

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.

2.10 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.

2.11 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.

2.12 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).

2.13 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 1000m².
- (3) The recycling of general waste at a facility that has an operation area in excess of 500m², excluding recycling that takes place as an integral part of an internal manufacturing process within the same premises.
- (4) The recycling of hazardous waste in excess of 500kg but less than 1 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 to land covering an area of more than 50m² but less than 200m² 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 200m² 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-
- Norms and Standards for Storage of Waste, 2013 or
 - Standards for Extraction, Flaring or recovery of Landfill Gas, 2013; or
 - Standards for Scrapping or Recovery of Motor Vehicles, 2013.

Storage of waste

- The storage of general waste at a facility that has the capacity to store in excess of 100m³ of general waste at any one time, excluding the storage of waste in lagoons or temporary storage of such waste.
- The storage of hazardous waste at a facility that has the capacity to store in excess of 80m³ of hazardous waste at any one time, excluding the storage of hazardous waste in lagoons or temporary storage of such waste.
- The storage of waste tyres in a storage area exceeding 500m².

Recycling or recovery of waste

- The scrapping or recovery of motor vehicles at a facility that has an operational area in excess of 500m².
- The extraction, recovery or flaring of landfill gas.”

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

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

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

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

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

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

- regular medical check-ups to ensure their health and well-being;
- appropriate personal protective equipment e.g. gloves, masks, overalls and raincoats, gumboots; and
- 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:

- the types of waste collection services provided;
- separation at source - the removal of recyclables and re-usable waste from the general household waste;
- the potential of composting of some of the household waste and the benefit of such to the household;
- the unacceptability of illegal dumping and littering;
- 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;
- (ii) 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.

2.15 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.

2.16 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

2.17 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.

2.18 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.

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

2.20 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

2.21 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 500m² and describes how such a facility 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 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 100m³ general waste continuously or 80 m³ of hazardous waste continuously.

2.23 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.

2.24 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.

2.25 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).

2.26 DRAFT VERSION: NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE AMENDMENT ACT, 2014 (ACT NO. 26 OF 2014): IMPLEMENTATION GUIDE

The purpose of the document is to provide a guideline to the public on how the Department of Environmental Affairs will interpret and implement the National Environmental Management: Waste Amendment Act, 2014 (Act No. 26 of 2014). As the Act is implemented and new issues emerge, the Department will provide further guidance and add to the document.

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 Western Cape Provincial Spatial Development Framework (March 2014)

The 2014 PSDF replaces the 2009 PSDF. The 2014 PSDF states that new recovery/recycling facilities and related awareness programmes need to be rolled out in order to counter the increasing waste generation and need for new waste disposal sites. Challenges are illegal dumping, shortfalls in hazardous waste facilities, growing informal settlements and a lack of recyclable collection from homes. Emphasis is placed on the “reduce, rethink, recycle” mindset that needs to be established. The following policies address solid waste:

“Provincial Spatial Policies

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

Waste

1. Learning lessons from the City of Cape Town’s recycling programme, mainstream recycling and recovery of waste in the high waste generation areas of the Province to unlock economic opportunities and increase the lifecycle of current disposal sites. Apply the principles of ‘reduce, reuse, recycle’.
2. Close down illegal sites and locate new regional waste sites adjacent to rail facilities to decrease operational costs and energy requirements associated with the need for road freight.”

Under Regional Economic Infrastructure the following is stated for solid waste systems:

- “- Increase waste recycling and reuse by replicating the City of Cape Town’s programme in all settlements.
- Adopt waste to energy in long term.”

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 III (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

The Overstrand Municipality compiled and published their Integrated Waste Management By-law since the previous IWMP revision. This by-law was published in the Provincial Gazette of 12 July 2013. The full by-law is attached as **Annexure 2** or can be downloaded at www.overstrand.gov.za.

As the old by-law has been replaced by the comprehensive Integrated Waste Management By-law, no new revision is planned or recommended in the IWMP. The by-law makes provision to responsibly regulate waste in the Overstrand and is in line with the Waste Act.

3. EXISTING WASTE MANAGEMENT IN OVERSTRAND 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 Overstrand 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 Overstrand Municipality

The Overstrand Municipality makes use of their official newsletter, the Overstrand Bulletin, to keep the public informed and updated with the latest matters, including solid waste topics. For example, the latest (October 2014) issue discusses the Youth Jobs In Waste programme as follows:

“The Department of Environmental Affairs (National) has launched a project called ‘*Youth Jobs in Waste*’ for all the municipalities in the Western Cape. The key focus of the *Youth Jobs in Waste* projects is employment of young people and to equip them with skills to have a better chance for obtaining permanent employment. They will be utilized in the following categories: Waste management administration, Landfill administration, Environmental Awareness campaigns and general work. Overstrand Municipality is excited about the opportunity to train local youth to do environmental awareness for the upliftment and empowerment of our communities and to contribute to better living conditions for all. The recruitment process has been finalised and residents are requested to give these youngsters their full co-operation with the awareness campaigns. This project will last for one year with a possibility to extend for another year.”

Copies of the Overstrand Bulletin can be downloaded from the Overstrand Municipal Website.

Mr van Taak also visits schools in the Municipal area to educate scholars about waste management.

3.2 WASTE QUANTITIES AND TYPES

3.2.1 Methodology for General Waste Survey

The waste disposed in the Overstrand is weighed and recorded. The Gansbaai Landfill and Karwyderskraal landfills are equipped with weighbridges and therefore all general waste disposed in the Overstrand are weighed. The Municipality reports the quantities to the IPWIS and the new Integrated Waste Management By-law makes provision for this. The By-law also makes provision for the Municipality to obtain data from other waste management entities located within the municipal boundaries for the purpose of reporting to the IPWIS.

The following table summarises the recorded waste totals for the 2013/2014 financial year. The negative values in the garden waste column shows that more garden waste was chipped than was generated that month, meaning that the stockpile from the previous months was reduced. The diversion quantity is the sum of the recycled waste, chipped garden waste and portion of building and demolition waste that was crushed during the month. This total is divided by the quantity in the first column of Table 3-1 in order to obtain the percentage diversion:

Table 3-1: Recorded Waste Totals

	Total Waste (t)	General Waste (t)	Garden Waste (t)	Building and demolition waste (t)	Chipped Greens (t)	Recycling Tailings (t)	Recycled (t)	Total Disposed (t)	Total Diverted (t)	Diversion %
Jul-13	5 139.45	3 111.78	141.18	254.38	1 046.78	314.22	271.11	3 697.80	1 441.65	28%
Aug-13	4 606.12	2 774.06	307.82	497.54	614.24	185.82	226.64	3 391.32	1 214.80	26%
Sep-13	3 749.98	2 594.67	124.24	236.02	419.32	142.18	233.55	2 923.17	826.81	22%
Oct-13	4 463.13	2 956.21	141.78	364.44	531.38	236.92	232.40	3 418.69	1 044.44	23%
Nov-13	4 527.97	2 968.86	108.56	364.20	755.74	95.68	234.93	3 228.58	1 299.39	29%
Dec-13	5 007.39	3 650.77	192.46	358.10	378.80	129.94	297.32	4 013.21	994.18	20%
Jan-14	5 487.96	3 266.53	933.77	657.61	198.99	129.16	301.90	4 649.04	838.92	15%
Feb-14	6 597.96	4 659.92	409.84	510.50	658.96	128.84	229.90	5 380.98	1 216.98	18%
Mar-14	4 913.04	3 161.62	61.03	530.71	912.26	65.10	182.32	3 486.08	1 426.96	29%
Apr-14	6 802.28	4 368.63	1 049.44	957.07	111.30	99.28	216.56	6 208.21	594.07	9%
May-14	5 147.19	3 081.98	- 111.29	927.79	962.81	75.40	210.50	3 567.29	1 579.90	31%
Jun-14	5 291.67	3 008.85	- 119.16	1 215.82	842.38	143.36	200.42	3 724.23	1 567.44	30%
Total	61 734.13	39 603.88	3 239.67	6 874.18	7 432.96	1 745.90	2 837.55	47 688.60	14 045.54	23%

3.2.2 Volumes of General Waste generated

The above information and totals were used to determine the average waste generation rates for the different income groups of the Overstrand population and to estimate the quantities generated per sub-area. Note that the quantities in **Table 3-3** do not include building and demolition waste. Building and demolition waste quantities fluctuate monthly and is not dependent on population waste generation, but rather economy related. The high generation rates can be explained by the fact that the Overstrand receives a lot of holiday-goers throughout the year on weekends. They contribute to the waste generated and recorded, but are not part of the Overstrand recorded Census population.

Table 3-2: Calculated Average Waste Generation Rates

Income group	kg/person/day
Very Low & Low	0.94
Middle	1.41
High & Very High	2.83

Table 3-3: Waste Quantities calculated for Overstrand Municipality

Sub-area	Population (2014)	Waste Generated in Tonnes/year (2014)	Population (2015)	Waste Generated in Tonnes/year (2015)	Population (2016)	Waste Generated in Tonnes/year (2016)	Population (2017)	Waste Generated in Tonnes/year (2017)	Population (2018)	Waste Generated in Tonnes/year (2018)	Average Waste Generation Factor for Area in kg/p/d
Rural											
Lebanon State Forest	84	48	87	50	90	52	93	54	97	56	1.57
Highlands State Forest	87	56	90	58	94	60	97	62	101	65	1.75
Overstrand NU	5 893	3 727	6 117	3 868	6 349	4 015	6 590	4 168	6 841	4 326	1.73
Walker Bay State Forest	31	22	33	22	34	23	35	24	36	25	1.89
Betty's Bay											
Betty's Bay SP	1 602	1 298	1 663	1 347	1 726	1 398	1 792	1 452	1 860	1 507	2.22
Rooi-Els & Pringle Bay											
Rooi-Els SP	146	132	152	137	158	143	164	148	170	154	2.48
Pringle Bay SP	933	735	969	763	1 006	792	1 044	822	1 084	854	2.16
Kleinmond											
Arabella Country Estate SP	77	69	80	71	83	74	86	77	89	80	2.46
Kleinmond SP	7 700	4 754	7 993	4 935	8 296	5 123	8 612	5 317	8 939	5 519	1.69
Hermanus & Surrounds											
Fisherhaven SP	839	671	871	696	904	723	939	750	974	779	2.19
Hawston SP	9 536	5 505	9 898	5 714	10 274	5 931	10 664	6 157	11 070	6 391	1.58
Onrus River SP	3 667	3 040	3 807	3 156	3 951	3 275	4 101	3 400	4 257	3 529	2.27
Vermont	2 312	1 954	2 400	2 028	2 492	2 105	2 586	2 185	2 685	2 268	2.31
Fernkloof Estate	132	123	137	127	143	132	148	137	154	142	2.54
Voëklip	1 341	1 259	1 392	1 307	1 445	1 356	1 500	1 408	1 557	1 461	2.57
Hermanus SP 2	28	17	29	18	30	18	31	19	32	20	1.67
Hermanus SP	5 008	4 275	5 198	4 438	5 396	4 607	5 601	4 782	5 814	4 963	2.34
Mount Pleasant	5 628	3 499	5 842	3 631	6 064	3 769	6 294	3 913	6 533	4 061	1.70
Hemel en Aarde	596	520	618	540	642	560	666	581	691	603	2.39
Sand Bay SP	4 169	3 215	4 327	3 337	4 492	3 464	4 662	3 596	4 839	3 732	2.11
Zwelihle SP	21 140	9 609	21 943	9 975	22 777	10 354	23 642	10 747	24 541	11 155	1.25
Stanford											
Stanford SP	5 569	2 845	5 780	2 953	6 000	3 065	6 228	3 182	6 465	3 303	1.40

Sub-area	Population (2014)	Waste Generated in Tonnes/year (2014)	Population (2015)	Waste Generated in Tonnes/year (2015)	Population (2016)	Waste Generated in Tonnes/year (2016)	Population (2017)	Waste Generated in Tonnes/year (2017)	Population (2018)	Waste Generated in Tonnes/year (2018)	Average Waste Generation Factor for Area in kg/p/d
Gansbaai & Surrounds											
Die Kelders	1 247	1 036	1 294	1 076	1 343	1 116	1 394	1 159	1 447	1 203	2.28
Gansbaai SP	12 221	6 240	12 685	6 477	13 167	6 723	13 667	6 979	14 187	7 244	1.40
Birkenhead SP	63	59	65	61	68	64	70	66	73	68	2.58
Van Dyks Bay SP	582	465	604	482	627	501	650	520	675	539	2.19
Uilenkraalsmond	118	70	123	72	128	75	132	78	137	81	1.61
Franskraalstrand SP	1 240	926	1 287	961	1 336	997	1 387	1 035	1 439	1 075	2.05
Baardscheerders Bosch SP	122	88	127	92	131	95	136	99	142	103	1.99
Pearly Beach SP	1 208	651	1 254	676	1 302	702	1 352	729	1 403	756	1.48
Viljoenshof	56	38	58	39	60	41	62	43	65	44	1.87
Total	93 374	56 945	96 922	59 109	100 605	61 355	104 428	63 686	108 396	66 106	1.67

3.2.3 **Commercial and Industrial Waste**

Due to unavailable separate data, commercial and industrial waste is included in the above totals.

3.2.4 **Garden Waste**

From the above data, the total garden waste generated per annum in the Overstrand is approximately 10 673 tonnes, which is 17% of the generated waste stream.

3.2.5 **Building and demolition waste**

Building and demolition waste quantities fluctuate significantly per month. The total from the recorded quantities in Table 3-1 for the year from July 2013 to June 2014 is 6874.18 tonnes.

3.2.6 **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 Overberg District. From that study, the anticipated average waste composition of the Overstrand Municipality can be derived to include the following recyclable materials (by mass):

Paper and Card board:	20%
Plastics:	13%
Glass:	6%
Metal:	4%

The Sustainable Cities Institute (United States) and California Department of Resources Recycling and Recovery recommend that the American Society for Testing and Materials (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 with the above guidelines in order to obtain data with a high level of confidence, the following is recommended:

- 30 samples of 90kg each are to be sampled randomly at the Hermanus Transfer Station, Kleinmond Transfer Station and Gansbaai Landfill spread over the year. (Total samples split between the facilities)
- 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 (EPWP) or the Youth Jobs in Waste Project. For EPWP, working with an average of R120 per person per day, this totals R21600.00. 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 R5000.00 is estimated if a consultant then reworks the data and reports on the gathered data. This can also be done by the Municipality to limit expenses.

The 2007 characterisation report is still the best available representation of the Overstrand waste stream. 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 3-4. These characterisation percentages were applied to the waste stream of the permanent population.

Table 3-4: Potential Quantities of Available Recoverable Materials

Sub-area	PAPER/ CARD (t/a)	PLASTICS (t/a)	GLASS (t/a)	METAL (t/a)
Rural				
Lebanon State Forest	9	6	3	2
Highlands State Forest	10	7	3	2
Overstrand NU	701	455	210	140
Walker Bay State Forest	4	3	1	1
Betty's Bay				
Betty's Bay SP	247	161	74	49
Rooi-Els & Pringle Bay				
Rooi-Els SP	25	16	8	5
Pringle Bay SP	140	91	42	28
Kleinmond				
Arabella Country Estate SP	13	9	4	3
Kleinmond SP	892	580	268	178
Hermanus & Surrounds				
Fisherhaven SP	128	83	38	26
Hawston SP	1029	669	309	206
Onrus River SP	580	377	174	116
Vermont	373	243	112	75
Fernkloof Estate	24	15	7	5
Voëlklip	242	157	72	48
Hermanus SP 2	3	2	1	1
Hermanus SP	817	531	245	163
Mount Pleasant	657	427	197	131
Hemel en Aarde	99	65	30	20
Sand Bay SP	611	397	183	122
Zwelihle SP	1761	1145	528	352
Stanford				
Stanford SP	527	342	158	105
Gansbaai & Surrounds				
Die Kelders	198	129	59	40
Gansbaai SP	1155	751	347	231
Birkenhead SP	11	7	3	2
Van Dyks Bay SP	89	58	27	18
Uilenkraalsmond	13	8	4	3
Franskraalstrand SP	176	114	53	35
Baardscheerders Bosch SP	17	11	5	3
Pearly Beach SP	121	79	36	24
Viljoenshof	7	5	2	1
Total	10679	6942	3204	2136

The above theoretical figures give a total of approximately 22 961 tonnes per annum, which is 40% 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 40% cannot be seen as recoverable in the practical sense, at least not yet.

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.

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, based on number of households, 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 3-5**. **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 3-5: Calculated Volumes of Recovery of Source Separated Materials

Sub-area	Participating Waste (t/a)	PAPER/ CARD (t/a)	PLASTICS (t/a)	GLASS (t/a)	METAL (t/a)
Rural					
Lebanon State Forest	15.3	0.6	0.1	0.4	0.1
Highlands State Forest	19.1	0.8	0.1	0.5	0.1
Overstrand NU	1272.8	53.5	9.9	33.6	5.1
Walker Bay State Forest	7.9	0.3	0.1	0.2	0.0
Betty's Bay					
Betty's Bay SP	514.6	21.6	4.0	13.6	2.1
Rooi-Els & Pringle Bay					
Rooi-Els SP	55.0	2.3	0.4	1.5	0.2
Pringle Bay SP	289.5	12.2	2.3	7.6	1.2
Kleinmond					
Arabella Country Estate SP	27.7	1.2	0.2	0.7	0.1
Kleinmond SP	1561.4	65.6	12.2	41.2	6.2
Hermanus & Surrounds					
Fisherhaven SP	267.3	11.2	2.1	7.1	1.1
Hawston SP	1784.9	75.0	13.9	47.1	7.1
Onrus River SP	1208.3	50.8	9.4	31.9	4.8
Vermont	790.0	33.2	6.2	20.9	3.2
Fernkloof Estate	50.6	2.1	0.4	1.3	0.2
Voëlklip	525.8	22.1	4.1	13.9	2.1
Hermanus SP 2	5.3	0.2	0.0	0.1	0.0
Hermanus SP	1728.9	72.6	13.5	45.6	6.9
Mount Pleasant	1210.1	50.8	9.4	31.9	4.8
Hemel en Aarde	209.5	8.8	1.6	5.5	0.8
Sand Bay SP	1229.4	51.6	9.6	32.5	4.9
Zwelihle SP	2222.4	93.3	17.3	58.7	8.9
Stanford					
Stanford SP	784.2	32.9	6.1	20.7	3.1
Gansbaai & Surrounds					
Die Kelders	418.4	17.6	3.3	11.0	1.7
Gansbaai SP	1724.1	72.4	13.4	45.5	6.9
Birkenhead SP	25.5	1.1	0.2	0.7	0.1
Van Dyks Bay SP	187.4	7.9	1.5	4.9	0.7
Uilenkraalsmond	24.4	1.0	0.2	0.6	0.1
Franskraalstrand SP	353.2	14.8	2.8	9.3	1.4
Baardscheerders Bosch SP	32.9	1.4	0.3	0.9	0.1
Pearly Beach SP	192.9	8.1	1.5	5.1	0.8
Viljoenshof	14.0	0.6	0.1	0.4	0.1
Total	18753.0	787.6	146.3	495.1	75.0

<i>Assumptions for Source Separation:</i>	<i>45% participation Mid & High Income groups</i>
	<i>15% participation Low & Very Low Income groups</i>
<i>Recovery % actual data from WastePlan:</i>	<i>21% recovery of available Paper and Cardboard</i>
	<i>6% recovery of available Plastics</i>
	<i>44% recovery of available Glass</i>
	<i>10% recovery of available Metals</i>

3.2.7 **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.

3.2.8 **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. 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.

3.2.9 **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.

3.2.10 **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.

3.2.11 **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.

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 3-6.

Table 3-6: 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

3.2.12 **Priority Waste Streams**

3.2.12.1 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 will have to develop an action plan to manage tyres generated within the municipal area.

3.2.12.2 Hazardous and Health Care Risk Waste

All health care waste generators register at the Overberg District Municipality and must make use of a compliant service provider. They are then issued with a certificate from the Municipality. Quantities are not available so the industrial and health care waste survey from the previous IWMPs were included here. The registered generators as received from the District Municipality are as follows:

Table 3-7: Registered Health Care Waste Generators

Generator	Cert. No.	Service Provider
Dr HC Barnard	O/M/G/1/06	
Drs Barnard & Fourie	O/M/G/2/06	Millennium
Dr F du Preez	O/M/G/3/06	Canon Hygiene
Gansbaai Apteek	O/M/G/4/06	
Herberg aan See	O/M/G/5/06	Millennium
Dr AG Nel	O/M/G/6/06	Sanumed
EC Buchner	O/M/G/7/11	Canon Hygiene
Anre Begrafnisdienste	O/M/G/8/12	Canon Hygiene
Dr HC Barnard	O/M/G/9/12	Solid Waste Tech.
Gansbaai Medi Praktyk	O/M/G/10/13	Solid Waste Tech.
Gansbaai Kliniek	O/M/G/11/13	Solid Waste Tech.
Whale Coast Animal Consulting Rooms	O/M/G/12/13	Canon Hygiene
Red Inks	O/M/G/13/13	Solid Waste Tech.
Dr O koorts	O/M/S/01/06	Sanumed
Dr. Marianna Steyn	O/M/S/02/06	Sanumed
Stanford Health Cottage	O/M/S/03/06	Sanumed
Dr. W v/d Walt	O/M/S/04/12	Pathcare
Dr. Marianna Steyn	O/M/S/05/13	Sanumed
General Medical Practice	O/M/S/06/13	Pathcare
Albertyn Apteek	O/M/K/1/06	Solid Waste Tech.
Dr JP Duvenage	O/M/K/2/06	Sanumed
Dr F du Plessis & van Niekerk	O/M/K/3/06	Sanumed
Dr J Engelbrecht	O/M/K/4/06	Solid Waste Tech.
Kogelpark Kliniek	O/M/K/5/06	Millennium
Dr TF Malherbe	O/M/K/6/06	Sanumed
Fynbos Seniorsentrum	O/M/K/7/06	Sanumed
Kleinmond Animal Clinic	O/M/K/8/06	Pet Cremation Services
Kleinmond Apteek	O/M/K/9/06	Solid Waste Tech.
Kleinmond Animal Clinic	O/M/K/10/07	Millennium
Kogelpark Kliniek	O/M/K/5/8	Solid Waste Tech.
Dr F du Plessis & van Niekerk	O/M/K/11/8	Steinmed
Albertyn Apteek	O/M/K/12/8	Steinmed
Dr JP Duvenage	O/M/K/13/8	Steinmed
Fynbos Seniorsentrum	O/M/K/14/8	Steinmed
Kleinmond Apteek	O/M/K/15/8	Thermal Plant JHB
Dr EH Moses	O/M/K/16/9	Solid Waste Tech.
Dr HJ Visser	O/M/K/17/10	Solid Waste Tech.
Dr F du Plessis & van Niekerk	O/M/K/18/11	Canon Hygiene
Supersmile Dental Care	O/M/K/19/11	Solid Waste Tech.
Albertyn Apteek	O/M/K/20/12	Solid Waste Tech.

3.2.13 Volumes of Hazardous Wastes Generated

3.2.13.1 Industrial Hazardous Waste

Industries were visited physically (2009) and a survey of each possible hazardous waste generator was made per industry/ occupant of a unit in an industrial park. Possible generators were evaluated in terms of the process generating waste, waste type, classification, quantity, and disposal venue.

Table 3-8: Quantities of Industrial Hazardous Waste Generated in Overstrand Municipality in kg/a (2009)

	A: Agriculture, Forestry & Food Production	B: Mineral Extraction & Upgrading	C: Energy	D: Metal Manufacture	E: Manufacture of Non-Metal Mineral Products	F: Chemical & Related Industries	G: Metal Goods, Engineering & Vehicle Industries	H: Textile, Leather & Wood Industries	I: Garages & Workshops	J: Manufacture of Paper Products, Printing & Publishing	K: Medical, Sanitary & other Health Services	L: Commercial & Personal Services
Hermanus	-	-	-	-	-	-	-	261,312	269,079	60	-	-
Gansbaai Area	10,120	-	-	-	-	-	-	35,000	5,630	-	-	-
Kleinmond Area	-	-	-	-	-	-	24,810	-	-	6	-	-
Stanford	-	-	-	-	200	-	-	-	3,120	-	-	-
Sub-totals	10,120	-	-	-	200	-	24,810	296,312	277,829	66	-	-
Total	609,337 kg/a											

3.2.13.1.1 Status Quo: Gansbaai Area

The biggest industrial area is adjacent to Masekhane, towards Franskraal. There are light industries in the area with the highest hazard waste described as empty lead-acid batteries and used oils. Empty metal cans are collected by two recyclers in the industrial area, as well as used oil. There is a used oil collector operating in the industrial area. Nobody knows him by name, but he collects the used oil and he reportedly supplies the chain saw operators with fuel for the clearing of bush.

There are various manufacturers of concrete products of which only one had visible pools of contaminated water standing on his property. This generator admits to the water mixture merely draining into the sub-soils.

A sea bamboo processor is in the industrial area. The bamboo is macerated and exported for use in the beer industry. Initially, dust was generated causing irritation due to the iodine and salt content. The air filters were upgraded and no nuisances are lately caused.

Tyres are usually collected by farmers and boat owners. The remaining tyres are landfilled.

Used batteries are recycled by Sabbat and Willard Batteries, collecting the old batteries when supplying new batteries to the dealers.

There are a few panel-beaters and spray painters in the industrial area. Some of the industrial units in which they are based have a lot of petroleum-based soil pollution, probably due to poor management of the waste.

No formal used oil recycling exists. A workshop owner in town has taken his own initiative to collect used oil from a few other workshops in town. He keeps the oil in drums on his premises until collected by the "chainsaw operators". The owner of the two garages in town disposes off all the empty oil cans and plastic containers to the landfill via the normal municipal collection service.

Asbestos sheets are occasionally generated in building & demolition waste. Mr D Crafford (Operational Manager of the Gansbaai and Stanford areas during the 2009 study) noticed sheets in the landfill.

The fishing industry consists of three operators, all operating in the harbour area. Two operators produce occasional fish waste for disposal on the landfill. The rinse water is pumped into the deep sea. The third operator is a sardine canning and fishmeal producer, not generating any hazardous waste.

There is no industry except for two fuel suppliers in all of Pearly Beach, Franskraal, Kleinbaai and De Kelders. Empty oil cans from the fuel suppliers at Pearly Beach and Kleinbaai are handled differently. The number of cans at Pearly Beach is unknown. Cans are collected by the municipality twice a week, with the waste arising from a general dealer. Disposal is at Gansbaai landfill. The Kleinbaai fuel dealer stores all the empty oil cans that are collected by various informal scrap recyclers.

3.2.13.1.2 Status Quo: Stanford

Stanford has a Business Park with many empty units.

Prima Crushers (Afrimat), Stanford Motors and Naude Earth Movers are the only generators of hazardous waste. Prima Crushers is the only concern that uses Oilkol to remove used oil, even if only 1 x 210 liters per year. Empty oil cans and plastic containers are stored in a Caltex container on the garage forecourt. However, the container is emptied by the municipal vehicle and the empty oil containers disposed of at the Gansbaai landfill.

The local brewery is running along international production standards and is very environmentally conscious. The spent grain is used as animal feed while the effluent consisting of diatomaceous earth is contained in a tank until removed by the municipal tanker to the Sewage Works.

Used tyres are used for support of an embankment at the shooting range, otherwise disposed of at the Gansbaai Landfill.

3.2.13.1.3 Status Quo: Hermanus

There are two major industrial areas in Hermanus, i.e. Hermanus industries and Sandbaai industries. The comments are based on both industries.

The fuel suppliers and workshop managers are probably the generators with the most hazardous waste. The waste generally has a hazard rating of 3 to 4 and consists mainly of used oil and/or used oil containers. The larger fuel suppliers are very environmentally conscience and contract either the local recycler (Walker Bar Recycling) or even transport the containers to Cape Town for recycling by Collect-a-Can. Various of the smaller fuel suppliers are simply not concerned and “throw the cans in the bag or wheelie” for collection by the municipality. Although many of the cans will be extracted by recyclers at the municipal Transfer Station, the cans are entering the Transfer Station as part of the mixed general waste stream.

Shell Petroleum is apparently phasing out the 500 ml metal cans and use plastic “bottles” instead. The ratio between plastic and metal containers varies from garage to garage. The annual weight of the containers per generator was calculated according to the ratio in which it is generated. Each 500 ml container is coated with an approximated 20 ml residue that remains in the container when the oil is decanted. The oil weight is not included in the mass of each container.

Used oil is generally collected by Oilkol. However, various private people are collecting from 20 to 210 liter each. They collect the used oil from the used oil generators when they require a fuel for use in chainsaw operations. There is also a private person with a fuel tanker, very similar in colour and size to the Oilkol tanker that collects from used oil generators in the Hermanus area. He arrives with the unlabelled tanker at generators without prior arrangement. He pays the generator per liter that he removes. The name of the person and the end use of the used oil are not known. He issues invoices to the generators where he obtains the used oil. The generators that made use of this contractor have no copies of the invoices available that he issued, or his contact detail.

There is an owner of a piece of earth moving equipment that generates bio fuel. He was not available and is working on an oil drill in Moss gas for extended periods. The secretary mentioned this activity but does not have any further information.

The generation of wood off cuts and saw dust from furniture, trusses and cupboard manufacturers are a concern, even if not hazardous waste. The quantity is vast and very often the wood off-cuts disappear in the general waste stream. The Municipal Transfer Station has a separate area for wood off cuts and sawdust. However, the generators transporting the waste product to the Transfer Station do not consistently agree to off-loading it in the dedicated areas of the Transfer Station.

The re-use of wood and composting of untreated sawdust could contribute to an increase in resource management.

The management of used tyres is a major challenge. The tyres stockpile to a level that even re-use by the farmers becomes a saturated market. All of the tyre suppliers urgently requested alternatives to used tyre disposal.

Used vehicle batteries are returned to the suppliers. Only two units of lead-acid batteries were found to be stored in all of the industries in the area. The recycling of used lead-acid batteries is very efficient.

Used fluorescent tubes are generally taken to the Transfer Station for storage since the placement of the hazardous waste collection containers by the municipality.

The generation of used printer cartridges seems to be a “disposal problem.” Very little awareness exists for the recycling and/or re-use of cartridges. The generators of printing development fluid are far and few. The generator in Hermanus recycles the fluids through the supplier.

The spray painters using thinners are generally returning the spent product to the supplier, Auto Industrial Suppliers (AIS) in the Strand. AIS recycles the thinners.

Various concrete products such as wet decks, bricks and ornaments are made in the industrial area. The empty bags are generally collected by builders for use during casting as a protective wrapping around electrical pipes, etc.

The steel industry mostly manufactures gates, safety bars, furniture and crafts. The process is mostly welding of steel with little hazardous waste generation.

Discharge of hazardous industrial effluents without a permit was not observed during the questioning of generators. This statement was generally supported by the lack of sewer transgressions registered by the municipality.

Walker Bay Recycling is a great asset to the area as it is apparent that the company identifies, source and sort as much of the waste at source as possible. A major fuel supplier mentioned that they do not even know how many oil cans they generate and are not concerned about the recycling as it is done very efficiently on their behalf by Walker Bay Recycling

3.2.13.1.4 Status Quo: Kleinmond Area

The Kleinmond industries generating hazardous waste are mostly in the Harbour Industrial area. Used oil cans from the one fuel supplier are disposed of at the transfer Station with the general waste. A second fuel supplier is opening in the main road during June 2009. Used oil is mainly removed by Oilkol for recycling.

The steel industry is similar but smaller than Hermanus.

The tyre management problem, effective lead-acid battery recycling and the re-use of concrete-cement bags, is similar to the Hermanus status quo.

The villages of Bettie's Bay, Pringle Bay and Rooi-Els do not have industrial hazardous waste generators.

3.2.13.2 Health Care Risk Waste

Health Care Waste (HCW) consists of Health Care General Waste (HCGW) from offices, etc as well as Health Care Risk Waste (HCRW) arising from material contaminated with body fluids, etc.

The Overberg District Municipality published a by-law during 2004 (PK6141, 25 June 2004), that allows for all Health Care Risk Waste generators to become listed and receive a Health Care Risk Waste disposal certificate number. New Health Care Risk Waste generators must apply to the ODM for permission to operate in the region and dispose of Health Care Risk Waste in a responsible manner.

There are various Health Care Risk Waste generators in the Overstrand municipality of which the major generators are the two hospitals including the provincial clinics.

Most of the Health Care Risk Waste generators are very responsible in the storage, handling and disposal of the waste.

Types of Health Care Risk Waste:

There are various types of Health Care Risk Waste generated namely:

- Sharps consist of injection needles, blades and often broken glass ampoules.
- Contaminated bandages and materials may contain any material contaminated with body fluids such as plastic gloves, drip tubing, contaminated cotton wool, bandages, etc. Often, syringes are also added to this container.
- Anatomical parts from theater amputations, etc.
- Fetuses and placentas from abortions and births arise in the pediatric wards.
- Blood as Health Care Risk Waste is generated mostly in theater as well as pathological laboratories.
- Expired pharmaceuticals has usually reached the end of its shelf life
- Carcasses are generated at the veterinary institutions such as the SPCA, TEARS and the veterinary consulting rooms. The carcasses are usually euthanised animals.
- Uncontaminated pressurised containers are usually separated and disposed of as general waste.
- Radio-active Health Care Risk Waste is generated by iodine type drips used for analytical purposes or cancer treatment medication. Health Care Risk Waste that may be removed as low radio-active Health Care Risk Waste for treatment and/or disposal must be below 74 Bq/g.

Table 3-9: Quantities of Health Care Risk Waste in Overstrand Municipality (2009)

Generator	Health Care Risk Waste Types in kg/a							
	Sharps	Contaminated materials	Blood and blood Health Care Risk Waste products	Fetus & placentas	Anatomical Health Care Risk Waste	DA nappies	Carcasses	Expired pharmaceuticals
General Practitioners and dentists	1,804.11	4,444.00	-	-	-	-	-	-
Forensic Unit	16.5	1,560.00	-	-	-	-	-	-
Pathcare	16.5	-	400.00	-	-	-	-	-
Old Age Homes	38.94	60.0	-	-	-	83,700.00	-	-
Home based Frail Care	6.6	-	-	-	-	-	-	-
Funeral Homes	182.0	-	-	-	-	-	-	-
Medi-city Hospital & pharmacy	918.72	9,480.0	240.00	37.1	-	-	-	8.0
Provincial Hospital	2,195.5	16,972.5		1,820	-	-	-	-
Provincial clinics	1,401.5	4,300.0	-	-	-	-	-	-
Pharmacies & Private clinics	233.64	-	-	-	-	-	-	-
Veterinary	50.25	2,320.0	-	-	-	-	8,824.0	-
SUB-TOTALS	6,864.28	39,776.5		1,857.1	-	83,700.0	8,824.0	8.0
TOTAL	141,029.88 kg/year							

3.2.13.2.1 Health Care Risk Waste Treatment Facilities

There are no Health Care Risk Waste treatment facilities in the Overstrand area. Almost all the Health Care Risk Waste is taken across the municipal border for treatment and disposal at Health Care Risk Waste facilities in Cape Town.

Euthanised pets are mostly incinerated by Greg's Pets in Worcester and/or Somerset West while euthanized animals from the SPCA and TEARS are disposed of at Karwyderskraal landfill.

3.2.13.2.2 Health Care Risk Waste Contractors Operating within Overstrand

The major Health Care Risk Waste contractors operating in the area are:

- Canon Hygiene in Milnerton
- Pambhile Wasteman
- BCL in Delft
- Pathcare Laboratories: Pathcare is the only contractor that collects from the doctors and does not treat the Health Care Risk Waste as well. Pathcare employs Canon to collect and treat the Health Care Risk Waste received from private practitioners.
- Psychem in Black Heath
- Millennium Waste in Bellville
- Steinmed in Cape Town
- Solid Waste Technologies (SWT) in Killarney Gardens

All of the contractors incinerate by using the BCL, Enviroserv and Psychem incinerators in Delft, Vissershok and Blackheath except Pambhile Wasteman. Solid Waste Technologies provides a HCRW treatment service to Pambhile Wasteman. SWT operates an Electro-thermal Deactivation Plant (EDP) in Killarney for the destruction of Health Care Risk Waste excluding anatomical, fetuses and pharmaceutical Health Care Risk Waste.

Final disposal takes place in the Vissershok landfill operated by the City of Cape Town.

3.3 WASTE AVOIDANCE

3.3.1 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.

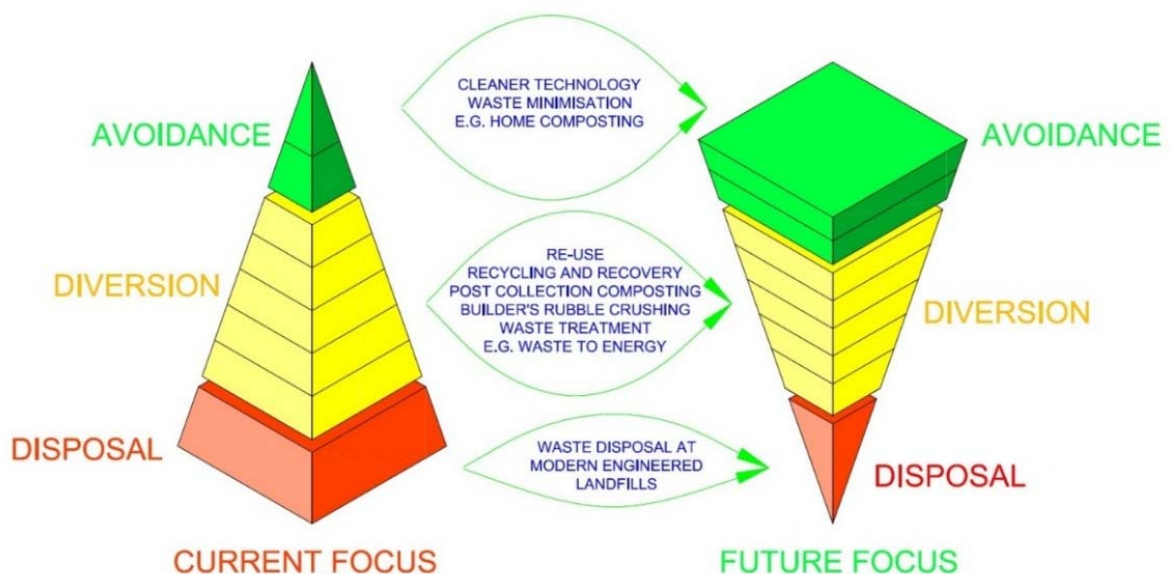


Figure 3-1: Waste Hierarchy

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 infected 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. Along with making the public aware of new issues, new education and continual promotion of waste reduction must be done, as it appears that the majority of shoppers once again rather opt for convenience and buy new plastic bags with each shopping outing than re-using the bags they already own.

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 comparatively 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 Overstrand.

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 Overstrand Municipality is registered on the Integrated Pollutant and Waste Information System (IPWIS) and reports their waste quantities. The Overstrand Municipality makes use of the weighbridge readings at the Karwyderskraal and Gansbaai landfills as well as the Department Waste Calculator.

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.

3.3.2 Existing Waste Avoidance in Overstrand Municipality

In Overstrand, the best place to expand 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 Municipality 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 Overstrand waste management infrastructure and the functions of collection, recovery and disposal will be done more efficiently.

3.4 COLLECTION SYSTEMS

3.4.1 Municipal Waste Collection Systems

The details of the Overstrand Municipality solid waste collection fleet are attached as **Annexure 3**.

It is advisable that collection vehicles should ideally not be operated beyond 7 to 8 years in age since the maintenance costs increase dramatically with age as well as down-time which also has cost implications. It is recommended that all vehicles above 8 years are evaluated to determine the need for replacement.

Wheelie bins are used as well as refuse bags where wheelie bins have not yet been introduced. All formal households receive weekly door-to-door waste collection services. All informal settlements receive weekly waste collection services in the form of communal collection points (bins and skips).

Farmers that are not located on collection routes do not receive a service, but offload their household waste themselves at the drop-offs and transfer stations.

There are no formal unserved areas in the Municipality, except rural areas and farms where a collection service is not feasible.

Level of Free Basic Service

There are on average 6535 (2013/2014 financial year) registered indigent households as shown in the table below in the Overstrand Municipal area who qualify for free basic services. The Municipality reports 100% service to these households.

Table 3-10: Indigent households receiving free basic services

2013	Indigent Households
July	6 427
August	6 446
September	6 514
October	6 558
November	6 576
December	6 596
2014	
January	6 729
February	6 523
March	6 474
April	6 516
May	6 523
June	6 543
Average:	6 535

3.4.2 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.

Illegal dumping that is reported by the public is followed up by the cleansing department and the area is cleaned. Illegal dumping is removed once per week as is necessary.

No separate costs for dealing with illegal dumping are available, but is part of the operational budget.

3.4.3 **Public Complaints**

The Overstrand Municipality makes use of a formal complaints register. All complaints received are logged on their internal system. The contact numbers for each town are as follows:

- Hermanus: (028) 313 8000
- Gansbaai: (028) 384 8300
- Kleinmond: (028) 271 8400
- Stanford: (021) 341 8500

When a complaint is received a work order is created and communicated to the relevant persons who must follow up.

The summary of complaints received and actions taken to address the complaints provided by the Municipality are as follows:

Complaint: Hours of Solid Waste Transfer Stations. Residents complained that the hours of operation of the Hermanus Transfer Station were not long enough on a Saturday (09:00 to 14:00)

Action: The operational hours of the Hermanus Transfer Station for Saturdays were extended to 09:00 to 16:00.

Complaint: Dust of illegal dumping and chipping at Hermanus Transfer Station.

Action: Measures were taken to keep the garden refuse heap small and to remove the chipped material more often. Collected illegal dumping will go straight to Karwyderskraal instead of temporarily stored at the Transfer Station. The Municipality was required to use the Transfer Station for illegal dumping as the travel distance to Gansbaai landfill did not allow for direct disposal from collection. Now that Karwyderskraal landfill is operational again, direct transport will be possible.

Complaint: Refuse not collected.

Action: In some cases it is not clear whether the refuse was placed in time for collection. Other cases are as a result that the allowed amount of garden waste that was placed for weekly collection was exceeded. The complainants were contacted and informed of the regulations. All cases were dealt with on the same day the complaint was received.

Complaint: Vagrants that are a nuisance at the week-end drop-offs.

Action: Permanent labourers are deployed at each drop-off to eradicate the problem.

Complaint: Complaints about all the waste of the Overstrand is being transported to the Gansbaai landfill.

Action: The Karwyderskraal landfill is operational again and only the waste from Gansbaai and Stanford is transported to the Gansbaai landfill from April 2015.

3.5 **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”.”

The Overstrand Municipality already achieves an average diversion rate of 23%. It is therefore recommended that the Overstrand strives to achieve an average of 30%.

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

- 1) Separation at source
- 2) Recovery for recycling from post-collected waste, and
- 3) Composting of post collected garden waste.

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

3.5.1 Waste Recovery in Overstrand

Waste recovery in the Overstrand is done by Walker Bay Recycling and Enviroserv Waste Management. Walker Bay Recycling operates at the Hermanus MRF and Enviroserv at the Gansbaai MRF. The recycling statistics are shown in table 3-1 above.

3.5.2 Composting

3.5.2.1 Composting Facilities in Overstrand

Composting of garden waste at a centralised composting facility requires approximately a minimum 350 tonnes of garden waste per month in order to achieve financial sustainability. From the weighbridge data the average monthly total of garden waste generated in the Overstrand is approximately 890 tonnes. This makes a centralised composting facility a financially sustainable endeavour. Garden waste is chipped at some of the waste facilities discussed under section 3.6 below. The chipped garden waste is then transported to the Karwyderskraal landfill where it is composted.

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.

3.5.2.2 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