

# Challenges in Determining the Correct Waste Disposal Solutions for Local Municipalities - A South African Overview

N.M.Mannie. Aurecon South Africa (Pty) Ltd ,South Africa. [Nick.Mannie@aurecongroup.com](mailto:Nick.Mannie@aurecongroup.com)  
A Bowers. Aurecon South Africa (Pty) Ltd ,South Africa. [Aiden.Bowers@aurecongroup.com](mailto:Aiden.Bowers@aurecongroup.com)

## ABSTRACT

The changing landscape in South Africa and the drive towards creating a sustainable environment is progressing but not without its own set of challenges.

The Department Environmental Affairs (DEA), National Waste Management Strategy (NWMS) (2011) clearly sets out deliverable objectives for Municipalities such as the provision of a basic waste service. However in order to achieve this and promote a manageable waste solution, the type of waste disposal infrastructure is prudent in closing the loop on poor waste management at the end point. As will be described later in the paper, numerous challenges have presented itself in the waste management area.

This paper will elaborate and share current examples of these challenges and recommend some solutions to these challenges. Ultimately the aim of providing the local municipality with the appropriate disposal solution and working constructively to eliminate these challenges is what is going to lead to good waste disposal in a sustainable manner.

Key Words: Challenging, infrastructure, disposal solution

## 1. INTRODUCTION

Waste Management is a challenge in most municipalities in South Africa. This is a growing trend and continues to be an issue for the Public and Municipal Officials. The Department of Environmental Affairs and Tourism (2007) reports that 87 per cent<sup>1</sup> of municipalities lack capacity and infrastructure to pursue waste minimisation strategies. It is estimated that in 2007, 95% of household waste was directed to landfill according to the Department of Environment.

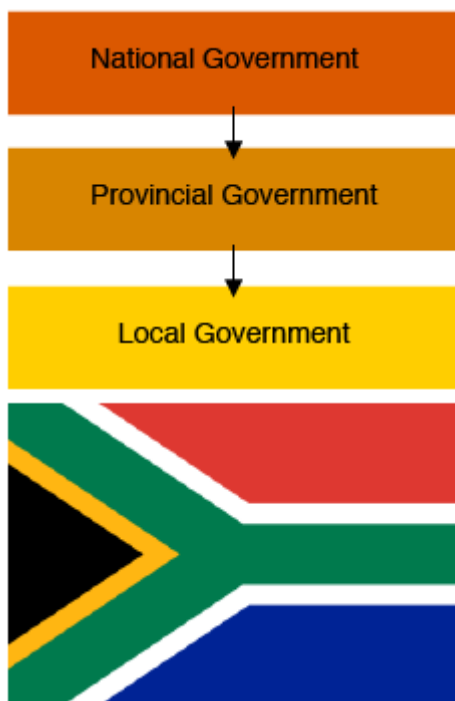
Rising cost, limited revenue and seeking alternative “fit for purpose” solutions continues to challenge municipalities on rendering an effective waste service. Unless the challenges raised in this paper for determining the correct waste disposal solutions, can be addressed, then can there be a workable solution in hand.

## 2. BACKGROUND

The advent of democracy and the leap towards a transforming nation has sparked the demand for adequate basic services of which waste management is one. Presently there exists a comprehensive legislative framework for waste management such as the National Environmental Management Waste Act (Act 59 of 2008) (NEMWA). As Government and the respective tiers of Government (Figure 1 refers) pursue in implementing the prescriptions of the Act and associated legislative requirements, the challenge that is currently arising is determining the right choice of disposal or waste management solution at a Municipal level whether it is local or District level.

---

<sup>1</sup> Department of Environmental Affairs and Tourism, Directorate: General Waste Management, Assessment of the status of waste service delivery and capacity at the local government level, AUGUST 2007.

Figure 1: Levels of Government<sup>1</sup>

It is almost assumed and practised that landfills are the ultimate solution<sup>2</sup> for disposal in mainly the local municipalities, however due to the vast expanse of the rural local municipalities; landfills are not optimally the most ideal solution. This is largely attributed to the rural nature of these towns, distances to travel, low population densities and extremely low income levels. These are only some of the contributing factors; however these communities regularly recover or recycle waste types leaving basically the unusable waste types on the landfill. Officials need to thoroughly assess their own specific needs well and plan effectively.

A key problem in municipalities is the illegal development (historically) of open dumps now termed “landfills” which have not been properly managed, have contributed to the rise of health and safety issues, contamination of the underground water systems and sources. The required levels of conforming to legislation and the escalating cost of operating and building new landfills further influences the problem. Solid waste management is a local government function.

SECTION 156(1) (a) of the Constitution, read with Schedule 5, assigns responsibility for refuse removal, refuse dumps, solid waste disposal and cleansing to the local government.

### 3. CHALLENGES

To unpack some of these challenges facing municipalities and their officials are not limited to but include:

- § o waste planning for the town. Past and future trends and dynamics are considered;
- § Waste management knowledge, understanding waste in the larger context, training, institutional and technical ability;
- § No waste management capacity in the municipal management team to direct and take ownership of decisions, often see this service area absent or incorporated into other service areas;
- § Financial constraints, no access to adequate funding form National Treasury, Grants or donor funding. Poor financial planning by the municipal officials often lead to waste infrastructure initiatives not being planned for in the right period or at all, not seen as a priority;
- § Poorly –advised by advisors on the best solution. Limited solutions explored forcing clients to use traditional approaches;

<sup>1</sup> <https://mycyberwall.co.za/get-smart/history/grade-6/government-and-constitution>

<sup>2</sup> [http://www.who.int/water\\_sanitation\\_health/resourcesquality/en/groundwater12.pdf](http://www.who.int/water_sanitation_health/resourcesquality/en/groundwater12.pdf)

- § Failure to apply “back to basics” approach as the decision makers have not acknowledged that simple cost effective solutions are what is required to close the waste disposal challenges in local municipalities;
- § Promoting cost efficiencies is over looked. Emphasis in this area could greatly improve operational and delivery objectives;
- § Health, safety and environmental challenges are not sufficiently addressed in the waste disposal solutions. As will be noted in the paper, litter and scavenging on landfills in the local municipalities is an enormous challenge as well as an exceptional risk thereby compromising operations, livelihoods of scavengers and a safe environment.

#### 4. STRATEGY AND PLANNING

No optimal planning or strategy is carried out to understand the current needs versus the future needs of the municipality. Many municipalities do not have suitable decision making tools or baseline data to assist them in making an informed decision in siting, sizing or determining the type of waste disposal facility or solution they would require. In some instances municipalities do not have a waste strategy or an integrated waste management plan (IWMP). These documents normally provide direction for the municipality for waste management. Figure 2 outlines the various aspects that will be assessed and addressed through this WMS, Figure 3 describe the planning process around waste activities at municipal level for both local and district municipalities.



Poor and inadequate waste management knowledge, understanding waste in the larger context, training, institutional and technical ability and awareness underpin the municipalities waste officials ability to implement the right disposal solution. Due to the scarce skills in waste management in the country and particularly at municipal level, you will often find inappropriate persons taking charge of the waste department or leading the waste program. The poor background in waste management know –how further impacts on the operations which has an effect on the utilization of landfills, maximizing airspace, compaction ratios, managing the environmental compliance requirements and planning daily operations. There are 2000 waste handling facilities, of which 27% are licensed and an estimated 350 (44%) of South Africa’s known private and public landfill sites are permitted (DEA, 2009). It is assumed that most unlicensed sites are not maintained or operated in accordance with the Minimum Requirements for Waste Disposal by Landfill (DWAf, 1998).

**Figure 2: Focus of Waste Management Strategy**

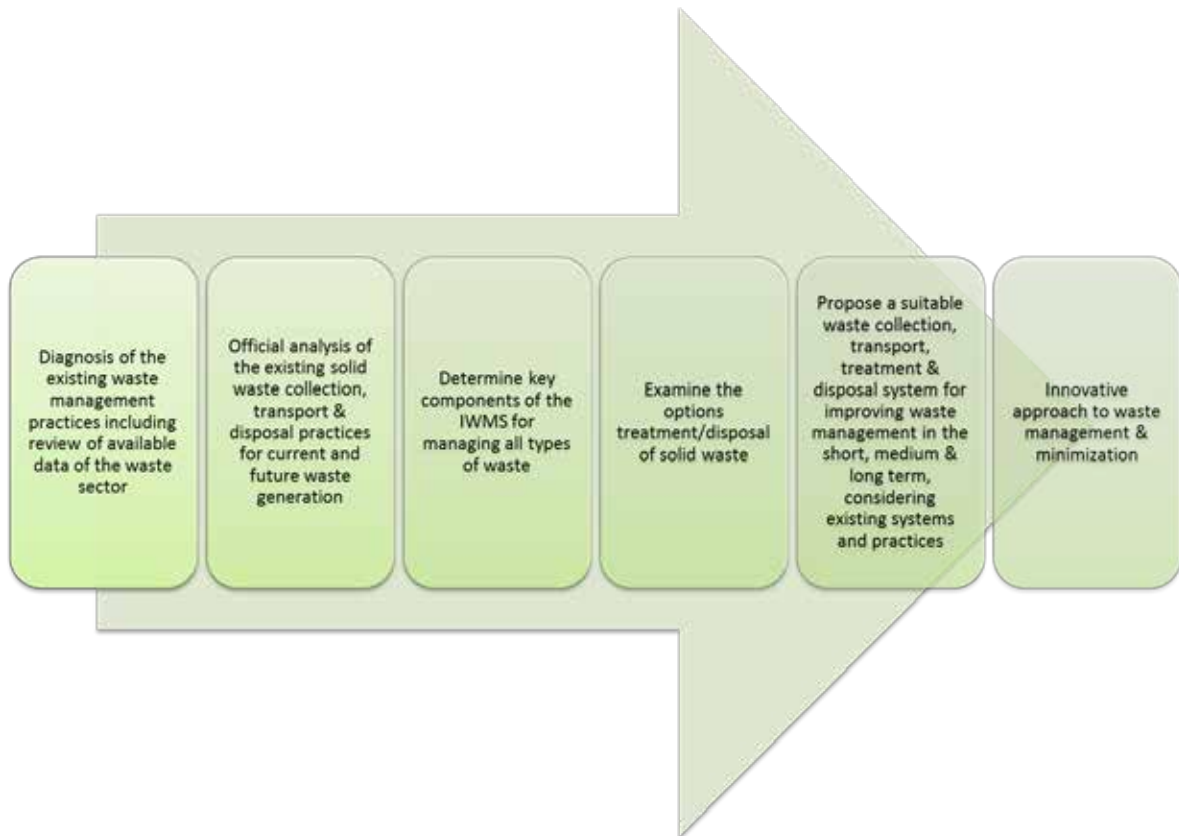


Figure 3: Planning

A Waste Management Strategy (WMS) should be developed to assist the municipalities and its clients in the minimisation of waste volumes generated, with an ultimate reduction of waste volumes disposed to landfill. The WMS requires co-operative effort from the municipality and waste generators. Figure 4 outlines the need for a WMS.



Figure 4: Need for a Waste Management Strategy

## 5. LEGISLATIVE FRAMEWORK

Poor interpretation of the legislative policies, guidelines, frameworks and agreements is a set-back. There is poor understanding by municipal officials around this. The lack of training in this area is impeding the implementation of the correct waste solutions. Often the capacity and knowledge base required for future development is not adequately considered.

There is failure to understand the regulations and legislative framework in terms of waste from a national, provincial and local perspective. The individuals tasked with the waste management responsibility do not have the depth or clear understanding to implement the legislation as required. This limitation impacts on the correct waste disposal solution being considered. Legislation such as NWMS, The National Domestic Waste Collection Standards and the Municipal Waste Sector Plan are crucial instruments of waste legislation that provide overall guidance to effective waste management and as such disposal and infrastructure are inherent parts of this.

The Municipal Systems Act 2000 (Act 32 of 2000) describes the core principles, mechanisms, and processes that are necessary to enable municipalities to move progressively towards the social and economic upliftment of communities and ensure access to services that are affordable to all. Its focus is primarily on the internal systems and administration of the municipality.

Objectives are designed within the milieu of Municipal government objectives as set out in section 152(1) of the Constitution referring to the objective "To promote a safe and healthy environment" including the Principles of NEMWA and the Bill of Rights as stated in the Constitution. Government's commitment to long-term sustainable development is achieved, when explicit recognition is given in its policy-making processes that its economic systems are essentially products of and dependent on social systems, which in turn are products or, and dependent on, natural systems.

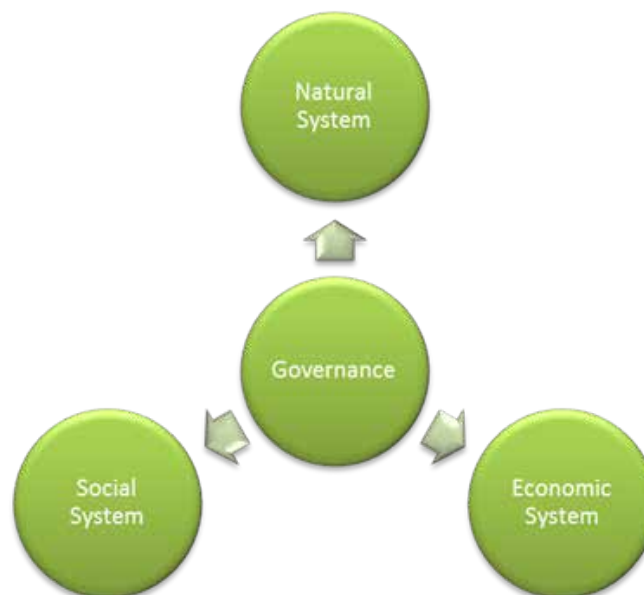


Figure 5: Integrated and co-operative management approach

Effective management of these interdependencies (see Figure 5) will require a significant change in current governance practices, in adopting an integrated and co-operative management approach to governance that includes an accurate valuation of environmental goods and services.

The Act enables the process of decentralization of functions through assigning powers of general competence to local Government. Municipal by-laws are regulated to achieve harmony with national and provincial legislation.

As service authorities, municipalities remain responsible for the effective delivery of services and must provide an appropriate policy and regulatory framework. This can be achieved through the most appropriate service provider, ranging from internal departmental delivery to corporatization and joint ventures to private sector delivery options. Figure 6 outlines a typical organogram for a district municipality for waste service, whilst this is the ideal structure, it will be found that it is a challenge in its own right to achieve as there are capacity and resource issues to deal with, thus this affects the complete service delivery value chain.

Performance management systems are to be developed to measure and evaluate performance in priority areas, which are to be reported annually to citizens and other spheres of government.

The process to be followed in planning, drafting and adopting the Integrated Development Plan is set out. The challenge of not knowing these legislative prescripts hinder the application of the right solution.

As with many municipal challenges with skills and personnel, no waste management capacity or waste management officer exist in the municipal management team to direct and take ownership of decisions. Section 10 of the NEMWA requires that each local government must designate in writing a Waste Management Officer from its administration to be responsible for co-ordinating the waste management activities inclusive of standards and planning.

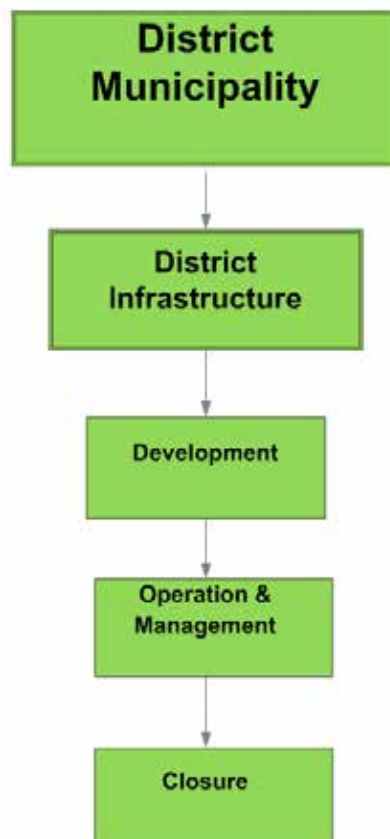


Figure 6: District Municipal Waste Structure

## 6. FINANCIAL PLANNING

Financial constraints, deficits in revenue (amongst smaller municipalities), no access to adequate funding from National Treasury, grants or donor funding are some of the financial challenges facing municipalities. Poor financial planning by municipal officials often leads to waste infrastructure not being planned for in the correct financial period or not planned at all. In some cases, waste infrastructure is not seen as a priority. Waste tariffs are in some cases not correctly calculated or not allocated according to service level. Municipal officials believe the recovery from waste tariffs will contribute towards paying for waste services or infrastructure but this is not the case in most municipal levels. Metropolitans and a select number of District municipalities will be able to recover a portion of the funds required for services or infrastructure but the small municipalities cannot recover funds due to the income levels in these municipalities. The choice of building the incorrect infrastructure or providing more than a basic waste service places the municipality in a financially constrained situation. The financial challenge of developing landfill infrastructure further requires municipalities to provide for the ultimate closure and rehabilitation of the landfill which is a National Treasury requirement, Grap 17 and Grap 19 respectively. The financial provision must be indicated in the municipal balance sheet annually, failure to provide for this cost will result in the municipality obtaining a “qualification” in this regard. The cost of capital particularly with purchasing of trucks, equipment and associated plant requires significant investment coupled with an appropriate level of skill. In order to ensure that all these equipment and staff are optimally utilized, there has to be sufficient waste volumes.



You will find that there is a fair amount of inadequate planning or research done prior to decisions taken on the plant and resource requirements without the necessary financial break even projections being done. Smaller municipalities invest heavily in this regard and do not utilize them correctly. On the other hand, some municipalities are not spending and investing according to the demand of service required and this requires intervention and re-evaluation to ensure sustainability of the service. This in turn impacts on the waste disposal solution.

## 7. WASTE SERVICE

Providing integrated sustainable waste management services in some municipalities can prove to be a challenge with collection, disposal and treatment of waste. National government has committed itself to providing a basic waste service with access to basic services in rural municipalities a key challenge. Households in these areas specifically discard of waste into open fields in an uncontrolled way often as a result of no adequate waste infrastructure in place. Municipalities don't often invest in these areas mainly owing to access and waste streams primarily being organic. Burning of waste is common practice in these areas and increases the risk of health and safety issues. Coupled with this is the picking or scavenging of waste that is a daily occurrence. With scavenging being a daily activity on these sites, existing landfill or transfer station infrastructure is destroyed or stolen. This repeatedly happens and challenges the waste officials on how best to provide the best waste disposal solution.

Failure to apply "back to basics" approach as the decision makers have not acknowledged that simple cost effective solutions are what is required to close the waste disposal challenges in local municipalities.

Promoting cost efficiencies is over looked. Labour, logistics (transport), and maintenance are cost drivers in waste management. Transport cost contribute a large portion of the cost associated with waste management and the long distances to transport waste to landfills continues to be questioned as to whether having landfills built at such long distances is feasible or does exercising the right to explore all cost effective alternatives have a suitable cost benefit. Therefore municipalities should look holistically at waste management in terms of integrated sustainable waste management.

An Integrated waste management system has three major dimensions Figure 7 refers:

- § Stakeholders involved in waste management;
- § The (practical and technical) elements of the waste system; and
- § The aspects of the local context that should be taken into account when assessing and planning a waste management system.

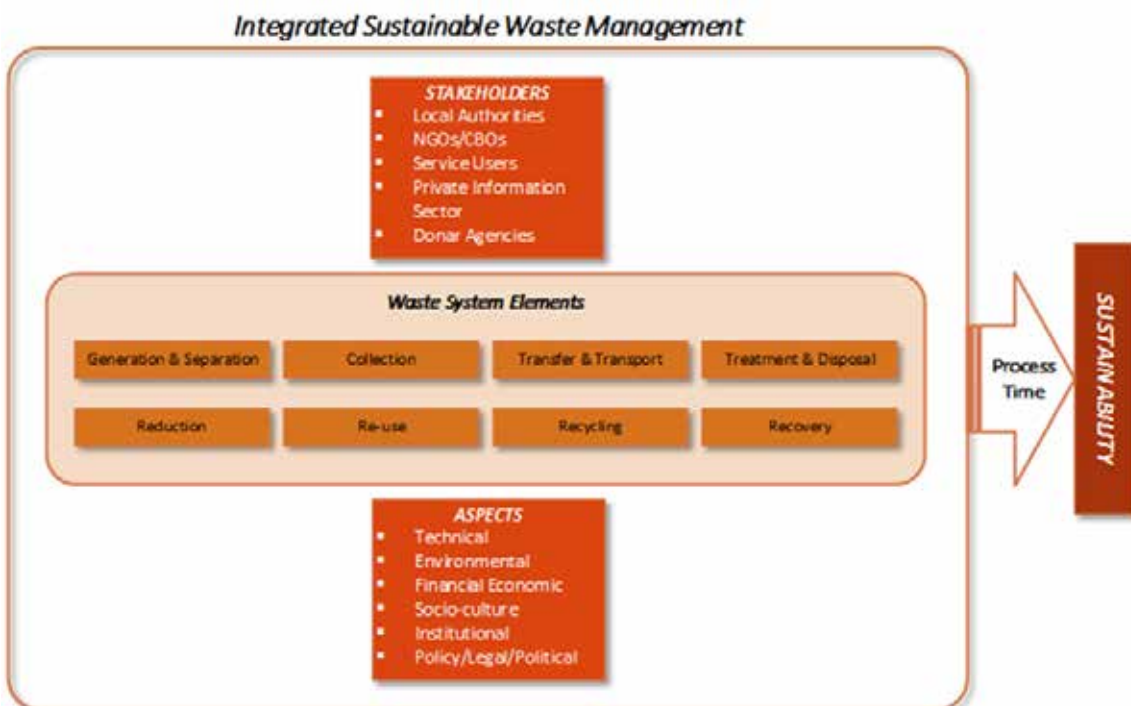


Figure 7: Integrated Waste Management System

## 8. CONCLUSIONS

Choosing the correct disposal solution, remains a challenge for all those involved in managing waste solutions. The achievement and success of the appropriate waste disposal solution is largely dependent on the planning process and identifying the specific requirement. The upskilling of staff needs attention and equally the education of officials and waste officers will need to be included as part of the planning. Training of waste officers in the current legislation and the requirements there off are equally important to successfully implementing the right solutions in the municipalities. Obtaining the correct technical advice and support is another solution to overcome the challenges in making the right decisions, expertise will be able to provide direction and guidance in this regard. Waste officers need to thoroughly evaluate the “needs” and demand requirements for specific types of waste infrastructure rather than delve straight into developing a waste facility and weigh the cost of each type of waste facility in terms of capital and operational cost, in essence is it affordable and does it serve the current and projected future need.

## REFERENCES

Felix Busse. Senior Investment Manager, DEG (02/04/2013) Financing waste projects, a challenging opportunity.

<http://blog.private-sector-and-development.com/archive/2012/10/29/municipal-solid-waste-turning-a-problem-into-resource.html>

RSA (Republic of South Africa) Department: Environmental Affairs. Statistics South Africa (StatsSA) (2012) Census 2011, Census in Brief. Statistics South Africa, Pretoria, South Africa. National Waste Information Baseline Report, 14 November 2012. <http://sawic.environment.gov.za/documents/1880.pdf>

Jean-Pierre Ymelé, Director of Hysacam's Couala branch office. Cameroon own path towards municipal solidwaste management

[http://www.proparco.fr/jahia/webdav/site/proparco/shared/PORTAILS/Secteur\\_privé\\_developpement/PDF/SPD15/SPD15\\_jean\\_pierre\\_ymele\\_uk.pdf](http://www.proparco.fr/jahia/webdav/site/proparco/shared/PORTAILS/Secteur_privé_developpement/PDF/SPD15/SPD15_jean_pierre_ymele_uk.pdf)

RSA (Republic of South Africa) Department of Environmental Affairs and Tourism, Directorate: General Waste Management, Assessment of the status of waste service delivery and capacity at the local government level, AUGUST 2007.

<http://www.treasury.gov.za/publications/igfr/2011/lg/14.%20Solid%20waste%202011%20LGBER%20-%20Final%20-%209%20Sept%202011.pdf>

RSA (Republic of South Africa) Department of Environmental Affairs: National Waste Management Strategy (2011), Government Gazette 35306 Government Notice 344 of 4 May 2012.

[https://www.environment.gov.za/sites/default/files/gazetted\\_notices/waste\\_strategy\\_establishment.pdf](https://www.environment.gov.za/sites/default/files/gazetted_notices/waste_strategy_establishment.pdf)

RSA (Republic of South Africa) DWAF (1998) Waste management Series: Minimum Requirements for the handling, Classification and Disposal of Hazardous Waste, Second Edition. (Department of Water Affairs and Forestry): Pretoria.

<http://www.dwaf.gov.za/Documents/Other/WQM/RequirementsHazardousWasteSep05Full.pdf>

RSA (Republic of South Africa) Constitution of South Africa, Act 108 of 1996, SECTION 156(1) (a) of the Constitution, read with Schedule 5. <http://www.gov.za/documents/constitution/1996/a108-96.pdf>

RSA (Republic of South Africa) (2000) The Municipal Systems Act 2000, Act 32 of 2000

[http://www.energy.gov.za/files/policies/act\\_municipalsystem\\_32of2000.pdf](http://www.energy.gov.za/files/policies/act_municipalsystem_32of2000.pdf)

RSA (Republic of South Africa) Department: Environmental Affairs. National Waste Management Act (2008), sub section 7 (1) B, National Standards for domestic waste collection

<http://sawic.environment.gov.za/documents/384.pdf>

RSA (Republic of South Africa) (1999) Section 91, Public Finance and Management Act, 1999, Act No.1 of 1999, Grap 17 and 19 <http://www.treasury.gov.za/legislation/PFMA/act.pdf>

RSA (Republic of South Africa) (2010) National Waste Information Regulations in terms of the National Environmental Management: Waste Act, 2008 (Act No 59 of 2008). Government Gazette No 35583 Government Notice 625 of 13 August 2012. Government Printers: Pretoria.

[https://www.environment.gov.za/sites/default/files/legislations/nemwa\\_wasteinformationregulations\\_g35583g\\_on625.pdf](https://www.environment.gov.za/sites/default/files/legislations/nemwa_wasteinformationregulations_g35583g_on625.pdf)

RSA (Republic of South Africa) (2011) National Environmental Management: Waste Act, (59/2008): Waste classification and management regulations. Government Gazette No 36784, Government Notice. 634 of 23 August 2013. Government Printers: Pretoria. <http://sawic.environment.gov.za/documents/2177.pdf>