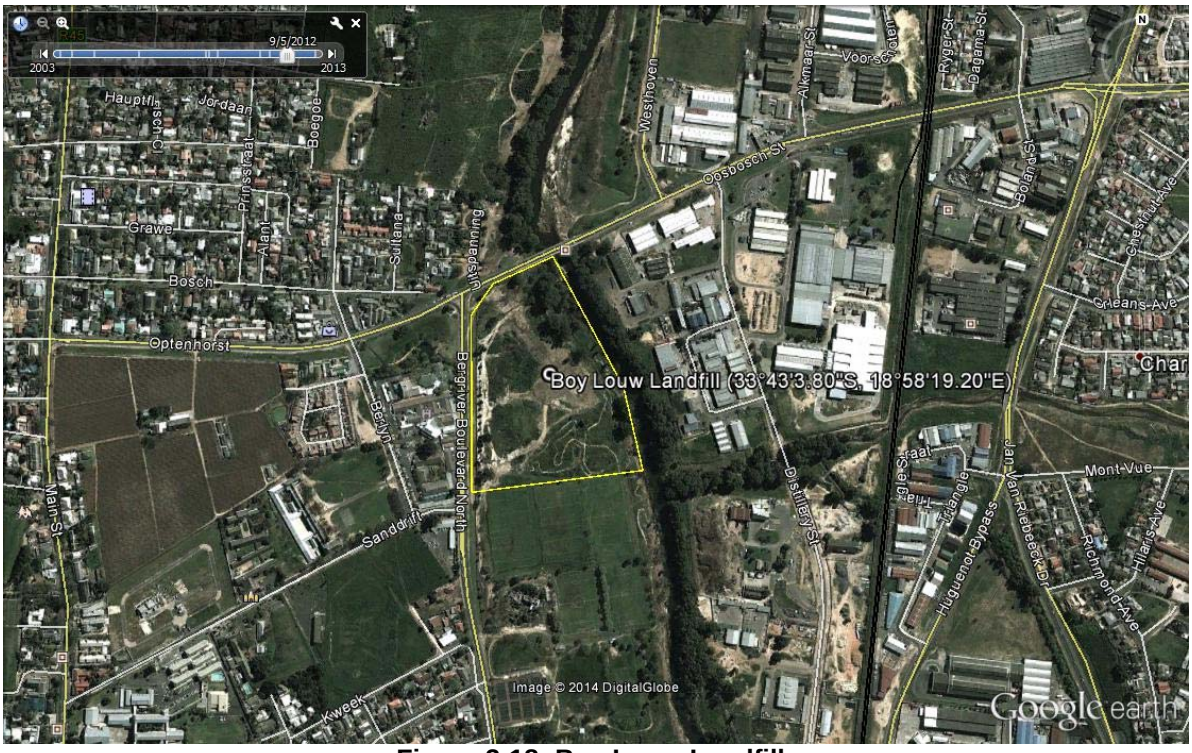


Figure 3-18: Boy Louw Landfill

Klapmuts (Rehabilitation complete)

License number: 16/2/7/W511/B14/Z1/P368
Location: 33°47'15.22''S, 18°50'08.81''E

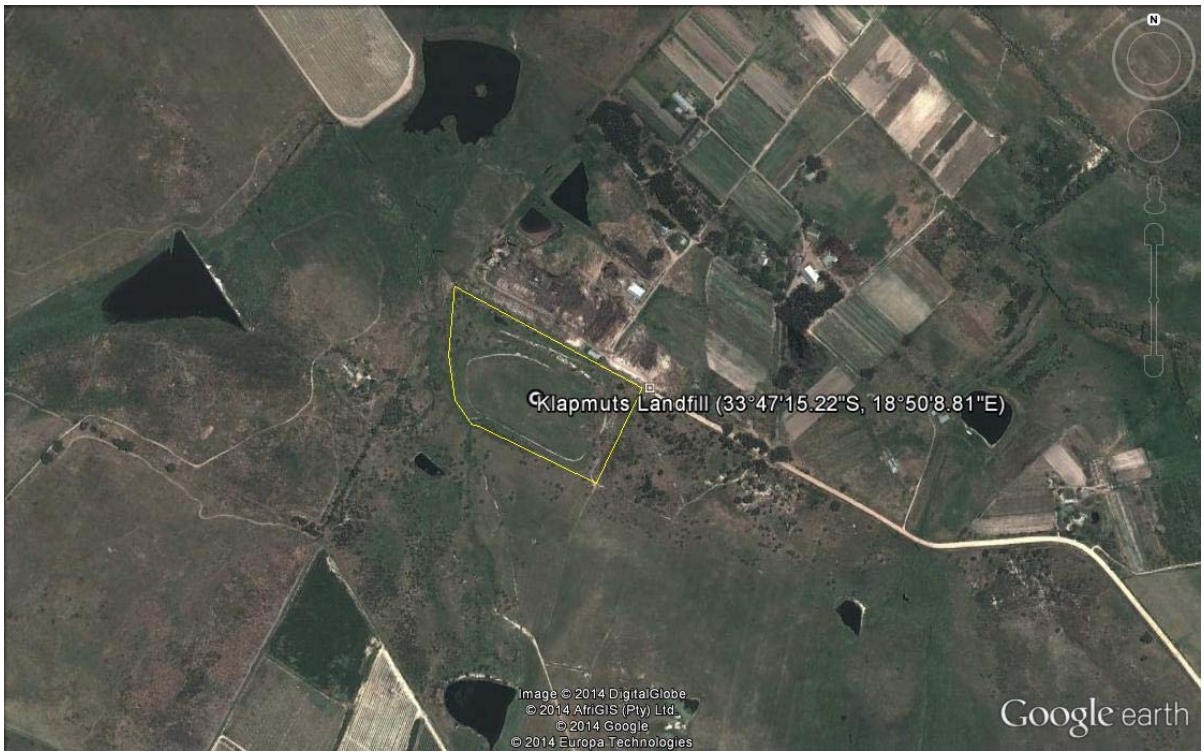


Figure 3-19: Klapmuts Rehabilitated Landfill

3.7.2.3 Langeberg

Robertson (Rehabilitation complete)

The Roberston landfill has been closed and rehabilitated for a number of years.

Figure 3-20: Robertson Rehabilitated Landfill

McGregor

The old closed garden waste site near McGregor (33°57'40.72''S, 19°48'26.7''E) is in the final stage of being issued with a closure license. The license will be issued during 2015 and will provide clarity regarding the rehabilitation requirements. Refer to **Figure 3-28** below.

3.7.2.4 Stellenbosch

The closure license application for the Stellenbosch landfill is currently under way along with the rehabilitation designs. The landfill will then be rehabilitated when the current operational cell has reached capacity, currently estimated at 4 years from 2015.

3.7.2.5 Witzenberg

The closed Ceres disposal site (33°23'16.72''S, 19°19'37.12''E) has been rehabilitated.

Figure 3-21: Ceres Closed Landfill

3.7.3 Waste Transfer Stations and Public Drop-offs

3.7.3.1 Breede Valley

Breede Valley Municipality operates one Solid Waste Transfer Station/Material Recovery Facility (S33°20'30.7''; E 20°01'39.7'') in Touws River. The facility is managed by the private company Beirowplas, who was appointed via a public tender process. Currently, four labourers pick recyclable materials from a conveyor belt.

Waste collection is done by the Municipality and delivered to the facility. The non-recyclable waste that is stored in 30m^3 containers is hauled by the Municipality to the Worcester landfill on a weekly basis.

On average, 9 021kg of recyclable material is diverted monthly.

Figure 3-22: Touws River Transfer Station/MRF

Touws River Transfer Station
Summary Table

Type of facility	Transfer Station / Material Recovery Facility
Licensed/Permitted?	None required/ Directive issued
License/Permit Number	-
Date of issue	-
Classification	-
Estimated Remaining Lifetime	Indefinite with regular maintenance
Access Control?	Site is fenced and has good access control
Externally audited?	No
Waste Types Received	General waste
Requirements	-

3.7.3.2 Drakenstein

Drakenstein Municipality operates one Solid Waste Transfer Station (S 33°43'11.3''; E 18°58'33.4''). The facility was upgraded in 2010 from operating with open top containers to operating with a static compactor into compaction containers.

Figure 3-23: Paarl Solid Waste Transfer Station

Paarl Transfer Station
Summary Table

Type of facility	Transfer Station
Licensed/Permitted?	None required, has ROD
License/Permit Number	-
Date of issue	-
Classification	-
Estimated Remaining Lifetime	Indefinite with regular maintenance
Access Control?	Site is fenced and has good access control
Externally audited?	No
Waste Types Received	General waste
Requirements	-

Public Drop-off Facilities have been provided in Saron (S33 11 20.9; E19 00 25.9), Hermon (S33 26 03.7; E18 57 38.3) and Gouda (S33 17 56.9; E19 01 34.2). These facilities receive only general waste and do not require licensing since the storage capacity is less than 100m^3. Waste is transported from these facilities to the Wellington Landfill.

Figure 3-24: Gouda Drop-off

Figure 3-25: Hermon Drop-off

Figure 3-26: Saron Drop-off Google Earth Image

3.7.3.3 Langeberg

In Langeberg public drop-offs have been provided at Montagu (33°47'34.60''S, 20°08'11.93''E) and McGregor (33°57'44.54''S, 19°48'29.69''E) and a transfer station at Robertson (33°49'15.84''S, 19°52'15.21''E).

Figure 3-27: Robertson Transfer Station

Figure 3-28: McGregor Drop-off

Figure 3-29: Montagu Drop-off

3.7.3.4 Stellenbosch

A transfer station has been provided at Klapmuts (33°48'22.15''S, 18°51'19.81''E).

Figure 3-30: Klapmuts Transfer Station

3.7.3.5 Witzenberg

No transfer stations or drop-offs have been provided in the Witzenberg Municipality, but a transfer station is recommended in order to replace the Wolseley landfill when it is no longer in use.

3.7.4 Disposal Facilities used outside the District Municipality Boundaries

The hazardous waste generated in the Cape Winelands District will be transported to the Vissershok Waste Management Facility (VWMF). It has a H:H operating permit from DWAF. The site is situated some 800m west of the N7 at Vissershok and is operated and audited in terms of its permit conditions.

3.7.5 Contaminated Land

Contaminated land includes all sites discussed under "3.7.2 Closed Sites".

3.8 COSTS OF EXISTING WASTE MANAGEMENT SYSTEM

3.8.1 Financial Summary of Waste Management Services of Cape Winelands District Municipality

The tables below show the totals for the Capital Budget and the Operating Budget for the Cape Winelands Municipality.

Table 3-9: Total Cape Winelands District Municipality Actual Budget and Expenditure

	2012/2013	Adjust. Bud. Jan 2014	2014/2015	2015/2016	2016/2017
Operating Expenditure	270 848 600.00	298 274 306.00	324 960 841.00	337 628 770.00	353 937 641.00
Project Expenditure	70 438 500.00	59 183 259.00	40 792 570.00	34 074 120.00	34 886 374.00
Sub Total	**341 287 100.00**	**357 457 565.00**	**365 753 411.00**	**371 702 890.00**	**388 824 015.00**
Capital Expenditure	11 102 020.00	8 295 622.00	12 482 747.00	7 472 050.00	7 048 300.00
Total Budget	**352 389 120.00**	**365 753 187.00**	**378 236 158.00**	**379 174 940.00**	**395 872 315.00**

Table 3-10: Project specific Budget (Solid waste and related projects)

Description	Adjust. Bud. 2014	Budget 2014/2015	Budget 2015/2016	Budget 2016/2017
Land-use and spatial planning				
EPWP invasive alien vegetation management programme	1 000 000.00	1 000 000.00	1 060 900.00	1 092 730.00
River rehabilitation	-	350 000.00	360 500.00	371 320.00
Projects and housing				
Cleaning of cemeteries	200 000.00	-	-	-
Clearing of road reserves	1 600 000.00	850 000.00	2 884 000.00	2 970 520.00
Municipal Health Service				
Clean-up Campaigns	1 000 000.00	-	1 000 000.00	1 000 000.00
Annual Environmental Health Education Programme	289 000.00	400 000.00	412 000.00	424 360.00
Greening	250 000.00	288 430.00	257 500.00	265 230.00
Waste Minimisation	-	-	-	-

Table 3-11: Total Income

	2012/2013	Adjust. Bud. Jan 2014	2014/2015	2015/2016	2016/2017
RSC Replacement Grant	193 926 000.00	199 744 000.00	205 736 000.00	210 834 000.00	217 159 020.00
Equitable Share	6 945 000.00	9 692 000.00	7 892 000.00	6 215 000.00	6 215 000.00
Finance Management Grant	677 431.00	2 043 315.00	1 250 000.00	1 250 000.00	1 250 000.00
EPWP Incentive	1 214 000.00	1 000 000.00	1 030 000.00	1 060 900.00	1 092 730.00
Other National Dora Grants	-	-	5 000 000.00	-	-
Provincial Dora Grants	1 303 094.00	4 991 607.00	9 820 520.00	5 542 970.00	5 682 273.00
Public Contributions	1 989 950.00	2 587 000.00	604 620.00	622 750.00	641 430.00
Other Income	4 183 164.00	7 987 869.00	38 630.00	4 746 800.00	2 280 001.00
Interest Received	R 24 451 381.00	R 26 250 000.00	R 27 500 000.00	R 28 840 000.00	R 29 705 200.00
Agency Services	R 73 799 198.00	R 91 727 298.00	R 99 267 364.00	R 103 447 362.00	R 107 537 135.00
Total budget	**R 308 489 218.00**	**R 346 023 089.00**	**R 358 139 134.00**	**R 362 559 782.00**	**R 371 562 789.00**

3.9 STAFF COMPLIMENT OF EXISTING WASTE MANAGEMENT SYSTEM

As the District Municipality is not responsible for weekly waste collection, there is not a large labour intensive staff compliment as with the local Municipalities. The waste management responsibilities are divided between the Technical Services Department and the Municipal Health Services Department.

Waste Management Officer:

Chapter 3 of the Waste Act states that:

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

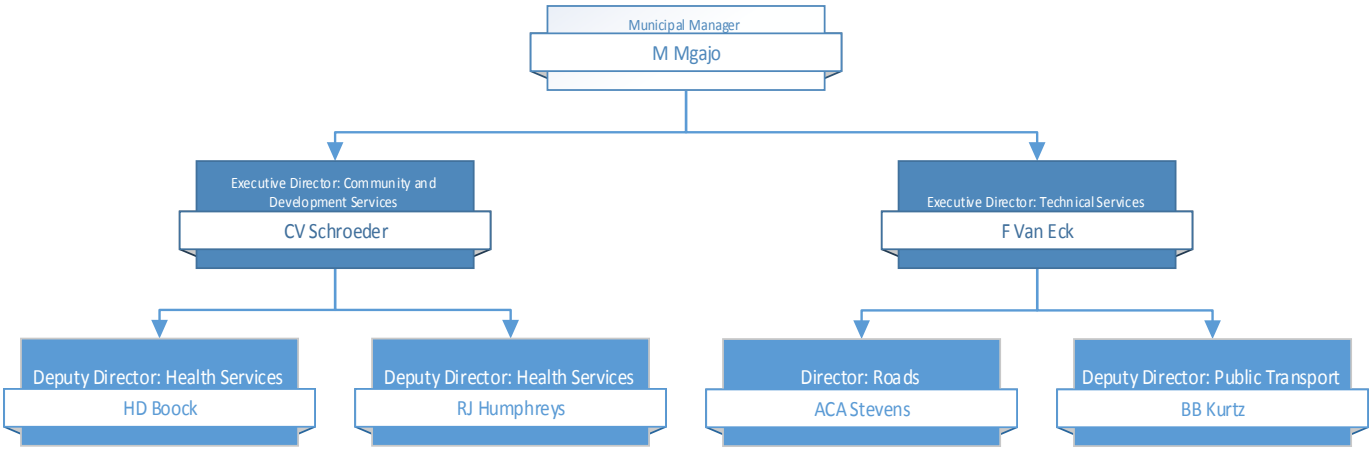
(4) A power delegated or a duty assigned to a waste management officer by virtue of subsection (3) may be sub-delegated of further assigned by that officer to another official in the service of the same administration, subject to such limitations or conditions as may be determined by the municipality.

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

The designated Waste Management Officer for the Cape Winelands District Municipality is Mr F van Eck who was appointed by Council as required by the Waste Act.

Provision must be made for the continuous training and education of the Cape Winelands waste management employees. Waste management information sharing/capacity-building events such as the Departmental Waste Forum, Waste Khoro and Wastecon should be attended by waste management employees determined by the Municipality.

Only the Macro structure has been included below, as there is no specific solid waste department. The duties are shared between the Technical Services Department and the Municipal Health Services (Under Community Services and Development Planning).



3.10 CURRENT WASTE MANAGEMENT IDENTIFIED GAPS

The following gaps were identified from the status quo of solid waste management in the Cape Winelands District Municipality:

- Public Awareness and Education.

  A large part of the general public appears to be content to put out their waste and then it is somebody else's problem and source separation participation must still be established in all neighbourhoods in the District which prove viable. Concepts such as waste avoidance, waste reduction, etc., are not within their general vocabulary. Public awareness and education must be continued and expanded in all local Municipalities.

- Not all residents are aware of the impacts of waste and the consequences of their littering
- Illegal dumping shows that these offenders are not in sync with the mind-set of sustainable waste management yet

- Recycling and waste minimisation.

  - Recycling initiatives need to be supported in all local Municipalities so that diversion rates in the District can be boosted. Reaching the target of 15% diversion by the end of 2015 will be very hard through recycling alone. Focus must be placed on garden waste chipping/composting as well as builder's rubble crushing. The future implementation of waste to energy in Drakenstein will boost diversion rates significantly.

- Area cleaning.

  - Proper area cleaning has been raised as a concern in some of the local Municipalities and must be brought up to standard.

- Lack of information regarding waste generation types and volumes.

  Accurate information regarding waste quantities are not readily available in all local Municipalities. The lack of weighbridges and waste characterisation are the cause of this.

  - The registration of industry waste generators and health care waste generators and transporters need to be addressed in a revision of the Municipal Integrated Solid Waste By-laws.
  - A new study regarding the waste stream characterisation must be done.
  - Weighbridges need to be installed at the larger waste management facilities.

- Collection Fleet – Age, Condition, Aesthetics, Type.

  Some collection vehicles in the District are likely in service long after the end of their economic lives. Collection vehicles help in creating the public's perception of waste management and need to be aesthetically pleasing.

  - Some vehicles are likely operating beyond their effective lifetimes. These vehicles need to be evaluated to ensure that they are still cost effective and efficient. If not, they need to be replaced. Each local Municipality in the District must ensure that their waste collection fleet is up to standard.

- Law enforcement.

  - The levels of illegal dumping need to be reduced by stricter law enforcement on the perpetrators.
  - The current outdated solid waste by-laws of some local Municipalities need to be updated to Integrated Waste Management By-laws.

- Disposal sites.

  - Some disposal sites in the District require external audits in order to ascertain non-compliances and develop action plans to correct them. Sites that cannot be operated or developed in terms of issued license conditions need to be closed and rehabilitated.
  - Closed disposal sites need to be replaced by solid waste transfer stations.
  - Drop-off and collection points need to be established for the public to deliver their household hazardous waste. The Municipalities must then dispose of this waste at the appropriate licensed facility or use private service providers to do so.
  - Disposal airspace is limited and there is need for the development of a regional disposal site as soon as possible.

- Vacant Positions.

  - Vacant positions in the solid waste management departments need to be filled so that services can be rendered effectively by all municipalities in the District.

Possible negative impacts of identified gaps on health and the environment

- With lack of public awareness and education, the understanding of a sustainable waste management system will be lacking and public littering will increase. With no realisation of the actual impact of waste on the environment, there would be no reason to be environmentally responsible. The environment will be poisoned by uncontrolled waste which will affect the public at large. An uninformed public will also not participate in waste avoidance and recycling efforts, causing pressure on landfill airspace requirements, hence more landfills need to be constructed to the detriment of the environment.
- With lack of information regarding waste generation types and volumes, no control can be exercised over the generators of these wastes and where it is disposed, possibly illegally.
- If the vehicles in the collection fleet are used past their useful lifetimes, they become a financial liability

4. WASTE MANAGEMENT STRATEGIC OBJECTIVES

With the Status Quo of waste management as listed in the previous chapters and the current problems that are experienced by waste management, the way forward is to state the strategic objectives of the District Municipality and then to develop action plans or implementation instruments how to achieve the strategic objectives.

Being a District Municipality and not "owning" any waste, these strategies are more focussed on supporting the local municipalities with their individual strategies and in the event of developing a district landfill, to develop action plans to ensure safe disposal. The District Municipality does not collect waste with the result that strategies for waste avoidance and waste reduction are not really applicable.

The District Municipality is committed to a system of waste management that will see the least possible amount of waste going to modern engineered landfills. This will be achieved through the use of education, law enforcement and material recovery and treatment plants. New and emerging technologies, where applicable and affordable, will also play a part in overall waste management.

The Waste Management Strategic Objectives for Cape Winelands District Municipality on which this Plan is based, commits the municipality to:

- Create an atmosphere in which the environment and natural resources of the region are conserved and protected.

- Develop a communication/information/education strategy to help ensure acceptance of 'ownership' of the strategic objectives among members of the public and industry throughout the municipality and to promote co-operative community action.

- Provide solutions for the three main objectives:
  - The avoidance of waste generation
  - The reduction of waste volumes
  - The safe disposal of waste

4.1 STRATEGIC OBJECTIVES

4.1.1 General

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

4.1.2 Waste Avoidance

To promote the minimisation of the generation of waste.

4.1.3 Waste Reduction

To promote the reduction of all waste so that nothing of neither value, nor anything that can decompose, gets disposed.

4.1.4 Waste Disposal

To store, dispose or treat all waste that cannot be avoided nor reduced at licensed facilities with regular operational and environmental monitoring and in accordance with regulatory requirements.

4.1.5 Definitions

WASTE AVOIDANCE is to avoid material entering the waste stream, e.g. when the generator of the material either re-uses it or gives the material to somebody else as product or raw material. Composting at home is regarded as waste avoidance.

WASTE REDUCTION is to reduce the quantity of waste that has been discarded by its generator, e.g. when recyclable materials are recovered at the sidewalk or at a transfer station, materials recovery facility or landfill. Composting of garden waste at a composting facility is regarded as reduction.

WASTE DISPOSAL is defined as the storage, treatment or disposal of waste at licensed facilities.

4.2 ROLE OF CAPE WINELANDS DISTRICT MUNICIPALITY

The role of the District authority is not easily defined as the collection and disposal of municipal solid waste is a function of the local municipalities. It is only when waste crosses a local municipal boundary that the receiving waste disposal facility or transfer station becomes a District function.

The plans formulated by the Cape Winelands District Municipality are specific to the area and its resources. They reflect the availability of suitable waste management facilities in the region, as well as local market demand for recovered materials. Special care must be taken to cater for the volatility of markets for recovered materials by ensuring that there are other suitable options to fall back on, if required. It is, therefore, highly desirable to be able to switch between waste management methods - further emphasising the hazards of relying too heavily on a single policy option instead of a combination of policies.

The Integrated Waste Management Plan of the Cape Winelands District Municipality is a requirement of the Waste Act and this plan will be carried out through the upcoming years. This plan takes into account the Municipality's legal obligations regarding waste avoidance, recovery, disposal and general management.

The implementation instruments or action plans defined in the following section are laid out in a manner which reflects the waste management hierarchy, putting the emphasis on waste avoidance and minimisation, with specific waste streams looked at in detail.

5. CAPE WINELANDS DISTRICT MUNICIPALITY'S IWMP IMPLEMENTATION ACTIONS, SCHEDULE AND COST ESTIMATES

5.1 IWMP GOAL 1: PUBLIC AWARENESS AND EDUCATION

<table>
<tr><th colspan="7">Goal 1: Awareness & Education</th></tr>
<tr><th rowspan="2">Objectives/Targets</th><th colspan="6">Actions/Cost Estimates</th></tr>
<tr><th>2015/2016</th><th>2016/2017</th><th>2017/2018</th><th>2018/2019</th><th>2019/2020</th><th>2020 AND ON</th></tr>
<tr><td rowspan="6">Educate, strengthen capacity and raise awareness in integrated waste management. The public will be informed and continually made aware of the impacts of waste on the environment. Municipal staff will receive training and attend forums.</td><td colspan="6">Environmental Health Education</td></tr>
<tr><td>400 000.00</td><td>TBD</td><td>TBD</td><td>TBD</td><td>TBD</td><td>TBD</td></tr>
<tr><td colspan="6">Greening Project. Measured by number of trees planted.</td></tr>
<tr><td>250 000.00</td><td>TBD</td><td>TBD</td><td>TBD</td><td>TBD</td><td>TBD</td></tr>
<tr><td colspan="6">Cape Winelands Solid Waste employees to attend education seminars and waste forums. Capacity training and education conducted within the Municipality where needed.</td></tr>
<tr><td colspan="6">Costs dependent on number of forums attended as well as costs related to internal training provided by the CWDM.</td></tr>
</table>

5.2 IWMP GOAL 2: IMPROVE WASTE INFORMATION MANAGEMENT

<table>
<tr><th colspan="7">Goal 2: Improve Waste Information Management</th></tr>
<tr><th rowspan="2">Objectives/Targets</th><th colspan="6">Actions/Cost Estimates</th></tr>
<tr><th>2015/2016</th><th>2016/2017</th><th>2017/2018</th><th>2018/2019</th><th>2019/2020</th><th>2020 AND ON</th></tr>
<tr><td rowspan="6">Ensure the reporting of all waste management facilities to IPWIS. Waste quantification systems to be in place. Registration of hazardous waste generators (industry & medical) and service providers (e.g. transporters).</td><td colspan="3">Ensure that all the local Municipalities conduct waste characterisation studies.</td><td colspan="3"></td></tr>
<tr><td colspan="6">Ensure that all local Municipalities have registered their waste management facilities on and reports to IPWIS.</td></tr>
<tr><td colspan="6">No Cost. The District's Waste Management Officer to oversee in co-operation with the Waste Management Officers/Waste Managers of the Local Municipalities.</td></tr>
<tr><td></td><td colspan="5">The planned new regional landfill will be equipped with weighbridges to record waste loads. This will be reported to IPWIS.</td></tr>
<tr><td></td><td colspan="5">Costs included under Goal 3</td></tr>
</table>

5.3 IWMP GOAL 3: EFFECTIVE SOLID WASTE SERVICE DELIVERY

Goal 3: Effective solid waste service delivery						
Objectives/Targets	**Actions/Cost Estimates**					
	2015/2016	**2016/2017**	**2017/2018**	**2018/2019**	**2019/2020**	**2020 AND ON**
Ensure that waste services are provided in an effective and environmentally responsible manner to all residents in the District.	Construct the planned regional Integrated Waste Management Facility. This is to ensure future disposal airspace in the District for use by the local Municipalities.					
	Civil contractor to be appointed via public tender for the construction. External operator to be appointed via public tender for the operation of the MRF, chipping & crushing area and landfilling. Costs will be determined.					
	River Rehabilitation Project. Measured by amount of hectares cleared.					
	350 000.00	TBD	TBD	TBD	TBD	TBD
	EPWP invasive alien plant management programme. Measured by amount of hectare cleared.					
	1 030 000.00	TBD	TBD	TBD	TBD	TBD

5.4 IWMP GOAL 4: PROMOTE AND ENSURE WASTE MINIMISATION

Goal 4: Promote and Ensure Waste Minimisation						
Objectives/Targets	**Actions/Cost Estimates**					
	2015/2016	**2016/2017**	**2017/2018**	**2018/2019**	**2019/2020**	**2020 AND ON**
Maximise waste minimisation in the CWDM. Monitor and assist local municipalities to achieve recycling and diversion targets. The aim is to consistently divert high percentages of waste from landfill.	The regional integrated waste management facility will include a Material Recovery Facility, Garden Waste Chipping Area and Builder's Rubble Crushing Area which will ensure that the incoming waste stream is diverted as much as is practicable before disposal.					
	Educate the public regarding waste minimisation as part of Goal 1.					

5.5 IWMP GOAL 5: IMPROVE REGULATORY COMPLIANCE

Goal 5: Improve Regulatory Compliance						
Objectives/Targets	**Actions/Cost Estimates**					
	2015/2016	**2016/2017**	**2017/2018**	**2018/2019**	**2019/2020**	**2020 AND ON**
Ensure up-keep with latest legislation and the enforcement thereof relating to solid waste management in the District.	Ensure that all local Municipalities' and the CWDM's solid waste management by-laws are relevant and up to date. Provision should be made in the by-laws so that generators and transporters of hazardous wastes register and report to the Municipalities.					
	No additional costs. Can be done in-house					
			Ensure that the regional integrated waste management facility is internally and externally audited as per the frequency required in the license once operational. Further ensure that license conditions and requirements are met. The cost estimate includes an operational audit, water monitoring and topographical survey.			
			60 000.00	63 600.00	67 416.00	71 460.96

5.6 IWMP GOAL 6: ENSURE SAFE AND INTEGRATED MANAGEMENT OF HAZARDOUS WASTE

Goal 6: Ensure safe and integrated management of hazardous waste						
Objectives/Targets	**Actions/Cost Estimates**					
	2015/2016	**2016/2017**	**2017/2018**	**2018/2019**	**2019/2020**	**2020 AND ON**
Provide education and management options for hazardous wastes. Ensure legal compliance by hazardous waste generators and transporters. Ensure the monitoring of the incoming waste stream at disposal facilities.	The public must be informed about household hazardous waste and the avoidance, reduction and disposal options available to them regarding these wastes. This forms part of Goal 1 of this plan.					
	As part of Goal 2 of this plan, the registration and reporting of hazardous waste generators at the local Municipalities will allow the Municipalities as the service authorities to ensure that the waste is stored, transported, treated or disposed as is legally required. The District can oversee and review this.					
	Hazardous facilities: With the construction of the regional disposal facility, provision must be made for the temporary storage of household hazardous wastes from where it will be transported and disposed at the appropriate licensed facility.					
	Monitoring of waste: It must be ensured that waste management employees are familiar with the latest legislation regarding hazardous waste, the identification thereof and the disposal options that are legal. Employees at the future regional waste management facility must be able to identify the received waste loads and prohibit the disposal where required. The incoming waste loads at disposal and waste management facilities must be monitored.					

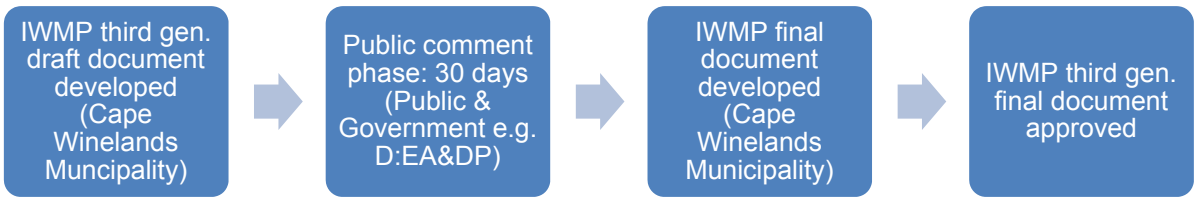
5.7 IWMP GOAL 7: ENSURE SOUND BUDGETING FOR INTEGRATED WASTE MANAGEMENT

Goal 7: Ensure sound budgeting for integrated waste management						
Objectives/Targets	**Actions/Cost Estimates**					
	2015/2016	**2016/2017**	**2017/2018**	**2018/2019**	**2019/2020**	**2020 AND ON**
Ensure that upcoming implementation actions are in the budget. Explore sources of funding.	The Municipality will ensure that there is sufficient provision in the budget for upcoming projects and action items. This can be done with the annual IWMP implementation programme review and project evaluation.					
	The Municipality will explore other sources of funding.					
	The Municipality will as part of Goal 3 ensure that the service delivered is cost efficient.					

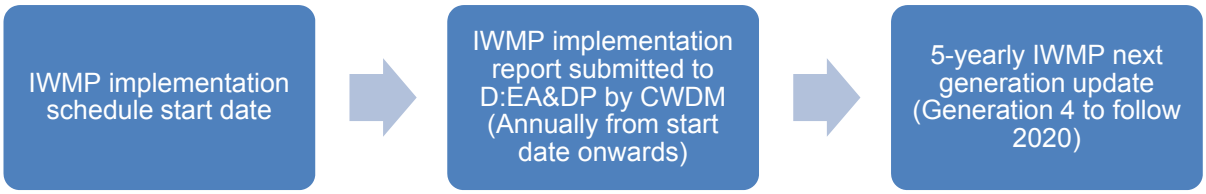
6. IWMP MONITORING AND REVIEW

For the IWMP to be an effective and relevant tool and guide for integrated waste management in the Cape Winelands District Municipality, it will need to be monitored and reviewed. Monitoring relates to the goals and targets set out in the IWMP and whether they are being achieved or pursued. Reviewing relates to the document and the projects themselves which will require regular updates to stay up-to-date, specifically the implementation items of Section 4. The proposed implementation schedule as well as allocated budget may change at any time and these changes, if any, need to be reflected in the reviewed IWMP to avoid confusion.

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



The date on which the final IWMP third generation document is approved, must be recorded and will serve as the base date on which further monitoring and review dates are based. This is also the start date of the approved implementation schedule. The following diagram illustrates the review steps that must be followed after the final IWMP is published.



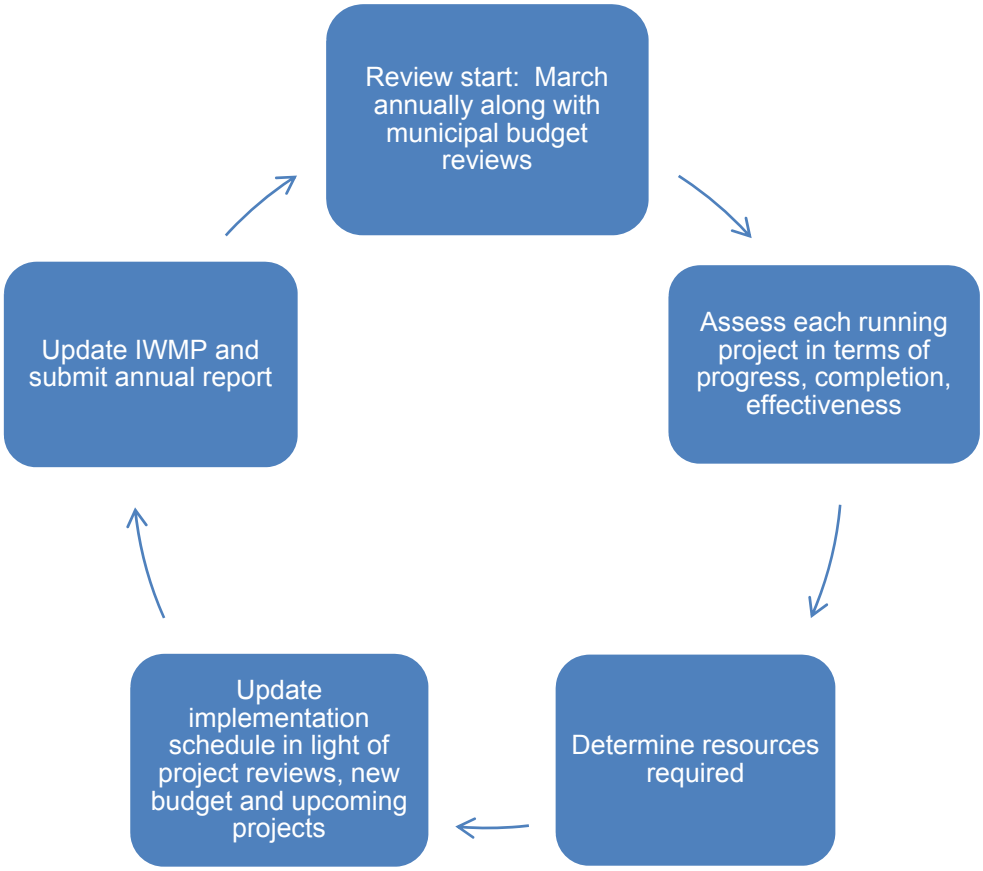
The annual implementation reports will be submitted by the CWDM and will be compiled by Mr van Eck, or to whom the task is delegated by him. The annual report must contain the approved implementation items and dates of the IWMP and the progress thereof of the past year. Based on the progress and possible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

The progress of each task on the implementation schedule, if under way according to the schedule for that year, must be summarised and the estimated completion date must be updated. The reasons for the lack of progress or practical difficulties must be stated along with a summarised action plan to adhere to the schedule as close as possible.

The report must further discuss the effectiveness of completed projects. For example, when a new weighbridge has been commissioned, the collected data must be reported on and added to the IPWIS. Also the participation rates of source separation can be monitored along with the public awareness and education campaign. See **Annexure 2** for an example of a project review form which can be used to track the success and effectiveness of the waste management projects and added to the annual report. The projects and progress thereof will be tracked by each project team constantly, meaning that each project is not reviewed only annually, but all progress tracked in order to provide an accurate description in the annual report for submission.

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

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



7. CONCLUSIONS AND RECOMMENDATIONS

7.1 CONCLUSIONS

The Project Team, with the assistance of Municipal Officials, has undertaken an analysis of the current municipal solid waste management activities within Cape Winelands District Municipality.

The analysis has shown that the Municipalities in the District have through the years committed themselves to the delivery of a collection and disposal service for all its residents. In recent years the more sustainable approach with regard to waste minimisation and reduction has been adopted and is to be expanded in the upcoming years.

The chapters of this Integrated Waste Management Plan report describe the way in which the municipalities are currently conducting solid waste management and how to strategically move towards a sustainable waste management system whereby the focus will shift to the avoidance and reduction of waste rather than to the disposal thereof. It also lists the strategies of the municipality in terms of waste avoidance, waste reduction and waste disposal.

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

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

- all formal and informal residential erven are receiving a weekly door-to-door waste collection service
- waste collection services are not available to farms, but farmers offload their household waste themselves or can apply for a service in some of the municipalities
- separation of recyclables at source is done in all municipalities in the District and continues to expand to more neighbourhoods
- collected municipal waste are transported to the local disposal sites, with some of these sites becoming restricted in terms of available disposal airspace

- green waste chipping and builder's rubble crushing activities are practiced throughout the District, with composting being done in Langeberg and Stellenbosch
- most healthcare risk wastes are managed by private contractors
- waste recovery is being done, but needs to expand

With the current waste management system focussing on getting the waste into the waste stream and disposing of it in an acceptable manner, and with the future integrated waste management system focussing on waste avoidance and waste reduction, the municipality requires a set of strategic objectives on how to transform from the current management system to the future management system.

The strategic objectives for integrated waste management in Cape Winelands District Municipality can be summarised as follows:

- To ensure that Waste Management in the Cape Winelands District complies with South African and International environmental standards so that it is beneficial to industrial and agricultural growth and the public's right to a clean and healthy environment.
- To promote the minimisation of the entrance of material of value into the waste stream.
- To promote waste reduction so that nothing of value nor anything that can decompose, gets disposed.

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

- Public Awareness and Education
- Waste Quantification & Information
- Effective Solid Waste Service Delivery
- Promote and Ensure Waste Minimisation
- Improving Regulatory Compliance
- Ensuring the Safe and Integrated Management of Hazardous Waste
- Ensuring Sound Budgeting for Integrated Waste Management

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

Since the highest priority for transforming the current management system is undoubtedly depending on public acceptance and ownership, the Public Awareness and Education instrument will receive preference in the implementing framework.

7.2 RECOMMENDATIONS

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

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

Public Awareness

The first step in educating the public about waste is to make them aware of any new waste management procedures and facilities available to them.

Another reason to focus on educating the public will cause a greater awareness of waste minimisation. This will reduce waste generation rates which will in turn reduce transport volumes and costs. It is important to also provide feedback to the public of the success of their efforts, for example publishing month to month volumes of waste diverted from being landfilled.

To reduce the contamination of recyclables, the current source separation strategy should be expanded in all local municipalities.

Waste reduction

Expanding the separation at source neighbourhoods and continual use of existing and additional MRF's will ensure the reduction of waste to landfill. The establishment of swop shops will also contribute to waste reduction.

Waste Disposal

When the regional site is established, it must be ensured that it is audited in terms of the license. Regular audits will ensure that the facility is operated correctly and efficiently. Ensuring the correct operations will maximise the results of efforts of waste reduction and recovery and therefore the benefits thereof.

A disposal strategy must be co-ordinated for the western portion of the Cape Winelands District. The Waste to Energy strategy of the Drakenstein Municipality will contribute, but disposal airspace will still become a requirements once the current landfills have reached capacity.

The following items must be included in the Cape Winelands Municipality IDP:

All implementation actions requiring Capital Expenditure not already contained in the IDP:

- The establishment of the regional integrated waste management facility following the issuing of the license

ANNEXURE 1
IWMP CHECKLIST

Western Cape Government
Environmental Affairs and Development Planning

INTERGRATED WASTE MANAGEMENT PLANNING

CHECKLIST FOR THE .....LOCAL MUNICIPALITY

FEBRUARY

2014

The Afrikaans or Xhosa version of this document is available on request.

SECTION 1: GENERIC INFORMATION				
Category of the municipality		A	B	C
Date of Submission				
Name of the municipality				
Section or Department within the municipality responsible for drafting the IWMP				
Contact details of "Responsible Person" in the Municipal Department		Contact details of Alternate contact person from Municipality		
Name:		Name:		
Tel:		Tel:		
Fax:		Fax:		
Cell:		Cell:		
Email:		Email:		

Integrated Waste Management Plan Review Form (IWMP) / Checklist

Please answer the following questions by placing a (**X**) in the appropriate block. Only submit your IWMP for approval once you have answered YES to all the questions below.

CHECKLIST QUESTIONS	YES	NO
SECTION 1 INTRODUCTION AND GENERAL DESCRIPTION		
1.1) Does the Intro and general description includes overall aim, strategic goals and scope, of the IWMP?		
1.2) Does the IWMP indicate the geographical coverage of the plan?		
1.3) Does the IWMP indicate the Geo-physical and Geo-hydrological conditions in the municipality?		
SECTION 2 STRATEGIC LINKAGES		
2.1) Does the IWMP show linkages with the WC IWMP?		
2.2) Does the IWMP show linkages with the SDF?		
2.3) Does the IWMP show linkages with the IDP?		
SECTION 3 PUBLIC PARTICIPATION		
3.1) Is there a detailed public participation program included in the IWMP? (i.e. date, location and amount, number of PP session's, type of PP(newspapers, meetings), (participants)		
3.2) Does the IWMP provide proof of PP i.e. attendance registers, comments received and response given?		
SECTION 4 IWMP STATUS QUO OR SITUATION ANALYSIS		
4.1 LEGISLATION		
4.1.1) Does the IWMP identify all existing legislation and policies, which is applicable to integrated waste management including the local municipal by-laws?		

4.1.2) Does the IWMP indicate which existing local government by-laws that influence waste management practices are currently being reviewed or in the process of being reviewed?		
4.1.3) Does the Status Quo identify any international agreements		
4.2 DEMOGRAPHIC PROFILE		
4.2.1) Does the Status Quo indicate the existing demographic profile of the municipality w.r.t total population of the area,		
4.2.2) Does the Status Quo indicate the existing demographic profile of the municipality w.r.t projected population and growth rate of the area,		
4.2.3) Does the Status Quo indicate the existing demographic profile of the municipality w.r.t population distribution		
4.2.4) Does the Status Quo indicate the existing demographic profile of the municipality w.r.t socio-economic categories including income levels		
4.2.5) Does the Status Quo indicate the existing demographic profile of the municipality w.r.t development profiles		
4.3 WASTE MANAGEMENT COST AND FINANCING		
4.3.1) Does the IWMP include a detailed breakdown of current operational and capital budget?		
4.3.2) Does the IWMP include a detailed breakdown of current operational and capital expenditure?		

The Afrikaans or Xhosa version of this document is available on request.

4.3.3) Does the IWMP indicate the current breakdown of income (e.g. tariffs, fines for waste management)		
4.4 SERVICES AND SERVICE DELIVERY		
4.4.1) Does the IWMP indicate the level of free basic services		
4.4.2) Does the IWMP indicate the level of services to Formal residential houses		
4.4.3) Does the IWMP indicate the level of services to informal settlements.		
4.4.4) Does the IWMP indicate the level of services to farms		
4.4.5) Does the IWMP indicate unserviced areas		
4.5 COMPLIANCE AND ENFORCEMENT		
4.5.1) Does the Status Quo identify licensed and unlicensed waste management facilities and has provision been made for the licensing, closure and rehabilitation of these facilities in the IWMP.		
4.5.2) Does the IWMP indicate if landfill sites, recycling, drop-off and buy-back centers are in compliance with license conditions?		

The Afrikaans or Xhosa version of this document is available on request.

4.5.3) Does the Status Quo provide a summary of waste related complaints (i.e. number and type)		
4.5.4) Does the Status Quo indicate the available annual air space and remaining life expectancy of the waste management facilities.		
4.5.5) Does the Status Quo identify contaminated land (unpermitted landfills prior to ECA) and indicate remediation measures to reduce the risk of harm to health or the environment.		
4.5.6) Does the IWMP address how informal salvaging, if any, on existing landfill facilities are going to be formalized, controlled or eliminated and does the permit/license or environmental authorization make provision for it, or do they indicate if the existing authorizations are to be amended.		
4.6 WASTE CHARACTERISATION		
4.6.1) Does the IWMP include waste generation quantities and types for general and hazardous waste from households		
4.6.2) Does the IWMP include waste generation quantities and types for general and hazardous waste from industry		
4.6.3) Does the IWMP include waste generation quantities and types for general and hazardous waste from business		
4.6.4) Does the IWMP include waste generation quantities and types for general and hazardous waste from Farms		
4.6.5) Does the IWMP include waste generation quantities and types for general and hazardous waste from Other institutions e.g. health care facilities		

The Afrikaans or Xhosa version of this document is available on request.

4.6.6) Does the IWMP include projected waste generation quantities?		
4.7. **WASTE MINIMISATION**		
4.7.1) Does the Status Quo indicate any waste minimisation (reuse, recycling, recovery, treatment) initiatives as mandated in the NEM: WA within your municipal area including private sector initiatives?		
4.7.2) Does the IWMP include waste minimisation quantities and types for general and hazardous waste?		
4.8. **ORGANISATIONAL STRUCTURE AND STAFF CAPACITY**		
4.8.1) In accordance with Chapter 3 of NEMWA has a waste management officer been designated in writing to be responsible for coordinating matters pertaining to waste management in the municipality?		
4.8.2) Does the IWMP indicate the entire waste staff (management, supervisor and labourers) complement including any staff vacancies and plans to fill vacant posts.		
4.9. **WASTE AWARENESS AND EDUCATION**		
4.9.1) Does the IWMP provide information(campaigns) on waste awareness and education		
4.10 WASTE INFORMATION MANAGEMENT		

The Afrikaans or Xhosa version of this document is available on request.

4.10.1) Does the IWMP indicate the Status of registration and reporting of waste management facilities on IPWIS.		
4.10.2) Does the IWMP indicate the use of a waste quantification system?		
5. GAP AND NEED ANALYSIS		
5.1) Does the IWMP indicate a gap analysis (analysis and identification of issues, problems or shortcomings or challenges within the municipality w.r.t waste management.		
6. OBJECTIVES AND TARGETS		
6.1) Does the IWMP set short, medium and long-term objectives and targets? If yes, are these objectives specific/measurable/achievable/realistic/time-based (SMART)?		
7. IWMP IMPLEMENTATION		
7.1) Is there a detailed implementation plan identifying activities together with both human and financial resources and timeframes.		
7.2) Does the Implementation plan address how the IWMP will be integrated with the Integrated Development Plan (IDP)?		
8. MONITORING AND REVIEW		
8.1) Does the IWMP introduce mechanisms to monitor the effectiveness of the implementation of the IWMP and to take corrective actions if the targets are not met?		

Score:

Percentage:

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ANNEXURE 2
PROJECT REVIEW FORM

CAPE WINELANDS DISTRICT MUNICIPALITY IWMP IMPLEMENTATION PROJECT REVIEW FORM

PROJECT NAME AND DESCRIPTION: ……

……

……

PROJECT COMMENCEMENT DATE: ……

PROJECT COMPLETION DATE: ……

RATE PROJECT OVERALL SUCCESS IN TERMS OF INTENDED PURPOSE: 1 2 3 4 5

REASON(S) FOR SCORE: ……

……

……

IF SCORE = 1-3, LIST THE ACTIONS THAT ARE TO BE TAKEN ALONG WITH TARGET DATES TO IMPROVE SCORE: ……

……

……

……

LIST ALL PUBLIC COMMENTS/COMPLAINTS RECEIVED RE THIS PARTICULAR PROJECT: ……

……

……

HAVE THESE BEEN ADDRESSED: ……

……

ANNEXURE 3
ADVERTISEMENTS

CAPE WINELANDS DISTRICT
MUNICIPALITY • MUNISIPALITEIT • UMASIPALA

DRAFT INTEGRATED WASTE MANAGEMENT PLAN (3rd GENERATION)

Notice is herewith given in terms of section 21 of the Local Government: Municipal Systems Act, 2000 (Act 32 of 2000) that the Draft Integrated Waste Management Plan (IWMP) Third Generation of the Municipality has been developed.

The local community is invited to submit comments in connection with the Draft Plan to the Municipality by submitting such comments on or before 4 June 2015 to the Municipal Manager (For attention Mr F van Eck) at the following address, fax number or e-mail:

JPCE, PO Box 931, BRACKENFELL, 7561, Fax number: (021) 981 0868, info@jpce.co.za

The Council will consider the Draft Plan together with all the comments and representations received. The Draft Plan will be available for perusal during office hours at the offices of the Breede Valley, Drakenstein, Langeberg, Stellenbosch and Witzenberg local municipal offices, at libraries throughout the District and can be downloaded at www.jpce.co.za.

M Mgajo
MUNICIPAL MANAGER

AAAAAA-WS010515

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KONSEP GEINTEGREERDE VASTE AFVAL BESTUURPLAN (3de GENERASIE)

Kennis geskied hiermee ingevolge artikel 21 van die Wet op Plaaslike Regering: Munisipale Stelsels, 2000 (Wet 32 van 2000) dat die Munisipaliteit se Konsep Geintegreerde Vaste Afval Bestuurplan, 3de Generasie saamgestel is.

Die plaaslike gemeenskap word uitgenooi om vertoë met betrekking tot die Konsepplan aan die munisipaliteit voor te lê deur hul vertoë voor of op 4 Junie 2015 te rig aan die Munisipale Bestuurder (vir aandag Mnr F. Van Eck) by die volgende adres of faksnommer:

JPCE, Posbus 931, BRACKENFELL, 7561, Faksnommer: (021) 981 0868, info@jpce.co.za

Die Raad sal die Konsepplan tesame met alle kommentaar of vertoë wat ontvang is oorweeg. Die Konsepplan is gedurende kantoorure ter insae by die kantore van die Breede Vallei, Drakenstein, Langeberg, Stellenbosch en Witzenberg munisipale kantore, openbare biblioteke in die Distrik en op die volgende webwerf: www.jpce.co.za.

M Mgajo
MUNISIPALE BESTUURDER