

**Littering in Mankweng Zone A: A Situational Waste  
Management Study**

**By**

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## **DECLARATION**

I declare that the dissertation hereby submitted to the University of the North for the degree of Master of Philosophy in Environmental Law and Management has not been previously submitted by me for a degree at this or any other university, that it is my own work in design and in execution, and that all material contained therein has been duly acknowledged.

Signed .....

**Tivani Chucheka Lawrence**

## **DEDICATION**

This dissertation is dedicated to my father, mom and the entire Tivani family for their support.

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A word of appreciation goes to my Supervisor Dr GT Tengbeh who has been with me since day one of this research and giving his invaluable guidance.

To the Mankweng community and Local Municipality, I am overwhelmed by the support you gave in this project. Thank you very much for giving me your time. And also to everyone who put a hand in this study, I say thank you.

Above all, I give the Honour to the source of my life - God.

## **ABSTRACT**

The purpose of this study was to first determine the nature and magnitude of littering in Mankweng Zone A, through observation and from the views of not only the Local Municipality (LM) which is in charge of waste management but also from the views of the Mankweng community that do the littering – the residents, street vendors, shop business owners, taxi drivers and passengers. The object of this was to determine the views of all the above stakeholders about what should be done to minimise the littering problem. Such an approach of involving the community in the identification of the causes of environmental problems has been found to be useful in coming up with sustainable community-generated solutions.

The findings of the study acknowledged that the widespread littering in Mankweng Zone A is unacceptable and therefore needs addressing. Also, and more importantly, the reasons for the wide spread littering were suggested and the roles which the LM and the Mankweng community could and should play in minimizing littering were also suggested. These were used as a basis for recommendations made to the LM as the overseer of the good health of the environment. These included the adequate provision of litter bins in all areas where people congregate for either social or economic reasons, the regular removal of litter from households and the daily removal of waste from the Central Business District, the involvement of the community in waste management campaigns and the promulgation of waste management by- laws by the LM and the involvement of the community members in enforcing such by-laws. Finally it was recommended that since the taxi drivers insist that the passengers litter the environment rather than their taxis, the taxi drivers be encouraged to carry plastic litter bags in which passengers would drop litter rather than throw such litter through the taxi windows.

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# CHAPTER ONE

## INTRODUCTION

### 1.1 Background to the Problem

Waste or litter is increasingly becoming a concern in the world. The Department of Environmental Affairs and Tourism (DEAT) defines waste as "... undesirable or superfluous by-product, emission, or residue of any processor activity which has been discarded, accumulated or has been stored for the purpose of discarding or processing. It may be gaseous, liquid or solid or any combination thereof and may originate from a residential, commercial or industrial area." (DEAT, 2000:79). Since the beginning of the Industrial Revolution in the 18th century, there has been a tremendous change in the lives of many people. During this period, sophisticated equipment were invented and extensively used to speed up the processing of raw materials (Chambers et al., 1987). Thus, many different goods were manufactured during this period. Although the Industrial Revolution brought an improvement in social life styles of many people, such as better living conditions, employment, as well as accessibility to health facilities and, economic growth, it was however accompanied by negative effects in the environment. During this period, waste generation increased sharply due to the exploitation of natural resources and the production and packaging of manufactured goods. As a result, too many industrial and domestic wastes are being generated from industries and households.

These have adversely affected the environment. For instance, mining waste from the mining of minerals such as asbestos, coal and copper have had a negative impact on the environment. Waste from manufacturing industries cause air, land and water pollution; domestic waste causes bad odours, the devaluing of properties, loss of the aesthetic value of settlements and many others.

Waste can also categorised into: domestic waste, generated by and within households; industrial waste, generated by industries and medical waste generated in medical centers. Domestic waste can also be classified into two types namely: sewage or night soil and refuse or garbage. Refuse includes papers, plastics, tins, textiles, bottles, glass, foodstuff and so forth. Litter, with which this study is mainly concerned, is the waste that is commonly found randomly scattered in household yards, along the streets, Central Business Districts (CBD) and other places in settlements. Gilpin (1997:139) defines litter as "... any kind of rubbish, refuse, or garbage, and any article or matter that when left, deposited, dropped, or thrown in a public place, public reserve, or on public land leads to the defacement or defilement of that place or land". Industrial waste is usually classified as hazardous waste (DWAF, 1998a). Hazardous waste is toxic, and thus very harmful to fauna and flora. Medical waste, which includes used syringes, expired medicines, surgical materials, and is also regarded as hazardous waste. Because of their hazardous nature, medical and industrial wastes are not supposed to be disposed of together with domestic waste (DWAF, 1998a).

Waste disposal entails throwing away or getting rid of all waste on a designated area, in or on land. Usually there are different methods used to dispose of waste. Generally, landfill disposal and incineration are some of the methods that are used. Landfill is the disposal of waste in the land. According to McHarry (1993) and DWAF (1998b), about 80% of the world's waste is disposed of in landfill sites. It has been estimated that in South Africa, in excess of 95% of waste is disposed of in landfills (DWAF 1998b: 2-1). This is because waste disposal in landfills is the cheapest and most convenient method of waste disposal methods. Incineration entails the disposal of waste by means of burning. Although it is common, is not mostly used as compared to the landfills. Incineration is mostly preferred in Industries where organic and selected inorganic hazardous wastes are disposed of (DWAF, 1998). Medical waste is also disposed of by incineration. Incineration reduces the volume of waste by about 90%, which makes it a favoured option for countries that have insufficient land to dispose of waste. However, it is expensive and it can seriously pollute the atmosphere.

“Waste management is a comprehensive, integrated, and rational systems approach towards the achievement and maintenance of acceptable environmental quality and the support of sustainable development” (Gilpin, 1997: 228). It involves the regulation of waste by means of reusing, remanufacturing, recycling, and the proper disposal of unused material. Paper, glass, plastic, metal cans and others are materials that can be recycled and reconditioned. These waste management practices are essential for reducing the high volumes of waste normally generated and so cutting down on costs of waste collection and transport, and on space needed in landfills for disposals. In this regard, households

can play a very important role, by avoiding discarding materials which can still be used, and by properly disposing of waste after sorting. However, the waste management bodies must sensitise and educate their communities on these issues through for instance neighbourhood cleaning campaigns. It is not known whether or not this is done in the study area.

Waste is one of the serious concerns which urban settlements such as Mankweng, the study area, are faced with in this century. Almost every week mountains of waste are disposed of. Rosenbaum (1977) has envisaged that public expenditures for solid waste collection and disposal were likely to triple at the end of the 21st century. Some people charge that the growing quantity of waste accumulating in the world can be attributed to people's failure to use materials and energy in a sustainable manner (Hewett, 1995).

There is an important factor contributing to the current upsurge of widespread littering in many settlements such as Mankweng. This factor is the trend to use disposable plastic carrier bags for transporting already packaged household goods from stores. These plastic carrier bags and the packaging usually compose most of the observed litter contents in Mankweng and in other settlements. Additional contributions are made by canned foods and drinks and disposal bottled foods and drinks. The fact that all these do not easily biodegrade makes them particularly problematic wastes for disposal.

Barbour's (1993) has estimated that in 1993, South Africa generated about 450 million tons of waste. The increase of population, social development and economic growth as

well as poor waste management had contributed to this increase of waste in the country. According to Dunckley in the Waste-By-Rail Solution article indicated that in South Africa less than 10% of landfills have permits to operate. In Black urban settlements such as Mankweng littering is rife, as it is not adequately controlled.

The South African government has laid down legislation that regulate waste. Section 19, subsection 1, of the Environment Conservation Act 73 of 1989 states that “no person shall discard, dump, or leave any litter on any land or water surface, street, road, or site or in any place to which the public has access, except in the container or at a place which has been especially indicated, provided or set apart for such a purpose”. Subsection 2 of the act further indicates that “every person or authority in control of, or responsible for the maintenance of any place to which the public has access shall at all times ensure that containers or places are provided, which will be normally adequate and suitable for the discarding of refuse”. Thus, the ECA seeks to control waste in South Africa. However judging from the widespread littering in Mankweng, Zone A, one could infer that the ECA on its own is ineffective in ensuring proper waste management.

## **1.2 Statement of the Problem**

For the management of litter in urban settlements to be effective, it should be an integrative process whereby the whole community including the business sector, and the local authority work together in regulating litter as legislated by the Environment

Conservation Act. The lack of this kind of cooperation in waste management could lead to a high increase in uncontrolled random littering in the settlements. This is likely the case in Mankweng Zone A where the most visible and widespread waste problem is littering. In Mankweng, Common-Property Resource areas such as roadsides, vacant land, parks, and as well as around the Central Business District (CBD), are inundated with litter. Taxi ranks and commercial areas are also affected by this random disposal of litter. Paper, plastics, empty cans, card boxes, broken glasses, and bottles are the most predominant wastes thrown away randomly in the study area in Mankweng. Taxi passengers, visitors, street vendors and the shops, all generate the litter daily. The residents remove refuse from their homes and improperly dispose of it in vacant places, in the outskirts and, more commonly, near roadsides or streets. Taxi passengers often throw litter out of the taxi windows, as most of the taxi drivers object to litter in their vehicles. In other words, they would rather the environment be littered. Street vendors and visitors who come to transact business also contribute to the littering in Mankweng. Away from the CBD, there are other commercial areas, which are also affected by litter; the shops and the public in general discard waste around these shopping premises. For instance, in commercial areas such as the Mokgobu Supermarket and Mankweng Bottle Store and other outlets, litter is often disposed of nearby the shopping premises. Observation shows that there is a paucity of waste disposal bins in these areas and that where such bins exist, the Local Municipality does not regularly remove the waste as evidenced by the overflowing bins.

Littering can thus become a serious problem in Mankweng if measures are not found to abate it. Although a national legislation exists that is supposed to ensure proper waste management in communities, it nevertheless has not led to curbing the widespread littering problem in Mankweng Zone A. A very important reason for this is that such pieces of environmental management legislation, which may not be known to communities, are a top-down approach that expects the unquestioning obedience of the people who litter. However, on their own, environmental legislation, however well formulated, do not necessarily solve environmental problems (Rwenjuna, 1994:13). Experiences from elsewhere (Rwenjuna, 1994; Segerros, 1994; Shaxson, 1989; Sluis, 1994 and Thompson, 1994) have shown that without involving the affected communities in the management of their environments, environmental management objectives will be difficult, if not impossible, to achieve. In order to get communities to effectively participate in such environmental management programmes as litter minimization, it is considered essential to determine the views of the community members as to whether they consider litter minimization of value to their environment, and whether and how they would participate in making it a success.

### **1.3 Aims of the Study**

The aims of this study are to determine the views of the Mankweng Local Municipality, residents and community members who use facilities in Mankweng Zone A, about the reasons for the widespread littering, and whether and how they would participate in

helping to minimize littering in their area. Such information may be useful to the Mankweng LM in their efforts in ensuring proper waste management in Mankweng Township.

#### **1.4 The objectives of the Study**

1. To determine the views of the Local Municipality concerning littering in the areas identified in Mankweng, in terms of:
  - a. Whether and why littering is a problem, whether and how the Mankweng community has been made aware of any waste management legislation.
  - b. Why legislation has been so far ineffective in waste minimisation; and
  - c. Whether and how community involvement in litter minimisation could solve waste problems in the study area.
  
2. To determine the views of the residents, store owners, taxi drivers and passengers in terms of:
  - a. Whether and why littering is a problem;
  - b. Whether they are aware of any waste management legislation; if so why it is ineffective in minimising littering in Mankweng.
  - c. What can be done to minimise littering in Mankweng

## **1.5 Study area**

The study was conducted in the Mankweng Township, in the Limpopo Province of South Africa, under the jurisdiction of Mankweng Local Municipality (LM). Mankweng is located about 30 kilometers north east of Polokwane, the provincial capital. The Township is divided into six zones; A to F. However, the study site will be in zone A as it is the area which includes the CBD, and other commercial areas. These are the areas where very widespread littering is usually observed and therefore a problem. This is also, where a large number of people usually congregate during the day as street vendors, to board taxis, or to shop and transact other businesses, and in the process, generate much waste which litter the area.

# **CHAPTER TWO**

## **LITERATURE REVIEW**

### **2.1 Introduction**

High rate of littering is commonly observed in most South Africa's townships such as Mankweng Zone A. This widespread littering takes place while there is national legislation promulgated to control it. Local authorities commonly known as Local Municipalities (LMs) are responsible for making regulations for litter control and enforcing litter regulations within the towns and, as well as also serving as overseers of other services that are rendered within their area of jurisdiction. Litter minimisation is amongst the services rendered by LMs (Barnard, 1999). The purpose of this chapter is to explore factors behind littering in Mankweng Zone A, and further to find out the role of the entire Mankweng community (the residents, Shop business sector, street vendors and, taxi drivers and passengers) towards litter minimisation. The chapter also seeks to determine the effectiveness of environmental legislation as an instrument used to control litter, and also to find out possible solutions suggested by other researchers about litter minimization.

### **2.2 The State of Littering in Urban Areas**

Litter is a serious concern among towns such as Mankweng Zone A. A substantial amount of money is spent to keep towns clean from litter. A report by Van Rensberg (1983) showed that local governments had to pay R500 million a year to manage litter.

According to a survey by Van Rensberg (1983), people in urban areas throw away at least 7 600 tons of bottles, cans, plastic bags, paper and other litter material per day.

Regarding this state of affairs Chazan (2002) maintains that plastics bags in towns are a major eyesore and they have been dubbed the ‘national flower’ because they are usually observed scattered around most places of the towns. Apart from plastic bags, papers, metal cans, plastic bottles, building rubbles, broken bottles, glass, and etc are some of the materials that form litter in Mankweng Zone A.

Marsden (1993) has identified one aspect that has a bearing in the widespread littering in towns similar to Mankweng Zone A; The “Not In My Backyard”(NIMBY) attitude. This attitude has been believed to have a serious influence in the state of litter in most towns. People with this kind of attitude hold the view that so long as their dwellings are litter free and tidy, they do not bother themselves about keeping other places tidy (Marsden 1993). The “NIMBY” attitude people also contribute to the cause of litter in public places and other people’s properties (Van Rensberg, 1983). For example, some residents would remove litter from their homes and dump it on other peoples’ properties or common-property resource areas.

Similarly, this is also true about the shop business sector, street vendors, taxi drivers and passengers. These groups discard litter at random. The taxi drivers would not allow the passengers to discard litter in the taxi, but allow them to throw litter outside through the taxi windows. Thus, it is also one of the main reasons why high littering has been

observed around taxi ranks, taxi stops, roadsides and near shopping centres. While some street vendors and shop business sector would just remove litter and drop it on the ground near litter bins. Paucity of litter bins further aggravates the litter problem in public places.

### **2.3 The Role of Local Municipalities in Litter Management**

As far as rendering of services, monitoring and maintenance of facilities is concerned, the Local Municipalities are the backbone of the urban communities. Services which are managed by Local Municipalities, include road maintenance, water, waste management, etc (Chanda, 2000). They are also responsible for outsourcing services to sub-contractors, making regulations and enforcing them to ensure that all services and activities that are performed within their jurisdiction are managed efficiently (Chanda, 2000). Novella (1999) added that local authorities have to encourage communities to be involved towards litter management through campaigns and including them in planning of any other litter control strategies.

Thus, the Local Municipalities have an enormous role to play and huge responsibility thereof. As a starting point, in finding ways for proper litter management, Transitional Local councils have to conduct studies to determine points of high litter probability according to Lombardy (1999) and Van Rensberg (1983). This means that comprehensive studies identifying places that seem to be inundated with litter in Mankweng Zone A, have to be undertaken, in order to give them first consideration in the planning and providing of services within the town. According to a study conducted

about points of high litter in Sasolburg, places such as bus stops, take-away food centres, shopping malls, etc were identified as places carrying excessive amount of litter (Van Rensberg, 1983). The identified places in Sasolburg were given priority in regard to planning and providing litter control services.

Van Rensberg (1983) further emphasized that in order for Sasolburg to be literally litter free, an effort by everyone and commitment from all members of community (private enterprise, residents to a person on the streets) working together with the Local Municipalities was observed and considered. These people collectively found that some places needed more litter bins, and others which needed bigger litter bins. It was also found that litter bins were not easily accessible to all people (Van Rensberg 1983). Agunwamba, (1998) asserted that in most towns litter bins are not accessible to many people especially in public areas, which lead people to throw litter wherever they are. In addition to this, in Sasolburg, a litter removal system was streamlined and the public was educated and participated in litter campaigns. Apparently this is what is lacking in most of the towns such as Mankweng Zone A.

On the other hand the LMs have obstacles hindering them from managing waste effectively. Diaz (1999) argued that most Local Municipalities are running short of trained personnel specifically for the planning and implementation of proper litter management systems. It is said that in most cases litter management systems that are employed by local authorities are ineffective and a top-down approach and expecting the unquestioning obedience of the people (Rwenjuna, 1994). Thus people are denied of the

right of making decisions regarding the litter management programmes, which in turn lead to programmes becoming unsuccessful (Rwenjuna, 1994).

However, several possible solutions to overcome these obstacles have been suggested. For example; Van Rensberg (1983) maintained that local authorities should adopt the principles of the Clean Community System as applied by the Keep South Africa Beautiful organisation which is aiming at behavioural change of the community members, by means of involving them in activities such as litter campaigns. Van Rensberg (1983) also stressed that by including the entire community; it would eventually instill a sense of responsibility for every individual.

#### **2.4 The Role of Community Participation in Litter Management**

Community participation is seldom recognized, yet it plays a significant role in the management of litter. The people in the community could be of help in situations such as identifying problem areas of litter, which need serious attention as far as providing more receptacles is concerned. This is because people are familiar with the areas they live in, and are also aware of other causes of litter within the towns. So they would come up with invaluable suggestions, which could be adopted in making proper litter management systems in the towns. Diaz (1999) concluded that no waste management system could operate effectively without having involved the members of the community. Lombardy (1999) substantiates that the community participation process should however, governed

by rules that set standard of acceptable behaviour and time frames for decision making process that must be binding on all members. In order to avoid further delays of programmes.

Community involvement in litter minimization systems is a shift of practice from primitive systems employed in litter management systems whereby members of the community were closed out of the planning and decision-making process. It has been proved that community participation in planning and decision-making in any development has successful results. According to a study by Thompson (1994), it has been found that in most programmes where participation in planning and implementation was interactive, the impacts were substantially greater than when community involvement was excluded.

The roles of members of the community in litter minimization within towns include among other things, helping the local authority in seeking a proper method, which could be employed in litter control. Shop business sector should also be proactive to avoid litter in front of their establishments, thus they should not allow litter on pavements, inside or at the back of their enterprises (Van Rensberg, 1983). The community could also point and report the members who violate regulations agreed upon by the entire community, because as residents they have a right to voice their concerns about any mismanagement and the violation of the regulations made in the town. (Van Rensberg, 1983)

## **2.5 The Role of Environmental Legislation**

South Africa has a problem with environmental legislation (McHarry, 1993). The problem is about ineffective implementation of the legislation. According to Environment Conservation Act 73 of 1989, section 19(1) states that “ No person shall discard, dump or leave any litter on any land or water surface, street, road or site in or on any place to which the public has access, except in a container or at a place which has been specially indicated, provided or set apart for such purpose.” Another legislation (National Environmental Management Act 107 of 1998) gives local authorities the authority to further make by-laws in order to control litter within their areas of jurisdiction and enforce them. However, enforcement of the waste legislation is of poor standard and often the local authorities do not have litter regulations at all (Agunwamba, 1998). This is also the case in Mankweng Zone A, which is under the Mankweng Local Municipality where there is no regulation made to control litter. Obviously this would have adverse effects because people would discard litter anywhere and not cautioned. Davis (1984) rightfully put forward the view that it is very difficult to practice proper litter control without the backing of the law.

Barnard (1999) came up with another view on the poor enforcement of environmental legislation. South Africa has about 37 pieces of legislation that deals with litter (du Pleisis and Burger, 1999). They are contained in “many Acts of Parliament, ordinances, rules, and regulations, relevant legislation is difficult to access and conflicting measures are inevitable”(Barnard 1999:195) According to Barnard (1999) it becomes difficult for

environmental legislation to be effectively implemented. He continued to argue that this was often caused by the fragmentation of these Acts. “This fragmentation of control detracts from effective management and lends itself either conflicting control or to a complete absence thereof” (Barnard, 1999: 195)

The fragmented environmental legislation poses a challenge to environmental practitioners to establish effective management systems of this collection of legislative measures in the manner that facilitates their accessibility, integration, co-ordination, application and further development (Barnard, 1999). It is also believed that some of the laws being enforced in South Africa in environmental control are not effective. It is argued that most legislation focused on the ‘old command-and-control approach’ (Barnard, 1999). The ‘old command-control approach’ in environmental legislation is said to be not focusing on the prevention of environmental degradation. But law enforcement was mainly done by warning or prosecuting the transgressors that were found contravening the legislative requirements (Barnard, 1999). In developing command-and- control measures, little regard is given to the nature of the processes that produced offensive material or the ability of organisations to avoid pollution (Barnard, 1999). It has been further indicated that legislation in general and the sections describing contraventions in particular are usually prepared with little or no reference to the parties that would be subjected thereto (Barnard, 1999). The one particular legislation that had been identified as practicing the old command- and-control approach is the Environment Conservation Act No. 73 of 1989.

The old command-and-control approach has been widely criticised in favour of the ‘new environmental protection management approach. The first component of the new environment protection and management strategy is an attempt to create a project that through good planning and design would be less likely to cause environmental degradation. Furthermore, the organisation concerned is required to draft and maintain a detailed management programme that if implemented, would effectively prevent environmental degradation. The Environmental legislation on this new approach would give clear detail as to how certain activities that may have an impact on the environment should be dealt with, rather than on focusing on the punishment only (Barnard, 1999).

## **2.6 Effective Litter minimization Approach**

It is argued by many that litter could be successfully managed by an integrated approach system. The integrated approach in litter control include among other things; “holistic approach, integrated environmental planning and capability, focused research, adequate waste collection services for all, and integrated regulatory approach” (Joubert, 1999). The Integrated system has become a common theme in environment, as it was commended for its holistic approach that focuses on management of outcomes rather than being a command -and- control (Margerum, 2001).

The first priority in achieving a breakthrough in the integrated approach is training unskilled personnel working in the local authorities in charge of waste management. Diaz (1999) and Matsoga (1999) asserted that most of the personnel assigned to waste

management in local authorities are not adequately trained. This is one of the most serious challenges faced by most of the local authorities, which impedes them from providing better programmes efficiently and enforcement of the law. This has also been considered as one of the causes of litter being thrown all over the public places and sometimes the litter bins are observed being over spilling with litter without being attendant to (Murevanhema, 1999). This is no exception to Mankweng Zone A as litter was usually seen scattered around and the over spilling of litter bins was observed in a number of times.

The trained local authority personnel in charge of waste management would mobilise the community members' participation in litter control, as it has been demonstrated on a number of occasions that no development for litter management would be successful without the participation of the community concerned (Diaz, 1999). This idea was also emphasised by Thompson, (1994), that the involvement of the community in waste management programmes is integral, as they would help to come up with more relevant mechanisms of solving the litter problem. Moreover, this would discourage a delivery of a pre-designed litter control strategies, which would not yield the expected required results. Therefore it is vital that local authority personnel, who are specifically trained and, assigned for waste management, work hand in hand with the community members at all stages. Feed back from community leaders to the least member of the community should be obtained prior to carrying out a certain proposed litter control programme (Thompson 1994). By including all the interested and affected parties would yield better results of the litter control programmes.

Another important aspect of the integrated approach on litter minimization is research and development of better mechanisms suitable for that particular town. The research apart from looking at areas, which have high litter, would also look at the socio-economic status of the community, so that when programmes are being planned these issues would be considered, to enable the community to have affordable services (Agunwamba, 1998).

Matsoga (1999) and Lombardy (1999) have criticised the ways in which programmes are implemented without prior studies to find out the best programmes that would suit the needs of the community, in all aspects such as their socio-economic status for instance. Subsequently the lack of a research in litter programmes would lead to programmes transferred from areas of need and eventually those litter programmes would tend to be a failure. In the light of the integrated approach systems the LMs have to develop their own programmes based on the principles of this systems according to the needs of a specific town. Barnard (1999) recommended that local authorities should work according to the guidelines included in Integrated Environmental Management in South Africa. The IEM explains how the local authority or any organisation in charge of any programme should co-operate with all the people affected such programme (Barnard, 1999).

Agunwamba (1998) has suggested another method of how local authorities could reduce litter within their towns. He argued that an efficient method of pricing household waste management services should be developed. This is important not only with respect to generation of funds to maintain the services but also as a control over litter generation particularly by the residents and the shop business sector. Murevanhema (1999) and

Agunwamba (1998) asserted that it is possible to incorporate an economic incentive or disincentive that encourages or discourages the generation of high litter. This could be achieved by the unit pricing method whereby the person who generates litter is billed according to the level of generation of litter and services rendered. This was regarded as an efficient and equitable method of reducing high litter in towns (Agunwamba (1998)).

This method can raise consumer awareness of the cost of waste collection services; reduce the amount of waste produced, while motivating recycling activities. This would also influence consumers to change their shopping habits by buying products that generate less litter. This may furthermore increase more carefulness not to produce more litter in multiple family dwellings in fear of paying more (Agunwamba 1998).

## **2.7 Conclusion**

An integrated waste management approach is needed in order to successfully address the widespread littering problem in Mankweng Zone A. This approach must encompass the waste generation, collection and disposal stages. The waste management system must provide adequate waste bins in households and public places, while the collection of the waste must be carried out regularly, and the waste properly disposed of by the Local Municipality. Also, the system must therefore entail the training of waste management personnel and the involvement of community members in waste minimisation activities or drives. In addition, it may be necessary to have a waste legislation drawn up in consultation with the community. Such legislation could then be readily enforced with the help of the community

# CHAPTER THREE

## METHODOLOGY

### 3.1 Sampling Methods

Three sampling methods were used in this study. This was done in order to obtain views about littering in Mankweng Zone A from the Local Municipality (LM) and the different members of the Mankweng community.

Firstly, a systematic sampling method was used for selecting a manageable sample of about 5% of households from among the existing 668 Mankweng Zone A households. First, a starting household was randomly selected. Thereafter, every third household was systematically selected, until the 39 households making up the 5% sample were selected.

Secondly purposive sampling was used to select the following samples:

- i) The only LM official who was responsible for waste management; and
- ii) One employee, each of whom was responsible for waste disposal, from each of the following five main businesses within the CBD and the residential areas that are observed to generate the most waste: Tintis Spar; Turfloop Supermarket; Mokgubu Supermarket; Mankweng Bottle Store and a shop owned by Indians located next to the PEP Store.

Finally, a random sampling method was employed to select a manageable sample of five from each of: the Taxi drivers; the passengers and the street vendors.

Thus, a total of 60 respondents – 39 household heads and 20 members of the Mankweng community (Street vendors, shop business sector, taxi drivers and taxi passengers) and 1 LM official were selected for the study.

### **3.2 Data Collection**

Data for the study was collected through self-administered questionnaires. The questionnaires were used as a basis for interviewing the selected respondents and, the items consisted of closed and open-ended questions.

The questionnaire for the 39 Mankweng households was meant to collect information about the views of the household heads, about litter issues such as, the state of littering in Mankweng Zone A, causes of littering, household disposal practices and etc. The shop business sector, passengers, taxi divers and street vendors, were also asked similar questions. The questionnaire for the LM official, who was in charge of waste management, was meant to find out, among others, the availability of the waste bins in the households and public places, the state of littering, and the regularity of waste collection, as well as the existence of any legal instrument used in enforcing waste management compliance in the Mankweng Zone A community.

### **3.3 Data Analysis and Presentation**

The Statistical Package for Social Science (SPSS) computer programme was used to generate descriptive statistics from all but the one questionnaire from the LM official. Also the data from open-ended questionnaires was quantified. All the results of the analysis are presented in Tables and bar graphs.

# **CHAPTER FOUR**

## **RESULTS AND DISCUSSION**

### **4.1 Introduction**

In this chapter, the views of the Mankweng community about the state of littering and waste management in Mankweng Zone A are presented and discussed. The community members whose views are here discussed include the LM, which is responsible for managing waste and for implementing waste management strategies and/or legislation, and those who generate waste in Mankweng Zone A - the residents, taxi drivers and passengers, the street vendors, and the shop business sector.

#### **4.1.2 Views about the state of littering in Mankweng Zone A**

All community members studied were asked for their views about the state of littering in Mankweng Zone A. This was done in order to determine whether they regarded the state of littering in their environment as a problem or not. This is because until littering is seen as a problem, there will be little public concern or interest to clean it up (Park 2001:21). For the LM, this question was posed to the Chief Administration Clerk who was responsible for waste management in Mankweng.

The LM official acknowledged that littering was very widespread in the settlement, particularly in public places such as around shopping centres, taxi ranks, road-sides and other open or common property resource areas. This sentiment was also shared by most of the Mankweng community members (Table 1). From this Table, 90 % ( 4 out 5) of the street vendors and all of the shop businesses, taxi drivers and passengers felt that there was too much litter in Mankweng Zone A. For the Mankweng residents, (92%) (36 out of 39) said that litter was widespread, while only 8%(3) said that littering was not that much of a concern in Mankweng Zone A.

| Respondents             | Littering is Too High | Littering is Not too High | Totals   |
|-------------------------|-----------------------|---------------------------|----------|
| Mankweng Residents      | 36 (92%)              | 3 (8%)                    | 39       |
| Street Vendors          | 4 (80%)               | 1 (20%)                   | 5        |
| Shop Businesses         | 5 (100%)              | 0%                        | 5        |
| Taxi Drivers            | 5 (100%)              | 0%                        | 5        |
| Passengers              | 5 (100%)              | 0%                        | 5        |
| TOTALS (+1 LM Official) | 56 (93%)              | 4(7%)                     | 60(100%) |

Table 1: Views about state of littering in Mankweng Zone A

Apparently, the Mankweng residents who did not feel that littering was too widespread in Zone A and therefore did not feel that it was a problem, were probably those who resided far away from the CBD and did not frequent the CBD of the township (which includes Zone A) where most littering is observed to occur.

#### **4.1.2.1 Discussion of results**

The LM official and nearly all (93%) of the community members: the residents, street vendors, shop businesses, taxi drivers and passengers, agreed that littering is a problem in Mankweng Zone A. This is a good sign because, as has been observed elsewhere (Rwenjuna, 1994:13; Sluis, 1994:9; Park, 2001:21) the residents' awareness of the existence of a littering problem could indicate that they may be willing participants in trying to solve the problem. Observation of the burnt out litter next to an overflowing metal litter bin behind the street vending structures opposite Standard Bank in the main shopping complex, shows that the litter is not sorted (Photo 1). It consists of a jumble of degradable and non-degradable waste such as paper, plastics, cans, beer bottles etc. Consequently, when this waste is burnt, because the LM does not remove it when the bin is full, there is a residue of smoke-blackened cans, glassware etc (Photo 1) scattered all around the bin. This is usually an eyesore and so reduces the aesthetic value of the environment.



Photo 1: Shows overflow of litter bin and smouldering waste on the ground

It must be pointed out that the widespread solid waste littering was only observed in public places or common property resource areas. The compounds of the surrounding residential homes were observed to be tidy. This indicates that, a very likely reason for littering may have to do with the usual negative or 'I care less' attitude towards common-property resource areas (Park, 2001:10).

#### **4.1.3 Views about causes of littering in Mankweng Zone A**

The reasons which the respondents gave for littering being rife in Mankweng Zone A township are: The inefficiency of the LM in managing waste, the careless littering by residents and the inappropriate disposal of waste by Street vendors and shop businesses (Table 2).

Almost half (46%) (18 out of 39) of the residents singled out the LM's inefficiency in managing waste as the most important reason why litter is scattered in most of the public places. According to residents, the LM's inefficiency includes among other things: the inadequate provision of litter bins in Mankweng Zone A; the lack of any waste management legislation in the municipality; and the lack of regular removal/collection of waste from the households and public places.

Another cause of widespread littering suggested by about 41% (16 out of 39) of the respondents is careless littering. This behaviour is mostly common among shoppers, pedestrians, taxi drivers and their passengers. Shoppers and pedestrians tend to be the guiltiest of this kind of littering. They do not dispose of litter in litter bins. The problem is compounded by the fact that the few bins around are usually not near the place where they are shopping or where they carry out other business transactions. Similarly the taxi drivers and their passengers have the tendency of throwing the litter out of the taxi windows; in fact taxi drivers insist that no passenger litters in their taxi but rather litter the public places.

Furthermore, about 13% of the residents indicated that a cause of widespread littering is due to the inappropriate disposal of waste by the residents themselves.

| Respondents                     | LM's Inefficiency<br>In managing<br>Waste in Mankweng<br>Zone A | Careless<br>Littering by<br>Pedestrians,<br>Shoppers, Taxi<br>Drivers<br>&Passengers | Inappropriate<br>Disposal | TOTALS |
|---------------------------------|---|--|---------------------------|--------|
| Residents                       | 18 (46%)  | 16 (41%)   | 5 (13%)                   | 39     |
| The rest of<br>the<br>Community | 12 (60%)  | 8 (40%)  | -                         | 20     |
| LM                              | -   | -  | -                         | 1      |
| TOTALS                          | 30 (50%)  | 24 (40%)   | 5(8.3%)                   | 60     |

Table 2: Views about causes of littering in Mankweng Zone A

The same question was asked of the rest of the community members: the street vendors, taxi drivers and passengers, and shop business people. Most of them, 12 out of 20(60%), were of the view that the LM's inefficiency in waste management was the main cause of littering. Another cause suggested by 40% (8 out of 20) of them is careless littering.

Half (30 out of 60) of all sampled respondents saw the LM's inefficiency as the main cause. Careless littering is suggested by 40% (24 out of 60) of the respondents, whilst inappropriate disposal by street vendors and shop business was suggested by only 8% (5 out of 39).

The view of the LM was that the paucity of the litter bins was the main cause of the high littering in Mankweng Zone A.

#### **4.1.3.1 Discussion of results**

Two main reasons are given for the cause of widespread littering in Mankweng Zone A. These are the LM's inefficiency in waste management and careless littering. However, of these two causes, the inefficiency of the LM is more important although the careless littering attitude among the residents is also important. As mentioned earlier in the results section of the causes of littering, LM's inefficiency in waste management comprised mainly the inadequate provision of litter bins in Mankweng Zone A and the lack of regular removal/collection of waste from the households and public places.

Observation shows that in Mankweng Zone A, there are very few and very widely spaced litter bins in all public places where large numbers of people congregate daily. For instance, the main shopping centre, where the main taxi rank is also located, extends for about a kilometre on either side of the road from the University of the North pedestrian (Pfundzho) gate to the petrol station. In all of this area, there are only three large metal

bins. Two of these are almost a kilometre apart on one side of the road where the formal businesses are, whilst on the other side of the road where the informal street trading structures are, there is only one metal bin. In fact, in the other taxi rank near the Mankweng Hospital where the largest number of informal traders and their customers also congregate, there are no litter bins at all. The absence of litter bins in these very busy areas definitely contributes to the observed widespread littering.

Another indication of the LM's inefficient waste management is the Irregular removal or collection of litter from the households and public areas. Waste is only collected once a week from both the public and residential areas. In the public areas, where there is a high concentration of shoppers, pedestrians, passengers, street vendors and formal businesses people, litter should, ideally, be collected daily after business hours. Because this does not happen, the few litter bins soon get full to overflowing. All subsequent waste generated is, of necessity, dumped in the area surrounding the bin. When this piles up, it is burnt to allow for more waste to be dumped around the bin. Clearly, a combination of the paucity of litter bins suggested by the LM official, their being very few and placed very widely apart, is a recipe for the widespread littering observed in the area around Mankweng Zone A. Also, because the LM does not regularly collect waste from residential homes in the area, residential households tend to dump their un-removed waste randomly - commonly in public or common resource property areas. Consequently, although the common resource property areas are litter-infested, one commonly finds that the residential areas are litter-free.

It would therefore seem that residents have developed the wrong attitude towards the environment - littering the common property resource areas rather than the residential areas for which they feel more obligated to protect from littering (Photo 2). The tragedy of the commons as waste dumps is clearly obvious in this littering attitude among respondents. Residents' households are observed to be litter-free because the compounds are cleaned daily. However, these same residents dump their households' wastes on common resource property areas where all have right of access. Also, the taxi drivers do not allow passengers travelling in their taxis to drop any litter in the taxis; they would rather the litter be thrown on to the streets, roads and road-sides, reinforcing the assertion that respondents have developed the wrong attitude towards common resource property areas.



Photo 2: Two residents walk away after emptying their Refuse bin.

Apparently careless littering is aggravated by the inefficiency of the LM. The residents would probably throw litter at random without fear of any caution from the authorities. This also applies to the street vendors and shop business people where they would burn litter and cause air pollution. This usually happens when the refuse bins are full and are over-flowing. The absence of any by-laws that control the disposal of litter could also be attributed to the inefficiency of the LM which also has negative consequences such as reinforcing the wrong attitudes towards people keeping their common property resource environments litter-free (Photo 3).



Photo 3: LM's inefficiency leads to rubbles discarded anywhere

#### **4.1.4 Knowledge of waste management legislation**

Section 19(1) of the Environmental Conservation Act (ECA) 73 of 1989 provides that all litter should be properly disposed of. However, it should be known that in Mankweng Zone A there is no waste regulation in the form of by-laws, as required by the ECA. The TLC official was asked if there existed any legal instrument or regulation that is used to control littering in Mankweng Zone A. His response was that there was no by-law used to control litter in Mankweng. Thus people were not legally compelled to manage their waste as required by the ECA.

Despite the non-existence of litter by-laws in Mankweng Zone A, all community members were asked whether they knew of any national waste management legislation. Most (69%)(27 out of 39) of the residents said that they did not, while only a few, 12 out of 39(31%) did (Table 3).

On the other hand a high percentage (80%) (16 out of 20) of the rest of the community that do most of the littering: Shop businesses, Street vendors, Taxi drivers and Passengers, had no knowledge of any waste management legislation (Table 3).

Thus there is a high percentage (73%) of the community who do not know about any waste legislation. However, knowledge of such legislation is of little or no importance when the no waste legislation exists to control littering in Mankweng Zone A.

| Category of Respondents      | Waste Legislation Knowledge | No Waste Legislation Knowledge | Totals |
|------------------------------|-----------------------------|--------------------------------|--------|
| Mankweng Residents in Zone A | 12 (31%)                    | 27 (69%)                       | 39     |
| The Rest of the Community    | 4(20%)                      | 16(80)                         | 20     |
| <b>TOTALS</b>                | 16(27%)                     | 43 (73%)                       |        |

Table 3: Knowledge of waste management legislation.

#### 4.1.4.1 Discussion of results

The Environment Conservation Act, 73 of 1989, section 19(1), prohibits the disposal of waste in all but designated places such as litter bins. As a national legislation, it is supposed to be enforced in all of South Africa. This means that the Mankweng LM had to have by-laws which to use in order to control uncontrolled random littering. Therefore the non-existence of any waste management by-laws has the potential to indirectly encourage people to randomly discard litter, when they are aware that such random

littering carries no punitive measures. This could be probably a contributing factor to the widespread littering in Mankweng Zone A.

#### 4.1.5 Alternative waste disposal by households

Households of residents were asked how they would dispose of their waste if the waste collectors do not come on the scheduled days. Their responses are presented in Table 4.

| Respondents | Keep in Plastic Bags | Throw away | Not yet Occurred | Burn waste | Backyard Trench | TOTALS  |
|-------------|----------------------|------------|------------------|------------|-----------------|---------|
| Residents   | 14(36%)              | 7(18%)     | 7(18%)           | 5(13%)     | 3(8%)           | (36)93% |

Table 4: Alternative waste disposal by residents

This table shows that 36 % (14 out of 39) of the Mankweng residents would put household waste in plastics and keep it in their homes until such time when the waste collectors come and pick them up. Other respondents, (7 out of 39) (18%) said that they would dump the waste far away from their homes such as on the outskirts of the township, in open areas and other common property resource areas. There are also other respondents (13%), (5 out of 39) who said that they burn the waste in their homes. Putting waste in trenches is another alternative method used by 8% (3 out of 39) of the

residents for disposing of waste; they bury their waste in the home yard and cover it with soil to form compost. Some respondents 18% (7 out of 39) said that they have not yet experienced non-collection of their waste and as a result have never thought of an alternative method.

#### **4.1.5.1 Discussion of results**

The results in Table 4 indicate that a very high proportion of the residential households surveyed, 82%, experience either non-collection or irregular collection of their waste, while only about 18% do not. Since at best waste is only collected once in a week, and often not regularly collected, most of the Mankweng community members had their ways of coping with the uncollected waste. The best of these alternative methods is the composting approach of biodegradable waste because it can be used as a source of organic manure in home gardening. The burning of household waste is another commendable approach provided it is not done frequently and provided waste such as plastics and rubber waste are not included because they have a very high potential of polluting the atmosphere. The storage of waste until it is collected is very commendable as it ensures that the waste does not end up littering the environment. However the dumping of waste in common property resource areas should be discouraged either by legislation or by community environmental awareness drives. This is because it encourages an increase in the widespread littering observed Mankweng and in many rural and small urban settlements.

#### 4.1.6 Litter minimization strategies

Because of the widespread littering in Mankweng Zone A, the Mankweng community members (residents, the street vendors, shop business people and taxi drivers and passengers and the LM) were asked to suggest what could be done to minimize littering in Mankweng Zone A. The suggestions from the residents are summarized in Figure 1 while those from the rest of the community are summarized in Figure 2.

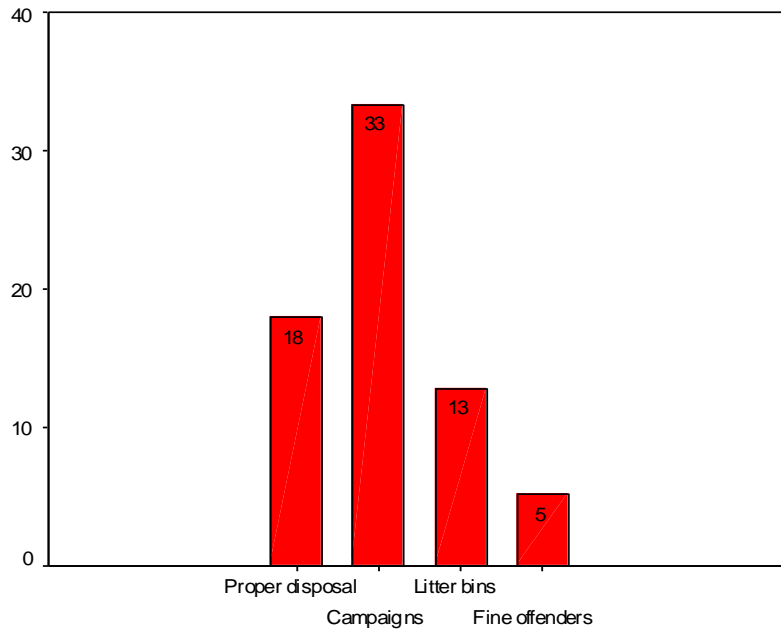


Figure 1: Litter minimization strategies suggested by residents

For the residents, 7 out of 39 (18%) suggested that littering could be best minimized by the proper disposal of waste by the community by disposing of litter in the provided bins. Some 13 % ( 5 out of 39) suggested that the small number of refuse bins provided (4) be substantially increased and that they be located in places where the public could easily

access them. Other respondents 33 % ( 13 out of 39) suggested that waste collection campaigns be conducted in Mankweng Zone A in order to sensitise the residents about the ills of improper waste disposal. They suggested that for such activities to be more meaningful, residents of particular streets or areas should be encouraged to clean their respective environments. There were also some respondents (5%) (2 out of 39) who suggested that the LM should fine offenders who could be found throwing litter in undesignated areas.

Figure 2 shows the responses of the rest of the community members - the street vendors, shop business people, taxi drivers and passengers.

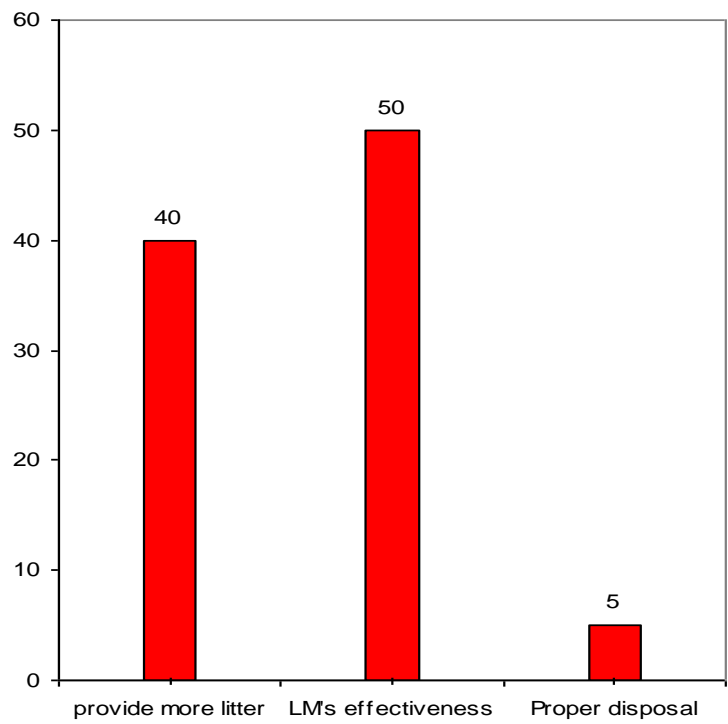


Figure 2: Litter minimization strategies suggested by the Street vendors, Shop business sector, and the taxi drivers and passengers

Most (40%) (8 out of 20) of these respondents suggested that increasing the number of the litter bins could be the most effective means of combating littering in Mankweng Zone A. Half (50 %) (10 out of 20) of them were of the view that littering could be minimized if the Local Municipality could be committed to regularly collecting and emptying litter bins, especially where there is a high density of both formal and informal businesses and around taxi ranks – areas where very high volumes of waste are generated. Only 5 % ( 1 out of 20) suggested the option of proper disposal which would require regular monitoring and enforcement or the fining of littering offenders.

The LM official agreed with the views about the adequate provision of litter bins strategically located in all areas where large numbers of people congregate and the organization of cleaning campaigns. An additional suggestion was that by-laws should be put in place to control littering. How these were to be enforced was not immediately made clear.

#### **4.1.6.1 Discussion of results**

The following four main approaches have been suggested for the minimisation of littering in Mankweng Zone A: Increasing the number of litter bins where they are inadequate and the provision of bins where they do not currently exist; The regular collection of litter bins; Waste management campaigns in the community; and The enactment of waste management by-laws and the sanctioning of offenders. In all these approaches, the roles of the LM and the community are inter-twined such that the minimisation of littering by

the community is assumed to depend on the efficiency of the LM – by providing litter bins where they are needed, by regularly collecting and disposing of waste in the community and by putting in place effective waste management regulations, the enforcement of which could be efficiently monitored. It is suggested here that the effective enforcement of any such waste management regulations would require not only the commitment of the LM in monitoring the various hot-spots of high litter occurrence, but also the active co-operation and participation of the community members in sanctioning offenders.

Litter campaigns are also of utmost importance in litter minimization. As some members of the community have suggested, it would be vital to involve community members in all such waste campaigns. Here also, it is suggested that either the LM takes the initiative in organising the community, or that it works through environmental education organisations in the immediate educational institutions. Such waste management campaigns are very effective means of environmental education as it raises the awareness of the community members about keeping their surroundings free from waste. The use of illustrative billboard notices prohibiting littering and strategically placed especially in common property resource areas for all the people to see, could serve effectively educate the community about littering.

# CHAPTER FIVE

## CONCLUSION AND RECOMMENDATIONS

### 5.1 Conclusion

The Mankweng community and the LM official in charge of waste management in Mankweng, are all agreed that Mankweng Zone A, had too much litter disposed of improperly. They have consequently also identified some of the causes of this wide spread littering problem. These include the attitude of the community to carelessly dispose of waste in public or common property resource areas and the inefficient waste management of the LM – mainly the lack of litter bins and in adequate numbers located in areas where littering can be very high because of the congregation of large numbers of people, the irregular waste collection for disposal from the residences and the CBD.

Also, the community members have suggested various approaches which they think could be employed to control the high littering in Mankweng. These include the adequate provision of litter bins located in all areas that generate high volumes of waste – the residences, the taxi ranks and the formal and informal business centres. They also suggested the need for community waste management awareness strategies through litter cleaning campaigns in which community members are encouraged to actively take part and through billboard campaigns. It was also suggested that the putting in place of by-laws to regulate waste which members from all sections of the community - the residents,

street vendors, the formal business sector and the taxi operators - would enforce among themselves, would help in curbing the indiscriminate disposal of waste.

These are views of the Mankweng Zone A community about the problem of littering and how they thought it could be dealt away with amicably. As they have pointed out that one of the fundamental issue is commitment by all community members, as the key issue. This would ensure that all members, work towards one goal of which is to controlling littering in Mankweng Zone A. Moreover, by-laws are also of more importance in ensuring that all members of the community should properly dispose of litter. These by-laws ought to be enforced by the Mankweng LM.

## **5. 2 Recommendations**

Based on the above findings of the study, the following recommendations are made that would hopefully contribute to a more efficient litter management system in Mankweng and a healthy environment for all:

- i. That adequate numbers of waste bins be provided in all areas where they are needed but do not currently exist. These areas include:
  - The streets leading into the CBD where there are street vendors;
  - The areas adjacent and opposite to the Mankweng hospital; and
  - The taxi rank and sports areas where informal vendors also operate. In this way, these areas will not be a waste-heap as at present;

- ii. That the density of waste bins in the CBD be considerably increased and that they be located around the main taxi rank. Currently, there are no bins around the taxi rank; those that exist in the CBD are not easily accessible to the taxi passengers because they are more than 50 meters away;
- iii. That the bins in the residential households be regularly collected so that residents with full bins are not tempted to empty their waste improperly;
- iv. That the bins in the CBD be collected for the disposal of the waste at the end of every working day. In this way bins are less likely to fill up and spill over;
- v. Since taxi drivers prohibit passengers from littering their taxis, that they be encouraged to have plastic litter bins in their taxis in which passengers would drop any waste rather than throw them through the taxi windows as at present. In this way taxi operators would become useful in helping to keep their environment litter-free; or that the community (the source of taxi passengers) be educated to keep their waste on them and to properly get rid of the waste at points of descent;
- vi. That community waste management campaigns be regularly organised that would educate all community members – especially street vendors, taxi operators and passengers – about good waste management practices; and

- vii. That a waste management by-law be put in place and that if such a regulation is to succeed, all community members must be encouraged to take an active part in its enforcement.

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**ADDENDUM**

**QUESTIONNAIRE**

**Research Questionnaire for TLC Official in charge of waste management in**

**Mankweng Zone A**

1. Designation.....

2. Is there too much littering in Mankweng?

YES [ ] NO [ ]

2.1 If YES. Why?.....

.....

.....

2.2 If NO. Why?.....

.....

.....

3. Are the number of litter bins sufficient in public places (Shopping centers, Taxi ranks, Roadsides, etc)?

YES [ ] NO [ ]

3.1 If NO. Do you have plans of increasing the litter bins?

YES [ ] NO [ ]

4. Are the litter bins located in convenient places for public to dispose of litter?

YES [ ] NO [ ]

5. How do you decide on location of the litter bins?.....

.....  
.....  
6. Is there any regulation that is enforced to control litter disposal in Mankweng Zone A?

YES [ ] NO [ ]

7. Have you ever received complaints about litter from the community?

YES [ ] NO [ ]

7.1 If YES. Explain.....

.....  
8. What do you think can be done to minimize litter in Mankweng?.....

.....  
.....

**Research Questionnaire for Mankweng Residents**

**Section A: Litter in public places**

1. Gender: Female [ ] Male: [ ]

2. Age group: Young Adult [ ] Middle Aged [ ] Old [ ]

3. Occupation: Employed [ ] Unemployed [ ] Self-Employed [ ]

3.1 If Employed. Where?

Government [ ] Private [ ]

4. Is there too much littering in Mankweng?

YES [ ] NO [ ]

4.1 If YES, why?.....

.....

.....

4.2 If NO why?.....

.....

.....

5. Which areas in Mankweng have too much litter?.....

.....

.....

6. Are the number of Refuse bins sufficient in public places (Shopping centers, Taxi ranks, Roadsides, etc)

YES [ ] NO [ ]

7. Are the Refuse bins located in convenient places for public to dispose of litter?

YES [ ] NO [ ]

8. Do most people use the Refuse bins that are provided?

YES [ ] NO [ ]

9. Do you know of any National Legislation that regulates litter?

YES [ ] NO [ ]

**Section B: Management of waste within the household**

10. Do you pay for waste collection services?

YES [ ] NO [ ]

11. Are you satisfied with the waste collection services provided?

YES [ ] NO [ ]

12. If NO. Why?.....  
.....  
.....

13. In case your Refuse bin becomes full prior to the collection day. How do you deal with the waste?.....  
.....  
.....

14. Can community assist in helping to control littering in Mankweng?  
YES [  ] NO [  ]

14.1 If YES. How?.....  
.....  
.....

14.2 If NO. Why?.....  
.....  
.....

15. If the TLC embarks on Refuse campaigns can you participate?  
YES [  ] NO [  ]

15.1 If NO. Why?.....  
.....  
.....

16. If YES. Suggest type of litter campaigns you would participate in.....

.....  
.....

**Research for Shop Business Sector**

1. Gender: Female [ ] Male: [ ]

2. Age group: Young Adult [ ] Middle Aged [ ] Old [ ]

3. Is there too much littering in Mankweng?

YES [ ] NO [ ]

3.1 If YES. Why?.....

.....  
.....

3.2 If NO. Why?.....

.....  
.....

4. Which areas in Mankweng have too much litter?.....

.....  
.....

5. How do you dispose of your litter?.....

.....  
.....

6. Do you have any by- law that regulates the waste from the TLC?

YES [ ] NO [ ]

7. What do you think can be done to minimize litter in Mankweng?.....

.....  
.....

9. Would your business participate in litter campaigns?

YES [ ] NO [ ]

**Research Questionnaire for Street Vendors**

1. Gender: Female [ ] Male: [ ]

2. Age group: Young Adult [ ] Middle Aged [ ] Old [ ]

3. Is there too much littering in Mankweng?

YES [ ] NO [ ]

3.1 If YES. Why?.....  
.....  
.....

3.2 If NO. Why?.....  
.....  
.....

4. Which places in Mankweng have too much litter?.....  
.....  
.....

5. How do you dispose of your litter?.....  
.....  
.....

6. Do you have any litter regulation from the TLC?

YES [ ] NO [ ]

7. Do you know of any Legislation that control waste?

YES [ ] NO [ ]

8. What do you think can be done to minimize litter in Mankweng?.....

.....  
.....

9. Would you participate in litter campaigns?

YES [ ] NO [ ]

10. If YES. Suggest type of litter campaigns you would participate in.....

.....  
.....

**Research Questionnaire for Taxi Drivers**

Gender: Female [ ] Male: [ ]

2. Age group: Young Adult [ ] Middle Aged [ ] Old [ ]

3. Education: Highest level of education reached.....

4. Is there too much littering in Mankweng?

YES [ ] NO [ ]

4.1 If YES. Why?.....

.....  
.....

4.2 If NO. Why?.....

.....

.....

5. Which places in Mankweng have too much litter?.....

.....

.....

6. Do you allow passengers to throw litter inside the taxi?

YES [ ] NO [ ]

6.1 If NO. Why?.....

.....

.....

7. Would you like to have litter bins in the taxi?

YES [ ] NO [ ]

8. Do you know of any Legislation that control waste?

YES [ ] NO [ ]

9. What do you think can be done to minimize litter in Mankweng?.....

.....

.....

10. Would you participate in litter campaigns?

YES [ ] NO [ ]

10. If YES. Suggest type of litter campaigns you would participate in.....

.....  
.....

**Research Questionnaire for Taxi passengers**

1. Gender: Female [ ] Male: [ ]

2. Age group: Young Adult [ ] Middle Aged [ ] Old [ ]

3. Is there too much littering in Mankweng?

YES [ ] NO [ ]

3.1 If YES. Why?.....

.....  
.....

3.2 If NO. Why?.....

.....  
.....

4. How do you dispose of litter in the taxi?.....

.....  
.....

5. Would you like to have litter bins inside the taxis?

YES [ ] NO [ ]

6. Do you dispose of litter while the taxi is moving?

YES [ ] NO [ ]

7. Do you know of any Legislation that control waste?

YES [ ] NO [ ]

8. What do you think can be done to minimize litter in Mankweng?.....

.....  
.....

9. Would you participate in litter campaigns?

YES [ ] NO [ ]