



**DEPARTMENT OF ENVIRONMENTAL AFFAIRS AND TOURISM
OF SOUTH AFRICA**

WORKING WITH WASTE



GUIDELINE ON WASTE COLLECTION IN HIGH DENSITY & UNSERVICED AREAS



DANIDA
Supported by the
Royal Danish Embassy

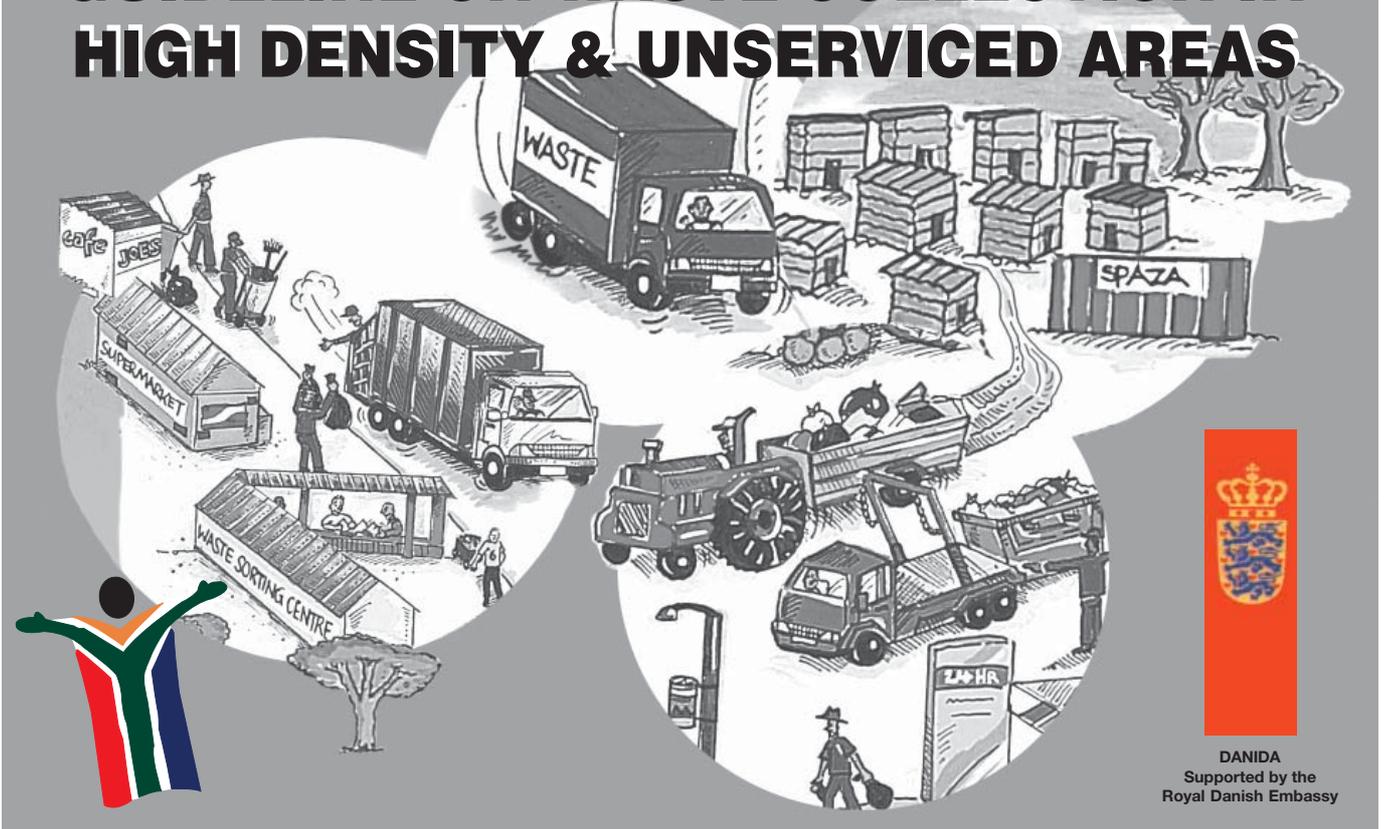


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ACKNOWLEDGEMENTS



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Major funder: The Royal Danish Embassy through Danida

With additional contributions from:

Sappi War on Waste
Mainline Solid Waste Handling Equipment Suppliers
EnviroServ Waste Management
Tedcor
Institute of Waste Management of Southern Africa

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Printing: Proprint, Durban

Print24.Com, Durban

The participation of a number of stakeholder groups during the planning workshops which took place at national/provincial and local levels is gratefully acknowledged.





FOREWORD

The focus of waste management in South Africa is changing. No longer is the emphasis on the disposal of waste, but rather on avoiding its generation and minimising the waste stream wherever possible.

South Africa has a policy on Integrated Pollution and Waste Management in place and a comprehensive National Waste Management Strategy and Action Plans to implement that Policy. The need for user-friendly guidelines to implement the National Waste Management Strategy was identified.

This series of 'WORKING WITH WASTE' guidelines has been specially prepared to give very practical, easy to follow steps that a municipality should take to manage its waste. This is one of a series of guidelines that deal with management of waste. These guidelines are easy to read, updateable and have been designed with colourful section divider cards to double as awareness raising and capacity building resource materials when municipalities work in communities and consult with their residents.

The accompanying attractive full colour 'WORKING WITH WASTE' poster completes the package. This is primarily an awareness-raising resource and shows where the particular topic, dealt with in each guideline, fits into the broader integrated waste management system.

These guidelines have been workshopped at a national and local level and it is hoped that municipalities will use them extensively to make their waste systems more sustainable. The Department would also like to receive feedback on how they have been used, how useful they are, and where they could be improved.

If we are going to reach the goals adopted in the Polokwane Declaration at the National Waste Summit of September 2001 and work towards a waste free environment, each resident in every municipality will have to become a responsible manager of waste.

These guidelines are a step towards achieving this.





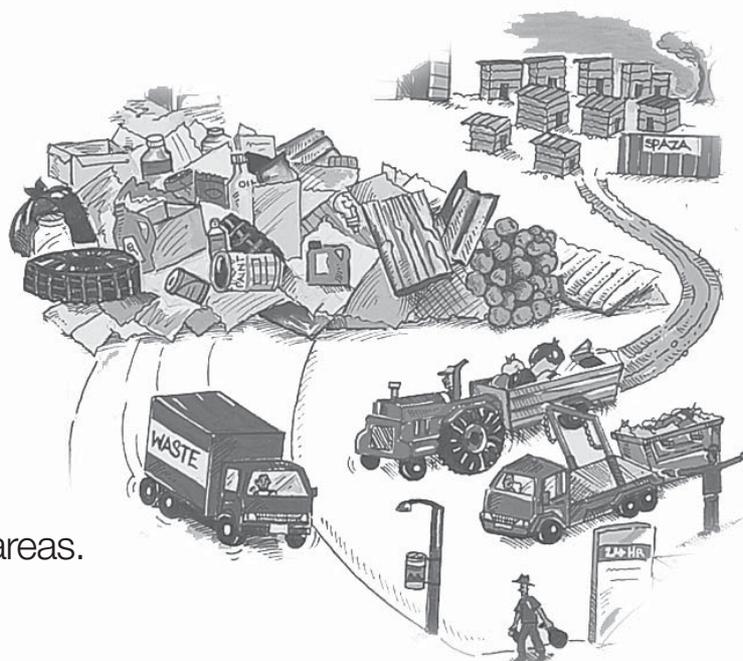
GUIDELINE FOR WASTE COLLECTION IN HIGH DENSITY & UNSERVICED AREAS

PURPOSE OF THIS GUIDELINE

This is one of a series of guidelines to assist municipalities in the implementation of the National Waste Management Strategy.

During the development of the strategy, it became clear that special attention was required for areas that were densely settled (where there were more than 5000 households in an area with more than 10 dwellings per hectare [10 000 m²]), and unserviced areas (which had inadequate or failed services, or no waste collection service at all).

This document focuses on how to introduce appropriate general waste collection systems in high density and unserviced areas.





HOW TO USE THIS GUIDELINE

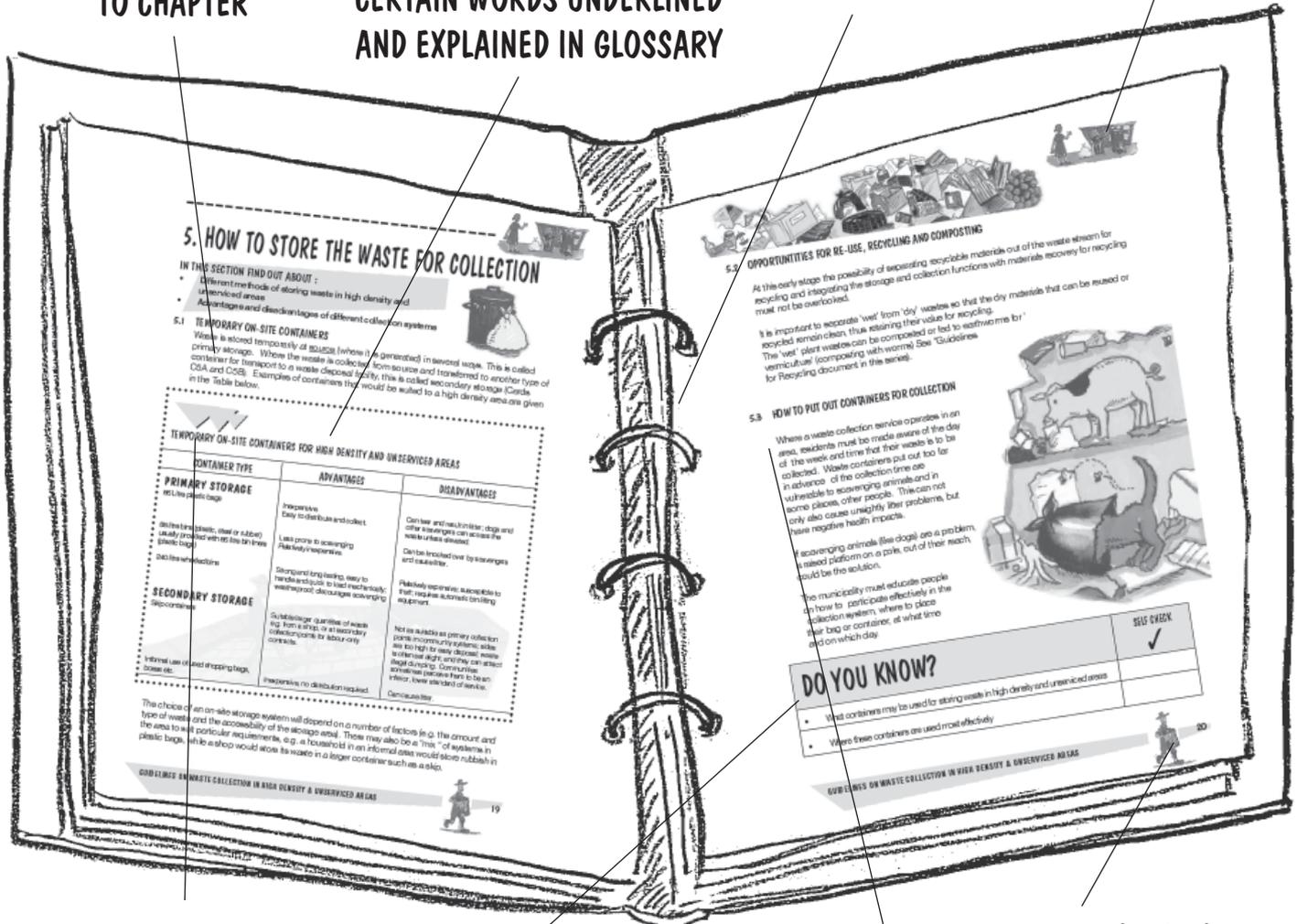
LOOSE LEAF FILE

LOOSE LEAF RESOURCE
FILE FOR USER TO
ADD OWN NOTES

CHAPTER ICON

INTRODUCTORY OUTLINE
TO CHAPTER

CERTAIN WORDS UNDERLINED
AND EXPLAINED IN GLOSSARY



CASE STUDIES
AND INTERESTING FACTS

SELF CHECK BOX AT END OF EACH
CHAPTER FOR READERS TO
REVIEW THEIR LEARNING

GUIDELINE ICON

TEXT GIVING STEP BY
STEP GUIDELINES

DIVIDER CARDS

Numbered colour divider cards can be removed from each chapter and used as capacity building resources, together with the poster, when working with communities. Remember to put them back!

POSTER

The poster has facilitator notes on the reverse side. If read from top to bottom, the poster shows the different functional elements of waste management (avoidance, generation, storage, collection, etc). If read from left to right it shows waste minimisation methods (green background), general non-hazardous waste management (yellow background) and hazardous waste management (orange background) technologies.





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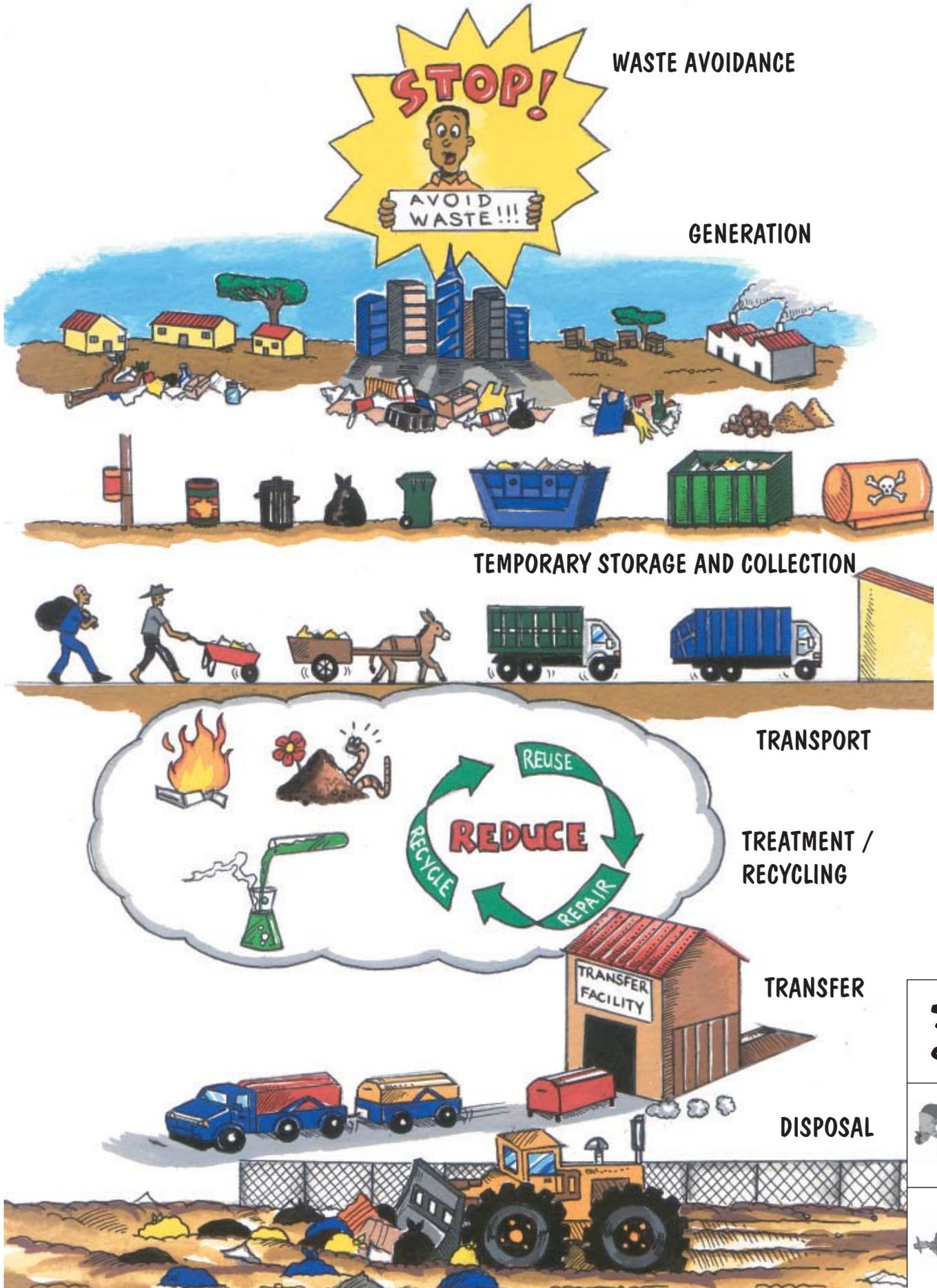
DIVIDER CARDS

GUIDELINES FOR WASTE COLLECTION

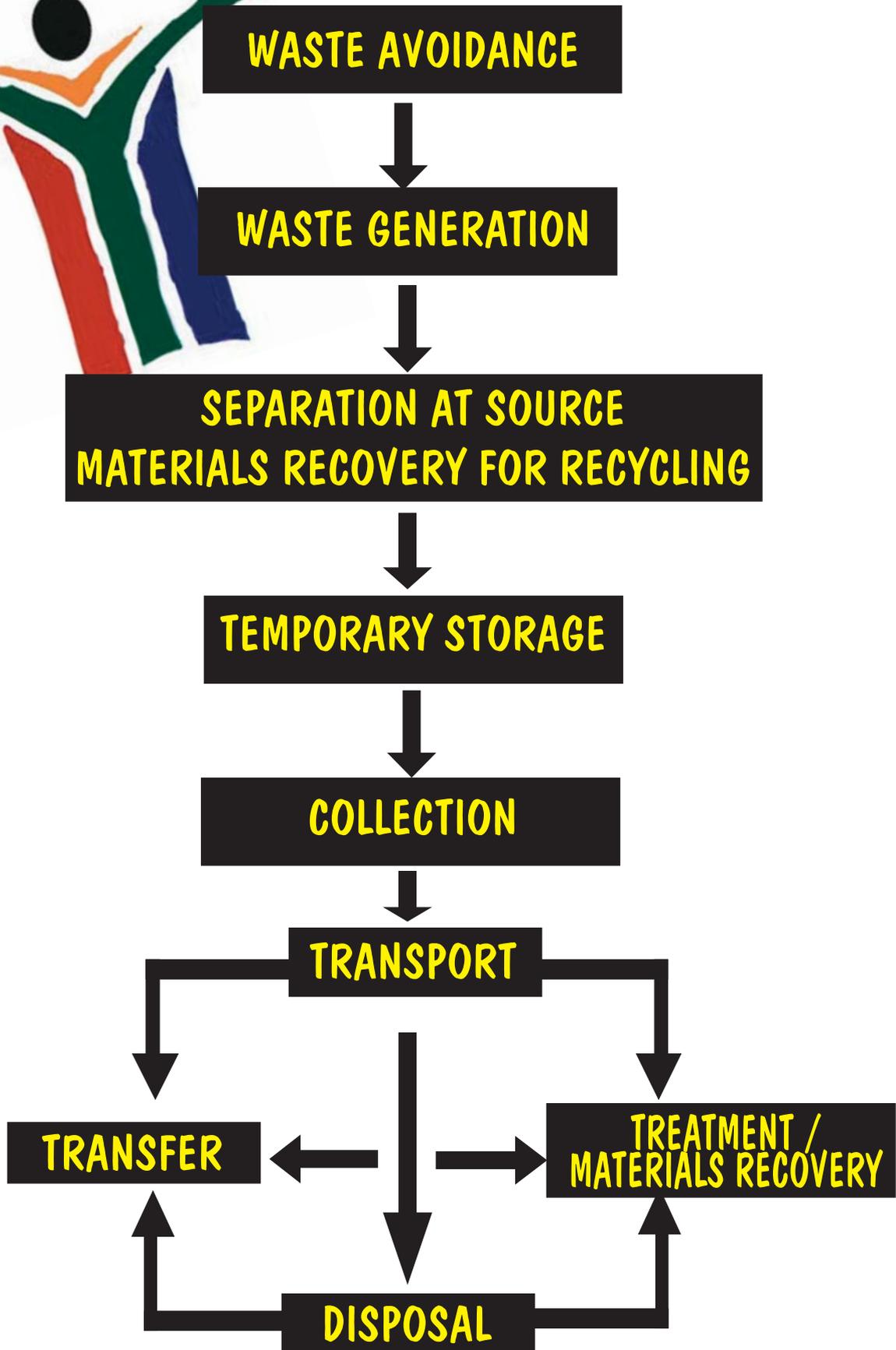
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ELEMENTS OF A WASTE MANAGEMENT SYSTEM



ELEMENTS OF A WASTE MANAGEMENT SYSTEM



1. INTRODUCTION

IN THIS SECTION FIND OUT ABOUT:

- Sustainable living
- Integrated Waste Management
- The National Waste Management Strategy
- Where waste collection fits in the waste management process



1.1 SUSTAINABLE LIVING

Municipalities play a fundamental role in managing development and in the delivery of essential services to the people of South Africa. The way they carry out their functions directly affects people and the environment in which they live. Municipalities must be able to make choices that will promote *sustainable living*, especially in the area of managing household waste and waste from other sources.

Municipalities will be moving towards sustainability if they take into account the economic, social and natural environmental factors in any activity that they undertake. When we produce waste, it eventually returns to the natural environment - to land, water or the air. The environment that receives the waste must be able to assimilate it (take it up) without becoming degraded or polluted. Waste must be disposed of in a way that does not have an adverse effect on the environment.

WASTE
must be disposed
of in a way that
does not have an
adverse effect on
the environment.



INTEGRATED POLLUTION AND WASTE MANAGEMENT POLICY FOR SOUTH AFRICA AND THE NATIONAL WASTE MANAGEMENT STRATEGY.

In 2000, a national policy on pollution and waste management was published:

- This policy shifts the focus of waste management away from the disposal of waste to waste avoidance, reduction, re-use and recycling before handling and final disposal.
- It sets principles which include accountability, *cradle to grave* responsibility, *equity*, integration, open information, polluter pays, *subsidiarity*, waste avoidance and minimisation.
- The National Waste Management Strategy applies these principles in its action plans which aim to move away from fragmented and uncoordinated waste management to integrated waste management.
- Objectives of the NWMS include prevention and minimisation of waste.



1.2 MOVING AWAY FROM 'END OF PIPE' SOLUTIONS



In South Africa there has been a very important change in the way that we manage our waste. The traditional 'end of pipe' solution which focused on dealing with waste once it was produced is no longer adequate.

Elements of an integrated waste management system:

- Waste avoidance
- Generation
- Source separation for materials recovery (Recycling)
- Temporary storage
- Collection
- Transport
- Treatment / Processing
- Transfer
- Disposal

Now, instead of concentrating on the storage, collection and disposal components of the waste management system more attention is given to the avoidance of waste as a first priority. If it is not possible to avoid waste completely, we should then look for ways to reduce, reuse or recycle the unwanted material. If waste cannot be made useful, only then should it be collected, treated and disposed of.

The White Paper (Policy) on Integrated Pollution and Waste Management sets out the principles that underpin the National Waste Management Strategy. This strategy translates the policy principles into strategic plans and actions. Waste collection (also called refuse removal) activities are just one part of an integrated waste system.

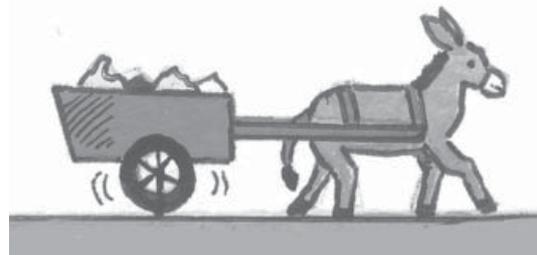
The diagram on the card divider (C1A and C1B) shows that the collection of waste is just one of a series of steps in the management of waste. When the priority steps of avoiding waste, reusing and recycling unwanted materials have been taken, the waste that remains is what should be collected. A municipality must be able to set up effective and efficient waste collection systems within its area of jurisdiction. In order to do so, it must know • the quantities and types of waste that are produced in an area; • what equipment is appropriate; • what management systems will be most effective; • what is required to educate communities receiving the service to use the service correctly and pay for it; and • what systems are most suitable for outlying rural areas.

Communities have a crucial role to play in working with their local municipality towards managing waste as effectively and efficiently as possible. They must also take responsibility for cleanliness in their own environment.

APPROPRIATE TECHNOLOGY

Problems result if unsuitable methods and equipment (inappropriate technology) are chosen for waste collection and recycling systems. The technology must be appropriate:-

- It must adequately address the specific needs of a community.
- It must make use of manual labour wherever possible rather than make too much use of machines: labour-intensive methods create employment and can optimise the overall system.
- It must take into account the socio-economic and cultural factors that determine the way the public behaves.



1.3 WHAT IS WASTE?

Waste can be defined as anything that is no longer useful and needs to be disposed of. In the waste management process, waste is any material that has been discarded and, as such, needs to be disposed of in an environmentally acceptable manner.

Waste is also defined in terms of where it is produced, how dangerous it is and the main substances and materials that it is made up of. This guideline deals with the collection of solid waste from high density and unserved areas: waste from these areas will be mostly general waste from households, shops, schools, clinics, etc. It is nevertheless important to be aware that there are many different types of waste which may be illegally dumped in unserved areas.

The focus of this guideline is solid waste; it does not deal with liquid waste or gaseous and particulate emissions into the atmosphere.



SOLID WASTE IS CLASSIFIED INTO TWO MAIN CATEGORIES: GENERAL AND HAZARDOUS WASTE:

GENERAL WASTE

Waste which does not pose an immediate threat to people or the environment, i.e. household waste, builder's rubble, garden waste, dry industrial and commercial waste (DWA 1998). It may, however, with decomposition and infiltration by water, produce leachate (the brown liquid that oozes out of waste) with an unacceptable potential to pollute the environment.

HAZARDOUS WASTE

Any waste which may, by the circumstances of its use or because of its quality, concentration, physical or infectious characteristics, cause or be likely to cause, danger to health or to the environment, whether by itself or when in contact with other waste (DWA 1998). There are different classes of hazardous waste which include substances that are explosive, corrosive, chemically very reactive, poisonous, biohazardous (e.g. containing infectious disease organisms), radioactive or cancer-causing (See card C3A).





People refer to many different types of solid waste according to where these wastes are produced. This means that there could be both general and hazardous wastes present in the waste stream from a single source.

WASTE!

TYPES OF SOLID WASTE ARE:

AGRICULTURAL WASTE

AGRICULTURAL WASTE

Waste that comes from the rearing or processing of animal products and the production and processing of agricultural crops. Plant or animal wastes, for example, would usually be general waste whereas empty pesticide containers would be hazardous.

BIODEGRADABLE WASTE

BIODEGRADABLE WASTE

Waste items that will eventually decay and go back into the soil and nature, including garden refuse (e.g. grass clippings) and animal, fruit or vegetable leftovers resulting from the handling, preparation or cooking of foods. Biodegradable waste includes the 'wet fraction' or putrescible fraction of the general waste stream which, if separated at the point of generation from the 'dry fraction' (largely the recyclable packaging materials), results in the dry fraction remaining 'clean' and therefore more valuable for recycling.

BULKY WASTE

BULKY WASTE

Large items of waste material, such as broken appliances, furniture, large auto parts, branches and stumps of trees.

COMMERCIAL TRADE WASTE

COMMERCIAL/TRADE WASTE

Waste generated by shops, offices and other commercial activities that do not actually make products, but trade them or sell services.

CONSTRUCTION AND DEMOLITION WASTE

CONSTRUCTION AND DEMOLITION WASTE

Waste materials from construction sites, the demolition of buildings, road building activities etc.

DOMESTIC HOUSEHOLD RESIDENTIAL WASTE GARBAGE/REFUSE

DOMESTIC/HOUSEHOLD/RESIDENTIAL WASTE/GARBAGE/REFUSE

Waste normally produced or generated on residential premises. Even our household waste stream contains small quantities of hazardous wastes.

INSTITUTIONAL WASTE

INDUSTRIAL WASTE

Waste that comes from industrial and manufacturing processes. Some industrial wastes might be hazardous, such as liquid or sludge wastes which need to be disposed of at a permitted hazardous landfill, or disposed of to sewer provided that special consent has been granted. Other industrial wastes such as off-cuts of manufacturing materials would be general waste.

HEALTH CARE WASTE (MEDICAL WASTE)

INSTITUTIONAL WASTE

Waste materials coming out of schools, hospitals, research institutions and public buildings.

MUNICIPAL SOLID WASTE

HEALTH CARE WASTE (MEDICAL WASTE)

Any solid or liquid waste generated in the treatment, diagnosis or immunization of humans (or animals). This is often generated at health care facilities, but not exclusively so. This type of waste can present a threat of infection to humans.

MINING WASTE

This mainly includes residues and slimes, resulting from ore-beneficiation processes. This waste is not part of the municipal waste stream.

MUNICIPAL SOLID WASTE

The total amount of general waste generated in a municipal area. The collection and disposal of this waste is usually the responsibility of the municipality.

OFFICE WASTE

Waste arising in offices, comprising mostly written and printed paper such as ledgers, letters, envelopes, printed circulars, catalogues etc.

LOOK AT SOME FACTS



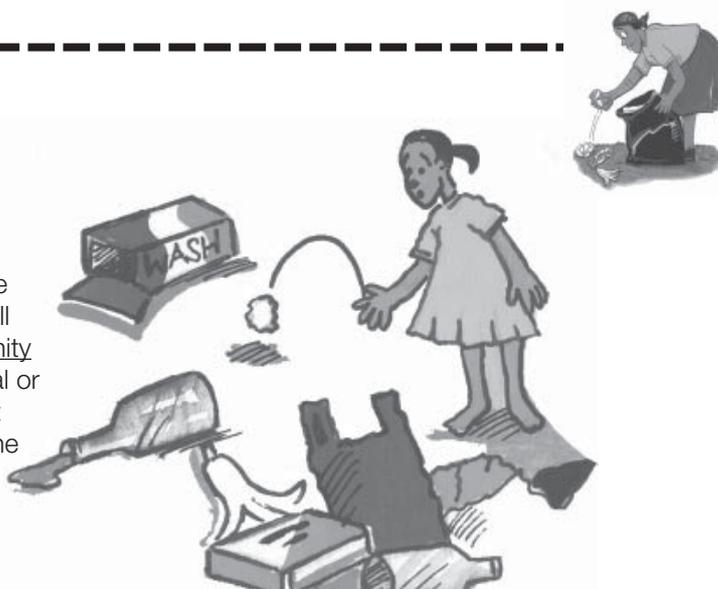
All toxic waste is hazardous waste BUT not all hazardous waste is toxic! Toxic waste is poisonous to living cells whereas hazardous waste includes other types of waste that can cause damage in other ways. Hazardous waste must be handled with due care and disposed of at a hazardous landfill site.



1.4 WHO PRODUCES WASTE?

EVERYBODY PRODUCES WASTE!

Wherever people live, work or spend their leisure time they produce waste. The type of waste produced will vary depending on the demographics of the community - e.g. whether it is developed or undeveloped, formal or informal, urban or rural, etc. It is extremely important when managing waste to know the composition of the waste stream being handled.



1.5 HOW IS WASTE MANAGED?

Waste must be managed from the point of generation to the point of disposal through careful control of the following functional elements:

- Waste avoidance (not making waste in the first place)
- Waste minimization (reducing waste, reusing, sorting and recycling)
- Generation (when waste is made)
- On-site storage (where waste is stored temporarily when it is first produced)
- Collection (how waste is picked up)
- Transport and Transfer (how waste is moved)
- Processing and materials recovery (how waste is treated or made useful)
- Disposal (how waste is finally discarded)

1.6 WHAT HAPPENS WHEN WASTE IS NOT MANAGED PROPERLY?

Litter and illegal dumping in a community are signs of unmanaged or poorly managed waste. Litter and illegally dumped waste can be defined as any waste found outside the formal waste management system (i.e. waste in the wrong place, scattered about in the streets, open spaces and the veld).



LOOK AT SOME FACTS

Only 20% of the litter found on the streets of a town is caused by motorists and pedestrians discarding waste carelessly, or not using the proper receptacles, BUT 80% results from inadequacies in the formal waste collection system, such as wind scatter off waste collection vehicles, spillages, late collections, lack of good housekeeping in managing the system. Picking up litter costs six or seven times more than the cost of collecting waste that has been put into the correct waste containers.



LITTERING AND ILLEGAL DUMPING HAVE BAD EFFECTS:

- An environment that is dirty and ugly
- A potentially serious hazard to people or the natural environment which can cause the spread of infectious diseases such as diarrhoea, cholera, tuberculosis, AIDS, hepatitis B, and the breeding of disease vectors such as flies, mosquitoes and rats.
- High costs of cleanup
- A negative impact on economic development and investment in the affected area
- People developing and passing on bad habits to one another.
- People make the problem of litter and illegal dumping worse through discarding waste thoughtlessly or handling rubbish at home, work or recreational areas carelessly.



LOOK AT SOME FACTS

You can be fined or prosecuted if found littering by law enforcement agents.

Let us keep our environment clean by not littering!



People, traffic, wind and water cause mismanaged waste to travel in all directions. It can then get trapped in gutters, storm water drains, against fences and walls. This causes erosion and deterioration of roads, pavements, bridges and storm water management systems.

Incorrect waste management can happen ANYWHERE - at homes, businesses, recreational areas, on building sites, along roads, on verges and pavements. Municipalities must identify these places (sometimes called litter 'hot spots') and identify a way of addressing litter in their integrated waste management plan.

DO YOU KNOW?	SELF CHECK ✓
• What is meant by sustainable living?	
• What is meant by an Integrated Waste Management system and the hierarchy of waste management?	
• What is the difference between the approach in the National Waste Management Strategy and the traditional approach towards waste management?	
• What are the two main categories of solid waste?	



CONSTITUTIONAL ENVIRONMENTAL RIGHTS



C 2A

MUNICIPALITIES HAVE LEGAL RESPONSIBILITIES

MUNICIPALITIES ARE RESPONSIBLE FOR REFUSE REMOVAL, REFUSE SITES AND SOLID WASTE DISPOSAL

(The Constitution)

THERE ARE THREE KINDS OF MUNICIPALITIES:

- A - METROPOLITAN MUNICIPALITIES / UNICITIES**
 - B - LOCAL MUNICIPALITIES**
 - C - DISTRICT MUNICIPALITIES**
- (Municipal Structures Act)*

MUNICIPALITIES MUST DRAW UP AN INTEGRATED DEVELOPMENT PLAN THAT OPTIMISES RESOURCES AND MINIMISES WASTE *(Municipal Systems Act)*

MUNICIPALITIES MUST PROVIDE BASIC SERVICES (LIKE WASTE COLLECTION AND DISPOSAL) TO THEIR RESIDENTS *(Municipal Systems Act, Health Act)*

MUNICIPALITIES MUST MAKE BY-LAWS TO REGULATE THE MANAGEMENT OF WASTE



2. WHAT THE LAW SAYS ABOUT WASTE COLLECTION



IN THIS SECTION FIND OUT ABOUT:

- **The Integrated Pollution and Waste Management Policy for South Africa (the White Paper)**
- **The most important laws that govern waste**
- **The National Waste Management Strategy and Action Plans**
- **What the law requires municipalities to do about managing waste**



THE MAIN LAWS THAT CONTROL WASTE MANAGEMENT IN SOUTH AFRICA INCLUDE:

- Constitution of the Republic of South Africa (Act 108 of 1996)
- Environment Conservation Act (Act 73 of 1989)
- National Environmental Management Act (Act 107 of 1998)
- Health Act (Act 63 of 1977)
- National Water Act (Act 36 of 1998)
- Local Government: Municipal Structures Act (Act 117 of 1998)
- Local Government: Municipal Systems Act (Act 32 of 2000)
- Occupational Health and Safety Act (Act 85 of 1993)
- Hazardous Substances Act (Act 15 of 1973)
- National Road Traffic Act (Act 93 of 1996)
- Provincial laws
- Municipal By-laws

The Constitution of the Republic of South Africa Act 108 of 1996, Section 24 embodies the right of every individual to an environment that is not detrimental to his/her health and well-being (See Card 2A). The Constitution also stipulates that Local Government is tasked with ensuring the provision of services to communities in a sustainable manner and the promotion of a safe and healthy environment. The National Environmental Management Act (Act 107 of 1998) (NEMA) and Environment Conservation Act (Act 73 of 1989) address waste management, and particularly litter and the permitting of waste disposal sites.

2.1 WHO IS RESPONSIBLE?

Each sphere of Government is tasked with promoting the awareness of every person in the country that they have a vital role to play in managing their own wastes, not only as individuals but also as partners with their community and municipality. The Constitution devolves the competency for waste removal, refuse sites and solid waste disposal to local government level.

In terms of the Health Act (Act 63 of 1977) and the Municipal Structures Act (Act 117 of 1998), local municipalities have the responsibility of collecting and disposing of waste within their area, while district municipalities are responsible for the planning, establishment and operating of regional landfill sites in their area, i.e. a landfill site serving more than one local municipality (See card C2B).

The Municipal Systems Act (Act 32 of 2000) states how these functions and powers should be exercised. It is also a municipality's responsibility to pass by-laws and enforce existing litter laws (Environment Conservation Act), and to ensure that litter is cleared from the streets so that it does not pose a health hazard. A municipality is also authorised as a service authority to establish tariffs for the collection and disposal of waste within the municipal boundaries. This law also sets out the process required to decide on and set up Municipal Services Partnerships to improve on service delivery.



Waste management is mostly controlled through municipal by-laws and, since each municipality makes its own by-laws, there are often discrepancies in enforcement, regulation and administration of waste management functions between the different municipalities. The Department of Environmental Affairs and Tourism is drafting minimum standards for the collection and recycling of waste in South Africa, while the South African Waste Management Employers Association (SAWMEA) has drafted model by-laws and standard operating procedures for waste operators to assist municipalities who have not yet addressed this need.

2.2 WHAT MUST THE MUNICIPALITY DO?

In terms of the Municipal Systems Act every municipality is required to prepare an Integrated Development Plan (IDP). The IDP is the cornerstone for municipal service delivery. One of the elements of the IDP is an Integrated Waste Management Plan which, in terms of the National Waste Management Strategy, must implement the integrated management of waste with emphasis on waste avoidance and minimisation, through to responsible disposal. The Municipal Systems Act also sets down the principles that a municipality must follow in interacting with its residents (See Section 4 and card C4A). The many laws which govern environmental and waste management in South Africa are in the process of being reviewed and consolidated. It is also probable that a new Waste Management Act will result from this law reform process. Such a law is likely to require greater commitment to producing less waste, extended responsibility of manufacturers to ensure that their products can be recycled or responsibly managed once they are discarded, and maximising the job creation and business opportunities related to waste management.



A MUNICIPALITY MUST:

- Introduce and enforce by-laws relating to waste management.
- Provide an efficient and affordable waste collection system with waste minimisation and recycling options.
- Make available suitable storage bins or facilities for different types of waste (but not necessarily provide individual domestic bins).
- Show people how to use these facilities.
- Initiate and support the development of recycling centres and transfer stations where needed.
- Set aside suitable areas for waste facilities such as landfill sites.



DO YOU KNOW?	SELF CHECK ✓
<ul style="list-style-type: none"> • What the most important laws are that deal with waste management in South Africa. 	
<ul style="list-style-type: none"> • What key municipal planning document should also contain an Integrated Waste Management Plan to address the management of waste from generation to disposal. 	
<ul style="list-style-type: none"> • What the roles and responsibilities of a municipality are in managing the waste that arises within its boundaries. 	



FIND OUT MORE ABOUT THE WASTE STREAM IN THE AREA TO BE SERVICED



1. **HOW MANY HOUSEHOLDS, LOW DENSITY OR HIGH DENSITY, UNSERVICED**
2. **HOW MANY SHOPS, SCHOOLS, CLINICS ETC. ARE THERE?**
3. **HOW MANY PEOPLE ARE THERE?**
4. **WHAT TYPES OF WASTE ARE GENERATED?**
5. **WHAT HAPPENS TO THE WASTE AT PRESENT?**
WASTE STREAM SAMPLING AND ANALYSIS
6. **ESTIMATED TOTAL QUANTITY OF WASTE TO BE COLLECTED**

C 3B





3. FIND OUT MORE ABOUT THE WASTE STREAM

IN THIS SECTION FIND OUT ABOUT:

- What types of waste are produced in **high density and unserved areas**
- What information needs to be gathered to plan an effective collection service
- How to determine what quantities of waste may be generated in an area



3.1 TYPES OF WASTE

In high density and unserved areas, the type of waste generated is mostly classified as “General” Waste (Card 3A).

This consists of:

- Domestic waste
- Garden refuse
- Commercial waste
- Dry industrial waste (such as off-cuts of materials and waste packaging)
- Construction & demolition waste

LOOK AT SOME FACTS

The waste generated in a home can contain hazardous wastes, for example:

- Aerosol cans
- Batteries
- Expired medicines & Health Care Wastes from home nursing
- Fluorescent tubes
- Household chemicals
- Motor vehicle lubricating oils
- Paint residues
- Pesticides
- Solvents
- Even some discarded cosmetics are hazardous waste!



Some hazardous wastes do occur in such small quantities that they can be mixed in with the general waste stream without posing an immediate threat to man or the natural environment. Sometimes municipalities, private waste companies, and even the manufacturing companies, offer a collection service for certain of these e.g. fluorescent tubes, batteries and pesticide containers. Ideally the producers should take them back for recycling or appropriate disposal.

If there is a factory or business in the area which produces significant quantities of Hazardous Waste (see “Types of Waste” above), then this must be dealt with completely separately from the general waste stream.

The same goes for any Health Care Waste (Medical Waste) which may be generated at clinics, doctors’ rooms etc, but also at places where informal medical treatment takes place. Hospitals, clinics and other health care facilities usually make their own arrangements for disposal of their medical waste, but the non-hazardous general waste from a hospital would have to be allowed for in planning the collection service.





Animal carcasses and abattoir wastes should also be kept separate from general waste stream. If there is a regular, significant quantity of this type of waste generated, then provision for a separate collection service should to be made.

3.2 INFORMATION ABOUT THE AREA TO BE SERVICED

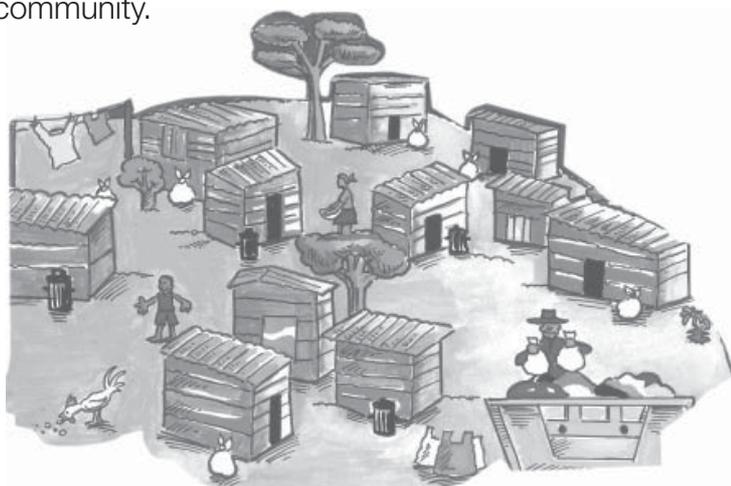
To plan an effective collection service for high density and unserviced areas, basic information about the area needs to be collected (Card C3B).

This includes:

- number of formal houses
- number of informal dwellings
- average number of people per household
- number of schools and other educational institutions
- number of all other institutions
- number of government/municipal offices and clinics
- number of shops and small businesses
- number of any other commercial enterprises
- number of any industrial premises
- assessment of any future commercial and industrial needs
- length of streets
- width of streets
- evenness of terrain/topography
- areas of verges to be cut
- length of stormwater drains
- extent of open areas such as parks, gardens etc.
- estimate of population
- estimate of population growth/decline

Some of this information can be calculated from existing plans, maps and/or aerial photographs. If there is a lack of information about certain areas it becomes more difficult to gather the information. Often the information must be confirmed by visiting the area and noting down the facts first hand (on-site survey).

Population estimates are not always available, and a survey of a small sample area may be required to calculate population density or estimate average household size. These figures can then be used to estimate the population size of the whole community.



3.3 QUANTITIES OF WASTE

From the information gathered above, it is now possible to estimate the quantity of waste that may be generated in the area being examined.

This estimate depends on a number of factors, some of which are:

- Economic profile of community serviced. Wealthier communities generate more waste per person, but have lower population densities than poorer communities.
- Whether street cleaning, litter picking, and verge cutting are included in the type and frequency of service
- How much recycling (formal and informal) is taking place
- Whether the community has individual electrical connections. A large proportion of the waste generated in informal areas comes from ash from cooking and heating fires.
- Seasonal variations e.g. some areas generate much more ash during the winter months.





A sample waste stream investigation form for a municipality is included in Appendix A

Because each situation is different, estimating quantities of waste can be extremely difficult. Much research has been done on waste generation in developed countries. Far less has been done on specifically South African conditions. Research findings from different contexts can vary widely. The figures obtained for developed countries are thus not always useful in a South African context.

The United States Environmental Protection Agency estimates that Americans generate 8 to 11 kg per person per week of domestic waste. However, they note that this can drop to 1.5 kg per person per week in developing countries.

In previously unserved areas in Durban, waste generation rates of 1.4 kg per person per week have been recorded.

Because estimates of waste quantities can fall within a wide range and be complicated by technical factors, a formal waste stream investigation should be done in the area to be serviced. (Appendix A). This should include actual sampling and analysis of the waste stream and can then also serve the purpose of estimating the recyclable portion of the waste stream.

HOW TO ESTIMATE WASTE QUANTITIES

WASTE QUANTITY IS USUALLY MEASURED BY MASS (KILOGRAMS OR TONNES) BUT IT CAN ALSO BE LESS ACCURATELY ESTIMATED AS VOLUME (CUBIC METRES)

$$\boxed{\text{Annual total tonnes waste from an area}} = \boxed{\text{Average amount of waste produced by one person in one day (kg)}} \times \boxed{\text{Number of people in the area}} \times \boxed{\frac{365}{1000}}$$

This amount will differ depending on the socio-economic status of the community: Less affluent communities will generate less waste than those where people have more money to spend because they will not buy as many processed and packaged goods as the more affluent communities. Studies have shown that in the less advantaged high density and rural communities this figure can be as low as 0.2kg per person per day, while in the affluent areas it is typically between 0.8 to 1.2kg per person per day.

DO YOU KNOW?	SELF CHECK ✓
• What types of waste are produced in high density and unserved areas	
• What information needs to be gathered to effectively plan a collection service	
• How to estimate and measure the quantity of waste that may be generated in an area	
• How to carry out a waste stream investigation	

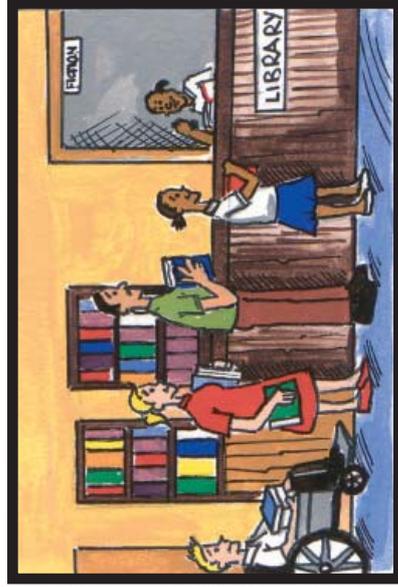


BATHO PELE PRINCIPLES

'Batho Pele' in Sesotho means 'People First'
(Municipal Systems Act)



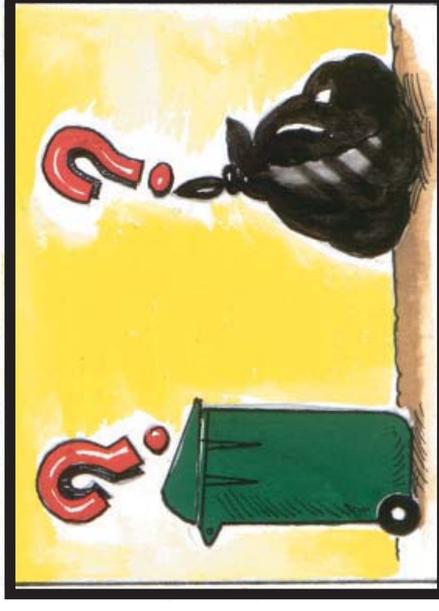
1. CONSULTATION



3. ACCESS TO SERVICES



C 4A



2. SERVICE STANDARDS



5. INFORMATION



6. OPENNESS & TRANSPARENCY

7. REDRESS



8. VALUE FOR MONEY



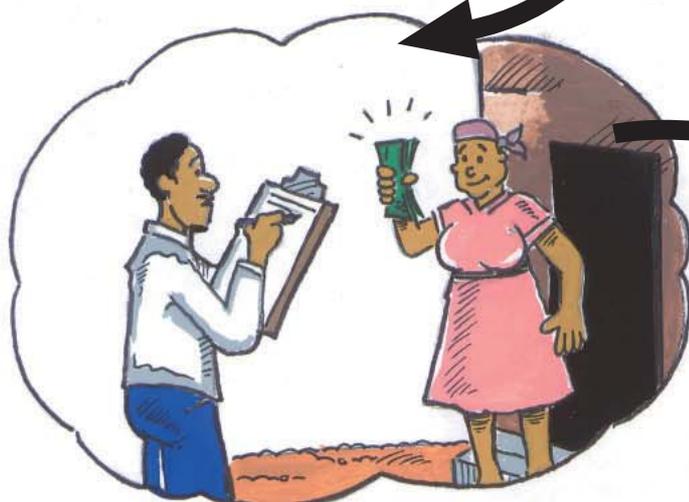
COMMUNITY PARTICIPATION IN CHOOSING A WASTE COLLECTION SYSTEM



CONSULT THE PEOPLE WHO ARE TO RECEIVE THE SERVICE



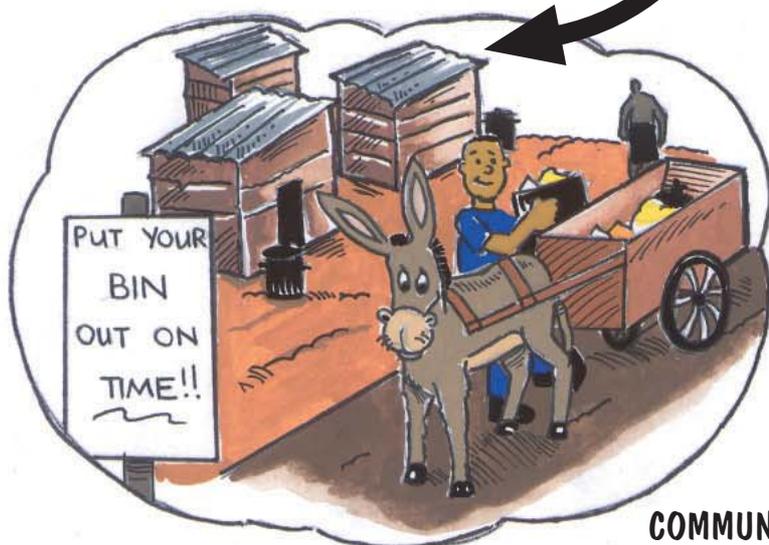
WILLINGNESS TO PARTICIPATE



WILLINGNESS TO PAY



SELECT APPROPRIATE SYSTEM



COMMUNITY EDUCATION PROGRAMME





4. COMMUNITY AWARENESS AND PARTICIPATION

IN THIS SECTION FIND OUT ABOUT :

- The importance of community participation in raising the level of environmental awareness and recognition of the need for living in a healthy environment
- How to conduct a willingness to participate and pay survey
- Community structures for consultation
- Agreeing the type of service and standards
- Community awareness and education programmes

WHO OR WHAT IS THE COMMUNITY'?

In the context of this guideline, a community is a number of households co-existing in an area. Communities are complex social structures: there are usually several social groupings within the community. Municipalities must be aware of them in order to work effectively with them.

4.1 BENEFITS OF COMMUNITY PARTICIPATION

Why is community awareness and participation important?

Often, when planning a waste collection system, the municipal decision-makers may not take into account the opinions and preferences of the people that are to receive that service. Involving a community in the initial stages of planning ensures that the community is aware of what is planned and what is expected of them in the whole process (Card C4B). A common question concerning community awareness and participation is “when should it all start happening?” Community awareness campaigns and participation should commence as early as possible in the development process of a waste collection system and must continue throughout the operation of the system.

Through awareness programmes and interactive participation, communities should be able to:

- 4.1.1** Understand the service that is being provided and their role in the system.
The following issues should be made clear from the beginning:
 - Why communities are getting a particular service
 - Where the solid waste collection system fits within the holistic development of the community
 - How the system operates
 - Who will be responsible for providing the service - the municipality or private contractors
 - What the expected role of the communities will be.
- 4.1.2** Establish the channels of communication between municipality and the structures that will be representing a community. The meeting schedules, venues and minutes of meetings should be easily accessible to the community. Strategies for disseminating information to people must be in place.
- 4.1.3** Commit to an agreed type of service and standards. Their participation in the process will ensure that they agree on something that is consistent with their development expectations, that they understand the





proposed system, and will be able to maintain it.

4.1.4 Be aware of the resources and facilities for waste collection involved in the service, and know how to use them correctly. Certain areas use colour-coded refuse bags for collecting various kinds of waste or operation. In KwaMashu, a township in Durban, black bags are used for normal domestic waste and yellow bags are used by contractors only for litter picking. The community needs to know this in order to be able to comply with the system.

4.1.5 “Buy in” to the service to be provided. If a community is involved in all stages of waste service delivery, it is empowered to participate in the whole process, including decision-making, thus fostering a sense of ownership of the whole collection system. A well-designed participatory process provides communities with access to all available information.

4.1.6 Support and use the waste removal service on an ongoing basis since it will remain with the community, be coming part of their daily lives. For this reason, community involvement in the design, implementation and improvement of services is crucial.

4.1.7 Develop awareness and see the municipality fostering openness and transparency, thus

engendering respect and a sense of ownership for the service to be provided.

4.2 THE ROLE OF THE MUNICIPALITY IN SERVICE DELIVERY :

Municipalities are regarded as the agents that must implement a waste collection service. In delivering a service, they must ensure that they put into practice the “Batho Pele” principles, which aim at putting people first.

BATHO PELE PRINCIPLES (CARD C4A)

1. **CONSULTATION**
Consult with residents about the level and quality of service.
2. **SERVICE STANDARDS**
Tell people what services they are entitled to receive and the available options.
3. **ACCESS TO SERVICES**
Make services equally available to all, including disadvantaged communities.
4. **COURTESY**
Treat everyone with consideration and respect.
5. **INFORMATION**
Always provide residents with full and accurate information about services they are entitled to receive.
6. **OPENNESS AND TRANSPARENCY**
Be honest and open about how municipalities are managed, the cost involved and who is in charge.
7. **REDRESS**
Respond to complaints speedily, apologise if you have not delivered a promised service, & offer an explanation.
8. **VALUE FOR MONEY**
Eliminate wastage and always provide services that give the best value for money.

COMMUNITY PARTICIPATION LEADS TO MORE SUSTAINABLE SYSTEMS

Involvement of the community is central to the success and sustainability of any service delivery system. Community participation should be interactive and meaningful, embracing different sectors of the community.





4.3 HOW TO CONDUCT A "WILLINGNESS TO PARTICIPATE AND PAY" SURVEY

Municipalities tasked with extending waste collection services into unserved areas should be aware that not all people want to participate in planned service delivery, especially if it means paying for the service. People living in an unserved area may regard their current activities, such as burning waste, as their best option.

Communities should not be rushed into participating in a waste collection scheme: such a system must take into account the needs of the communities for whom the service is intended. Communities in an area should be consulted in the following way:

DID YOU KNOW?
'Batho pele' in Sesotho means 'people first'. The Batho Pele Principles ensure that government officials deal fairly and respectfully with the public

4.3.1 CONDUCT A PRE-SURVEY

The pre-survey can be carried out by starting discussions informally with various groupings in order to get a preliminary idea of their opinion or attitude.

These groupings can be engaged through the following structures :

- informal community gatherings
- formal workshops
- community groups (clubs, religious groups, stokvels)
- traditional leaders



4.3.2 CONDUCT A MORE FORMAL SURVEY

Written questionnaires can then be used find out how willing people are to participate and pay for the service.

4.4 COMMUNITY STRUCTURES FOR CONSULTATION

The community groupings in an area are the most important role players in ensuring proper service delivery. Communities know their needs, resources and capabilities. It is the community that will win or lose the most in any attempt to introduce a new development or system.

A community profile should be drawn up.



An example of a survey questionnaire is included in Appendix B





COMMUNITY PROFILE

This is a description of physical, socio-economic, cultural, psychological and political environment in which the community exists:

- Size, composition and socio-economic status of community
- Existing community structures
- Who key players are
- Leadership structures
- Prevailing norms and traditions
- Community resources and needs
- Education and awareness needs
- Preferred channels of communication for consultation

To ensure maximum community representation and participation the following should be identified:

- Leaders
- Figures of authority
- Opinion makers
- Resource persons
- Existing community structures
- Community based organisations



Depending on the area, the following structures are suggested starting points for community consultation:

- Traditional leaders
- Ward Councillors
- Development Forums
- Health Forums
- Ward Committees
- Environmental Forums
- Headmen, izinduna
- Community based organisations
- Relevant key stakeholders need to be identified among municipal officials and community representatives, including organisations that might threaten or promote the service delivery.
- Consultation should happen at all levels of the community: communication channels should be clearly defined.
- Prevailing norms and traditions should be taken into consideration when consulting the communities. It will be useless to call a formal meeting in an area where it is the custom only for males to attend meetings. A different



strategy will have to be used for each area in order to accommodate everyone.

- The physical, socio-economic, cultural, psychological and political environment should also be taken into consideration.
- An agreement on communication structures between the community and municipality should be defined as follows:
 - community representatives should be elected by the community itself.
 - meeting schedules should be drawn up.
 - mechanisms for reporting back to the community should be well established.

4.5 AGREEING ON THE TYPE OF SERVICE & STANDARDS

To ensure a clean community & proper service there should be an agreement on the type of service & standard of service.

- The type of service should accommodate the socio-economic levels of the community.
- The community's background information and existing knowledge should be taken into consideration.
- The agreement should incorporate the existing service or preferred service.
- The agreement should ensure the most appropriate, cost effective and affordable system.
- The agreed standards should complement the existing system and foster partnerships between the municipality and community.





IN ADDITION TO THE TYPE AND FREQUENCY OF SERVICE, OTHER ISSUES WHICH NEED TO BE AGREED:

- How to meet the community education and awareness needs
- Effectiveness of service
- Affordability as it relates to the community's ability to pay for the service
- Reliability of service
- Strategies for monitoring and sustaining the system

To come to the agreement discussed above, different activities could be undertaken.

These could include:

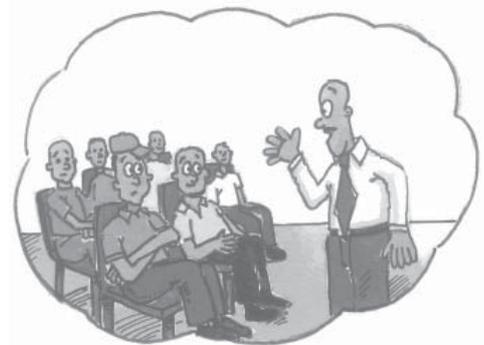
- Surveys
- One-on-one consultation
- Workshops and meetings
- Involving the community in a monitoring role.

To ensure the implementation of the agreed collection service, people in a community can be encouraged to form working groups/committees and environmental forums that meet frequently to assess and review the agreed standards.

4.6 COMMUNITY AWARENESS & EDUCATION PROGRAMMES

Even though research has shown that improper waste management can be a health hazard, most communities do not consider waste management to be a priority. Community education programmes should therefore include raising awareness on the impacts of poor waste management so that the communities see the need for an effective waste collection system.

- Community awareness and education programmes should benefit both the community and the municipality. For example, in an area where plastic bags are supplied as part of a weekly service, householders should be made aware that on the agreed day all rubbish bags must be put out for collection by a certain time.
- Awareness and education programmes should be developed in consultation with the community.
- They should, if possible, also complement any existing waste management activities already in the area.
- Education programmes should enable the community to appreciate and respect the existing service.
- They should accommodate different community groups and be sensitive to their literacy levels.
- Programmes should relate to people's daily lives, hopes and aspirations.
- They should be capable of enforcing the agreed-upon type of service and standards.
- They should empower and capacitate people with knowledge and skills.
- Programmes should be practical.
- They should be accessible to community members and flexible to accommodate their needs.
- They should enable people to initiate action.



To achieve the above, local people can be trained as facilitators.

These could include people with existing knowledge of community development e.g. members of existing community groups and development forums, or health workers.





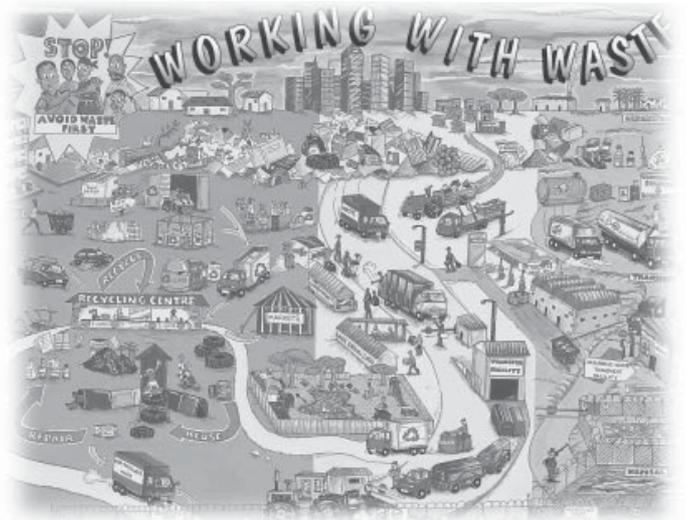
4.7 AWARENESS RAISING ACTIVITIES

The underlying principle of sustainability must be the keynote of any education and awareness programme for communities. It is not sufficient to organise once off activities that do not have follow-up actions or that are not part of a broader programme. The following activities and materials could be used as part of a programme to educate different sectors of the community:

- Exhibitions or displays : as an outreach activity
- Road shows: travelling outreach and information sharing
- Workshops (See Appendix C):
 - for community needs analysis
 - for sharing ideas and imparting knowledge
 - to build skills
- Seminars - for in-depth information sharing and gathering
- One-on-one education for more focused information sharing
- Stage plays/drama to raise community issues that can be discussed at a later stage
- Media for publicising critical issues like collection days and changes in the system
- Walkabouts to assess the impact of the service as well as identify areas that need extra attention regarding operation and education.
- Cleanup campaigns to educate and involve people (See Appendix D)
- Competitions
- Surveys



4.8 AWARENESS-RAISING MATERIALS



Awareness raising materials could be used in conjunction with awareness-raising activities to enhance important messages:

- Posters
(e.g. the WORKING WITH WASTE poster which accompanies this guideline)
- Pamphlets
- Banners
- Videos
- Worksheets

4.9 WHO CAN USE THE ABOVE?

Training can be organised for the following groups to empower them to use the tools effectively:

- Ward Councillors
- Development Forums
- Community Workers
- Community Health Workers (Nompilo)
- Working groups or committees
- Enviro Forums
- Community Based Organisations
- Non-Governmental Organizations
- Any interested people



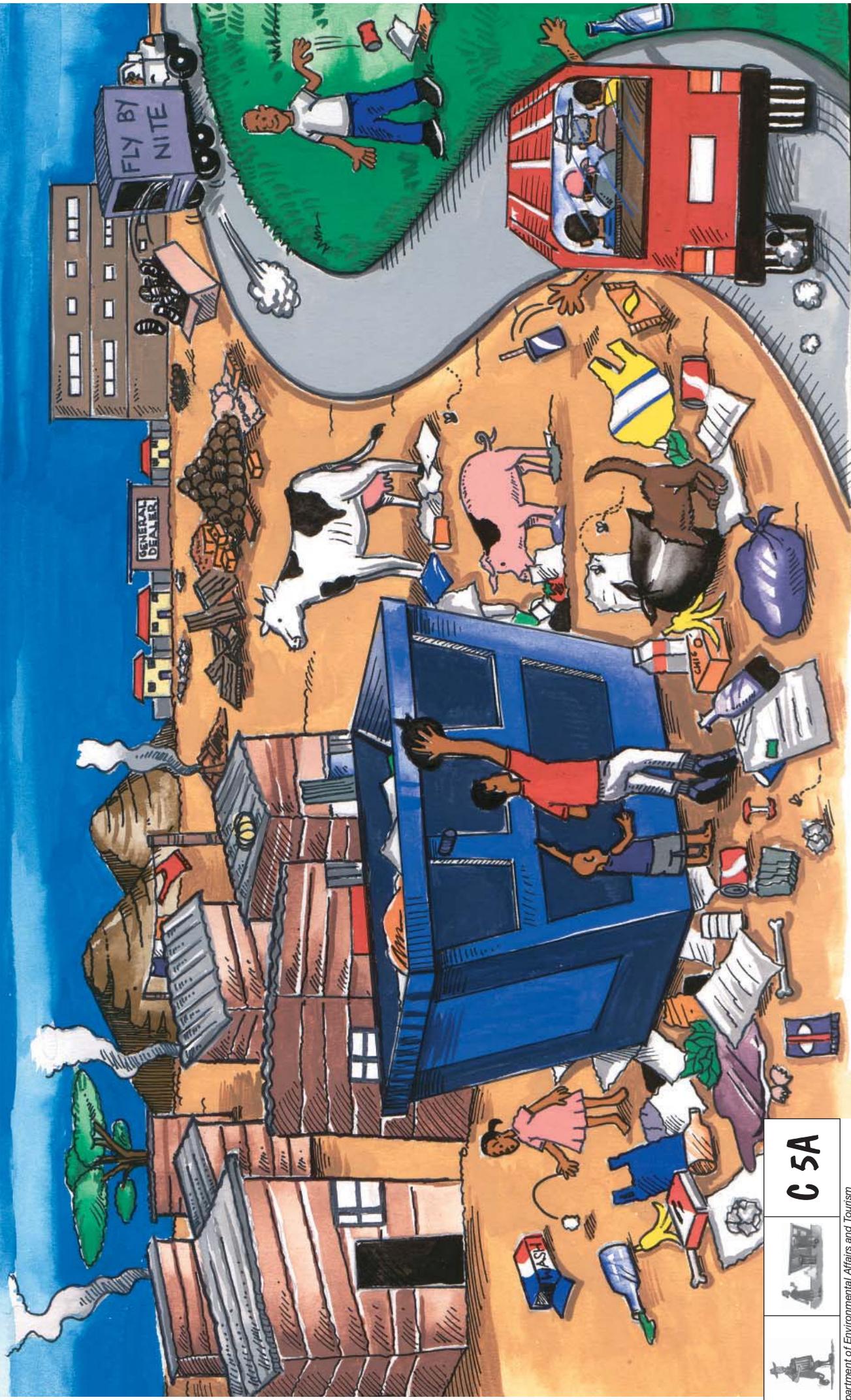


COMMUNITY PARTICIPATION & AWARENESS

DO YOU HAVE A COMMUNITY PROFILE	SELF CHECK ✓
• Has contact been made with the community formally and informally?	
• How do they need to be involved?	
• Do you have all the facts about : <ul style="list-style-type: none"> - How waste is handled - Existing community structures - Who key players are - Community resources and needs. 	
• Are people aware of channels to express needs or problems that they experience?	
• Have you explored options for action with them?	
• Is there a plan of action to include who does what, when, where and how?	
• Are people accepting the idea?	
• How willing are they to pay for a collection service?	
• How will you secure their commitment and accountability?	
• What is in it for them?	
• Are structures and channels of communication in place?	
• Do you know what community awareness and education programmes are needed?	
• Is there a mechanism of dealing with negative reactions?	



LACK OF, OR INADEQUATE, WASTE STORAGE SYSTEMS



C 5A



APPROPRIATE WASTE STORAGE SYSTEMS





5. HOW TO STORE THE WASTE FOR COLLECTION

IN THIS SECTION FIND OUT ABOUT :

- Different methods of storing waste in high density and unserviced areas
- Advantages and disadvantages of different collection systems



5.1 TEMPORARY ON-SITE CONTAINERS

Waste is stored temporarily at source (where it is generated) in several ways. This is called primary storage. Where the waste is collected from source and transferred to another type of container for transport to a waste disposal facility, this is called secondary storage (Cards C5A and C5B). Examples of containers that would be suited to a high density area are given in the Table below.

TEMPORARY ON-SITE CONTAINERS FOR HIGH DENSITY AND UNSERVICED AREAS

CONTAINER TYPE	ADVANTAGES	DISADVANTAGES
<p>PRIMARY STORAGE</p> <p>85 Litre plastic bags</p> 	<p>Inexpensive. Easy to distribute and collect.</p>	<p>Can tear and result in litter; dogs and other scavengers can access the waste unless elevated.</p>
<p>85 litre bins (plastic, steel or rubber) usually provided with 85 litre bin liners (plastic bags)</p> 	<p>Less prone to scavenging Relatively inexpensive.</p>	<p>Can be knocked over by scavengers and cause litter.</p>
<p>240 litre wheeled bins</p> 	<p>Strong and long-lasting, easy to handle and quick to load mechanically; weatherproof; discourages scavenging</p>	<p>Relatively expensive; susceptible to theft; requires automatic bin lifting equipment.</p>
<p>Informal use of used shopping bags, boxes etc.</p>	<p>Inexpensive, no distribution required.</p>	<p>Can cause litter.</p>
<p>SECONDARY STORAGE</p> <p>Skip containers</p> 	<p>Suitable larger quantities of waste e.g. from a shop, or at secondary collection points for labour-only contracts.</p>	<p>Not as suitable as primary collection points in community systems; sides are too high for easy disposal; waste is often set alight; and they can attract illegal dumping. Communities sometimes perceive them to be an inferior, lower standard of service.</p>

The choice of an on-site storage system will depend on a number of factors (e.g. the amount and type of waste and the accessibility of the storage area). There may also be a “mix “ of systems in the area to suit particular requirements, e.g. a household in an informal area would store rubbish in plastic bags, while a shop would store its waste in a larger container such as a skip.





5.2 OPPORTUNITIES FOR RE-USE, RECYCLING AND COMPOSTING

At this early stage the possibility of separating recyclable materials out of the waste stream for recycling and integrating the storage and collection functions with materials recovery for recycling must not be overlooked.

It is important to separate 'wet' from 'dry' wastes so that the dry materials that can be reused or recycled remain clean, thus retaining their value for recycling.

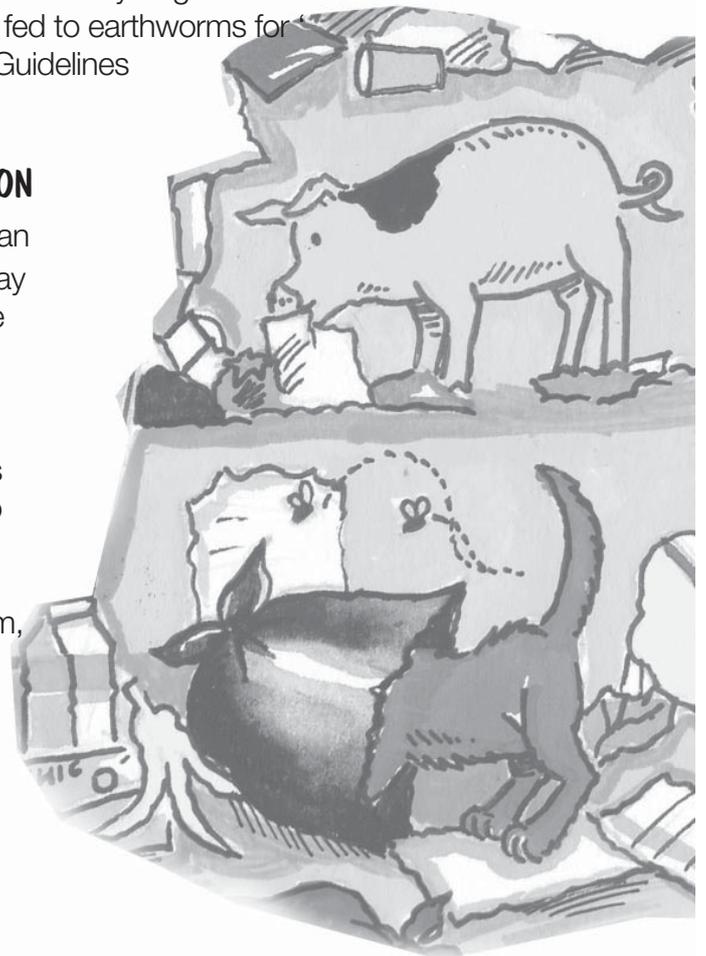
The 'wet' plant wastes can be composted or fed to earthworms for 'vermiculture' (composting with worms) See "Guidelines for Recycling document in this series).

5.3 HOW TO PUT OUT CONTAINERS FOR COLLECTION

Where a waste collection service operates in an area, residents must be made aware of the day of the week and time that their waste is to be collected. Waste containers put out too far in advance of the collection time are vulnerable to scavenging animals and in some places, other people. Not only can this cause unsightly litter problems, but it can also have negative health impacts.

If scavenging animals (like dogs) are a problem, a raised platform on a pole, out of their reach, could be the solution.

The municipality must educate people on how to participate effectively in the collection system, where to place their bag or container, at what time and on which day.



DO YOU KNOW?

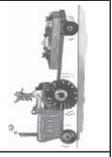
SELF CHECK



- What containers may be used for storing waste in high density and unserved areas
- Where these containers are used most effectively

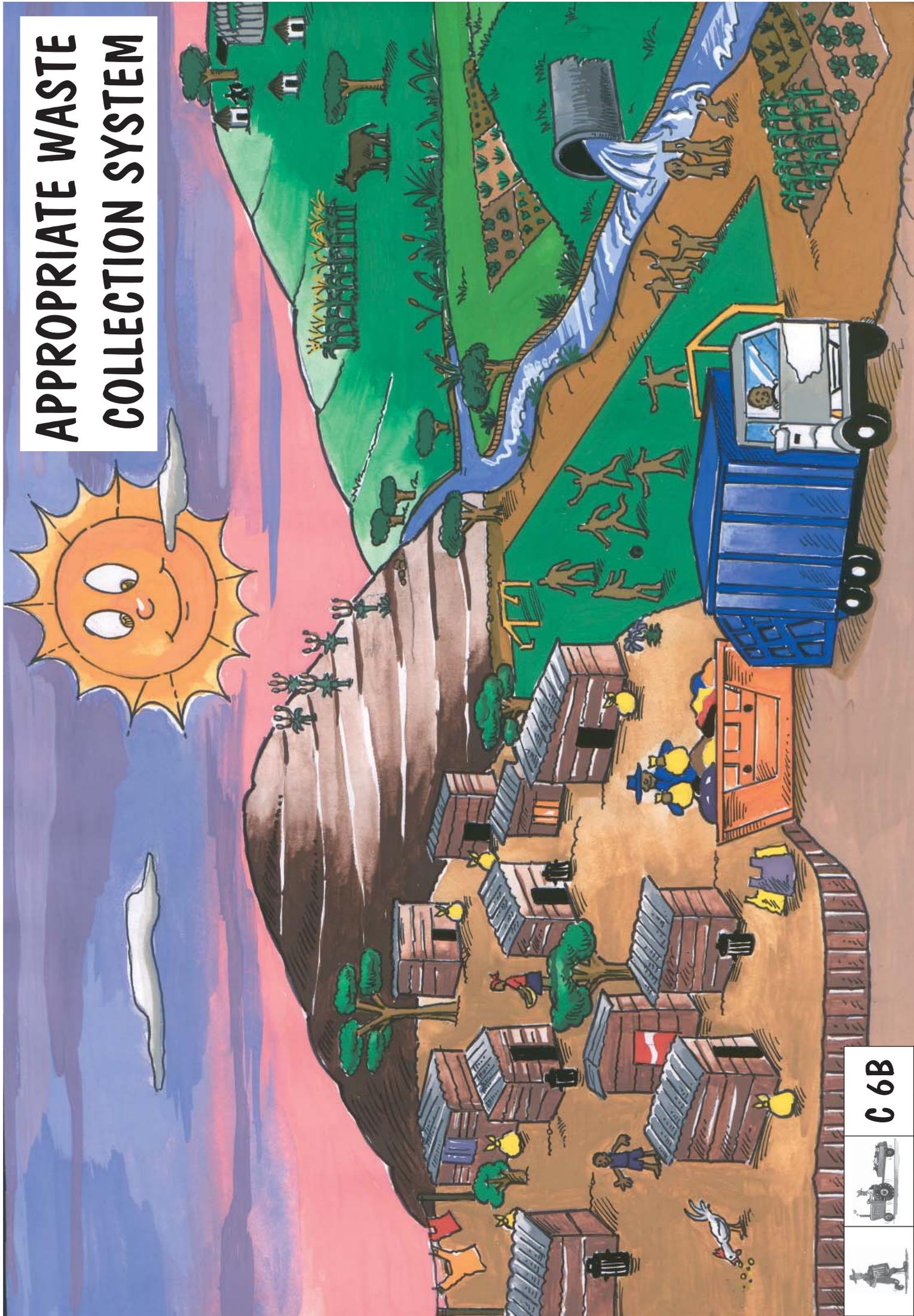


LACK OF WASTE COLLECTION SYSTEM



C 6A

APPROPRIATE WASTE COLLECTION SYSTEM





6. HOW TO COLLECT WASTE

IN THIS SECTION FIND OUT ABOUT :

- The basic and additional elements of waste collection system
- How these elements may be combined into a suitable waste collection system

6.1 BASIC ELEMENTS

These are the activities that have to be in place for waste to be collected (Cards C6A and C6B).

They are:-

- **Primary collection:** Collectors carrying waste from source to collection points (Secondary Collection Sites)
- **Secondary collection:** Loading of the gathered up waste from the Secondary Collection Sites
- Transport of the waste from the Secondary Collection Sites to the disposal site

There are a range of service options for waste collection:

Option 1 Household transfer waste to communal skips; waste in skips is transported to a formal landfill site. Note that placing of waste into communal skips by householders themselves has proved problematic and is not a favoured option even though it is the simplest, cheapest option. If the communal skip is too far away, not emptied regularly, or if children cannot reach to put waste into it, the collection point becomes littered and unhygienic (Card C5A and Card C6A).

Option 2 Organised door to door collection and transfer by a local contractor to a local collection point. e.g. communal skips; waste in skips is transported to a landfill site by the municipality or another contractor. This option is just under double the cost of Option 1 but is more convenient, creates jobs and can include street cleaning as well. (Card 5B and C6B).

Option 3 Kerbside collection by waste collection vehicles, usually once a week, and taken directly to landfill. This is the most expensive option (just more than double the cost of Option 1) since it requires specialised vehicles. This system is suitable for areas where the collection vehicle is able to have access to individual houses via well-maintained roads. Sometimes these three elements are combined into one e.g. labourers might collect waste directly from source (e.g. road verges) and put it into the collection vehicle, which transports it directly to the disposal site.

6.2 ADDITIONAL ELEMENTS

These are activities which could be added to the basic service to add value:

- Street sweeping and litter-picking along road verges and in public places
- Cleaning of open storm water drains
- Clearing of storm water catchpits
- Cutting of road verges
- Cutting of open spaces

- THERE ARE MANY WAYS TO COLLECT WASTE.
- EACH WAY COMBINES THE ESSENTIAL
- ELEMENTS IN DIFFERENT WAYS



6.3 JOB CREATION OPPORTUNITIES

In all the cases noted above, the waste collection service can be provided by the municipality itself ("in-house" service), or by outsourcing (contracting the service out to a private company), or by a combination of the two. For example, community contractors might collect and take the waste to the secondary collection site. The municipality would collect and transport the waste by vehicle from there to the disposal site. In some areas communities may organise their own waste collection system independently of the municipality.

6.4 HEALTH AND SAFETY MEASURES

Should there be any hazardous or medical waste generated in the area, then this must be provided for in the collection system, either with a completely separate service, or as a separate component of the general service. In most cases, the collection and disposal of hazardous or medical waste is outsourced to specialist contractors.

NOTE: Waste collection workers must be provided with adequate protective clothing (safety boots, gloves, overalls, helmets and goggles for brush cutter operators, etc.). It is important that this is allowed for, and strict specifications for personal protective equipment must be included in contract documentation in the case of outsourcing.

DO YOU KNOW?

SELF CHECK



- What is a primary collection system?
- What is a secondary collection system?
- Some additional elements that could be added to a basic waste collection system to enhance the service.



APPROPRIATE WASTE TRANSPORT VEHICLES FOR VARIOUS HAULAGE DISTANCES

0.5km



WHEELBARROW

2km



CART

5km



TRACTOR-TRAILER

15km



CLOSED TRUCK

20-25km



TIP PAK VEHICLE

30km



MOBILE COMPACTOR VEHICLE

30-90km



ROLL-ON ROLL-OFF VEHICLE



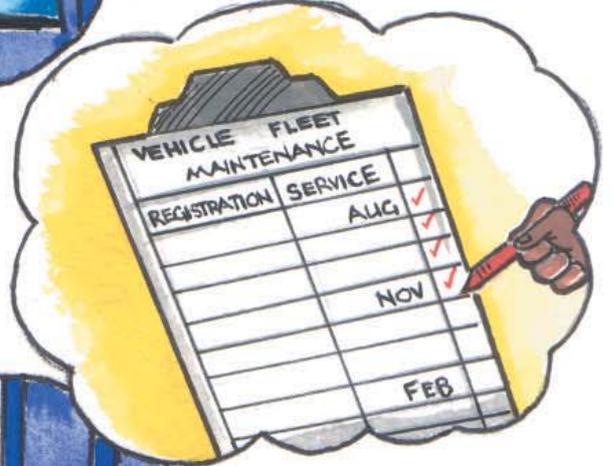
C 7A

COLLECTION VEHICLE MAINTENANCE & EFFICIENCY

REGISTRATION



VEHICLE SERVICING



DRIVER TRAINING



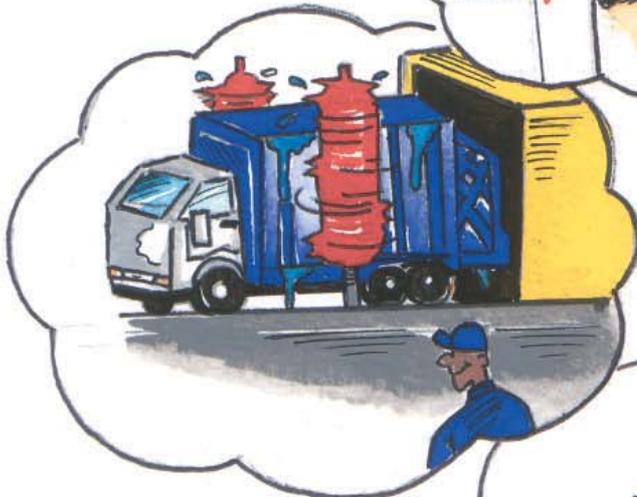
VEHICLE MAINTENANCE & REPAIR



SAFETY VEHICLE CHECK



VEHICLE WASHING



OPTIMISE FUEL CONSUMPTION

7. HOW TO TRANSPORT THE WASTE



IN THIS SECTION FIND OUT ABOUT :

- The different methods of transporting waste
- Advantages and disadvantages of each method
- How to choose the most suitable vehicle



7.1 PRIMARY COLLECTION AND TRANSPORT

Primary collectors in high density areas transport the waste to secondary collection sites in one of the following ways:

- Carry by hand
- Wheeled bins
- Handcarts or other trolleys
- Light Delivery Vehicle / small truck

7.2 SECONDARY COLLECTION AND TRANSPORT

Collection from secondary collection sites is done by vehicle. The vehicle can vary from a half ton Light Delivery Vehicle ('bakkie') to a mobile compactor vehicle, and includes tractor-trailers, tip trucks and other modified trucks.

7.3 WHAT TO CONSIDER WHEN CHOOSING THE MOST SUITABLE VEHICLE:

Many factors directly affect the choice of vehicle. These include:

7.3.1 TERRAIN AND ROAD ACCESS CONDITIONS

The condition of access roads (or lack of them!) will obviously be a limiting factor on any choice. There are densely settled areas that can only be serviced by tractor-trailer combinations. Other areas have good surfaced roads, but space and turning limitations due to the width of the roads mean that large mobile compactor vehicles cannot be used.

7.3.2 WASTE DENSITY

Waste density can vary greatly, but is generally much higher in poorer, informal communities, where a larger proportion of the waste is "wet" organic waste, such as vegetable peels. Waste from densely settled communities often has a high soil and ash content. The density of waste generated can significantly affect the choice and viability of a collection vehicle. The choice of vehicle size and power must also be suited to the waste density e.g. a mobile compactor vehicle is not suited to very dense waste with a high ash content: a non-compaction vehicle such as a tipper truck or tip pak vehicle should rather be used.

7.3.3 WASTE TYPE

Waste in informal areas is often both abrasive (sand and ash) and corrosive (decomposing food or vegetable matter), requiring the use of robust and easy-to-maintain vehicles.

7.3.4 SERVICE FREQUENCY AND WASTE GENERATION RATES

How often the area is to be serviced and the rate at which waste is generated in an area will determine the vehicle productivity and load speed choice.

7.3.5 HAUL DISTANCES TO LANDFILL/TRANSFER STATION

How far and how often waste has to be transported to the disposal site will also determine vehicle type. For example, a tractor-trailer combination will be completely unsuitable where frequent, long trips to a disposal site are required whereas a mobile compactor vehicle would be appropriate (Cards C7A and C7B).





7.3.6 THE POSSIBILITY OF USING A TRANSFER FACILITY MUST ALSO BE CONSIDERED

(See Section 9: 'How to choose the most suitable systems').

7.3.7 CREW SIZE FOR LOADING/UNLOADING

For Example: non-compaction vehicles require a larger crew than compaction vehicles.

There is much specialist literature available on the detailed analysis and costing of the most suitable vehicle to use in a particular situation (UN Centre for Human Settlements (Habitat) Undated).

A detailed analysis will not be given here.

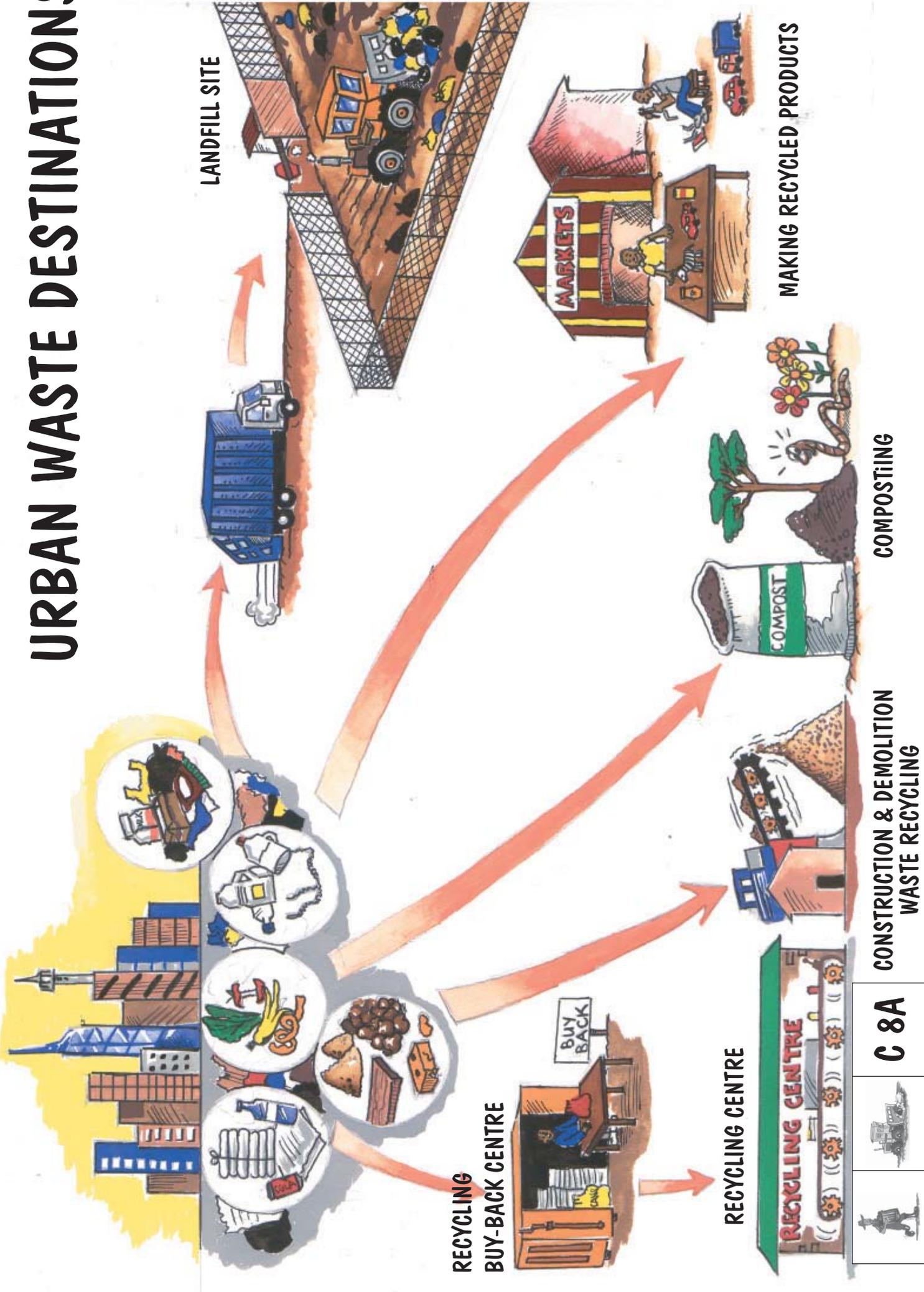
DIFFERENT TYPES OF COLLECTION VEHICLES



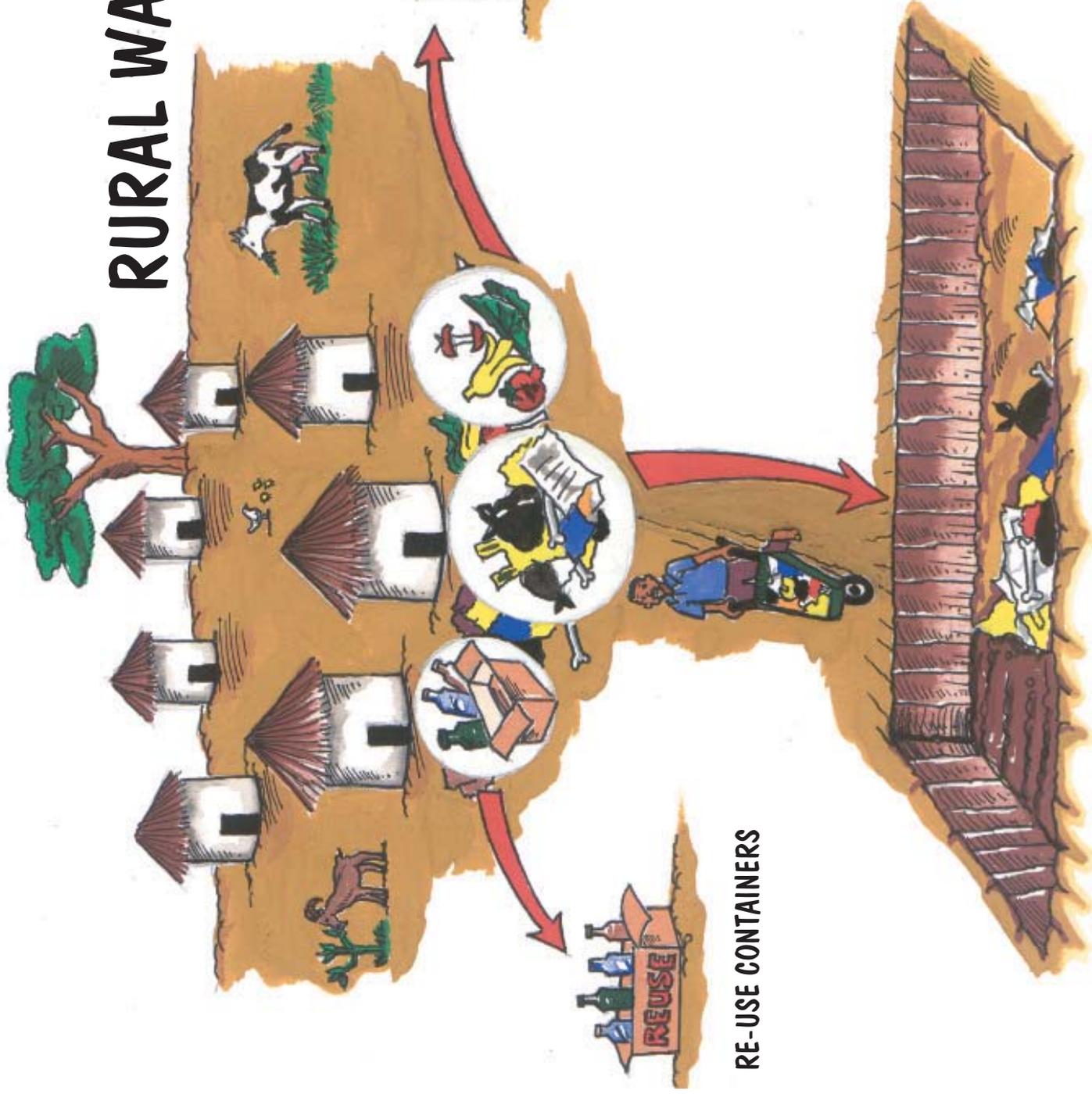
DO YOU KNOW?	SELF CHECK
<ul style="list-style-type: none"> The different types of vehicles that are used for transporting waste 	✓
<ul style="list-style-type: none"> What factors to consider when choosing the most suitable vehicle for waste collection and transport 	



URBAN WASTE DESTINATIONS



RURAL WASTE DESTINATIONS



RE-USE CONTAINERS

PUT WASTE IN TRENCH AND COVER

GARDEN WITH COMPOST



C 8B



8. WHERE DOES THE WASTE GO?

IN THIS SECTION FIND OUT ABOUT :

- What ultimately happens to waste in an urban situation
- What happens to waste in a rural situation

Municipalities and communities should first explore opportunities for re-use, viable recycling and composting (Refer to the Recycling Guideline in this series) when planning a waste collection system for any area. The collection system selected should accommodate these activities. Whatever waste remains will need to be disposed of responsibly and in a manner appropriate to the context, whether in an urban or a rural situation (Card C8A and C8B).



8.1 URBAN WASTE DESTINATIONS (Card C8A)

In an urban situation the waste destinations could be:

- Re-use
- Recycling facility
- Composting facility
- Landfill:

The waste which cannot be reused or recycled is collected and transported to a waste disposal site (also called a landfill site) where it is deposited, spread, compacted and covered with soil in a strictly controlled way so that it does not cause a nuisance or result in harm to human health or the environment.

8.2 RURAL WASTE DESTINATIONS (Card C8B)

In a rural situation where a community is more than 20km away from an urban centre and / or where road access is difficult, the waste destinations could be:

- Re-use
- Composting or trench gardening with degradable waste
- Buried in a controlled way in a backyard pit or communal trench, where the waste is deposited, sometimes burned under controlled conditions to reduce the volume (this practice is not desirable in dense settlements as it can cause air pollution), compacted manually and covered with soil (DWAf 1998).



DO YOU KNOW?

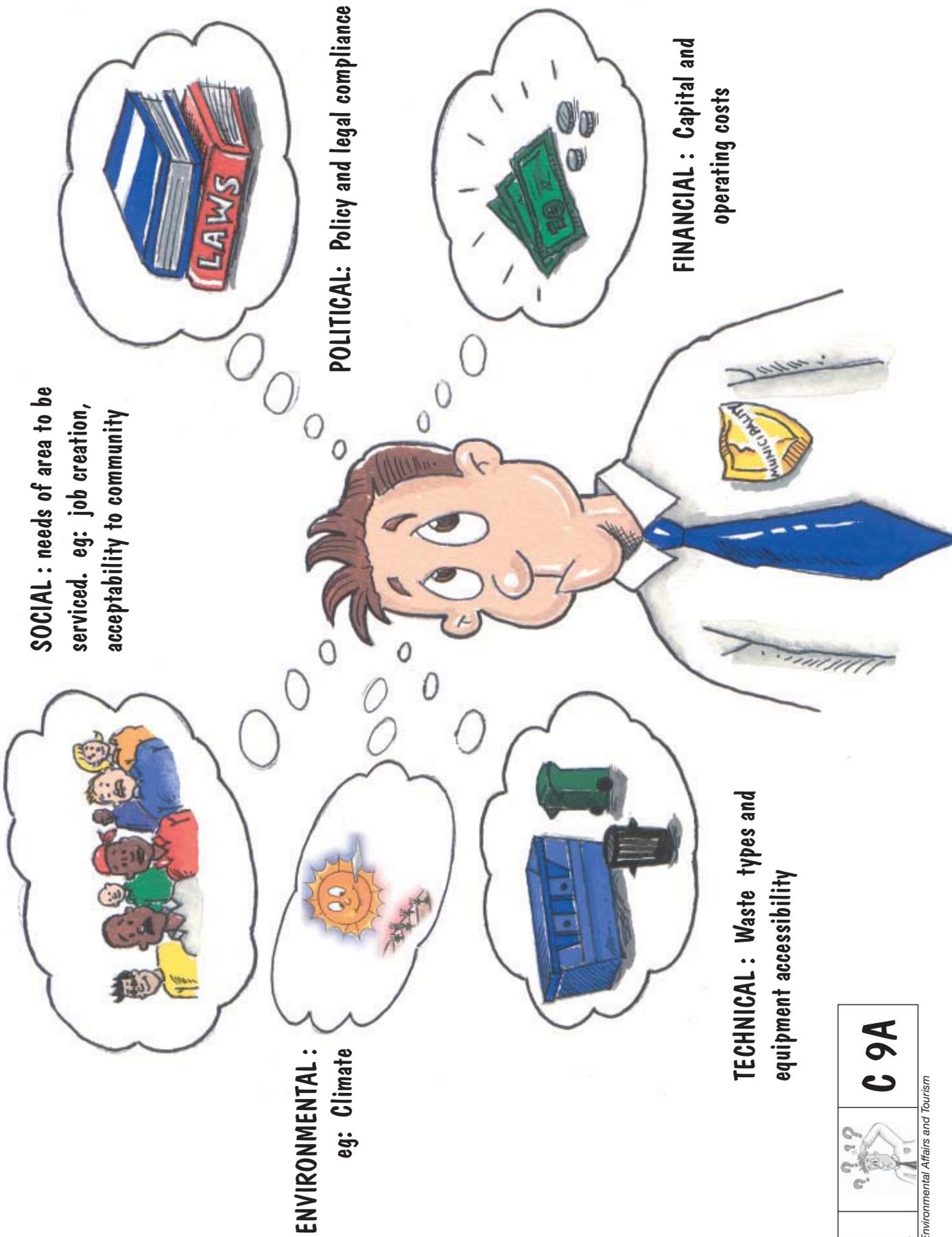
SELF CHECK



- What happens to waste that comes from a town or city?
- What happens to waste that is generated from households away from towns or cities?

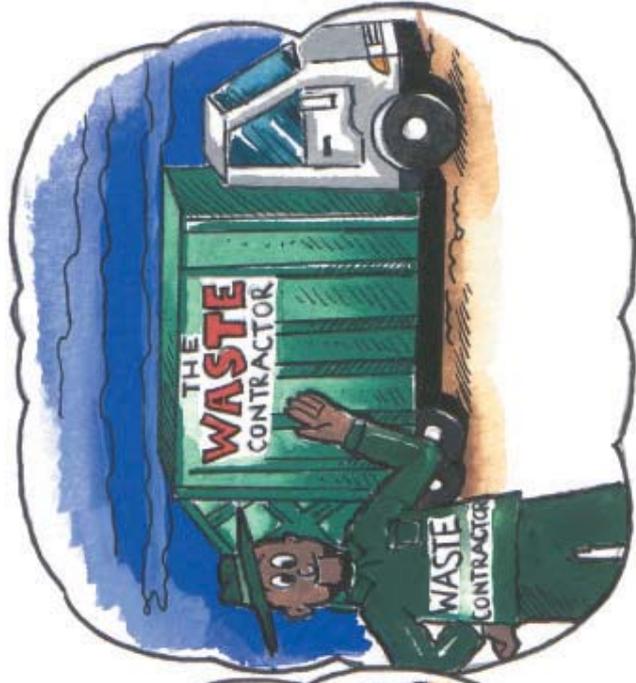
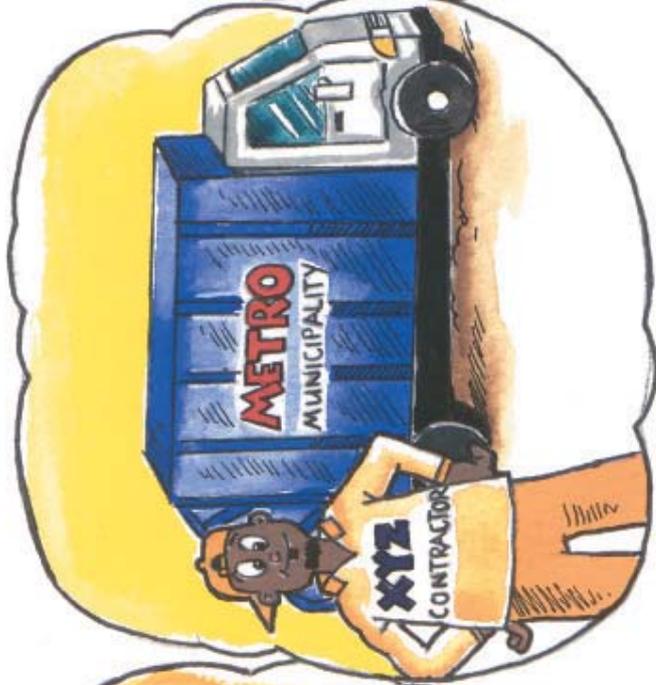


FACTORS IN CHOOSING A WASTE COLLECTION SYSTEM



C 9A

OPTIONS FOR PROVISION OF A COLLECTION SERVICE



“IN-HOUSE” MUNICIPAL SERVICE

MUNICIPALITY PROVIDES FULL SERVICE:

- Vehicles and equipment
- Staff
- Facility : buildings and land

MUNICIPAL SERVICES PARTNERSHIP

MUNICIPALITY ENTERS AN AGREEMENT WITH AN EXTERNAL SERVICE PROVIDER:

- Municipality usually supplies the facility or buildings and some or all of the vehicles, equipment and staff
- Service provider supplies the service and some, or all of the equipment and staff depending on the agreement
- The external service provider is usually a private company, or it could be another public sector, or community based organisation

PRIVATE CONTRACTOR

PRIVATE SERVICE PROVIDER SUPPLIES THE WHOLE SERVICE, INCLUDING VEHICLES, EQUIPMENT AND STAFF:

- Private waste companies operate independently of the municipality
- Some communities also organise their own waste collection service independent of the municipality



C 9B



9. HOW TO CHOOSE THE MOST SUITABLE SYSTEMS

IN THIS SECTION FIND OUT ABOUT :

- What **system selection criteria** are used to choose the most suitable waste collection system
- The options for the provision of a collection service

It is obvious that there are many different ways of combining methods to optimise the management of waste. Possible alternative collection systems need to be identified and evaluated. The municipality must assess its own capacity to evaluate these systems. Specialist companies could be employed to do the evaluation, or other municipalities may be asked to help.

9.1 THE FACTORS WHICH AFFECT THE CHOICE OF SYSTEM:

These include the following - Card C9A

9.1.1 TECHNICAL FACTORS

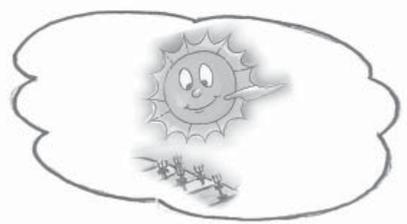
- Accessibility : how easy it is to reach the waste: this depends on roads, terrain (e.g. is the area flat or are there steep hills), density of dwellings (how close together homes are) etc.
- Waste type and quantities
- Type and standard of service: storage (where waste is stored), frequency (how often it is collected) etc.
- Type of collection equipment needed (containers, vehicles, equipment)
- Estimated staff/labour resources needed (especially for "In-house" option)
- Availability of secondary collection sites (if necessary)
- Availability of existing equipment and staff (if any)



9.1.2 FINANCIAL FACTORS

- Capital costs of each alternative - money needed to start the system up and buy equipment and vehicles
- Operating costs of each alternative - money needed to keep the system running
- Costs of supervision and monitoring - money needed to make sure the system operates correctly
- Expected tariff recovery - anticipated costs which may be recovered from the community (either through new charges or additional charges to existing rates)
- Possible cross-subsidisation - Higher charges which may be recovered from business or industry to make charges to communities lower.
- The possible use of a transfer facility - where the disposal site is far from the point of collection, or where vehicle access to households is difficult.





9.1.3 SOCIAL FACTORS

- Job creation opportunities - wherever possible, employment opportunities must be provided.
- Community perceptions of alternatives - consultation of communities is important in the choice of an acceptable waste collection system

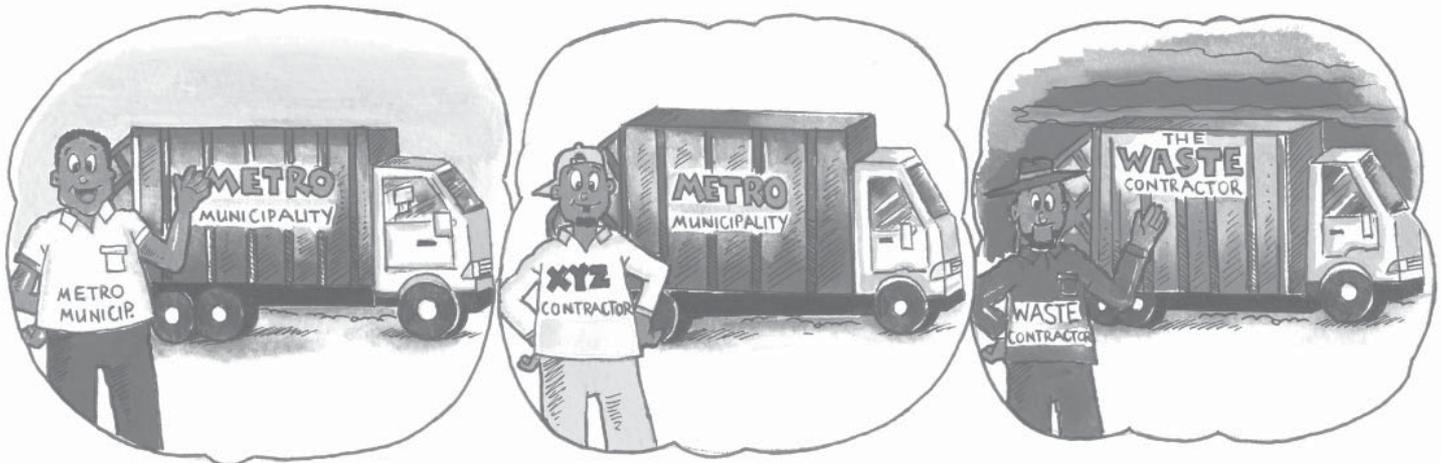
9.1.4 POLITICAL FACTORS

- Local political dynamics - Councillors must support the system and make resources available for it to be successful.
- Existing policies - policy principles must be applied.
- Equalization of service levels - previously disadvantaged areas which may have had lower service levels must now receive an equivalent level of service as all other areas.

9.1.5 ENVIRONMENTAL FACTORS

- Climate and Frequency of service in areas where there is a hot humid climate, coupled with communities that use a predominance of fresh unprocessed foods, require collections at more frequent intervals.
- In areas where there are many roaming dogs, a kerbside collection service would have to include an appropriate type of storage container or a raised platform for bags.

9.2 SERVICE DELIVERY OPTIONS - CARD C9B



9.2.1 THE MUNICIPALITY PROVIDES THE FULL SERVICE ("IN-HOUSE" OPTION)

In this instance the municipality provides all the resources (labour, equipment and plant) necessary for the service. This may be the best option where the municipality has existing resources available or, if not, it might employ additional staff and purchase all (or extra) vehicles and equipment. Political pressure or municipal policies may also dictate the use of this option.

9.2.2 MUNICIPAL SERVICES PARTNERSHIPS (MSPs)

The Municipal Systems Act sets out the procedure to establish MSPs

9.2.2.1 COMMUNITY COLLECTION PROGRAMMES IN PARTNERSHIP WITH THE MUNICIPALITY

In this instance the municipality works together with the community. The community itself undertakes the primary collection, with the municipality





undertaking the disposal of waste from the secondary collection sites. The municipality may also provide basic tools and equipment to the community. This requires a high level of involvement from the municipality and capacity building within the community. *This is a type of municipal service partnership.*

9.2.2.2 AWARD CONTRACTS TO INDIVIDUALS/CONTRACTORS (“CONTRACTED OUT” OPTION)

In this instance, the municipality contracts (“out-sources”) all or part of the service to a private contractor. The size and nature of the contract can vary greatly, from individual “one-person” contractors doing primary collection from a small number of houses, to major contractors providing a full service, including collection, transport and disposal. This option is suitable where the municipality has limited or no resources of its own, and does not wish to develop a new department to undertake this service. This is a cost effective option with more detail given below in the chapters on “Identifying a Contractor”, and “ How to draw up a Collection Contract”. *This is a type of municipal service partnership.*

9.2.2.3 COMBINATION OF THE ABOVE

A system that incorporates some, or all, of these options, may be the most effective way to provide the service.

9.3 OPTIONS WHICH OPERATE INDEPENDENTLY OF THE MUNICIPALITY

- There are communities that organize their own waste collection service independently of the municipality.
- Private waste companies operate some services independently of the municipality. eg: industrial waste collection.



DON'T FORGET TO CONSIDER A TRANSFER FACILITY

The economic implications of a transfer facility must be considered in any financial analysis of possible waste collection systems!

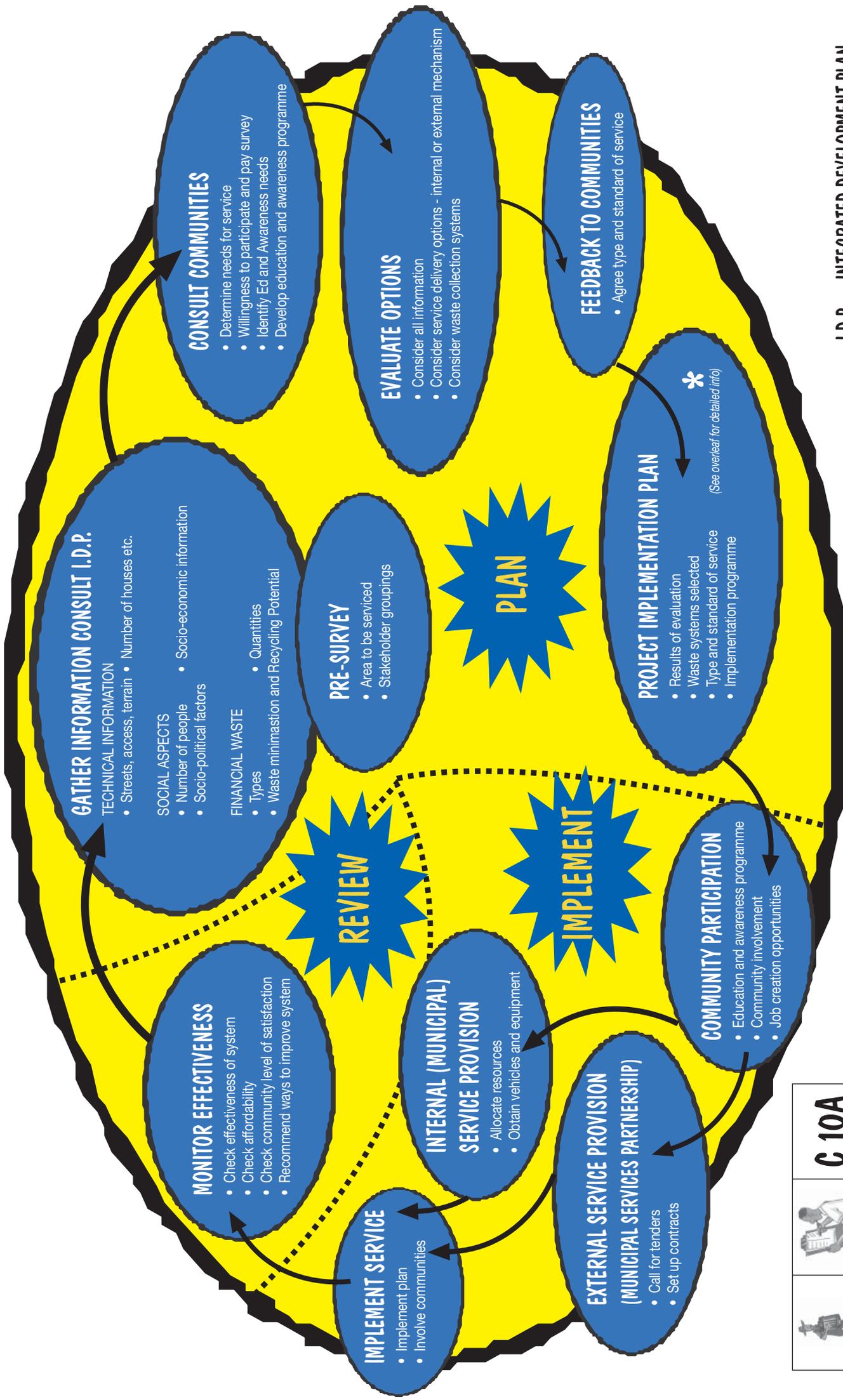
One of the crucial financial factors to consider is the question of a Transfer Facility. Providing a transfer facility may sometimes be the only way of providing an affordable service.

For Example - An area with poor or non-existent access roads might be far from the nearest disposal site. Tractor-trailer combinations might be the only possible way to collect waste in the area, but their slow speed on roads would mean that the trip time from the collection area to the disposal site would take too long. Extra tractor-trailers might then be necessary, but this would make the service expensive and inefficient. A transfer facility close to the area being serviced, where the tractors could tip their waste into more conventional road vehicles (such as trucks, possibly ones which could compact the waste), would make the service far more efficient. It might even make it affordable to collect waste from an area where it would otherwise be too expensive to do so.

DO YOU KNOW?	SELF CHECK
• What factors must be taken into account in choosing the most suitable waste collection system?	✓
• What the management options are for a municipality to deliver a waste collection service	



PLAN, IMPLEMENT, REVIEW, REVIEW CYCLE FOR A WASTE COLLECTION SYSTEM



* PROJECT IMPLEMENTATION PLAN

1. INTRODUCTION

2. RESULTS OF INFORMATION SURVEY

3. POSSIBLE SERVICE OPTIONS

4. EVALUATION OF OPTIONS

- Technical Evaluation
- Financial Evaluation
- Social Evaluation
- Political Evaluation
- Environmental Evaluation



5. SELECTED OPTION

- Type and standard of service
- Waste system chosen
- How the system will operate
- Resources required
 - Machines
 - Labour
 - Equipment
- Implementation tasks and dates
- Budget costing

6. MONITORING AND REVIEW SYSTEM



10. IMPLEMENTING THE COLLECTION SYSTEM



IN THIS SECTION FIND OUT ABOUT :

- How to prepare a Project Implementation Plan

Once a suitable system is chosen (Card C10A)
a Project Implementation Plan should be drawn up (Card C10B)

10.1 PROJECT IMPLEMENTATION PLAN

This plan should be in line with any policies, principles, or plans contained in the municipality Integrated Waste Management Plan and Development Plan and would cover the following aspects:

10.1.1 INTRODUCTION AND BACKGROUND

It is important to record all the background information that led to the investigation of service options to ensure that later evaluations of the effectiveness of the service are put into context.

10.1.2 RESULTS OF INFORMATION SURVEY

All the information gathered (as noted in Section 3 - "Find out more about the waste stream") is listed in a clear tabulated format. This must include the information gathered as part of the community participation process (i.e. the community profile including "willingness to participate" survey). Again it is important to note that effective later evaluation is not possible without knowing the data on which the original decisions were based.

10.1.3 POSSIBLE SERVICE OPTIONS

This lists all the service options considered (and possible combinations), giving brief reasons for their consideration.

10.1.4 EVALUATION OF OPTIONS

10.1.4.1 TECHNICAL EVALUATION

This section evaluates the technical feasibility of the options considered (with respect to accessibility, waste quantities and type, anticipated type and frequency of service, haul distances, site availability, etc). All technically unfeasible options are eliminated at this stage.

10.1.4.2 FINANCIAL EVALUATION

The remaining technically feasible options are now costed and compared. This includes capital and operating costs, start-up costs, costs of monitoring and supervision, possible cross-subsidisation, and possible grant funding (generally for initial implementation only). Crucial to correctly estimating costs for each system is to calculate the level of resources necessary for each option. Choice of vehicles is dealt with elsewhere, and for choice





of plant (machinery), specialist advice should be sought. Estimating required labour levels can be difficult for an area which has never received a service. Labour levels vary greatly, depending on terrain, access and service frequency. Investigating similar service provision in neighboring areas may be of assistance, and a clear method statement for estimating labour levels should be included.

10.1.4.3 SOCIAL EVALUATION

All of the community dynamics which impact on the final decision should now be noted and considered - (expectations of service levels, anticipated tariff recovery levels, job creation opportunities, etc).

10.1.4.4 POLITICAL EVALUATION

All of the policy issues (national and local) which impact on the final decision should now be noted and considered - (outsourcing, preferential procurement, preferences for local contractors, consultations with organised labour etc).

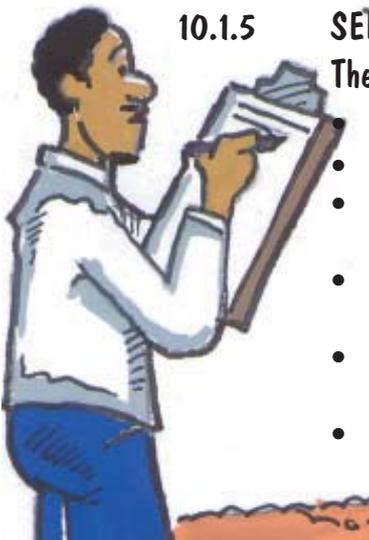
10.1.4.5 ENVIRONMENTAL EVALUATION

Identified environmental factors should be taken into account in the choice and the Best Practicable Environmental Option (BPEO chosen).

10.1.5 SELECTED OPTION

The plan now reports on the specific option selected, clearly stating:

- Type and standard of service
- System chosen
- Methodology - a clear method statement detailing how the system will operate
- Resources required - plant, labour and equipment. Any capital works (e.g. transfer stations) must also be noted
- Implementation programme/key dates - key target dates for the implementation of the programme (including future review dates)
- Budget costing - a detailed breakdown of start-up costs, capital works (if any), operating costs, supervision and monitoring costs must be calculated and noted



10.1.6 MONITORING AND REVIEW SYSTEM

- A plan detailing how the system will be supervised and monitored must be included.

DO YOU KNOW?	SELF CHECK ✓
<ul style="list-style-type: none"> • How to prepare a Project Implementation Plan for establishing an appropriate waste collection system. 	
<ul style="list-style-type: none"> • What would the plan have to include? 	



SELECTING A COMMUNITY CONTRACTOR

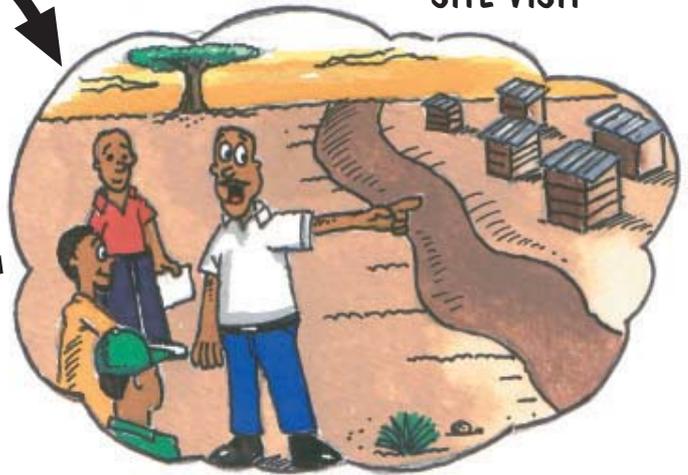
PUBLIC ADVERT



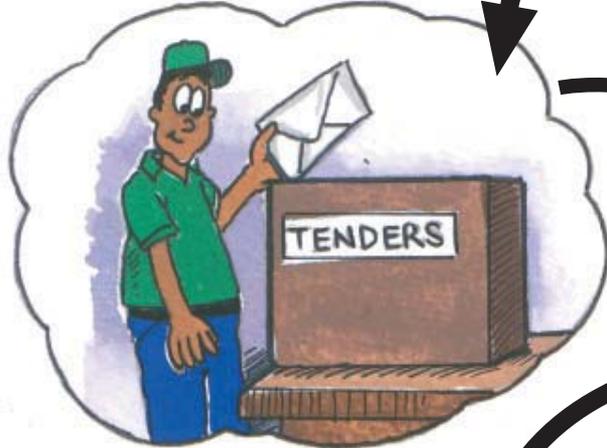
TENDER WORKSHOP



SITE VISIT



TENDER SUBMISSION



TENDER ADJUDICATION



TENDER AWARD



CONTRACT

C 11A



CRITERIA FOR SELECTION OF COMMUNITY OR S.M.M.E CONTRACTOR





11. HOW TO IDENTIFY SUITABLE CONTRACTORS

IN THIS SECTION FIND OUT ABOUT :

- **Preferential Procurement Policies**
- **How to choose community contractors**



There is huge interest in many communities in individuals starting their own businesses. Any call for tenders will elicit a great response, especially from potential contractors with little experience (Card C11A). The municipality must decide if they wish to stipulate minimum criteria for tenderers to qualify to tender.

Such criteria should allow emerging contractors the chance to start their own small enterprise but should also require some capacity in the potential contractor in terms of experience, possibly as a subcontractor on a similar contract (Card C11B).

11.1 PREFERENTIAL PROCUREMENT POLICIES

Restricting tenderers to a particular community or region is a frequent cause of conflict (and sometimes legal challenges), and is better handled by awarding preference points to preferred groups. This is specifically allowed for in the Preferential Procurement Policy Framework Act.



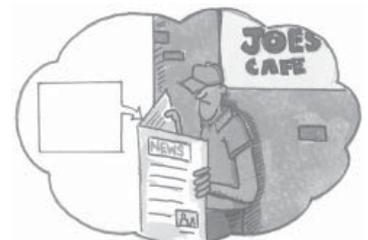
PREFERENTIAL PROCUREMENT POLICY FRAMEWORK ACT

The Preferential Procurement Policy Framework Act (Act 5 of 2000) requires that all organs of state, including national and provincial departments and municipalities, must determine their preferential procurement policies and implement them within the Act's framework and Regulations. Preferential Procurement is a means of giving some tenderers a better chance of winning a tender. A preference point system is followed which allows for more points to be given to tenders which, for example, may include persons historically disadvantaged by unfair discrimination on the basis of race, gender or disability or which promotes any specific goal in municipal policy.

11.2 SELECTING A COMMUNITY CONTRACTOR *(See Card C11A)*

11.2.1 ADVERTISE IN A PUBLIC PLACE OR NEWSPAPER

A more open policy would ensure that the widest possible audience is made aware of any tender.



11.2.2 TENDER WORKSHOPS (See Card C11B)

A series of workshops could then be held to explain the implications of taking on this sort of enterprise. Adjudication criteria, which would eliminate unsuitable tenders, would be spelt out these workshops. Some guidance on pricing methods and systems and how to put together the tender is given.



11.2.3 SITE VISIT

Those who are interested in putting in a tender to implement a collection system must attend a site visit to see the area requiring the service.



11.2.4 TENDER SUBMISSION

Tenderers prepare their documents and quotes and are required to submit them to a particular place by a particular time on a specified date.



11.2.5 TENDER ADJUDICATION (See Section 12.4)

Municipalities, or their consultants, go through all the tenders, allocate points, and decide on the preferred tender.



11.2.6 TENDER AWARD (See Card C12A)

The municipality awards the tender to the successful tenderer.



11.2.7 CONTRACT (See Section 12.5)

The municipality, or its legal advisors, draws up a contract with the successful individual or organisation and monitors their performance.



DO YOU KNOW?		SELF CHECK ✓
•	What steps must be taken in identifying a suitable contractor?	
•	What are your municipality's preferential procurement policy requirements?	



STEPS IN THE ADJUDICATION OF TENDERS

1. ALL PARTS OF TENDER CORRECTLY COMPLETED AND SIGNED

2. COMPULSORY SITE MEETING ATTENDED

3. ALL FORMS OR LETTERS REQUIRED ARE ATTACHED

4. BILL OF RATES AND QUANTITIES IS CORRECT

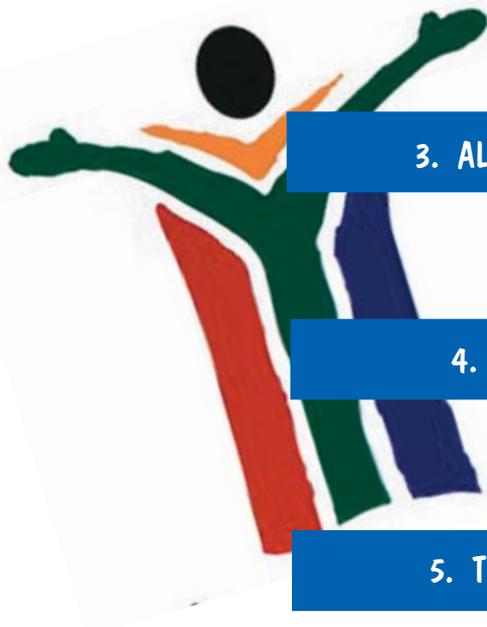
5. TENDER PRICE IS WITHIN THE SPECIFIED RANGE

6. GRADE THE TENDERS ACCORDING TO PREFERENTIAL POINTS WHICH REFLECT THE MUNICIPALITY'S PROCUREMENT POLICY AND LEGAL REQUIREMENTS

7. SHORTLIST THE LOWEST TENDERS WITHIN THE SPECIFIED RANGE

8. INTERVIEW THE SHORT LISTED TENDERERS

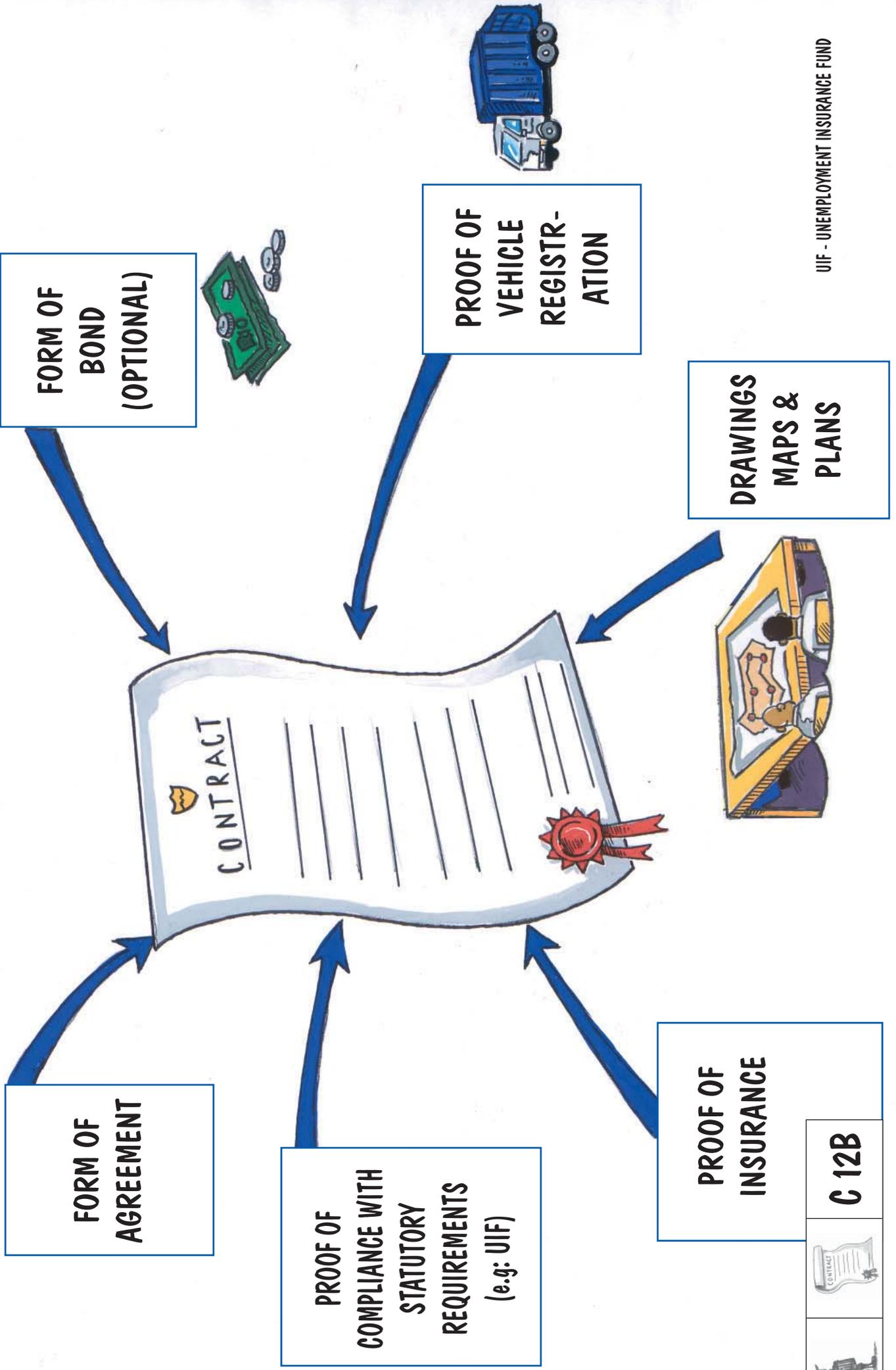
9. AWARD TENDER TO THE TENDERER WITH THE HIGHEST ADJUDICATION SCORE



C 12A



CONTENTS OF A COLLECTION SERVICE CONTRACT





12. HOW TO SET UP A COLLECTION CONTRACT

IN THIS SECTION FIND OUT ABOUT :

- What to include in a tender document
- How to draw up a Waste Collection Contract
- What elements should be included in the Contract Document/s

IF THE MUNICIPALITY DECIDES TO OUTSOURCE THE WASTE COLLECTION SERVICE, A FORMAL CONTRACT WILL HAVE TO BE DRAWN UP WITH THE CONTRACTOR/S INVOLVED.

The law says that any national, provincial or government authority that draws up a service contract with the private sector (company or individual) must follow the relevant procurement regulations. This will almost always involve calling for tenders.

When drawing up tender documents, all relevant legislation as well as the municipality's policies (e.g. regarding preferential procurement) must be taken into account (See section 11).

Again, the municipality must assess its own capacity to draw up tender documents. If necessary, experts should be called in to undertake this task. Serious technical and financial problems can arise when incorrect or inappropriate documentation is used. Municipalities should make tender documentation as simple as possible, so that inexperienced tenderers are not disadvantaged.

All tenders must be drawn according to the municipality's procurement policy. Again it must be emphasized that the municipality should assess its own capacity to undertake this aspect of the work, and, if necessary, call on external expertise to assist.

12.1 THE TENDER DOCUMENT

As a guide, the tender document should include:

12.1.1 CONDITIONS OF TENDER

These would cover all the conditions under which the tenderer makes their offer. This usually includes standard conditions that the municipality uses on all tenders, together with special conditions, which are applicable to that particular tender (e.g. attendance at compulsory workshops or inspections).

12.1.2 GENERAL CONDITIONS OF CONTRACT

These are usually standard conditions drawn up by the municipality or a legal body (e.g. S.A. Institute of Civil Engineers) and are recognised by government and industry. These conditions cover the legal provisions of the contract itself.

12.1.3 SPECIAL CONDITIONS OF CONTRACT

These are legal provisions which are specific to a particular only to this contract, or are not covered in the General Conditions of Contract (e.g. minimum wage rates which may apply)

12.1.4 SPECIFICATIONS

The specifications make clear the type of service to be provided, with exact specifications concerning things such as the types of bags or containers to be provided, protective clothing to be used by all workers and insurance of vehicles and third parties.

12.1.5 SCHEDULES OF RATES AND PRICES

These schedules are required where the contract price is determined by unit rates for work done (e.g. cost per house per week to collect) as opposed to collection contracts based on a lump sum. This schedule would include all weekly and/or monthly quantities for the service provided, together with a provision for fixed costs and occasional work done during the duration of the contract. The tenderer would be required to price this schedule, which would then be the basis for payment.





12.1.6 FORMS TO BE COMPLETED BY TENDERER

These are blank forms which the tenderer must complete when submitting the tender.

FORMS TO BE COMPLETED BY TENDERER

- Form of Tender
- Attendance at compulsory site meeting/s
- Targeted Procurement Forms (where applicable)
- Schedule of Experience
- Schedule of Vehicles and Plant
- Alterations by Tenderer (only if allowed)
- Authority to sign Tender
- Declaration of Good Standing - VAT and Income Tax
- Any other forms which may be required in terms of policy or local regulations.
- The tender documentation also includes blanks forms, which must be completed only after award of the contract (See below).
- Drawings, Maps or Plans
Any plans, maps, layouts or drawings that may help the tenderer price the tender, or make contract conditions clear, should be included here.



12.2 TENDER WORKSHOPS

It is strongly recommended that compulsory tender workshops be held for all first-time tenderers. The level at which the workshop is targeted will depend on the level of expertise among the tenderers. It is essential to ensure that all parties are aware of the implications of submitting a tender to avoid later conflict. Such a workshop should seek to explain (in simple terms) how the tender process works, contractual implications, and guide lines on pricing methods and systems.



12.3 TENDER SITE INSPECTION

A separate tender site inspection can be held for all tenderers (including experienced tenderers who have no need to attend the workshop) to inspect the site and ask questions relating to the tender itself. It is vital to clearly spell out to all tenderers the basis on which the tender will be adjudicated and awarded. Tenderers have the right to challenge the award of a contract if they feel it is unfair, and a clear explanation of award criteria at this stage may eliminate later problems.

12.4 TENDER ADJUDICATION (CARD C12A)

The adjudication process involves deciding whom to award the contract to, based on the submitted tenders. This can be a difficult process, depending on the number of tenders and complexity of the tender documentation. In larger municipalities, procurement departments will be familiar with this process, and are likely to have regulations and guidelines to cover this. In smaller municipalities, expertise may have to be brought in to deal with the adjudication process. It is important, however, that all role players are familiar with this part of any outsourcing process, to ensure that tenderers, contractors and the community have confidence in the transparency and fairness of any contract award. Prior to the tender closing, the municipality must finalize the adjudication criteria it intends to use. This would include which details must be submitted with the tender and which can be called for later, together with any preferential points to be awarded to affirmable enterprises/ local tenderers. Many authorities also set a minimum sustainable Tender Price, below which no tenders are considered. This is vital where there are "first-time" tenderers, since no municipality wishes to hold an inexperienced individual to a price which would lead to bankruptcy. Tenderers must be told at the outset that such a price has been set, although the price itself is not revealed.





HOW TO ADJUDICATE A TENDER

A basic step-by-step guide to adjudication would be as follows:

1. Check that all parts of the tender document/s have been correctly completed and signed where necessary.
2. Check that compulsory site meeting was attended.
3. Check that all forms or letters called for in the tender are attached (e.g. VAT registration certificates).
4. Unless a "lump sum" tender is called for, check the Bill of Rates and Quantities for any arithmetic errors, and correct totals where necessary.
5. Eliminate all tenders below the minimum sustainable Tender Price.
6. Calculate Preferential Points - in terms of policy/legislation noted earlier and grade tenders in points order.
7. Some municipalities short-list lowest compliant tenders at this point.
8. Call for interviews to ascertain whether the tenderer is authentic (i.e. not a front), and have basic expertise and access to finance necessary to undertake the contract.
9. Award the tender.



12.5 THE COLLECTION CONTRACT (CARD C12B)

The contract between the municipality and the successful contractor comprises the following:

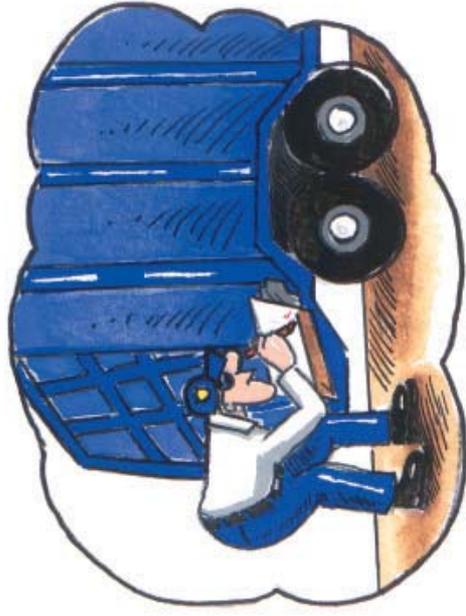
- Form of Agreement
- Form of Bond (if necessary)
- Proof of Insurance/s
- Proof of compliance with statutory regulations (UIF, Workman's Compensation etc)
- Proof of Vehicle Registration/s

This document would normally be drafted by the municipality's legal advisor.

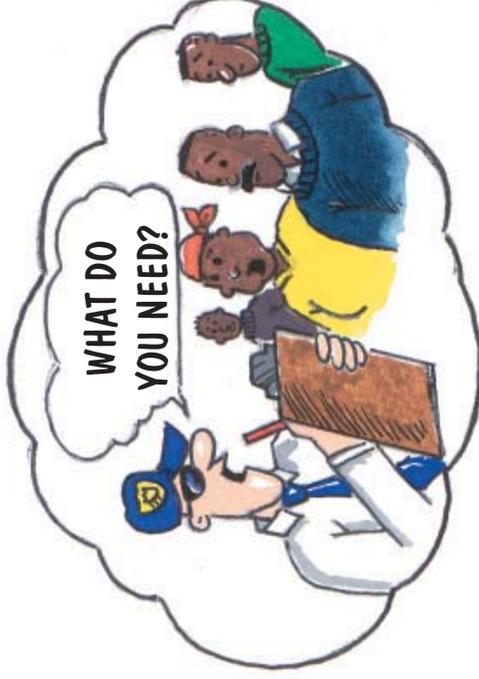
DO YOU KNOW?	SELF CHECK
• What a tender document should contain	✓
• How to adjudicate a tender	
• What is needed in the collection contract	



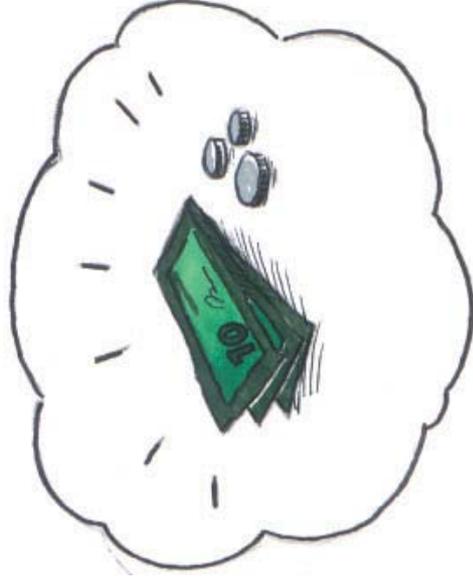
MONITORING A WASTE COLLECTION SYSTEM



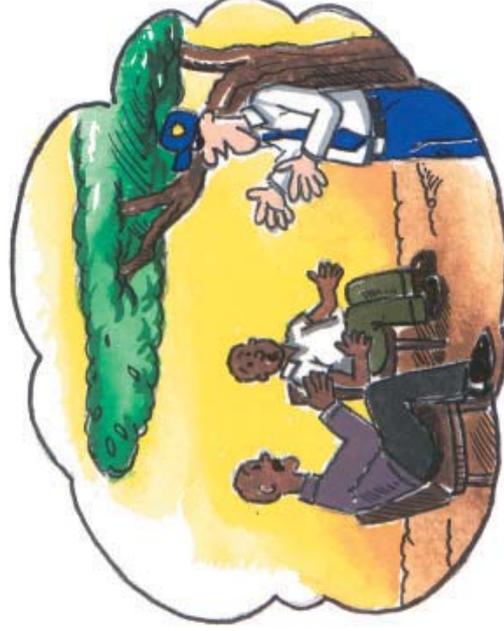
VEHICLE CHECKS



CONSULT RECEIVING COMMUNITIES



CHECK THAT COSTS ARE WITHIN BUDGET



CHECK EFFECTIVENESS OF EDUCATION AND AWARENESS PROGRAMME



CHECK EQUIPMENT



C 13A

SAFETY TIPS FOR WASTE COLLECTION



WEAR PERSONAL PROTECTIVE EQUIPMENT



VEHICLE OPERATING SAFETY



FIRE EXTINGUISHER ON VEHICLE



SAFETY OF CREW ON VEHICLES



NEVER LEAVE WASTE IN VEHICLES OVERNIGHT



IF A LOAD CATCHES FIRE, DUMP IT BEFORE EXTINGUISHING FIRE



CHECK THAT NO HAZARDOUS WASTE IS PRESENT



ROAD SAFETY



13. MONITORING AND MAINTAINING STANDARDS



IN THIS SECTION FIND OUT ABOUT :

- Who is responsible for monitoring the collection system
- How service standards are maintained



Monitoring the management and operation of a collection system is an essential, often overlooked, component of any successful waste collection system. Whichever of the three broad management options involving the municipality is chosen, the system must be closely monitored to ensure its effectiveness.

13.1 WHO IS RESPONSIBLE?

- 13.1.1** For “in-house”, municipal systems, cleansing officers are normally appointed to co-ordinate collection routes, manage the collection staff and inspect the work done (Card C13A).
- 13.1.2** For community-based systems, a community liaison officer appointed by the municipality is the essential link between the municipality and the community, ensuring that both primary collection and transport from the secondary sites takes place effectively at scheduled times.
- 13.1.3** If the outsourcing option is chosen, an inspectorate needs to be established and tasked with supervision of the contractors (checking on work done and measuring quantities in a rates-based contract) and contract administration (certifying monthly payments, issuing variation orders, imposing penalties where necessary etc). This inspectorate should also be responsible for checking contractors’ compliance with all statutory provisions of the contract - minimum wage rates for workers, UIF payments, VAT certificates, vehicle insurance and licensing, worker health and safety etc.
- 13.1.4** Feedback from the communities receiving the services should also be invited at regular intervals.
- 13.1.5** Another essential element in maintaining a high standard of operation is the regular servicing and maintenance of vehicles and equipment and regular health and safety checks (Cards C7B and C13B).

DO YOU KNOW?	SELF CHECK ✓
<ul style="list-style-type: none"> • What aspects of a collection system need to be monitored 	
<ul style="list-style-type: none"> • Who would do the monitoring for each type of service delivery option 	



FREQUENTLY ASKED QUESTIONS





14. FREQUENTLY ASKED QUESTIONS

These questions and answers are included as a guide to municipal councillors and officials who might be faced with similar questions from the public.

14.1. WHAT DO I NEED TO DO TO BECOME A COMMUNITY WASTE COLLECTOR?

Generally, tenders for waste collection contracts are advertised by the municipality, and the public notified when such tenders are called for. However prospective tenderers may miss this advertisement or notice.

If you are interested in becoming a community waste collector, you should approach your local councillor and/or municipal officials to register your interest. Getting involved in community forums and initiatives not only keeps you informed of any possible collection tenders, but also increases your knowledge of the solid waste situation in your area - a distinct advantage in pricing your tender!

14.2. HOW DO I PREPARE A TENDER TO GET WORK COLLECTING WASTE?

Preparation of any tender requires care and thorough investigation. Remember that once your tender is submitted, it is legally binding, and if you are awarded the contract, you must undertake the service at the rates you submitted - there is no scope to change these!

Many municipalities run workshops for prospective tenderers. It is essential that you attend these, and any other meetings or workshops called for during the tender period. Read the tender documents very carefully and make notes of questions you have before any meeting or workshop. If necessary submit questions in writing. Draw up a simple, but clear method statement of HOW you intend to undertake the work. This will help you focus on all the issues you need to consider in order to start and then run the contract. Then draw up a simple business plan, which spells out the details of your business venture.

The business plan should detail the following:

- Your operational plan (how, where and timing of the work), and
- Your financial plan (fixed and variable costs, tender rates and a cash flow).

This business plan will also be necessary if you need to get finance for your tender, as the lending institution will want to know these details before it considers advancing you any money.

Many first time tenderers get some form of outside assistance from accountants or business consultants. This is important if you are unsure of how to plan and price your tender. Ask around to try to find a local firm or individual who has done this before.

Finally, carefully fill in the tender documents, make a copy of all pages you have completed, and submit the tender - give yourself ample time to get there before the stated closing time. GOOD LUCK!

14.3. WHAT IS THE BEST WAY TO COLLECT WASTE FROM AN HIGH-DENSITY SETTLEMENT?

This is a difficult question, since no two settlements are alike, and each can have its own "best" solution. Essentially, densely settled areas lend themselves to labour intensive solutions, with local labour distributing bags (bin liners) and collecting from each dwelling, together with litter picking between dwellings and in roads, etc. The



key factor is to ensure that the secondary collection sites are well placed for both the labourer/collectors (not too far to carry by hand or trolley) and for the transporters (good vehicle access) who collect from these sites.



14.4. WHERE CAN I LEARN ABOUT WASTE MANAGEMENT?

Information on waste management practices can be obtained from the following sources:

- The Department of Environmental Affairs and Tourism (website: www.environment.gov.za), provincial Environment Departments as well as some of the larger municipalities are willing to share their expertise in the area of waste management. See list of contacts in this document.
- The Department of Water Affairs and Forestry supplies copies of the Minimum Requirements Waste Management Guidelines free of charge.
- The Institute of Waste Management of Southern Africa - through its branches- runs various waste management seminars and courses. See list of contacts in this document and visit the website www/iwmsa.co.za
- Certain tertiary institutions - universities and technikons - offer courses on waste management. See list of contacts in Appendix E.

14.5. HOW CAN POOR COMMUNITIES AFFORD WASTE COLLECTION SERVICES?

A waste collection service introduced into an area must be appropriate for those who live there. The service must be of a level and sophistication that can be afforded by that community. In some of the larger municipalities there is cross-subsidisation of services.

14.6. HOW CAN WE STOP LITTERING AND ILLEGAL DUMPING?

Four components need to be in place to put an end to littering and illegal dumping:

- Waste handling and disposal facilities must be adequate and appropriate.
- There must be buy-in from the community to an agreed standard of cleanliness for the area.
- The standards agreed to above must be actively enforced.
- All sectors of the community must be enabled, through participative education, to make informed, responsible decisions on how they manage their waste.

People must change the way they view littering: it must become socially unacceptable to litter or dump waste illegally.

14.7. WHO PAYS FOR THE CLEANING UP OF LITTER AND ILLEGAL DUMPING?

It is unfortunate but true that the cost of cleaning an area of litter and illegal dumping is met by the ratepayers of a community. It is six to seven times more expensive to pick up litter than to remove properly managed waste from a container. In instances where the culprits who are responsible for the litter and illegal dumping can be identified, they should be made to pay for the cost of cleanup.

14.8. HOW MANY HOUSEHOLDS SHOULD A SINGLE CONTRACTOR BE ABLE TO SERVICE EVERY WEEK?

There is no single answer to this, since terrain, access and many other factors will impact on this figure. For example, a "one-person", labour-only contract in a very dense hilly area might be able to handle 200 dwellings per week, but in a flatter part of the country many more could be serviced. At the other end of the scale, an established contractor with a modern compactor truck, a well-trained crew, good





access roads and a nearby landfill or transfer station could handle in excess of 10 000 houses per week. The three main technical factors impacting on this figure are the number of households each labourer can service per day (terrain and access), the type of vehicle used, and the distance to the disposal site/transfer station which determines the vehicle turn-around time. Where the municipality has a policy of encouraging the development of small and medium businesses, the decision on contract size is often a financial one, based on “what is a viable size of contract for a small business, employing a reasonable labour force?”

14.9 WHY ARE THE LABOUR UNIONS AGAINST CONTRACTING OUT COLLECTION SERVICES TO PRIVATE CONTRACTORS?

There are a number of reasons for this stance, many of them political or philosophical. Practically there is often opposition when the unions perceive that municipal jobs will be lost as a result of outsourcing, or that workers will be disadvantaged when employed by a contractor.

If a municipality were to outsource an existing service, it would be obliged to negotiate with the unions regarding transfer, secondment, take-over or retrenchment of the existing staff.

Where there is no existing service and new staff must be recruited in either option (“in-house” or “contracted-out”), the unions would seek to ensure that workers are protected. This can be done by including strict provisions in the contract (with penalties) to ensure that the contractors meet all their obligations in terms of labour law, minimum wages, health and safety etc. It is not unusual to provide for termination of the contract if these terms are not met.

14.10 WHAT IS A REALISTIC LENGTH OF TIME FOR A COLLECTION CONTRACT TO BE IN PLACE?

Labour-only contracts are usually drawn up for a one-year term, although some contracts allow for a one or two-year extension to allow for continuity of employment, and reduce costs of calling for tenders.

Conventional contracts requiring purchase of a vehicle should run for a minimum of three years, to allow the contractor a reasonable financing period. Again, a number of municipalities use three-year contracts with a possible extension clause, but usually only to cover possible delays in the award of the new tender.

15. REFERENCES

CSIR 2000: “Guidelines for Human Settlement Planning and Design” (“the Red Book”) prepared for Department of Housing - Chapter 11, ISBN 0-7988-5498-7

Department of Environmental Affairs & Tourism & Department of Water Affairs & Forestry 1999. National Waste Management Strategy and Action Plans: Series of documents.

Department of Environmental Affairs & Tourism; 2000.

White Paper on Integrated Pollution and Waste Management for South Africa: A Policy on Pollution Prevention, Waste Minimisation, Impact Management and Remediation.

Department of Environmental Affairs & Tourism Minimum waste collection standards for South Africa (in preparation)

Department of Water Affairs & Forestry 1998 Minimum Requirements Waste Management Guideline Series Vol 2 Minimum Requirements for waste disposal by landfill.

US Environmental Protection Agency 1995:

“Decision Maker’s Guide to Solid Waste Management”, Vol. II (can be found on USEPA Website)

UN Centre for Human Settlements (Habitat) Undated

“Refuse Collection Vehicles for Developing Countries” Nairobi, ISBN 92-1-131066-0



16. GLOSSARY



BRUSH CUTTER

Hand held machine used for cutting vegetation

COMMUNITY

All the people living in a specific locality. In terms of the Municipal Systems Act the community is that body of persons comprising the residents; ratepayers; any civic, non-governmental, private sector or labour organisations or bodies which are involved in local affairs within the municipality; and people from outside the municipal area who use the services or facilities provided by the municipality. Special mention is made of the poor and other disadvantaged sections of the community.

COMMUNITY PROFILE

An outline of quantified information about a community

CRADLE-TO-GRAVE RESPONSIBILITY

At every point in the life cycle of a programme, project, process, service or action, the responsible person must ensure that the environmental, health and safety impacts are minimised, pollution is prevented, resources and energy are used most efficiently.

CROSS-SUBSIDISATION OF SERVICES

Reducing the cost of services to less advantaged communities by recovering costs from service fees paid by more affluent communities

DEMOGRAPHICS

Statistics on populations that illustrate the conditions of life in communities

ECONOMIC PROFILE

An outline of the wealth and resources of a community especially in terms of the production of goods and services.

EQUITY

Fairness to all parties

FORMAL WASTE MANAGEMENT SYSTEM

Organised, regulated system that manages the handling and disposal of waste

HAUL DISTANCES

Distances over which waste has to be transported

HEALTH CARE WASTE

Solid, liquid and gaseous waste arising out of health care activities and includes: anatomical waste (e.g. tissue, organs, body parts); infectious non-anatomical waste (e.g. leftover food, blood, body fluids, teeth, hair, etc from infectious patients and discarded vaccines); sharps and similar waste (e.g. needles, syringes, blades, clinical glass and similar articles); pharmaceutical and genotoxic chemical waste (e.g. expired or contaminated pharmaceutical or medicinal chemicals, or chemical waste which is genotoxic i.e. carcinogenic, mutagenic, teratogenic or otherwise capable of altering genetic material); radioactive waste (in terms of the Nuclear Energy Act (Act 131 of 1993)).

HIGH DENSITY AREA

An area where there are more than 5000 households in an area with more than 10 dwellings per hectare [10 000 m²]

IN-HOUSE SERVICE

Service offered by an organisation internally, without outside assistance

LANDFILL SITE

The waste body created by landfilling: sanitary landfill is a method of disposing of waste on land without causing nuisances or hazards to public health and safety. Sanitary landfilling uses the principles of engineering to confine the waste to the smallest practical area, to reduce it to the smallest practical volume, and to cover it with a layer of earth at the conclusion of each day's operations or at less frequent intervals such as may be acceptable.

LITTER PICKING

Picking up waste which has been discarded as litter in public places



LOAD SPEED

How quickly and efficiently a vehicle can be loaded and unloaded. This affects how long it takes a vehicle to complete a round trip to a disposal or transfer facility.

OUTSOURCING

In this context, contracting an external service provider to deliver services to ratepayers on behalf of the municipality

PRE-SURVEY

An initial, preliminary, informal investigation of general conditions in an area which assists in planning for a more detailed investigation.

SOURCE

The place from which something comes or originates

STANDARD OF SERVICE

The quality of service, in terms of type, frequency and degree of excellence, that is agreed in consultation with a community and to which service providers must conform.

SUBSIDIARITY

The institutional arrangement put in place by the constitution that responsibility and authority for the various functions of government should devolve to the lowest (most local) level of competence.

SUSTAINABLE LIVING

Living in such a way that we meet the needs of the present generation without compromising the ability of future generations to meet their own needs.

It means that development must be "Development that delivers basic environmental, economic and social services to all without threatening the viability of the natural, built and social systems upon which these services depend" (International Council for Local Environmental Initiatives, ICLEI).

In terms of the Municipal Systems Act, environmentally sustainable municipal services will ensure that the risk of harm to the environment and human health and safety will be minimised, potential benefits maximised, and legislation relating to these aspects complied with.

SYSTEM SELECTION CRITERIA

Factors that are taken into account when the choice is made to use particular technologies and approaches in setting up a waste management system.

TENDER

An offer in writing to carry out work or supply goods at a fixed price

TRANSFER FACILITY

A temporary collection point for materials which are brought in by one means of transport and transferred to another vehicle for transport to a final destination.

TRENCH GARDENING

A method of preparing beds by lining the bottom of 40cm deep trenches with degradable wastes e.g. vegetable waste, tins. The trenches are then filled with soil and seeds or vegetables planted along the surface. The presence of the degradable wastes assists in retaining moisture and providing nutrients.

TYPE OF SERVICE

In terms of waste collection this refers to the combination of equipment used and how the service is provided by the waste operator (e.g. using refuse bags or wheeliebins and whether the waste operator takes the waste directly to the landfill or to a transfer facility)

UNSERVICED AREA

In the context of this guideline, an area which has had inadequate or failed services, or no waste collection service at all

VEHICLE PRODUCTIVITY

In the context of this guideline, relates to the capacity of a vehicle to haul waste efficiently and cost effectively and can be expressed as a rand per tonne-kilometre rate to haul waste.

WASTE DENSITY

The mass of waste per unit volume, usually expressed as kilograms of waste per cubic metre.

WASTE STREAM

The total waste flow from an entity, comprising general and hazardous wastes. In the case of a municipality it will be all the waste that is generated by households, institutions, business and industry.



APPENDIX A

WASTE STREAM INVESTIGATION

DATE:		PROJECT:	
LOCAL AUTHORITY:			
STREET ADDRESS:			
POSTAL ADDRESS:			
TELEPHONE NUMBER:			
FAX NUMBER:			
E-MAIL ADDRESS:			
CONTACT NAME:			
CONTACT POSITION:			
OTHER CONTACT NAME/S:			
POPULATION		NO. OF PEOPLE:	NO. OF DWELLINGS:
Formal housing areas:			
Informal settlements:			
WASTE COLLECTION		Contracted out?	
		Name of contractor/s:	
METHOD OF STORAGE AT SOURCE (e.g. plastic bags, 200 litre drums etc):			
COLLECTION VEHICLES:		TYPE AND CAPACITY:	NO. OF VEHICLES:
FREQUENCY OF SERVICE:		NO. OF COLLECTIONS PER WEEK:	
Domestic collections:			
Garden refuse:			
Commercial Wastes:			
Industrial Wastes:			
Hospitals/Clinics:			
Street cleaning:			



QUANTITIES OF WASTE	NO. OF BUILDINGS/UNITS	TOTAL m ³ (tonne) / WEEK
HOUSEHOLD:	FORMAL	
	INFORMAL	
HOTELS:	HOTELS	
CARAVAN PARKS/ CAMPING AREAS:	CARAVAN PARKS	
	CAMPING AREAS	
GARDEN REFUSE:	NO. OF SITES	
SEWAGE/SEPTIC TANKS:		
COMMERCIAL WASTES:	SHOPS/ OFFICES	
INDUSTRIAL WASTES	FACTORIES	
GENERAL WASTES:		
HAZARDOUS WASTES:		
MEDICAL WASTES:	HOSPITALS	
	CLINICS	
STREET CLEANING: CONTAINER TYPE AND SIZE:	CONTAINER NO	
TOTAL WASTE PER WEEK (SPECIFY UNITS): TOTAL WASTE PER ANNUM:	i.e: WEEKLY TOTALS X 52	m ³ (T) / WEEK m ³ (T) / ANNUM
TYPES OF WASTE RECYCLED?		
Any comments or problems which might be relevant to this investigation:		
SOURCE: LOMBARD & ASSOCIATES		



APPENDIX B

WILLINGNESS TO PARTICIPATE IN, AND PAY FOR, A WASTE COLLECTION SERVICE

..... (organisation, name of Council, etc) is responsible for collecting the household waste in your area. An effective waste collection service will ensure a healthy, litter free community. By completing this questionnaire (and returning it to) (place) you can help to make the collection service more suited to your needs.

You do not have to give us your name but we would like to know in which area you live. The results of this survey will remain confidential.

NAME OF HEAD OF HOUSEHOLD (OPTIONAL):		
NUMBER OF PEOPLE IN HOUSEHOLD:	CHILDREN (UNDER 16 YRS):	ADULTS:
	MALE:	MALE:
STREET:	FEMALE:	FEMALE:
SUBURB:		
TOWN/CITY:		
Nº. IN HOUSEHOLD THAT ARE EMPLOYED:	Nº. WITH FORMAL WORK	Nº. WITH INFORMAL WORK
PLACES OF WORK:		
JOB TITLES:		
HOUSEHOLD COMBINED MONTHLY INCOME (PLEASE TICK)	LESS THAN R 200 PER MONTH	
	R 200 TO R 500 PER MONTH	
	R 500 TO R 1000 PER MONTH	
	R 1000 TO R 3000 PER MONTH	
	R 3000 TO R 5000 PER MONTH	
	MORE THAN R 5000 PER MONTH	

1. WHAT HAPPENS TO YOUR HOUSEHOLD WASTE (RUBBISH) NOW?

PLEASE PLACE AN X IN THE APPLICABLE COLUMN	YES	NO	WOULD LIKE
A) Do you have a collection service at present? If yes, who takes the waste away?			
b) If no, what do you do with the waste? Dump it outside my house Bury it in a hole in the ground near my house Burn it and bury it in a hole in the ground near my house Take it to another place to dump it Please state where it is dumped:			



2. WILLINGNESS TO PARTICIPATE IN A WASTE COLLECTION SERVICE

PLEASE PLACE AN X IN THE APPLICABLE COLUMN	YES	NO	NOT SURE
Are you willing to participate in a waste collection service in your area if it suits your needs?			
What type of service would suit you best:			
a) Put my waste into plastic refuse bags or bins and someone takes it from my outside my house			
b) Put my waste into plastic bags or bins and I take it to a waste container in the street			
c) Keep my current way of dealing with my waste (no change)			

3. PAYMENT FOR SERVICE

In South Africa, it is the municipality's duty to provide basic services to all residents.

But it is also the duty of residents to pay for the services they receive. The more the residents in an area are able to contribute towards the real cost of the service, the better and more sustainable the standard of service they can get.

PLEASE PLACE AN X IN THE APPLICABLE COLUMN	YES	NO	NOT SURE
Are you willing to pay for a waste collection service in your area if you can afford it?			
What would you be able to afford:			
a) Pay part of the cost of collecting my waste every month (R)			
b) Pay the full cost of collecting my waste every month (R.....)			
c) Cannot afford to pay anything towards a collection service			

4. RE-USE AND RECYCLING

Do you re-use or recycle any items in order to make less waste and so reduce the cost of collection? There are drop-off (and buy-back) points for recycling in your area (At schools, shopping centres, community centres, churches, garden refuse sites, in commercial areas, etc).

If you would be willing to recycle a specific item, provided that you knew how and where, please indicate such:



PLEASE PLACE AN X IN THE APPLICABLE COLUMN TO SHOW IF YOU ARE INVOLVED IN RECYCLING AT BUY-BACK OR DROP-OFF POINTS AT THE MOMENT	YES	NO	WILL DO
a) Do you sort your paper and cardboard and take it to a drop-off point?			
b) Do you put your paper (recyclables) out as part of a collection programme (eg: Paper Pick-up)?			
c) Do you take your glass bottles and jars to bottle banks?			
d) Do you sort your cans and take them to a can collection point?			
e) Do you take your plastics to a plastic collection cage?			
f) Do you make compost from your garden and kitchen waste?			
g) Do you get any money for any of these activities?			
If so state which:			

5. DO YOU HAVE ANY IDEAS OR RECOMMENDATIONS ABOUT MAKING LESS WASTE?

6. DO YOU HAVE ANY IDEAS OR RECOMMENDATIONS ABOUT COLLECTING WASTE?

7. IF YOU HAVE COMMENTS ON ANY OF THE ITEMS IN THE QUESTIONNAIRE PLEASE STATE THEM.

THANK YOU FOR YOUR COOPERATION



APPENDIX C

IDEAS ON WORKSHOPPING

1. WHAT IS A WORKSHOP?

A workshop is a participatory learning meeting that empowers people through active sharing of knowledge, skills and experience. Each person has a chance to express their opinions and to work with ideas in a non-threatening environment. Everybody is expected to take responsibility for the success of the workshop. A workshop is a way of turning experience into knowledge. People with similar needs can meet and openly debate their differences. A workshop usually happens in a group with facilitators. It is not top-down learning. Each person can use the experience of the workshop in their work and their lives.

2. YOU DON'T HAVE TO BE AN EXPERT TO RUN A WORKSHOP

Anyone can run a workshop. A facilitator does not have to know very much about the topic. To be a facilitator you need to be prepared to take all opinions seriously and to encourage everyone to participate. It is important to draw from people's own knowledge, skills and experience. The group can decide on a set of group rules to be used in the workshop.

3. WHAT IS EXPECTED OF A PARTICIPANT?

Each participant must want to be at the workshop and is expected to take responsibility for his or her own learning. He or she should be prepared to respect opinions, challenge constructively, give others a chance to talk, take risks and be able to air conflicts. This should be done to encourage learning and to build the group.

4. HOW DO YOU PLAN A WORKSHOP?

A workshop should be carefully planned but the format must be flexible. When planning, consider the following:

- 4.1 **The Participants:** How many people will be participating? What work will they do? Why have they come to the workshop? What age group will predominate - will there be men and women (or girls and boys)? Will there be adults and children? Can reading and writing exercises be used? What verbal abilities do the people have - what languages are spoken? Have workshops been run before with this group?
- 4.2 **The Topic:** Why has the group requested this topic? How much do you know about the topic?
- 4.3 **Aims and Objectives:** Are you clear about the aims and objectives of the workshop? Have you been realistic in setting goals?
- 4.4 **Length of the Workshop, Venue and Equipment:** How long do you have? Are there enough breaks? Is there space for small group discussion? Are the chairs movable? What other equipment do you need? Is it provided?
- 4.5 **Funding:** Do you need to charge participants? Can you get funding to cover costs?
- 4.6 **Format:** People need to feel at ease in the workshop and their attention must be held. They should leave the workshop knowing that their opinions were heard and that they learnt from others.

5. EXAMPLE OF A WORKSHOP FORMAT

5.1 Icebreaker

- to introduce
- to focus on the topic; and
- to encourage participation

5.2 Introduction

- to introduce the topic
- to introduce the facilitator and the organisation or group that arranged the workshop
- to negotiate group rules

5.3 Expectations exercise

Although you will have planned the workshop, it is important to make sure that the material the group has asked for will be covered. The expectations exercise encourages participants to take responsibility for their own learning. In pairs, participants discuss what they expect from the workshop. The pairs tell the group what their expectations are and the facilitator obtains consensus on what will and won't be covered in the workshop.



5.4 **The body of the workshop**

Most of the work takes place in this section. It is good to include a mixture of exercises that draw on personal knowledge and experiences, allow for sharing of opinions and skills.

5.5 **Plan of action**

From the work that has been done in the workshop a plan of action is discussed and drawn up.

5.6 **Conclusion**

The workshop is summarised by the facilitator or a participant.

5.7 **Evaluation**

An evaluation, either written or spoken, gives feedback to both the facilitator and the participants.

5.8 **Wind down**

To complete the workshop you might like to do something that makes people feel good so that they leave with a sense of achievement.

6. **TECHNIQUES AND EXERCISES FOR WORKSHOPS**

Workshops make use of a variety of techniques that encourage participation and have an element of fun. The exercises are chosen according to the aims of the workshop. A facilitator must be comfortable with the techniques used.

Examples of exercises are given below:

6.1 **Icebreaker**

These are used to relax the participants. Sometimes they focus on the topic. To 'break the ice' one can use name games, trust games, listening exercises, a physical warmup or even telling a partner anything that is on one's mind.

6.2 **Discussion**

This is a major element in any workshop. There are a variety of ways in which discussion can take place depending on the purpose of each exercise.

6.3 **Buzz groups**

Discussion takes place in a small group of two or three to ten participants. Here they focus on specific questions and concepts. In this way everyone has a chance to contribute.

6.4 **Small group discussion**

Discussion takes place in groups of three to ten participants.

6.5 **Large group discussion**

The whole group discusses the issues. This is often used to consolidate ideas and information gained in the small group discussions and buzz groups.

6.6 **Feedback**

Feedback involves sharing whatever was discussed in the small groups. Feedback can be given verbally or it can be drawn up on a sheet of newsprint. The feedback can also be put up on paper on the wall where everyone can read it.

6.7 **Brainstorming**

By brainstorming ideas, participants say or write the first thing that comes to mind. Answers are not regarded as right or wrong. This method is used to pool ideas.

6.8 **Inputs**

Sometimes the facilitator or a member of the group provides information for the group.

6.9 **Imagining and fantasy exercise**

These exercises personalise whatever is being discussed. People are asked to imagine themselves in a situation similar to the one under discussion.

6.10 **Role plays and drama**

Acting out a situation or feelings can help to make that situation understandable or can serve to deal with feelings. Role-plays and drama bring people's own life experiences into the workshop.



6.11 **Questionnaires and handouts**

These help to facilitate small group discussion. By using handouts you can encourage people to participate rather than write everything down.

6.12 **Music, dance and writing**

These should focus on the issue under discussion.

6.13 **Graffiti boards**

Comments and questions can be written by all group members on a large piece of newsprint.

6.14 **Building blocks of ideas**

Each person or group is given a piece of paper shaped like a building block on which to write ideas. The blocks can be built into a wall. In this way you have a summary of everyone's ideas.

6.15 **A go-around**

A go-around allows each participant a chance to say something. It can be used to express a feeling, make a comment or to make peace when you have had a heated discussion.

7. **EVALUATION**

An evaluation can be done verbally or in a written form. Some questions that are useful to ask are:

- What was most useful?
- What was least useful?
- How could the workshop be improved?
- Were the programme and venue arrangements appropriate?

Well-timed tea breaks

These help people to relax.

Introductions and summaries

These help to create a good flow and continuity.

Visual and audiovisual aids

Slides, videos and music will make a workshop more interesting.

Appropriate seating

Sitting in a circle allows for better communication.



APPENDIX D

HOW TO ORGANISE A NEIGHBOURHOOD CLEAN-UP WITH FOLLOW-UP ACTIVITIES

1. WHY PEOPLE LITTER

Investigations have shown that people tend to litter where litter has already accumulated. By cleaning up an area people will be less likely to litter.

There are other reasons why people litter such as when:

- they feel no sense of ownership
- there are no facilities to dispose of waste correctly
- there are people paid to clean up
- they consider the waste they are littering as an 'insignificant amount'

2. PREPARATIONS FOR CLEAN-UP

- Get together with neighbours, local businesses, civic groups or organisations to organise the project.
- Identify areas that need particular attention.
- Make a map of the area to be cleaned up and divide it into sections small enough to be cleaned up by a single team. Also indicate collection points to which the rubbish must be brought.
- Take photos of the area to be cleaned up and keep them for people to see the difference made.
- Select a date and an alternate "rain date" (in case of bad weather on the first date)
- Contact the relevant waste department to remove the waste after the clean-up.
- List equipment needed for the project - litter bags (look for sponsorship), litter bins, brooms, rakes etc.
- Arrange for residents or local businesses to provide refreshments for clean-up teams.
- Contact locals in schools, churches, neighbourhood organisations, social clubs, etc. to recruit volunteers.
- Contact first aid personnel to be on stand by on the day.
- Assign volunteers to specific areas as team leaders.
- Hold a briefing session with the team leaders before the clean-up day to allocate responsibilities and make sure that they understand what they must do on the day.
- Agree on a meeting point and the time on the clean-up day.
- Involve the local media.

3. CLEAN-UP DAY

- Distribute equipment to team leaders.
- Provide an emergency telephone number - manned by a responsible person who has the map details of "who is doing what, where" and any phone numbers he/she may need including police, ambulance services and the fire department.
- First aid personnel must be present for the duration of the clean-up.
- Arrange for refreshments to be served at the end of the stint.
- While enjoying refreshments team leaders should ask participants about suggestions or solutions to combat littering, having seen the problem or problematic areas. Suggestions must be recorded.
- Keep records of the number of volunteers, the amount of litter collected, type of litter that was most prevalent, time spent cleaning up, etc., for follow-up publicity stories.

4. FOLLOW-UP

- Write thank-you letters to officials, businessmen and others who helped with the project. Certificates of recognition can also be presented to those who helped as a token of appreciation.
- Send stories and pictures of the clean-up to the local media.

5. INVOLVE THE PEOPLE

- Householders will need to be informed of the cleanup so as to make them aware of the concern. This can be done by students or youth.
- Undertake a mini survey of homes in the area immediately surrounding their school or neighbourhood.
- Taxi ranks could receive special attention. Several students or youth could be allocated to a rank, their task being to inform drivers of the need to keep ranks clean, as well as distributing bumper stickers and car litterbags to the drivers. These bags could also be obtained freely at



various petrol stations. Drivers/taxi owners should be asked to communicate a clean environment message to their passengers.

- Shop/Tuckshop Owners may also be individually canvassed to participate by providing litter bins in their shops or putting up posters that appeal to customers not to litter.

6. SUSTAINING ACTIVITIES

The impact of a clean-up is only temporary. For sustained awareness and involvement of both the community and the youth, several activities may be undertaken.

Here are some suggestions:

- Start an environmental action group to take responsibility for the area or to undertake projects
- Develop a clean vacant lot into a recreational open space
This will involve levelling, grassing, planting, keeping it litter free, etc
- Encourage residents to plant trees
- Get more information available on beautification projects from your Parks Department

7. SERVICES AND FACILITIES

As mentioned earlier, crucial to a long term solution is the provision of adequate services and facilities to enable the community to dispose of their waste correctly. It is suggested that the clean-up committee discusses and takes decisions on action in the following areas:

- Efficiency of the waste collection system
- Acquisition of refuse bins by householders
- Improvement in the managing of waste by providing black bags, Provision of public litter bins in key areas eg bus/taxi stops, shopping centres, community centres, church buildings, sports grounds, etc

8. THE PRELIMINARY STAGE FOR AN ANTI-LITTER AWARENESS CAMPAIGN

- Highlight issues pertaining to health and the environment with articles and photos in local newspapers
- Community meetings must also deal with such issues
- Meetings with the business sector, both formal and informal
- Meetings with schools
- Meetings with churches

A litter awareness campaign at your local shopping centre to be launched by a celebrity or any respected member of the community but with ongoing follow-up activities included in the campaign.



APPENDIX E

DIRECTORY OF CONTACTS

1. DEPARTMENT OF ENVIRONMENTAL AFFAIRS AND TOURISM

Private Bag X447 Tshwane 0001
Tel: 012-310 3911
Fax: 012-320 1167
Website: <http://www.environment.gov.za>

2. EASTERN CAPE: PROVINCIAL TREASURY, ECONOMIC AFFAIRS, ENVIRONMENT AND TOURISM

Private Bag X0029 Bisho 5605
Tel: 040-609 4889/90
Fax: 040-639 1030
Website: " <http://www.ecprov.gov.za>

3. FREE STATE: DEPARTMENT OF TOURISM, ENVIRONMENTAL AND ECONOMIC AFFAIRS

P O Box 264 Bloemfontein 9300
Tel: 051-403 3728
Fax: 051-448 4286

4. GAUTENG: DEPARTMENT OF AGRICULTURE, CONSERVATION, ENVIRONMENTAL AND LAND AFFAIRS

P O Box 8769 Johannesburg 2000
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5. KWAZULU-NATAL: DEPARTMENT OF AGRICULTURE AND ENVIRONMENTAL AFFAIRS

Private Bag X9059 Umsunduzi 3200
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Fax: 033-355 9593
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6. LIMPOPO: DEPARTMENT OF AGRICULTURE AND ENVIRONMENT

Private Bag X9487 Polokwane 0700
Tel: 015-295 7023
Fax: 015-295 7046
Website: <http://www.northernprovince.gov.za>

7. MPUMALANGA: DEPARTMENT OF AGRICULTURE, CONSERVATION AND ENVIRONMENT

Private Bag X11219 Nelspruit 1200
Tel: 013-766 6073
Fax: 013-766 8437
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8. NORTH WEST: DEPARTMENT OF AGRICULTURE, CONSERVATION AND ENVIRONMENT

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Fax: 018-384 2679
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- 9. NORTHERN CAPE: DEPARTMENT AGRICULTURE, LAND REFORM, ENVIRONMENT AND CONSERVATION**
Private Bag X5018 Kimberley 8300
Tel: 053-831 4049
Fax: 053-832 4328
Website: <http://www.ncwebpage.ncape.gov.za>
- 10. WESTERN CAPE: DEPARTMENT OF ENVIRONMENTAL AFFAIRS AND DEVELOPMENT PLANNING**
P O Box 560 Cape Town 8000
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Fax: 021-483 6081
Website: <http://www.westerncape.gov.za>
- 11. DEPUTY DIRECTOR: WATER QUALITY MANAGEMENT: WASTE MANAGEMENT
DEPARTMENT OF WATER AFFAIRS AND FORESTRY**
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Fax. 012-323 0321
Email: TEA@dwaf.gov.za
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- 12. INSTITUTE OF WASTE MANAGEMENT OF SOUTHERN AFRICA**
P O Box 79 Allen's Nek 1737
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Email: iwmsa@iafrica.com
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- 13. NATIONAL RECYCLING FORUM**
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APPENDIX F

PARTICIPANTS IN WORKSHOPS

PROJECT TEAM	
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DEAT (CP & WM)	TEMBEKA DAMBUZA
DEAT (CP & WM)	VUSI SKOSANA
DEAT COMMUNICATIONS	MOLEFE MALAMU
COWI / DANIDA	MARGOT NIELSEN
COWI / DANIDA	LYNNI RAMDEEN
ICANDO	JUNE LOMBARD
ICANDO	LORNA HILL
ICANDO	MAZWI MKHULISI
MSA	HILTON PETTERS
MSA	MVUME SIPAMLA
MSA	DUMISANI MTSHALI
ACCT	MARI VAN DER MERWE
ACCT	SARA FREEMAN
ACCT	GABI MCHUNU

STAKEHOLDER REFERENCE GROUP	
ORGANISATION	NAME
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CAPE TOWN MUNICIPALITY	SALIEM HAIDER
COLLECT-A-CAN	NICK KOCK
COLLECT-A-CAN	ROBIN SMITH
DEAT EDUCATION	MARIA MOATE
DEAT EDUCATION	SOLLY MOSIDI
DELTA ENVIRONMENTAL CENTRE	ANDREW MATHABATHE
DWAF	SARAH MOFOKENG
DWAF	NAOMI TSEBE
EAST RAND METRO	DOUGIE COWLEY
EJNF	ELIAS MKHWANAZI
EMFULENI LOCAL MUNICIPALITY	ALMA LUDIDI
ENVIRO-FILL	LEON GROBBELAAR
GAUTENG DACEL	I GOVENDER
GAUTENG DACEL	DEE FISCHER
GEM	MICHELLE PRESSEND
GLASS RECYCLING ASSOCIATION	MIKE BILLS
IWMSA	STAN JEWASKIEWTIZ
IWMSA	MPUMELELO NCWADI
N PROVINCE	TREVOR MPHAHLELE
NAMPAK	ROB RODGER
PACSA	OWEN BRUYNS
PFSA	E DLAMINI
PIKITUP	CHRISTA VENTER
PLASTICS FEDERATION	DOUW STEYN
SALGA	FLORENCE MOKGOBU
SAPPI	GARRETT MILLER
TEDCOR	CLARENCE HAMMAN
TSHWANE METRO/SAWMEA	HENNIE NEETHLING
W CAPE	GOTTLIEB ARENDSE



LOCAL TASK GROUPS	
ORGANISATION	NAME
ABN WASTE	B POPAT
ASSOCIATION OF REFUSE CONTRACTORS	T PHUNGULA
AT ENVIRONMENTAL WASTE SOLUTIONS	L LONGBOTTOM
COLLECT-A-CAN	V ZWANE
DSW	N MGINGQIZANA
DSW WASTE MINIMISATION	M MKHIZE
ECOSYSTEMS	G EICHLER
EDUCATION OFFICER NOE	L NXUMALO
FFS REFINERS	M DE SOUZA
GLASS RECYCLING ASSOCIATION	M BILLS
GREATER KOKSTAD MUNICIPALITY	J BUDGE
ICHC	N KUBHEKA
IWOE, DURBAN METRO	G MARSHALL
IWOE, DURBAN METRO	M MBAMBO
INANDA 'C' CLINIC	M C DLADLA
INNER WEST WASTE	J PARSONS
KEEP DURBAN BEAUTIFUL ASSOCIATION	C NGCOGO
KEEP DURBAN BEAUTIFUL ASSOCIATION	B DLAMINI
KEEP TONGAAT BEAUTIFUL ASSOCIATION	T FULELA
KEEP TONGAAT BEAUTIFUL ASSOCIATION	M MTHETHWA
KEEP VERULAM BEAUTIFUL ASSOCIATION	M MDZIMBOMVU
KHUPHUKA	Z DLAMINI
KWAMASHU RECYCLING GROUP	M SHOBA
KZN HEALTH	H Z MBAMBO
KZN UMLAZI HEALTH DEPT	T P MTSHALI
MALUKAZI COMMUNITY HEALTH WORKERS	N MALINGA
MASHU INANDA NTUZUMA CONSERVATION CLUB	S SITHOLE
MASHU INANDA NTUZUMA CONSERVATION CLUB	S MKHIZE
NLOE, DURBAN METRO	K NAIDOO
ROMP	L NAIDOO
ROMP	B FOELLMER
SYO TONGAAT	N DLAMINI
SYO TONGAAT	P VILAKAZI
SYO TONGAAT	N MASUKU
SYO TONGAAT	M YENGWA
THE RECLAMATION GROUP	K SCHWAGER
TONGAAT	NONHLANHLA
UMLAZI RECYCLING COMMUNITY	E GIGABA
WASTE MANAGEMENT DIVISION, MSUNDUZI MUNICIPALITY	R RAJAH





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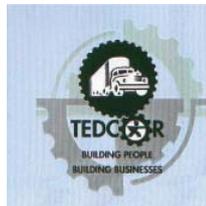


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