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AN INVESTIGATION INTO SERVICE DELIVERY IN
THE MAFIKENG LOCAL MUNICIPALITY: A CASE
STUDY OF SOLID WASTE MANAGEMENT

BY

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A MINI DISSERTATION SUBMITTED AS
PARTIAL FULFILMENT OF THE
REQUIREMENTS FOR THE DEGREE OF
MASTER OF BUSINESS ADMINISTRATION
(FINANCIAL MANAGEMENT)

DECLARATION:

I do hereby declare that this work, hereby submitted, has not been previously submitted to any University nor published, that the work is original, my own in design and execution and that all the material contained herein is duly acknowledged.

Signed Dele 13/03/03

Dedication

This work is dedicated to my father, Mr T.J.Segaecho, who always believed in me and wanted to see me ahead of the pack. Thank you

Dad!

Acknowledgements

Without the support and assistance of many people who acted in one way or another, this work would not have been possible. I wish to foremost thank my **Creator** for giving me strength during the most trying times; my husband Boitumelo, thank you for being there with the kids when they needed my attention. To my family a word of gratitude for encouraging me at all times; my colleagues at work and elsewhere, I would not have completed this task if it were not for your understanding, mindfulness and support and to the management and politicians of the municipality who were always there to contribute to my work when I needed to talk to them.

A special word of appreciation is definitely reserved to my Supervisor, Prof. H.O.Kaya, whose motivation, encouragement, help and guidance were most valuable.

Abstract

The study investigated solid waste management in the Mafikeng Municipality including the attitudes of the residents towards the waste management services rendered by the municipality. The study found the followings: the main sources of waste were from households due to minimal industrial activity in the area; that the residents had negative attitudes and perceptions about the waste management services provided by the Municipality. The majority of residents were not involved in the identification of needs and management of solid waste. They wanted to take an active role in the planning, design and implementation of the service especially where the formulation of policies are concerned; adequate policy mechanisms need to be adopted to enforce proper behaviour in waste disposal. The study recommends that:

- the community be involved in planning, design and implementation of the service especially where the formulation of policies are concerned.
- adequate policy mechanisms need to be adopted to enforce proper behaviour in waste disposal

TABLE OF CONTENTS

Item		page
1.	Acknowledge	1
2.	Abstract	2
3.	List of tables	4
4.	Appendices	5
5.	Chapter 1: Introduction	7
6.	Chapter 2: Main sources of solid waste	22
7.	Chapter 3: Problems associated with refuse removal	31
8.	Chapter 4: Policy mechanisms	38
9.	Chapter 5: Conclusions and Recommendations	43
10.	References	52

List of tables

1.	Table 2.1:	Frequency table for group that generates most refuse	65
2.	Table 2.2	Cumulative frequency for age	68
3.	Table 2.3:	Knowledge of local policy on waste removal	56
4.	Table 3.1:	Disposal of garden refuse	32
5.	Pie graph reflecting % knowledge on local policy		28
6.	Table 3.2:	Responsibility for household waste removal	31
7.	Table 3.3:	Frequency for refuse collection	35

Appendices

1. Appendix 1: List of environment Conventions and Treaties

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Chapter 1

INTRODUCTION

1.1 Background

Solid waste management is an integral part of environmental management in South Africa. It is thus one of the services each community is expected to be rendered with by any municipality. Since most of the solid waste is generated in municipalities they are at the forefront of delivering this basic service to communities within their areas of jurisdiction.

South Africa's reintegration into the international community has prompted the country to comply with international and improved pollution and waste management systems. The country has a growing global obligation to meet international commitments, agreements and treaties to be a globally responsible country. Most of the environmental treaties, as indicated in "Appendix 1" (White Paper on integrated pollution and waste management 2000) had implications for integrated pollution and waste management. To date, more than 26 international agreements (17 conventions, 4 protocols, 3 treaties and 2 agreements) pertain to integrated pollution and waste management, 19 of which have been acceded to or ratified by South Africa.

The dawn of environmental concerns was regarded as the new era in the early

1970s where national and international powers came together to address public concern in environmental issues. The United Nations, driven by the United States of America at that stage, made significant input in the American National Environmental Policy Act that was signed. South Africa only became actively involved two decades after this Act was promulgated by the United Nations in the 1970s (Fuggle and Rabie, 1996: 18). The country subsequently promulgated various laws relating to matters on water pollution, and signed declarations pertaining to many other environmental issues. More universities in the country became interested in environmental management studies and this has helped significantly in the realisation of good environmental laws. The conference held in 1972 at Stellenbosch has led to the formation of the Habitat Council, which aims at the protection of the environment through the propagation of responsible behaviour of private sector and all planning. A permanent cabinet committee was also formed to investigate pollution and conservation matters and to guide cabinet on all environmental matters. In 1973 a national department was established to deal with all environmental management matters and in 1975 the Physical Planning Act 88 was amended and renamed the Environment Planning Act 88 of 1967, to make provision for land-use planning. This department slowly gained control of other environmental matters that were dealt with by other departments.

Of more significance to policy was the birth of the White Paper on National Policy regarding environmental conservation, which sought to formulate the government's policy on a variety of environmental aspects in South Africa. A direct outcome of this was the White Paper on Environmental Conservation Act 100 of 1982. National efforts have since intensified to control solid waste more effectively as evident by the

fact that legislative powers of Provincial Councils have been extended to include control over litter. This has resulted in the proclamation of the Dumping of Refuse Ordinance 8 of 1976 and the Prevention of Environmental Pollution Ordinance 21 of 1981. These pieces of policy and the Health Act of 1977 have to a great extent assisted in controlling pollution and managing the generation and disposal of solid waste at local level. In her unpublished MA thesis, Frieda Khan also examined the factors that have acted to shape black attitudes towards the environment. Her work demonstrated that the injustices perpetrated on South African blacks during the apartheid era, particularly those related to dispossession of land, have had a significant impact on the perceptions that they hold on the environment. Thus, this paper also focuses on the attitudes displayed by people regarding solid waste management.

The Environmental Conservation Act of 1973 defines waste as "any matter or object discarded by the person in whose possession or control it was". This can further be interpreted to mean that waste is any unwanted, unusable and disposable material accumulated by any person with the ultimate aim of eventually disposing of such material. Solid waste management can be defined as a planned programme for the effective collection, proper handling and disposal of solid waste so as to create a safe and pleasant environment.

The Constitution of South Africa (Act No.108 of 1996) Section 24 (a) and (b) articulated the role of Local Government by enshrining it in a chapter of the Constitution. Section 24 of the Bill of Rights binds all spheres of government to give effect to Section 24. The chapter on Human Rights promotes the right to a healthy

and clean environment for all citizens of the country irrespective of race, colour or creed. Section 156 on Local Government emphasises a developmental role and the assignment of powers and functions to municipalities that will enable them to deliver on this mandate through sustainable development.

The White Paper on Environmental Management Policy for South Africa and the Integrated Pollution and Waste Management for the Republic of South Africa (1998), were Constitutional imperatives. The paper aimed at formulating an integrated waste management strategy to be implemented by various state departments and spheres of government, controlling pollution in the country, viz: - the Department of Water Affairs and Forestry, the Department of Minerals and Energy, the Department of Environmental Affairs and Tourism, and municipalities. The strategy sets action plans, time frames and targets, one of which is to minimise waste generation and pollution. The vision of the national government, which is aimed at developing, implementing and maintaining an integrated pollution and waste management system, the key issues of which addresses environmentally and socially acceptable practises that contributes to sustainable development and a measurable improvement in the quality of life of the entire population.

The North West province in its State Of The Environment Report Of 2002 has indicated that waste management in the province can never be overemphasised, as it is one of the global concerns for sustainable development. The Province has also indicated that waste and pollution are part of the major pressures in modern society. Municipalities have been identified as one of the main waste generators that handle approximately 355 000 tons of waste on an annual basis (Overview report-

2002:pg.25).

Since the inception of the Mafikeng local municipality an allocation of up to 14% of its total income, amounting to less than R10 million per annum, was spent on solid waste management to effect the provision of the Constitution of the right to a clean and healthy environment to all residents. The department of community services within the municipality is responsible for effecting this mandate through various operations like planning for refuse storage, collection, transportation and disposal of solid waste. That department has to render an equitable service to all residents especially refuse removal from households, commercial and industrial areas.

Storage, collection, transportation and disposal of refuse from all areas have to be arranged according to acceptable standards. The community of Mafikeng expect all arrangements of the service to be done by the municipality, which had to cope with the budgetary constraints due to incorporation of other areas to be serviced. This resulted in major littering where communities started to dump refuse anywhere creating pollution in some areas. There was a site allocated for disposal of collected refuse but this was also not properly managed due to lack of adequate knowledge and accessibility to proper machinery for the operation of the disposal site. Various other systems were put in place to try and attend to illegal dumps created in residential areas but all were inadequate as the Council still experienced major difficulties concerning pollution and corrective measures to deal with littering and indiscriminate dumping of all types of solid waste.

1.2. Statement of the problem

The research was based on the following research questions.

- ❖ What are the main sources of solid waste in the Mafikeng local municipality?
- ❖ What are the major problems faced by the Municipality regarding waste management?
- ❖ What policy mechanisms and structures are in place to manage solid waste in the municipality?
- ❖ What are the attitudes of the members of the community towards solid waste management by the municipality?

1.3. Aim of the Study

To investigate service delivery focussing on solid waste management in the Mafikeng local municipality.

1.4. Objectives of the Study

The study investigated the following specific aspects: -

- ❖ The main sources of solid waste in the Mafikeng local municipality.
- ❖ The major problems faced by the municipality regarding solid waste management.
- ❖ Policy mechanisms and structures in place to manage solid waste in the municipality.
- ❖ The attitudes of members the community towards solid waste management in the municipality.

1.5. Literature review and theoretical perspectives

Fuggle and Rabie (1998: 493) state that waste management has become one of the more rapidly developing multidisciplinary applied science that offers practical, effective and often innovative solutions to many modern waste problems. The lack of clear waste management strategies in South Africa has resulted in the belated discovery of the devastating effects of poor waste management on the environment. Despite the existence of a considerable number of statutes that existed in the country, it was realised that more specific legislation needed to be developed to control the waste management industry. The statutes also needed to be implemented effectively.

South Africa released its State Of The Environment Report In 1999 wherein various environmental indicators were highlighted, amongst others, waste management. According to this report, more than 42 million m³ of general waste is generated each person contributing an average of 0,7kg per day. It is estimated that if this rate of waste generation is not curbed, the country will over the next five years exceed landfill capacity in five of the nine provinces by up to 67%. The report states that 72,3% of the waste is generated by mines whilst urban waste contributes 4,5% at national level.

Waste management requires the input of a team with a wide field of expertise in order to deal comprehensively with the many facets of the waste management problem. According to Nyirenda(1994), to deal with waste

management effectively, it needs to be broken down into six manageable components, waste generation, storage, collection transportation, recovery and disposal. Waste Management implies a holistic approach where waste is dealt with in an environmentally responsible way from its generation to ultimate disposal. Strategy implementation must be managed properly but waste management budgets normally constitute a major obstacle in the implementation of plans and policies. There always exists a shortage of skilled workers in the field and managers with an overall grasp of the subject are rare. Obsolescence of strategies is also a reality, which makes data base creation an absolute necessity to enable authorities like municipalities to be effective and proactive in management (Lombard et al, 1998: 495).

Nyirenda (1994) [in his article delivered in The Waste Management Conference in Durban, on Waste Management in developing countries], also approaches the issue of waste management from the basis of a solid waste management as a kick – off. The author states that the main objective of solid waste management should be to achieve the utmost efficiency and economy in order to keep the service sustainable with minimum costs attached. Some problems in solid waste management are borne by the fact of incorrect attitudes displayed by residents and they thus need an education programme to help them realise the importance of a clean environment. Nyirenda further argues that costs in waste management are largely in storage and collection and can be reduced drastically.

Nyirenda (1994) also analyses incorrect technology used to manage solid

waste, which can be both time consuming and expensive. The use of a fleet of vehicles beyond their economic life aggravates expenditure problems. A lack of appreciation of socio-economic and cultural problems often leads to larger problems regarding effectiveness of solid waste management.

The research problem and questions in this study lead to the understanding of waste management as a National problem in a local context of the Mafikeng municipality.

Legislation in the past has charged local authorities with the responsibility of dealing with littering and refuse removal. The paradigm shift to intergraded solid waste management needs to be encouraged as stipulated in legislation. The Mafikeng local municipality has been concentrating on the end result and this study will introduce the bigger picture involved in solid waste management.

Community participation cannot be over emphasised and their contribution and involvement toward an effective waste management plan or strategy. Properly managed research, development of a waste management plan and appropriate application of policy objectives will go a long way in assisting the realisation of objectives as stated in the background of the study.

1.6 Hypotheses

❖ Hypothesis 1

The main sources of solid waste pollution in the Mafikeng Municipality are derived from household, commercial and industrial activities.

❖ Hypothesis 2

The Mafikeng municipality is faced with insufficient policy and law enforcement mechanisms to manage solid waste.

❖ Hypothesis 3

Poor solid waste management in the Mafikeng Municipality is exacerbated by the negative attitudes displayed by residents regarding responsibility to manage solid waste properly from the point of waste generation.

1.7. Significance Of The Study

The study is relevant in a sense that it suggests ways of dealing with the immense task and challenges facing the Mafikeng local municipality regarding solid waste management. It will assist the municipality to develop policies and strategies to deal with waste management in collaboration with the community. The study also supports the municipality to realise the mission of government of *"Bettering the lives of all that live in South Africa"*, as quoted from the state of the Nation address by the State President on 09 February 2001.

The study was critical to the municipality due to legislative changes and new methods of service delivery that have been developed during the past three years by national and provincial government structures. It creates a foundation for the municipality to understand what needs to be done to achieve optimum service delivery regarding solid waste management in terms of applicable legislation. Roles of different stakeholders have been defined to clarify participation in the process of service delivery.

The study contributes to existing knowledge within and across the discipline of Environmental Health through the provision of new methods of service delivery especially in the South African context of rural or tribal authority areas that were previously marginalized.

The study also contributes to the realisation of the extent to which community participation as envisaged by government can be effected to investigate community- based problems successfully and also, how much ownership of the process communities can take.

1.8. Methodology

This was a case study on solid waste management within the Mafikeng Municipality. This approach was used employing both qualitative and quantitative methods in order to have an in-depth understanding of the research problem. Mafikeng local municipality was selected because the researcher resided in the area and had an interest in solid waste management

issues in general.

1.8.1 Subjects

- ❖ A stratified random sample of 50 community members (25 males and 25 females) was selected in order to provide both male and female respondents an equal representation in the study.
- ❖ Key persons in the Mafikeng local municipality such as the municipal manager, the manager of the community services department, sectional managers within the same department and councillors (as political office bearers). These are responsible for the management of basic services in the municipality.

1.8.2 Data Collection Methods

Taking into consideration different sources of information, a combination of data collection methods was used: -

- ❖ A questionnaire with both open-ended and closed-ended questions was used. The closed-ended questions were used to collect the demographic characteristics of the respondents and open-ended questions were used to collect qualitative data such as opinions and attitudes of the respondents;
- ❖ A semi-structured interview schedule was used to gather information from the key persons;
- ❖ An examination of relevant secondary data regarding solid waste

management in the Municipality; viz. policy documents, Council resolutions, work procedures, schedules, minutes and relevant legislation was also undertaken.

1.8.3 Data analysis

Field data was both qualitative and quantitative. Content analysis of qualitative data such as opinions, attitudes and comments of the respondents, whereas descriptive statistics were used to analyse quantitative data such as demographic information of the respondents.

1.8.4 Limitations Of The Research Design

The study did not cover general services as deliverable by the Municipality but rather focused on solid waste management as a required deliverable. The study also did gauge levels of service delivery in the present set up but needed to suggest standards of service delivery in terms of solid waste management as indicated in the "Batho pele principles" of the government.

1.8.5 Ethical considerations

The study was conducted with assurance of confidentiality to subjects. Data collectors regarded it with integrity and utmost honesty especially in terms of

administration of questionnaires and interviews. The study was also conducted to ensure lack of bias and persuasion whilst targeting a high response rate.

1.9 Organisation of the final report.

1.9.1 Chapter one.

This is the introduction that includes background, aims, objectives and methodology of the study.

1.9.2 Chapter two.

The chapter focuses on main sources of waste and major problems faced by the Mafikeng municipality.

1.9.3 Chapter three.

The chapter analyses the attitudes of Mafikeng residents towards solid waste management in the municipality.

1.9.4 Chapter four

The chapter reflects existing policy mechanisms and structures for the management of solid waste in the Mafikeng local municipality.

1.9.4 Chapter five

This chapter provides conclusions and recommendations derived from the study

Chapter 2

MAIN SOURCES OF SOLID WASTE IN THE MUNICIPALITY AND ASSOCIATED PROBLEMS

Mafikeng local municipality is experiencing a burgeoning population growth and rapid urbanisation. This together with the need for economic growth to accommodate aspirations for an improved standard of living tends to lead to a disproportionate escalation in the generation of waste. This chapter clarifies problems associated with solid waste management in the locality and how these can be dealt with to allow the municipality to achieve its legislative mandate.

Despite the existence of a number of clear and concise statute that allude to some form of control over the production and disposal of waste, in line with International regulations, it was realised by senior management within the municipality, that much more needed to be done to control the generation of waste especially in urban areas. Waste generation and the indiscriminate disposal thereof obliged all spheres of government to investigate the need for control and proper management. The Water Act of 1973 provides a definition of pollution, which is generally accepted for all forms of pollution including that of solid waste as meaning a detrimental alteration or variation of the physical, chemical, biological or aesthetic properties of the environment.

As previously stated, the Environmental Conservation Act of 1973 defines waste as any matter or object discarded by the person in whose possession or control it was. This indicates that there exists a definite need to regulate the production, decrease, utilisation and disposal of waste. Waste management has been placed at local level and thus there is a need for municipalities to respond to the mandate to provide a healthy and safe environment in terms of the Constitution.

Noting the above background waste generated by various communities contributes to the pollution problem even if it is managed properly and forms a big part of the problem as identified by the management of the municipality. Litter refers to misplaced waste, which can be recovered and placed into the main waste stream to make the management more effective. The municipality collects an average of 712 000 kg of household and commercial waste per month. A general indication is that waste in the form of litter (street collection) is not collected in all areas thus leaving out a significant proportion of waste uncollected. This contributes to the dissatisfaction by some residents concerning this problem.

Plastic bags constitute one of the major polluters in the area. The Minister of Environment and Tourism, Mr Valli Moosa has promulgated Legislation in May 2000 that will reduce the use of non-biodegradable plastic bags by less than 30 microns by all South Africans. Many residents welcomed this legislation and many people and industries

have since developed initiatives that are linked to the replacement of plastic bags as carriers of goods as they inevitably end up as waste.

2.1 Main sources of solid waste in Mafikeng.

There are different sources of solid waste in different communities, especially in an urban area like the Mafikeng local municipality. The study aimed at locating the main sources of solid waste in the study area. The results are shown in Table 2.1 below:

Table 2.1: Cumulative frequency Table for the group that generates most refuse.

Which group, in your opinion, generates most refuse in Mafikeng?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Households	13	26.0	26.0	26.0
	Industries	10	20.0	20.0	46.0
	Gardens	8	16.0	16.0	62.0
	Commercial areas/Business	12	24.0	24.0	86.0
	Other(duiders, rubble, litter)	7	14.0	14.0	100.0
	Total	50	100.0	100.0	

Table 2.1. shows that household and commercial operations generate most refuse. This implies that these sections of the municipality need to be actively involved in the planning, designing and implementation of any waste management policies. Interviews with key persons and respondent residents in the municipality indicated that the common type solid waste generated by these sources include plastic bags,

It was suggested by the respondents that legislation related to the ban of plastic bags needs to be instituted to allow communities to assist them to avoid littering and excess waste, separation at source policy, which will also affect households.

The study also found that Mafikeng depends on the service industry and government sectors whose activities were also sources of solid waste such as paper, plastic and cardboard that is recyclable. The problem identified here was that service providers in the business area were not sensitive to the environment, thus left their waste anywhere for the municipality to collect. An integrated approach in managing these sectors will assist to reduce solid waste and to alert the business community on the sensitivity of the matter.

Table 2. 2: Cumulative frequency table for Age

		Age			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 25yrs	3	6.0	6.0	6.0
	25-35yrs	29	58.0	58.0	64.0
	More than 35yrs	18	36.0	36.0	100.0
	Total	50	100.0	100.0	

Table 2. 2 shows that respondents in the age group of 25-35 constituted 58% of the sampled group and can be said to form a large part of the community. They contribute largely towards the generation of solid waste in the area as most of them are employed and thus form part of the economic input of the municipality. This group can take responsibility of their environment if

authorities made provision for it. The municipality of Mafikeng therefore needs to explore this opportunity and allow residents to take part in community participation programmes regarding waste management issues. A major segment of the youth of Mafikeng falls under this age group although they are largely school going. The main sources of waste which are household and commercial can generate income for the youth through recycling projects in the community. The call for volunteerism by the National Government can be used to motivate the youth to take part in environmental matters at schools, by instituting some of the major principles of the White Paper on youth development can also be instrumental in shaping their careers towards environmental management.

Table 2.2 also indicates that 36% of the respondents were of the age group of 35 years and upward. This can be an indication of a mature community that wants to live in an acceptable environment and can do anything that makes them comfortable, including complaining about it. This group can be said to have a higher level of understanding of the area and their wisdom can be used effectively to contribute to policy issues. Further, this will also assist the municipality to achieve the developmental role of government and the inclusion of the community in decision making as anticipated in various pieces of legislation concerning local government in South Africa. Persons in this age group are influential in rectifying behavioural patterns that have gone wrong, especially amongst children who contribute to various forms of pollution through behavioural patterns.

The community of Mafikeng is heterogeneous and dynamic in nature. The questionnaire that was used to collect data from the community indicated that a large percentage of the respondents were middle aged, married and most of them had stayed in Mafikeng for a period longer than 10 years. Most of the respondents had an education level higher than matric. The inference that can be made is that the community is relevantly mature and can be receptive to education or awareness programmes regarding waste.

The commercial sector contributes largely to the generation of waste in the area and the municipality needs to develop policies that will assist commercial institutions to enable them to control and manage waste in this sector effectively.

2.2 Problems associated with solid waste management in Mafikeng.

Interviews with key persons in the municipality revealed that there were many problems associated with solid waste collection in major centres around commercial and residential areas. Firstly, resources, both human and capital that were unequally distributed among the different departments and municipal areas contributed to a large to inadequate collection of waste in these areas. The study found that the budget of the municipality was divided amongst five (5) departments, two (2) of which were service delivery related. The community services department which dealt with the removal of solid waste in more than 15

000 developed even, with a population exceeding 100 000, was allocated 14% of the total budget of the municipality. This allocation had to serve the cleaning of indiscriminate dumps, street sweeping and litter that is not in the main stream of solid waste that is formally collected. The municipality is also operating with a fleet that has exceeded its operation life, making service rendering inefficient, as vehicles are old and costly to maintain and to keep on the road. Nyirende (1994) indicated in his paper the effect of old, ineffective and outdated equipment that makes service delivery expensive and inaccessible.

Secondly, interviews with key persons and respondent residents indicated lack of awareness among residents on environmental issues within the municipality. The municipality has realised that problem and the need to implement an awareness programme that will include all residents.

Thirdly, shop owners in the commercial area are legally requested to secure an area equivalent to 6m³ for housekeeping of solid waste in their premises. Some shop owners have ignored this provision and used the space for storage or other business operations. This has resulted in many of them dumping solid waste on the street for street collection and in the process rendering the commercial area in a very unsatisfactory state. Vagrants and street dwellers in the commercial area also invade refuse bags to gather remains of food for themselves,

in the process tearing bags and strewing refuse in the city centre. This element and concern also came up clearly in open-ended questions that were pointed to respondents of the questionnaire.

Fourthly, a lot of household waste is also dumped in unallocated dumping areas contributing to litter and waste landing in the informal stream that is not collected regularly. The municipal management reported that there was a programme to collect waste that is not within the formal collection stream. This programme is ad-hoc and normally responds to complaints that are raised by residents who find such dumping unattractive. This approach has obviously not worked for the municipality and will have to be discouraged through law enforcement or attended to in a more comprehensive manner in future.

Most of the respondents complained of what they perceived as inadequate management of solid waste by the municipality. One of these complaints related to poor supervision of employees who collected waste as well as refuse collectors that did incomplete jobs when collecting waste at households. Some respondents also stated that law enforcement was inadequate and thus led to the problem residents dumping waste at unapproved places in the community

Table2. 3: Cumulative Frequency Table For *Knowledge Of Municipality's Policies On.Waste Removal.*

Are you aware of the mancipality's policy on refuse removal .

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	10	20.0	20.0	20.0
	No	40	80.0	80.0	100.0
	Total	50	100.0	100.0	

Lastly, one of the major concerns of the residents was also that they were not involved in policy decisions regarding waste management and that was a major problem. Table 2.3 reveals that 80% of the respondents are ignorant of any waste management policies that exist in their Municipality. Public involvement in waste management and education on waste matters cannot be overemphasised, as they are the most important stakeholders to promote the role efficient and effective management and adequate allocation of resources.

Chapter 3

ATTITUDES OF RESIDENTS TOWARDS SOLID WASTE MANAGEMENT IN THE MUNICIPALITY

The chapter indicates significantly how the community of South Africa at large regarded waste as an adhoc programme and how the government has attempted to rectify this attitude over years. The dawn of environmental concerns was regarded as the era in the early '70s where national and international powers came together to address public concern in environmental issues and to address the fragmented approach that was used internationally regarding this matter. The United Nations, driven by America at that stage, made significant input in the National Environmental Policy Act that was signed on the first day of the decade. South Africa only became very vocal and active two decades after this Act was promulgated by the United Nations in the '70s (Fuggle and Rabie, pg 18). South Africa hereafter promulgated various laws starting with matters on water pollution, and signed declarations pertaining to many other environmental issues. The formation of the Habitat Council and the Cabinet Committee to investigate pollution and conservation matters and to guide Cabinet on all environmental matters, which aimed at the protection of the environment through the propagation of responsible behaviour of private sector and all planning, was also a highlight of that era. In 1975 the Physical Planning Act 88 was amended and renamed the Environmental Planning Act 88 of 1967, to make provision for land-use

planning. This one department slowly gained control of other Environmental matters that were dealt with in a fragmented manner by other Departments.

Of more significance to policy was the birth of the ***White Paper on National Policy regarding environmental conservation***, which sought to formulate government's policy on a variety of environmental aspects in South Africa. A direct outcome of this was the *White Paper Environmental Conservation Act 100 of 1982*.

National efforts have since intensified to control solid waste more effectively manifested by the fact that Legislative powers of Provincial Councils were extended to include control over litter resulting in the proclamation of the *Dumping of Refuse Ordinance 8 of 1976 and the Prevention of Environmental Pollution Ordinance 21 of 1981*. These pieces of policy and the *Health Act of 1977* have to a great extent assisted to control pollution and manage the generation and disposal of solid waste in the country. In her unpublished MA thesis, Frieda Khan also examined the factors that have acted to shape black attitudes towards the environment. Her work demonstrated that the injustices perpetrated on South African blacks during the apartheid era, particularly those related to dispossession of land, have had a significant impact on the perceptions that they hold on the environment. These will be examined closely in the chapter following this.

3.1 Attitudes towards disposal of garden and other categories of waste

Residents in the area have indicated their lack of knowledge regarding the handling of waste generated in their households. Most residents dispose of waste that is not collected by the Municipality in a formal collection system, at any area deemed appropriate by them. This has led to garden refuse and other waste matter being dealt with in an uncoordinated manner, where children, gardeners and even adults dispose of it in inappropriate areas. This is a strong indication that some portion of the residents does not care about their environment.

Table 3.1: Cumulative frequency table for *garden refuse*

What do you do with your garden refuse?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Gardener removes it	17	34.0	34.0	34.0
	Children remove it	5	10.0	10.0	44.0
	I remove it	14	28.0	28.0	72.0
	Municipality should remove	11	22.0	22.0	94.0
	Throw it outside my yard	3	6.0	6.0	100.0
	Total	50	100.0	100.0	

Table 3.1 shows percentages of responses to garden waste disposal that is not combined with household kerbside collection. It indicates that 34% remove their own refuse, 22% say the municipality should remove it, 10% say children are normally tasked to dispose of it, while 6% just throw it outside their yards. Municipality should remove waste still do not allay fears of irregular disposal. The management of the Municipality has indicated that they

spend a quarter of their total budget on removal of indiscriminate dumps; this 28 % could also contribute to the indiscriminate dumps, which are collected at huge costs to the Municipality and residents. People do think that they should take some responsibility in assisting the Municipality; it will only take the Municipality some initiative to involve them as relevant stakeholders to assist the municipality to dispose of waste in a correct manner.

Attitudes of residents can be corrected through various means, which include policies that can lead to avoidance of solid waste, reduction, recycling and reuse of waste. This will be in line with the spirit in which the White Paper on waste management was drawn up.

Table 3.2: Cumulative Frequency Table For *Household Waste Removal Responsibility*

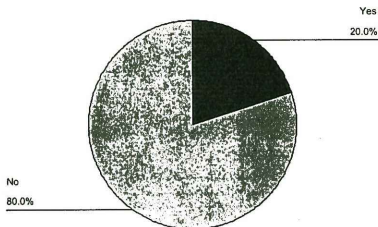
In your own opinion who is responsible for your household waste removal?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Municipality	34	68.0	68.0	68.0
	Myself	10	20.0	20.0	88.0
	My children	6	12.0	12.0	100.0
	Total	50	100.0	100.0	

Table 3.2 reveals a mixed reaction as to what people do with their garden refuse. Although 88% of the residents, behave in an irresponsible manner regarding disposal of waste, 20% of the respondents do behave responsibly by at least removing waste themselves, whilst a portion of 22% thinks that the Municipality should remove it. There is a response that indicate the lack of

sensitivity to what people do with their refuse by allowing children to be held responsible for disposal of household waste who normally dispose of refuse at any convenient place in a residential area. When children dump waste irresponsibly, it will normally occur without adult supervision. It is because of this that Ordinance 39 of 1974 and several other South African Legislation makes the owner of the residential plot responsible for any illegal act that is performed from such premises.

Knowledge of Municipality policy on waste removal



The pie graph above indicates that many adults are not aware of any policy provisions, where 80% have indicated no knowledge of the existing policies in the Municipality. Residents thus do not think that they are doing anything wrong by dumping solid waste in places that are not approved or not allocated for solid waste disposal. It will be in the interest of all parties, community and municipality, to highlight these laws to members of the community, not as a

threat but to make them understand the implications of their actions or that of their tenants. Hypothesis 3 insinuates that poor solid waste management in the area is exacerbated by the negative attitudes displayed by the residents. This is proved true by the responses given by the community. Hypothesis 2 also highlights the insufficient policy provisions to address issues of control and management of solid waste in the area. The lack of policy knowledge is evidence proving the hypothesis true. It indicates that there is either insufficient policies or lack of mechanisms that enhances any good policies that exists. The municipality does not have any by-law besides the Ordinance that governs waste removal and disposal, as reported by the management of the municipality, they have also acknowledged that this is an issue they will attend to very seriously in the near future.

Table 3.3: Cumulative frequency table for *refuse collection*

How often is your refuse collected?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Once a week	13	26.0	26.0	26.0
	Twice a week	26	52.0	52.0	78.0
	Never	11	22.0	22.0	100.0
Total		50	100.0	100.0	

Collection frequency of waste is twice a week in all areas as was confirmed by the management of the municipality. All residents of the area should know this. It is indicative of the fact that policy decisions are not disseminated to the community or that they choose to ignore Municipal Ordinances on waste removal. Many residents also claim that their waste is never collected and this contributes to the incorrect attitude displayed by residents. It can truthfully be

deducted that irregular collection is related to inadequate systems within the municipality. The municipality management who indicated that waste is not collected as frequently as they would like it to be collected also confirmed this fact. This element was related to various factors revolving around inadequate allocation of financial, human and technical capacity to deal with the rendering of a professional service like solid waste management.

Chapter 4

POLICY MECHANISMS FOR SOLID WASTE MANAGEMENT

The collection of refuse is one of the most visual benchmarks of inequality in South Africa. Prior to the introduction of democracy in 1994, only whites suburbs were kept clean with regular door-to-door refuse collection and teams of street sweepers, while in most black townships residents were somehow forced to dispose of their refuse in the open. Street cleaning was virtually non-existent, and even where they do exist, available workers are often not able to cope with the volume of work. In an attempt to arrest the situation, most municipalities have resorted to commercialisation and partnerships to assist in service provision.

The North West Province, formerly a homeland called Bophuthatswana, originally had all its towns, except the capital Mmabatho/Mafikeng, established as black townships. These townships, developed by the South African government, had little or no infrastructure including those that provide for proper waste management. (Ratnam: 1994). From a literal point of view, the performance of government after the re-integration of Bophuthatswana (now the North West Province) into South Africa has been encouraging. It can be noted from the literature search that many National policies have been put in place to ensure proper environmental regulation, which includes solid waste management.

The White Paper on Integrated Pollution and Waste Management for South Africa has strategic goals that should guide policy formulation at all spheres of government and is seen as an effort towards collective responsibility of all South Africans regarding waste management. The *National Waste Management Strategy and Short-term Priority Action Plans* have been developed together with *Implementing Instruments Project plans* to enable government and other spheres to gauge themselves in terms of performance in relation to the environment. These plans stipulate the deliverables of the National Waste Management Strategy and also what the role of all stakeholders is to achieve the deliverables and certainly do not exclude the Mafikeng municipality. The short-term period refers to the period up to 2004. The goals have been set out as stipulated below and should be used as yardsticks by various authorities to measure how much they have contributed towards the achievements of National policies.

- Goal 1. To create, develop, implement, maintain and continuously improve and effective, adequately resourced and harmonised institutional framework and integrated legislative system and to build institutional capacity.
- Goal 2. To promote holistic integrated pollution and waste management through pollution prevention, minimisation at source, impact management and remediation.
- Goal 3. To develop mechanisms to ensure that integrated pollution and waste management considerations are effectively integrated into government policies at all levels.

- Goal 4. To establish mechanisms and processes to ensure effective public participation in solid waste management.
- Goal 5. To promote education and awareness of all South Africans on environmental issues and assist in developing knowledge, skills, values and commitment necessary to achieve integrated waste management.
- Goal 6. To develop and maintain an effective database and information system to provide accessible information to interested and affected parties.
- Goal 7. To develop mechanisms to deal effectively in the national interest with international issues affecting pollution and waste.

4.1 Policy instruments for Mafikeng

The Mafikeng Municipality has not developed any policy instruments except for by-laws and Ordinances that were operational in the old Cape Administration, e.g. Ordinance 39 of 1974. Street by-laws and ordinances that were passed are still used to regulate waste management in the municipality. *The Prohibition of the Dumping of Rubbish Ordinance 8 of 1976* is also still in place at the municipality, followed by the use of the Environment Conservation Act of 1989, which also extensively dealt with issues related to solid waste control. The Municipality also consults the Health Act of 1977, which deals with "nuisances" in terms of waste; to assist them to attend to various types of pollution related matters. It was indicated by Management in their responses that there exists a serious lack of policy support and

recognition by senior management and politicians in the municipality. This has led to ad-hoc approaches that are in place to make delivery of the service possible.

The White paper on Integrated Pollution and Waste Management does not oblige any municipality to comply with the policy guideline but encourages them to adhere or recognise the abovementioned goals. The municipality was invited to take part in several initiatives like the Agenda 21, Cleanest City competitions, and the implementation of the Database and information gathering tool but never participated meaningfully.

Knowledge of Municipality policy on waste removal

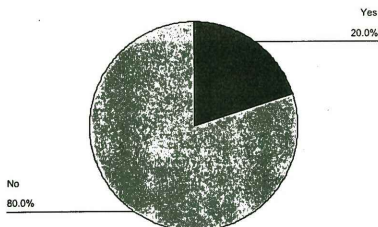


Fig. 4. 1: Knowledge of Municipality Policy on Waste Removal

Figure 4.1 indicates responses to the question that relates to how many respondents knew about any waste management policies. The respondents to this case study indicated that 80% of them are not aware of any policies that exist in the Municipality. This indicates a policy and community participation

gap that can be explored by the Municipality to create policies that will suite all residents.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

The study established the nature of the problem of solid waste management in the Mafikeng municipality including the factors which influence the problem. These include lack of environmental awareness among residents, unequal allocation of resources among the different municipal departments and residential areas and lack of capacity to manage the service. This was exacerbated by the municipality's inability to involve the community in the planning and delivery of the service. The level of priority of environmental issues as indicated in the Integrated Development Plan of the municipality, is also a realisation that residents did not participate adequately in the formulation of this document to elevate the status of this service. The repeated indication by the residents in respect of an inadequate level of service that is provided by the municipality is an indication of their concern that this will in the long run affect their health and the town's future economic and investment opportunities, thus needing adequate attention.

The municipality does not seem to realise that solid waste management needs to receive high priority and that it is crucial to the future development of the municipality.

There is evidently inadequate support from high levels of authority in the municipality, thus affecting adequate allocation of resources to support the function. The Integrated Development Plan of the municipality, as alluded to

before, is a 'legal planning document compiled by the municipality. This important document ranks environment and matters related thereto very low. This ranking implies that fewer resources will be utilised in future to pay adequate attention to this aspect of the municipality. It is also evident that capacity within the municipality is limited to a few individuals and utilization of skilful people in the delivery of this service cannot be neglected. Statistics gathered on a monthly basis by the Municipality indicates, that most of the waste is collected from residential and commercial premises. This reflects true and substantiated by the responses received from the community as their perceptions. Hypothesis 1 that says, that the main sources of solid waste are derived from household, commercial and industrial activities is proved true by the responses solicited from the participants of this study.

It was deduced from these responses that the general feeling about the main problems regarding refuse removal services by the municipality, is due to inadequate utilization of resources and lack of supervision of employees charged with the performance of certain functions related to waste management, which supports the observation in the study. This sections responses link directly to the hypothesis in this study that states that the municipality is faced with insufficient policy and law enforcement mechanisms to enforce solid waste management.

This study has provided an assessment of the route and prospects facing solid waste management in the Mafikeng area and located the current restructuring and paradigm shift that needs to be undertaken in a social, economic and geographical context, with special relevance to waste

management: There is an understanding of the extent of the problem that is being faced by the municipality in delivering this service to the community but that there is a serious communication disjuncture amongst stakeholders in this process. This is indicated by amongst others, the fact that 80% of the community is not aware of any policies regarding waste services in the municipality.

Furthermore, people who just throw waste anywhere also feel that disposal facilities must be provided to the communities by the municipality and that the number of collection days should also be increased. This also indicates a serious abjuration of responsibility by the community, notwithstanding the obligation of the municipality to provide facilities and to collect waste that is generated by residents. This requires special intervention by the municipality.

The greatest concern has notably been registered in the business area, where it was indicated in previous chapters that elementary problems related to attitudes exist. Business people dump waste in street corners and other irrelevant places, demonstrating the uncaring attitude that is displayed by shop owners. Many respondents have serious reservations about the way the business area is monitored by the municipality. They essentially argue that stricter measures need to be taken against them by the municipality, to keep the town clean. Concerns expressed by residents in this study are evidence of the fact that if they may be involved in future by the municipality, attitudes may be corrected.

5.2 Recommendations

As a follow up to the conclusions above, the study recommends the following: This kind of research has never been done in the Mafikeng area; hence there is little evidence on the indication of previous sources of waste streams, problems and policy mechanisms that can indicate a significant departure from the present. Although we know that during the apartheid era, most of the facilities were accessible to white people only, even though the Mafikeng area has always largely been dominated blacks, it is still not enough to deduce that these problems did or did not exist.

Although the public expects a lot from authorities, the pressing and very visible problems brought about by the absence of effective systems and resources should inspire stronger demands for good performance and accountability by the Municipality of Mafikeng to the residents. Good education and awareness campaigns, allocation of adequate resources and public involvement programmes will alleviate some of the problems related to ineffective management of waste in the area.

This study does present an opportunity for the municipality to better and continuously improve its solid waste removal services and thus the following recommendations can be considered.

5.2.1 Policy reforms

The municipality has to embark on a process of auditing its current provisions that contribute towards policy mechanisms that are usable. This will enable the municipality to ascertain what is outdated, needed and what needs to be

improved. It will also assist the municipality to realise the extent to which they have participated in national requirements regarding solid waste management.

The need to comply with policy and enhance law enforcement on certain issues in the municipality cannot be overemphasised. Some policies and strategies need to be reviewed to allow the municipality to be in line with national standards and applicable norms. The need to reprioritise the urgency of this service needs to be located in a policy context. Waste management is not afforded the priority it warrants as an essential service that is required to protect the community. Consequently, insufficient funds and other resources are allocated to this service. This neglect has evidently resulted in a lack of long term planning by the municipality. Policy provisions normally oblige a service authority to comply.

The socially and environmentally unacceptable practises that currently characterise many aspects of waste management in the municipality, needs to be attended to partially through policy reforms within the municipality. Examples of these are: illegal dumping and littering, adequate waste disposal sites that are properly used and effective utilisation of waste facilities.

The municipality needs to ensure that it contributes to the aspired view of an integrated waste management approach. A waste management plan that is seen as a policy document can be designed in consultation with the community to focus on measures that will avoid, minimise, reduce, reuse and

recycle waste in the area. The policy can be coupled to incentive measures for adhering to the designed framework. The plan should include appropriate and acceptable waste treatment and disposal methods to ensure a properly integrated approach. An international and recognised approach to integrated waste management is represented as follows:

Waste avoidance



Resource recovery



Waste treatment



Waste disposal

There are several short-term deliverables that can be used to achieve the previously mentioned 7 goals for policy formulation: -

- **Waste reuse:** The municipality can adopt measures, in close cooperation with the private sector aimed at facilitating and coordinating widespread implementation of existing successful waste minimisation and recycling initiatives, aimed at reuse of waste materials. The tariff of charges of a municipality is a policy instrument used for charging consumers for services provided, the municipality can use this instrument to build in a discount if a consumer has shown that they have minimised or reused their waste, as an incentive. The practice of reusing waste in food cultivation in Africa is not new, the municipality can utilize various types of organic materials to maintain and improve the productivity, and fertility of agricultural soils.

- **Compound gardening:** The compound farming system also centres on the household compound. The land immediately surrounding the compound can be cropped with vegetables and staples using organic soil regeneration techniques, which involves the use of household refuse and manure from livestock and a small piece of land can be allocated for dumping solid waste from the household which mainly consists of food and kitchen waste etc. Dumping continues for at least two years and the pile is left for a year to undergo anaerobic decomposition. This piece of land can be used for the cultivation of tomatoes, maize etc. (Agriculture in South Africa, 5th ed. Chris van Rensburg, 1994)

- **Reorganisation of tasks and functions:** The Municipal systems Act of 2000, makes it imperative for municipalities to restructure their institutions based on the IDP document that was alluded to before. It has become evident in this study that managerial reform needs to take place to ensure that the service is carried out fully and as required. There exists a crucial managerial discourse to link the community participation concept to environmental strategies and multi-skilling of staff to achieve objectives of the department. Policy directives should guide the institution towards a more efficient utilisation of resources, machinery, plant and equipment; important in this regard is also the aim to increase operational efficiency. Supervision of teams to be improved and better organised to operate on trucks as they become available for collection rounds, which implies flexibility of operation.
- **Public consultation:** Increase public consultation on municipality's policies, through local radios, television and copies of this information must be made available at all municipal offices. To encourage continuous participation, policies that are adopted by the community and the council should be revised annually in a public meeting were committees can be used to drive the process of implementation and monitoring. Formation of community groups per area or streets that will be responsible for the waste in such area. Asking for volunteers who are willing to help and also eliminate dumping in prohibited areas can do this as part of the policy plan.

Analysis of the open-ended revealed that interviewees further suggest

that the municipality must urge the community to get involved in solid waste management by involving them through street collection committees, providing resources like transport and facilities to embark on awareness campaigns. It is also a general view that fines should be imposed on anyone who litters around. People also indicated that residents should volunteer to report incidents related to intentional littering and improper disposal of refuse, where the municipality should provide meaningful backup of law enforcement.

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ppendix 1

International conventions, agreements, treaties and rotocols which pertain to pollution and waste anagement

he international conventions, agreements, treaties and protocols which pertain to pollution and waste manage-
ent are listed below in chronological order:

CONVENTION ON THE INTERNATIONAL MARITIME ORGANISATION, 6 March 1948 (Geneva): South Africa was admitted to become a party to this convention after its transition to democracy in 1994. The International Maritime Organisation is a specialist United Nations agency dealing with maritime matters, including the development of all the marine pollution control conventions. No relevant specific domestic legislation has been promulgated.

THE ANTARCTIC TREATY, 1 December 1959 (Washington): The Antarctic Treaty stipulates that Antarctica may be used only for research and peaceful purposes. It is complemented by resource protection treaties. The relevant domestic legislation is the Antarctic Treaty Act (No.60 of 1996).

TREATY BANNING NUCLEAR WEAPON TESTS IN THE ATMOSPHERE, IN OUTER SPACE AND UNDER WATER, 5 August 1963 (Moscow): South Africa acceded to this convention in 1963. There is no specific legislation giving it domestic effect, but in terms of the Nuclear Energy Act (No.113 of 1994), South Africa indirectly complies with its obligations under this convention.

CONVENTION ON THE CONSERVATION OF THE LIVING RESOURCES OF THE SOUTHEAST ATLANTIC, 23 October 1969 (Rome): This convention regulates the conservation and exploitation of the resources of the Antarctic waters. It imposes a duty to protect the environment. Relevant domestic legislation is the Antarctic Treaty Act (No.60 of 1996).

INTERNATIONAL CONVENTION RELATING TO INTERVENTION ON THE HIGH SEAS IN CASES OF OIL POLLUTION CASUALTIES, 29 November 1969 (Brussels): This convention authorises coastal states to intervene, subject to certain conditions, with regard to pollution damage which may be caused by foreign vessels in the high seas. It is incorporated into South African law in the International Convention relating to Intervention on the High Seas in Cases of Oil Pollution Casualties Act (No.64 of 1987). No domestic regulations have been promulgated under this act.

INTERNATIONAL CONVENTION ON CIVIL LIABILITY FOR OIL POLLUTION DAMAGE, 29 November 1969 (Brussels): This convention provides for a compensation fund for clean-up costs and environmental damage, subject to certain conditions and ceilings. It is incorporated into South African law in the Prevention and Combating of Pollution of the Sea by Oil Act (No.6 of 1981) and General Regulations made under it (GN R1276 of 29 June 1982).

CONVENTION ON THE ESTABLISHMENT OF AN INTERNATIONAL FUND FOR COMPENSATION FOR OIL POLLUTION DAMAGE, 1969: This convention provides for a compensation fund for clean-up costs and environmental damage, subject to certain conditions and ceilings. It is incorporated into South African law in the Prevention and Combating of Pollution of the Sea by Oil Act (No.6 of 1981) and General Regulations made under it (GN R1276 of 29 June 1982). South Africa has not become a party to this convention, as it necessitates disclosure of its oil imports.

TREATY ON THE PROHIBITION OF THE EMPLACEMENT OF NUCLEAR WEAPONS AND OTHER WEAPONS OF MASS DESTRUCTION ON THE SEA-BED AND THE OCEAN FLOOR AND IN THE SUBSOIL THEREOF, 11 February 1971 (London, Moscow, Washington): This treaty prohibits environmental pollution from nuclear activities. The relevant legislation is the Nuclear Energy Act (No.113 of 1994).

- **CONVENTION ON THE PREVENTION OF MARINE POLLUTION BY DUMPING WASTES AND OTHER MATTER, 29 December 1972 (London, Mexico City, Moscow):** This convention regulates the dumping at sea of matter scheduled in the convention. It schedules prohibited substances and substances requiring permits and sets out guidelines in this regard. It is incorporated into South African law by the Dumping at Sea Control Act (No.73 of 1980).
- **INTERNATIONAL CONVENTION FOR THE PREVENTION OF POLLUTION FROM SHIPS, 1973 and PROTOCOL OF 1978 RELATING TO THE INTERNATIONAL CONVENTION FOR THE PREVENTION OF POLLUTION FROM SHIPS 1973, 17 February 1978 (London):** This convention and the 1978 protocol are concerned with setting standards developed by the International Maritime Organisation for tankers and other large vessels. It is incorporated into South African law in the Marine Pollution (Prevention of Pollution from Ships Act (No.2 of 1986)), and the regulations concerning the Prevention of Pollution by Garbage from Ships Regulations (GN R1490, published in Government Gazette No. 14000, dated 29 May 1992).
- **CONVENTION FOR THE PREVENTION OF MARINE POLLUTION FROM LAND-BASED SOURCES, 1974:** This convention is relevant to the pollution of coastal waters from land-based sources. South Africa has not acceded to it, but is monitoring developments in this regard and may accede to it in due course.
- **CONVENTION ON WETLANDS OF INTERNATIONAL IMPORTANCE ESPECIALLY AS WATERFOWL HABITAT, 2 February 1971 (Ramsar) and PROTOCOL TO AMEND CONVENTION ON WETLANDS OF INTERNATIONAL IMPORTANCE ESPECIALLY AS WATERFOWL HABITAT, 3 December 1982 (Paris):** South Africa is a party to this convention and its associated protocol, whose focus is the protection of wetlands. An obligation is to conserve and protect wetlands and, as such, this convention is indirectly relevant to integrated pollution and waste management. South Africa has listed about a dozen wetlands, including the St Lucia lake area. Relevant domestic legislation includes the respective Nature Conservation Ordinances of the various provinces, as well as the Conservation of Agricultural Resources Act, (No.43 of 1983).
- **MULTILATERAL AGREEMENT ON THE CONTROL OF POLLUTION OF WATER RESOURCES IN THE SOUTH AFRICAN REGION, 21 November 1985:** This agreement imposes general obligations on the parties to cooperate with each other regarding access to and pollution of water resources which are common to two or more parties. There is no specific domestic legislation on this treaty.
- **VIENNA CONVENTION FOR THE PROTECTION OF THE OZONE LAYER, 22 March 1985 (Vienna) and MONTREAL PROTOCOL ON SUBSTANCES THAT DEplete THE OZONE LAYER, 16 September 1987 (Montreal):** The purpose of this convention and its protocol is to protect human beings and the environment from the harmful effect of activities which modify the ozone layer. It requires the parties to cooperate, according to their means, in research and legislative measures and to formulate agreed standards, procedures and measures in the form of protocols and annexes. The 1987 Montreal Protocol sets out a timetable for the reduction of controlled substances which deplete the ozone layer. It establishes a formula for determining calculated levels of consumption and production of controlled substances, based on the ozone-depleting potential of each substance. Although the convention has been ratified, no specific domestic legislation or regulation has been passed in this regard.
- **CONVENTION ON THE CONTROL OF TRANSBOUNDARY MOVEMENTS OF HAZARDOUS WASTES AND THEIR DISPOSAL, 22 March 1989 (Basel):** This convention regulates the transboundary movement of hazardous waste. This convention has been acceded to. No domestic legislation has been passed to this date.
- **FOURTH AFRICAN, CARIBBEAN AND PACIFIC-EUROPEAN ECONOMIC COMMUNITY CONVENTION, 15 December 1989 (LOME 4):** This convention, which South Africa has signed but not ratified, is a cooperative agreement of the European Community and its member states on the one hand, and the African, Caribbean and Pacific states on the other. Its purpose is to provide and expedite the economic, cultural and social development of the African, Caribbean and Pacific states and to consolidate and diversify their relations in a spirit of solidarity and mutual interest. Title 1 (articles 33 to 39) is dedicated to the environment. Article 39 is dedicated to the control of international movement of hazardous and radioactive waste. The article speci-

cally prohibits all direct and indirect export of such waste by the European Community to the African, Caribbean and Pacific states and provides that the African, Caribbean and Pacific states shall prohibit the import of such waste into their territory. South Africa has not passed domestic legislation or regulations in this regard and will have to do so once it ratifies the convention. South Africa is also considering a bilateral arrangement with the European Community.

- **CONVENTION ON THE BAN OF IMPORT INTO AFRICA AND THE CONTROL OF TRANSBOUNDARY MOVEMENT AND MANAGEMENT OF HAZARDOUS WASTE WITHIN AFRICA, 29 January 1991 (Bamako):** During the negotiation of the Basel Convention, the African states represented by the Organisation for African Unity adopted the Bamako Convention, as they were of the view that Basel was not strict enough. The Bamako Convention totally prohibits the importation of hazardous waste into Africa. South Africa has neither signed, nor acceded to this convention. No domestic legislation is necessary.
- **PROTOCOL ON ENVIRONMENTAL PROTECTION TO THE ANTARCTIC TREATY, 4 October 1991:** This protocol was negotiated because of pressure to explore the mineral potential of Antarctica. It imposes duties to protect the environment, including integrated pollution and waste management. The relevant domestic legislation is the Antarctic Treaty Act (No.60 of 1996).
- **UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE, 9 May 1992 (New York):** The objective of this convention is the "stabilisation of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system." The convention requires, *inter alia*, that developed countries formulate and implement programmes which mitigate the adverse effects of climate change and facilitate adaptation to it. South Africa ratified this convention in August 1997.
- **CONVENTION ON BIOLOGICAL DIVERSITY, opened for signature at Rio de Janeiro on 5 June 1992:** South Africa is a party to this convention, whose obligations include the duty to protect biodiversity, and thus indirectly to promote environmentally sound integrated pollution and waste management practices. A Green Paper on the Conservation and Use of South Africa's Biological Diversity (Department of Environmental Affairs and Tourism, October 1996) has been published and a White Paper is anticipated. No specific legislation to give effect to this convention has been passed, but many legislative enactments, for example the Nature Conservation ordinances are indirectly relevant.
- **CONVENTION ON THE PROHIBITION OF THE DEVELOPMENT, PRODUCTION AND STOCKPILING OF CHEMICAL WEAPONS, AND ON THEIR DESTRUCTION, opened for signature at Paris - 13 January 1993:** This Convention is relevant to this White Paper on Integrated Pollution and Waste Management for South Africa because when chemical weapons could cause pollution if they are not properly disposed of. Their management, particularly their destruction in the context of the "cradle to grave" principle, is thus important. South Africa ratified this convention in September 1995, and has incorporated it into domestic law (Government Gazette, No. 17967, dated 2 May 1997).

CONVENTION ON NUCLEAR SAFETY, 17 June 1994: The objective of this convention is to achieve and maintain a high level of nuclear safety worldwide through the enhancement of national measures and international cooperation, including safety-related technical cooperation, where appropriate. South Africa ratified this convention in December 1996 and the Council for Nuclear Safety has initiated a process to develop a national policy and domestic legislation in this regard.

UNITED NATIONS LAW OF THE SEA CONVENTION, 1982: Although South Africa has not ratified this convention, it is relevant, because many provisions reflect customary international law, which is part of South African law. Part XII headed "Protection and Preservation of the Environment" includes provisions on marine pollution.

Statistics				
	%	%	%	%
	Current	30 days	60 days	90 days
Ga-Rankuwa				
Urban	3.8	3.1	2.9	90.2
Industrial	24.4	12.0	3.5	60.1
	5.4	3.8	2.9	87.8
Mabopane	3.4	2.4	2.3	91.9
Winterveldt				
Urban	1.9	1.8	1.7	94.6
Peri-Urban	3.0	4.7	3.9	88.4
	2.5	3.3	2.8	91.4
TSHWANE	3.6	3.1	2.6	90.7
TOTAL				

The budget for Odi Retail in December 2001 stood as follows and only totals are reflected on the template:

Income Budget:

Mabopane			Ga-Rankuwa			Winterveldt			Total		
Actual R'000	Budget R'000	Variance R'000	Actual R'000	Budget R'000	Variance R'000	Actual R'000	Budget R'000	Variance R'000	Act R'000	Budg R'000	Var R'000
3,107	2,701	406	2,403	2,418	-15	1,351	794	557	6,861	5,913	948
Expenditure Budget											
2,208	2,235	-27	1,604	1,969	-365	985	710	275	4,797	4,914	-117

APPENDIX 'B'

ASSESSMENT QUESTIONNAIRE FOR ODI RETAIL WATER

The questionnaire is referred to Odi Retail Water and Tshwane combined because in reality Odi Retail Water is managing the operations and maintenance of water and sanitation services on behalf of Tshwane Metropolitan Municipality

Section A: Capacity to deliver services		
1	How many officials are in the employ of Odi Retail Water?	150
2	How many posts are identified in the current structure?	150
3	Does the council have sufficient staff/officials to perform the following services:	
	Direct service delivery	Yes
	Financial administration	Yes
	Other administrative functions	Yes
4	Are the financial administrative staff generally adequately trained in the following areas:	
	Budget preparation	Yes
	Receipt of money	Yes
	Payments (cash, cheque and/or electronic)	Yes
	Salary administration	Yes
	Debtors administration	Yes
	Accounting for transactions	Yes
	Reconciliation of control accounts	Yes
	Budget monitoring and accounts	Yes
	Financial reporting, including preparation of AFS	Yes
	Implementation of GAMAP (only applicable from 2003/2004)	Yes

3	Is the accounting function outsourced?	Not at all
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Section E: Analysis of accounts receivable		Questionnaire Date	19.02.02
1	The financial results, as indicated below, reflect the following month-end:	31.12.2001	
	Consumer debtors (water)	R 75,345,020	
	TOTAL	R 75,345,020	
2	Is the analysis of consumer debtors by nature of services available?	Yes	
	If yes, when?		Monthly
3	Is the age analysis of consumer debtors available?	Yes	Monthly
	Current Debtors (30 days or less)	R2,695,510	
	Debtors in Arrears Between 30 and 60 days	R1,304,699	
	Debtors in Arrears Between 60 and 90 days and longer	R68,369,049	
	TOTAL	R 75,345,020	
4	Is the analysis of consumer debtors per category (Value) available? (If Yes:)	Yes	
	Government	R1,831,760	
	Business	R3,838,792	
	Individuals	R69,674,467	
	Other	None	
	TOTAL	R75,345,020	
5	What is the current provision for irrecoverable consumer debtors (bad debts)?	R 22 million	
6	Does the council have formally approved credit control policy and procedures?	Yes	
	Does the council do credit checks before opening new accounts?	Yes	

APPENDIX 'C'

ATTITUDE ASSESSMENT QUESTIONNAIRE

Please mark with "X" in the relevant column in confirmation of the below mentioned statements

Statement	Agree	Agree more	Disagree	Disagree more
1. It will be beneficial to be managed by Tshwane municipality				
2. Most people are happy about the amalgamation of Ga-Rankuwa/Mabopane with Pretoria				
3. Odi Retail has satisfactorily handled the management of water and sanitation.				
4. The devolution of water and sanitary services to will bring good benefits for the community				
5. Water can best be managed by the new municipality				
6. Majority of consumers will be happy to pay for their services is management is transformed				
7. Rand Water Board is the company that is preferred for management of water functions				
8. National and Provincial governments are preferred in the management of water functions				
9. Water and sanitation services can be best managed by the community				
10. Privatisation can be the best option				

11. If empowered, the community can best manage water functions through the water association				
12. The current water tariffs are affordable and can build sustainability in water management functions				
13. Disconnection of water for defaulters can boost the financial status of the municipality				
14. Water pressure reduction is the best option for cost recovery				

APPENDIX 'D'

