

**DEPARTMENT OF ENVIRONMENTAL
AFFAIRS AND TOURISM**

**PROGRAMME FOR THE IMPLEMENTATION OF THE
NATIONAL WASTE MANAGEMENT STRATEGY**

Starter Document for General Waste Collection

**Guideline Document for
Waste Collection in High Density Unserviced Areas**

Final Draft

May 2000

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1. INTRODUCTION

This Draft Guideline Document must be read in conjunction with the Background Reference Document on Waste Collection in High-density Unserviced Areas, which investigates and analyses the various problems associated with waste collection in these areas. In addition, a number of international and local initiatives that have taken place in the provision of waste collection services in high-density low-income areas were studied. This was done in order to evaluate the different initiatives and identify the key success factors in providing sustainable waste collection systems. Based on the success factors, a framework of key principles for waste collection systems in high-density unserviced areas was established. These principles form the basis for developing a draft set of guidelines for the practical implementation of waste collection systems in high-density unserviced areas.

The purpose of this draft starter Guideline Document is to provide a framework to enable the Department of Environmental Affairs and Tourism (DEAT) to compile national guidelines and standards for appropriate waste collection services in high-density unserviced areas. These guidelines would form part of the basis for Provincial Government to draft waste collection regulations, so that Local Government structures can implement the necessary waste collection services in high-density unserviced areas.

Although the main target audience for these draft guidelines is the DEAT, it is also intended that they be distributed and discussed with all relevant stakeholders, so that as much comment as possible can be incorporated to make them user-friendly and practical implementation guidelines. It is also envisaged that these guidelines will form the basis for the implementation of a number of pilot studies on waste collection in high-density unserviced areas. By evaluating and monitoring the performance of these pilot studies, the guidelines can be improved and further developed to suit the actual conditions in South Africa's high-density low-income areas.

These draft guidelines have been written generally in a sequential order of activity, using a 'step by step' approach. This is to make implementation of pilot collection schemes as simple as possible. There will therefore be some overlap of different issues between the different sections, and some of the activities will run concurrently. These guidelines focus on South Africa's high-density low-income areas. Specific suggestions are therefore made regarding the types of collection systems that would be the most suitable for these conditions.

A brief overview of important issues relating to waste collection in high-density low-income areas is given, followed by the draft guidelines for implementation.

2. OVERVIEW OF ISSUES

2.1 *Definition of Waste Collection in High-Density Unserviced Areas*

These guidelines relate to the implementation of waste collection systems in high-density unserviced areas.

Waste refers to general domestic waste generated by dwellings in low-income areas, as well as street sweepings and litter generated in these areas.

Collection refers to the gathering and loading up of this waste from storage containers located close to the dwellings that generate the waste. This and the transport to the transfer point are termed primary collection. Thereafter, transfer to secondary collection vehicles and the subsequent transport of the waste to the disposal site is termed secondary collection. Primary collection may also include the sweeping of streets and the clearing of litter on the streets and open places within the area.

High-density areas have been defined as areas having more than 5000 households and more than 10 dwellings per hectare.

Unserviced areas are areas that have either inadequate collection services, failed collection services, or have never had any form of waste collection service. Typically, high-density unserviced areas would include informal settlements as well as formal high-density housing developments. Both areas would be regarded as low-income areas with relatively high rates of unemployment.

2.2 *Objectives and Principles of Waste Collection Services*

The **objectives** of providing waste collection services in high-density unserviced areas are:

- To protect the health of the population in the high-density low-income urban areas,
- To promote the quality and sustainability of the urban environment by controlling pollution of ecosystems,
- To empower communities to take responsibility for the cleanliness of their urban environment,
- To generate employment and income for community members involved in waste collection.

To achieve the above objectives, it is necessary to establish sustainable waste collection systems that meet the needs of the entire community, including the indigent. To this end, sustainability implies that the waste collection systems must be appropriate to the particular physical and socio-economic circumstances of the receiving areas. Maximum use must therefore be made of employing and developing the capacities of all stakeholders, including the receiving residents, private sector enterprises and workers (both formal and informal), and local authority officials.

Waste collection systems should be implemented within the integrated waste management strategy for the urban environment, viz., to:

- Minimise waste generation,
- Maximise waste recycling and reuse, and
- Ensure safe and environmentally sound disposal of waste.

Waste minimisation and recycling should actively be encouraged to reduce the size and hence the cost of collection and disposal of the urban waste stream.

2.3 Strategic Issues

Before any system is implemented for the waste collection in high-density unserved areas, strategic planning is required at various levels, from national government level, right down to community level. Such strategic planning would be necessary for the entire waste management function, and is covered in the Guidelines for Integrated Waste Management Planning. Nonetheless, there are certain strategic issues that are applicable to the implementation of sustainable waste collection systems. These strategic issues are categorised into political, institutional, social, financial, economic and technical issues. Although some of these issues are only applicable at national and provincial government levels, many of them apply at local authority and community level, and are therefore necessary in any implementation guidelines. These issues are listed and briefly discussed below.

2.3.1 Political Issues

- Society's goals and priorities regarding environmental protection and equitable service access in general, and waste management in particular, must be clearly articulated; i.e. a strategic plan is required.
- A clear definition of jurisdiction and roles is essential to the political sustainability of waste management systems, including waste collection.
- Local by-laws, ordinances and regulations must be few in number, transparent, unambiguous and equitable.
- Local governments are motivated by political interests, as well as legal obligations. The political will at local government level determines the priority given to implementation of waste management systems.

2.3.2 Institutional Issues

- Capacity-building measures for waste management services should give primary attention to strategic planning and financial management.
- Private sector involvement in waste management services implies a shift in the role of local government from service provision to regulation. Essential conditions for successful private sector involvement include competitive bidding, technical and organisational capacity, regulatory instruments, and monitoring and control systems.

- Responsibility for managing local waste collection may be decentralised to the user communities through community based partnerships.

2.3.3 Social Issues

- Attitudes towards waste management need to be positively influenced through community environmental awareness and education campaigns. Such campaigns, however, must be based on sound understanding of the social and cultural characteristics of the user communities.
- In most high-density low-income areas, community-based waste collection is the preferred solution.
- The effectiveness and sustainability of the waste collection system depends on the degree to which the served community identifies with and takes “ownership” of the system.
- Any waste collection system should aim to improve the working conditions, earnings and access to social services of waste collection workers.

2.3.4 Financial Issues

- Financial management skills should be actively promoted within institutional development programmes.
- While central financing of capital investment for waste management systems is often needed, investment authority should be devolved to local governments.
- To achieve equitable service access for low-income areas, some degree of cross-subsidisation and/or financing out of general revenues is often needed.
- To improve waste collection cost recovery, fees should be attached to billing for other services, such as water supply.
- Separate accounting procedures are required for waste management service revenues, to ensure that such revenues are used for the intended purpose.
- The best way to ensure financial sustainability is through cost reduction; “doing more with less”. Community-based waste collection systems can reduce costs.
- The competition aspect of public-private partnerships in waste management services generally leads to cost reduction.

2.3.5 Economic Issues

- The effective demand for waste management services, and the willingness and ability to pay for a particular level of service, is influenced by the economic context of an area. High-density low-income areas generally cannot afford to pay for waste collection services.
- There could be a trade-off between low cost collection services and environmental protection.

- Measures should be introduced to encourage waste minimisation and recycling, so as to reduce the cost of waste collection and disposal.
- Private sector involvement may initially reduce the number of jobs in waste management. However, by increasing effectiveness and labour productivity, service coverage can be expanded with resulting job creation opportunities.

2.3.6 Technical Issues

- Waste collection facilities and equipment must be designed and selected with careful regard to operating characteristics, performance, maintenance requirements and expected life-cycle costs.
- Collection systems should be designed with active participation of the communities concerned. Low cost, community managed primary collection systems should be considered.
- The physical characteristics of a settlement, including factors such as population/dwelling density, width and condition of roads, topography, etc., need to be considered when selecting and/or designing waste collection procedures and equipment. Appropriate, standardised and locally available equipment should be selected.

2.4 Principles for Waste Collection Systems in High-Density Unserviced Areas

The Background Reference Document identified the following important principles for the provision of Waste Collection Systems in High-Density Unserviced Areas:

- For a system to succeed and be sustainable there must be sufficient political will at both government and local authority level.
- The system must either be community driven, or the community must be actively involved in the decision making process.
- Although the community should take responsibility for any community-based system, ultimate responsibility for the provision of waste collection services remains with the local authority/
- Community education and awareness programmes are necessary to sensitise the serviced communities in environmental issues in general, and the importance of waste management in particular. This can be done through the establishment of environmental committees or forums.
- The technology of the proposed collection system, including vehicles and equipment, needs to be appropriate for the local situation. Factors such as the topography of the area, quality of the roads, density of dwellings, etc, need to be considered when designing an appropriate collection system.
- Primary collection services are ideally suited to “one person” type contracts. Depending on the specific conditions of the area, these could range from the manual carrying of refuse bags, the use of trolleys or carts, through to motorised vehicles such as tractors and trailers.

- Secondary collection services are better suited to slightly larger contractors with appropriate vehicles and equipment, such as tractor-trailer systems, trucks and loaders.
- Street sweeping and litter clearing must be an integral part of any waste collection system.
- Secondary collection points must be strategically located so as not to represent a nuisance for nearby residents.
- Appropriate training and capacity building for all parties involved in the provision of waste collection services is necessary to ensure sustainability of the service.
- Private sector participation with local authorities can result in a more cost effective and efficient waste collection service.
- For any system to be financially sustainable, there needs to be adequate cost recovery. Payment for services rendered is therefore necessary, although some form of cross subsidisation for low-income areas will generally be required. “Willingness to pay” surveys should be carried out to determine how much a community can afford to pay for a collection service.
- Capital funding in the form of donor grants or soft loans is necessary to set up and implement waste collection systems in high-density unserved areas. However, there should be a gradual phasing out of operational funding as service payment levels increase, in order to make the system sustainable. A maximum period of 12 months for this phasing out is suggested.

3. STRATEGIC PLANNING

3.1 *Introduction*

Before implementing any waste collection system, it is necessary to carry out a certain amount of strategic planning. Although such planning should be done within the context of the DEAT's overall Integrated Waste Management Planning Guidelines, these planning guidelines are specifically for waste collection in high-density unserved areas.

3.2 *Strategic Planning*

- Confirm that the proposed waste collection system would fit in with the overall strategic waste management plan of the local authority. It is important that complimentary systems such as recycling, waste transfer stations, transport systems and a disposal site to receive the waste, are all part of the strategic waste management plan.
- Identify the need for implementing a waste collection system in a particular area. Confirm that there is a genuine need for a new system, and that it is not just because the existing system is not being operated correctly.
- Identify and consult with local political leaders (councillors) and the relevant community leaders.
- Confirm with these leaders that they would support the implementation of a waste collection system in a particular area.
- Ensure that there is sufficient institutional capacity in place within the relevant local authority to support and maintain the proposed system. If not, employment, training and capacity building of suitable staff within the local authority may be necessary, particularly in the waste management, strategic planning and financial management.
- Establish the local authority's policy regarding the types of waste collection systems intended for high-density areas. For example, a total local authority system, or community based contracting, or private sector contracting, etc.
- Identify a number of alternative systems that could be suitable for the particular area.
- Develop a broad-based budget for implementing and maintaining the system.
- Explore possible sources of finance for implementing the system. These could include donor grants, sponsorships, soft loans, etc.
- Investigate viable alternative economic instruments for ensuring that the system is sustainable in the long term. These would typically include payment for services, donor funding (not preferred), cross-subsidisation, the use of public private partnerships, etc.

Note that, if there is not sufficient capacity within the local authority to carry out all the strategic planning, it may be necessary to employ additional resources.

4. COMMUNITY AWARENESS CAMPAIGN

4.1 Introduction

Based on the case studies referred to in the Reference Document, one of the most important aspects of implementing a successful waste collection system in a high-density low-income area, is to conduct a thorough community awareness and education campaign. This is an important function in sensitising the community in environmental awareness, and in the need for living in a healthy environment. Whether or not the collection system is community based, without the involvement and co-operation of the receiving community, it is highly unlikely that any waste collection system will be supported, and hence be sustainable in the long term.

The community awareness campaign should commence as early as possible in the development of the waste collection system, and must be maintained throughout the operation of the system. This is particularly necessary, as the receiving community can be the most effective body for monitoring the effectiveness of the system (see Section 10, Monitoring). Despite the foregoing however, the community must not be given expectations prematurely, i.e. before the proposed collection service has been authorised by the local authority.

4.2 Environmental Forums/Committee

- Working through existing political or community structures, establish a community environmental forum or committee.
- The environmental forum or committee must be properly constituted, with a chairperson, secretary, treasurer, etc.
- Explain the objectives of establishing the environmental forum in the context of the planned waste collection system. Also, explain the role of the environmental forum in the implementation of the waste collection system.
- Conduct an environmental training workshop for the forum.

Note that, in order to ensure credibility and acceptability with the community, the establishment of the environmental forum must be carried out democratically, and all actions must be totally transparent.

4.3 Environmental Training Workshop

- It is suggested that the workshop be conducted over a period of approximately three to five days.
- The workshop should commence with discussions surrounding general environmental and social issues, and then focus in on waste management and waste collection in particular.
- The workshop is also an ideal forum for discussing waste minimisation and recycling initiatives.

- Topics that should be covered in the workshop include, *inter alia*:
 - Environmental management and awareness
 - Environmental health and safety
 - Water quality
 - Air quality
 - Integrated waste management (minimisation, treatment, recycling and re-use, safe disposal)
 - Responsibilities of people as waste generators and their rights to waste management services
 - Appropriate waste collection systems for high-density low-income areas
 - Possibilities for private sector and community involvement in waste collection

4.4 Community Consultation

- Following the environmental forum workshop, the forum must consult with members of the entire community, to make them more environmentally conscious, and to discuss the proposed waste collection programme.
- The aim of the awareness campaign is to positively influence people's attitudes towards the need for an effective waste collection service, and the need to pay for such a service.
- This community consultation could take place by means of public meetings, as well as through smaller meetings conducted by individual forum members.
- Extensive use should be made of the local media (radio and press), as well as flyers to publicise the programme.
- It is also strongly recommended that environmental awareness programmes be implemented in the schools, right from primary school level.
- Regular report-back meetings on the progress of the waste collection programme should be held with the community.

Throughout the community awareness campaign, the objective should be to develop a culture of pride in the community environment.

5. NEEDS ANALYSIS OF AREA

5.1 Introduction

Before a waste collection system can be designed and implemented for a particular community, it is necessary to carry out an assessment of the waste collection needs of the area. This is necessary to determine the technical aspects of the system such as frequency of collection, number of collectors, numbers and types of vehicles required, etc. It is also necessary to determine the community's aspirations regarding the proposed collection system, regarding job creation, social upliftment, etc.

The needs assessment would typically include collecting and analysing the following information.

5.2 Demographics of the Settlement

- Determine the size of the population and the number of dwellings to be served.
- Determine the areal extent, and hence the population density and dwelling density of the settlement.
- Assess the socio-economic status of the residents, and the distribution of different socio-economic categories throughout the area. Distinguish between formally developed areas and informal areas.
- Assess expected population growth, as well as anticipated extension of the settlement. This is necessary to design sufficient flexibility into the waste collection system to accommodate future expansion and growth.

5.3 Waste Generation and Characteristics

- Determine the quantity of waste generated per capita and, using the data obtained in Section 5.2 above, estimate the expected quantity of waste generated per dwelling per week. There is a significant amount of information available in the literature concerning per capita waste generation rates in low-income areas. However, because of changing socio-economic and other circumstances (e.g. electrification of the townships), these figures should be used with caution. Ideally, on-site measurements of waste generation rates in the particular area to be served should be carried out.
- Analyse the constituents of the waste stream, to determine the potential for recycling and re-use, as well as to decide on the most appropriate means of waste storage.
- From a consideration of the climate and using the above information, determine the required frequency of collection. In hot, humid climates, collection more than once per week may be necessary to minimise the problems associated with freshly decomposing waste. Also, in extremely densely populated areas (e.g. Duncan Village, or Alexandra), it may be

necessary to collect more than once per week, as there is insufficient space for the residents to store their waste.

5.4 *Physical Characteristics of the Area*

Assess the physical characteristics of the area, taking into account aspects such as:

- Layout and planning of the settlement
- Width and condition of the roads
- Topography (hand carts and trolleys will be difficult to move along steep roads and terrain)
- Possible areas for secondary waste collection sites.

5.5 *Existing Waste Collection Systems*

If there are any existing waste collection systems operating in the settlement, assess the effectiveness of such systems, analyse their strengths and weaknesses and investigate to what extent they can be incorporated into the new system.

5.6 *Willingness to Pay Survey*

As part of the needs analysis for the settlement, a “willingness to pay” survey should be carried out. The results of such a survey could influence the level of sophistication of the proposed waste collection system. They would also indicate the expected cost recovery for implementing the system, and the degree of cross subsidisation required.

5.7 *Needs Assessment*

All the above information should be used to determine the key criteria for designing alternative waste collection systems for the particular area. These would be:

- Characteristics of waste to be collected
- Quantity of waste to be collected per dwelling
- Frequency of collection
- Methods of storage
- Methods of primary collection
- Methods of secondary collection
- Collection vehicle types
- Collection implementation models (e.g. Community based, private sector partnership, etc)

Note that, the collection of information for the needs analysis must to be carried out through the established environmental forums and using the community participation mechanisms set in place for the programme.

6. DESIGN OF ALTERNATIVE COLLECTION SYSTEMS

6.1 Introduction

Using the information obtained from the needs analysis, it is necessary to design alternative waste collection systems to adequately meet the needs of the area. It is important to be able to present a number of technically and environmentally acceptable systems to the receiving community, to enable them to have a say in the final choice of collection system.

This section considers the different components of any waste collection system in the context of high-density low-income areas, and gives guidance on the issues to be considered in the selection of each type of collection component. As there are a number of different ways of addressing each component, and there are a number of different ways of combining the components to form a complete collection system, the optimum collection system for a particular area will be dependent on the best combination of the preferred components. There is therefore no single optimum waste collection system suitable for all high-density areas. High technology systems are not regarded as suitable for low-income high-density areas, and have therefore not been considered any further.

Notwithstanding the foregoing, the case studies reviewed in the Reference Document have indicated some clear directives for implementing successful waste collection systems in high-density low-income areas. These guidelines therefore give some definite recommendations on the types of collection systems that would be suitable.

It must also be emphasised that the collection systems must not be developed in isolation, but must take account of other waste management initiatives and functions such as waste minimisation, recycling, transport and disposal.

6.2 Waste Storage

- The preferred means of waste storage for low-income high-density areas is the 85l plastic refuse bag. However, excessive high-density waste resulting from ash and soil can cause these bags to break. Hot ash is also a problem.
- In formal areas with good quality roads, 240l trolley bins could be considered, however, these bins can be extremely expensive for implementing collection schemes on a large scale.
- 85l plastic or steel bins can be considered, although these too would prove to be very expensive for the local authority to provide. It is suggested that individual households acquire their own bins if they so desire.
- In extremely poor informal areas, residents could be encouraged to use old shopping bags for waste storage.
- Regardless of the type of storage used, separation of recyclable materials, including garden refuse, should be encouraged.

6.3 Primary Collection

- Primary collection is best suited to “one person contractors” (OPCs), either contracted to the local authority, or to the community through the elected forums.
- In extremely high-density areas, primary collection will best be carried out by manually carrying the bags of waste to dedicated secondary collection sites.
- In less densely populated areas where greater distances would need to be covered, trolleys or handcarts could be used for carting the waste to the secondary collection sites.
- Although not common in South Africa, donkey carts and motorised carts could also be considered.
- Handcarts and trolleys must be carefully designed and constructed to take account of the loads to be carried, and the conditions of the roads and tracks to be traversed. It is strongly recommended that specialist advice be sought in the design and construction of trolleys and handcarts.
- Primary collectors can be expected to service between 60 and 80 households per day.
- Primary collectors must be provided with suitable protective clothing for the task of waste collection. As a minimum, overalls, boots and gloves should be provided.

6.4 Street Sweeping and Litter Clearing

- Street sweeping and clearing of litter should be the responsibility of each primary collector within his/her designated area.
- Primary collectors must be provided with the necessary equipment for street sweeping and litter clearing. This would include brooms, shovels and litter spikes.

6.5 Secondary Collection Sites

- Secondary collection sites must be strategically located to suit the maximum walking distance of the primary collector.
- Secondary collection sites must also be sited so as not to represent a nuisance to nearby residents.
- Secondary collection sites should be clearly demarcated and must be maintained by each primary collector (OPC). Consideration should be given to constructing a concrete slab at each collection site.
- Where bulk containers are used for secondary collection sites, consideration must be given to ensuring that the primary collectors can easily deposit the waste into the containers. Where necessary, split-levels such as ramps must be provided.

- Responsibility for maintaining the cleanliness of the secondary collection sites, whether the primary or secondary collector, must be clearly specified.

6.6 Secondary Collection

- Secondary collection can either be carried out by the local authority using compactors or tipper trucks, or by locally based small contractors, contracted to the local authority.
- Where the collected bags of waste are placed on the ground, consideration will have to be given to the loading up of this waste. In terms of providing employment opportunities, this would best be done manually by local labour employed by the secondary collection contractor.
- If bulk containers are used, the secondary collector will have to have suitably equipped vehicles for loading up the containers.
- The choice of secondary collection vehicles will also depend on the condition of the roads and/or tracks to be traversed. Tractor-trailer combinations are better suited to bad roads than trucks; however, they are slower in terms of turn-around time for travelling to the landfill site.

6.7 Discussion

On the basis of the Reference Document, the following generic model for waste collection services in high-density unserved areas is suggested:

- Primary collection and street sweeping/litter clearing should be carried out by community based “one person contractors” (OPCs), contracted to the relevant local authority. Each OPC should service between 250 and 300 households once per week.
- Secondary collection sites should be established by the local authority.
- Secondary collection should be carried out by locally based Micro- small enterprises (MSEs), using simple vehicles such as tractor-trailers or tipper trucks, and employing local labour. The MSEs would be contracted to the local authority.
- Supervisors will be required to supervise manageable size groups of OPCs, and to co-ordinate issue of bags, protective clothing, etc.
- The local authority must retain overall responsibility for the collection service, and must perform a regulatory and monitoring function by ensuring contractual compliance by the OPCs and MSEs.

Training and capacity building of the OPCs and the MSEs is essential to ensure that the standard of the collection service is maintained (see Section 8).

As discussed in the Reference Document, there are also a number of different ways in which the private sector can play a role in the provision of waste collection services. These are discussed further in Section 8.

7. SELECTION OF WASTE COLLECTION SYSTEM

7.1 *Introduction*

Once the various alternative collection models have been developed, they must be evaluated objectively against one another. The different alternatives must then be presented to the community through the environmental forum, together with the results of the comparative evaluation. The evaluation and the implications to the community for each system must be thoroughly explained, to enable the community to make an informed decision as to the preferred collection system.

7.2 *Comparative Evaluation of Alternatives*

The alternative collection systems should be evaluated according to the following criteria:

- Technical criteria: Suitability to roads and terrain; waste type and quantity, suitability of primary and secondary collection equipment; type and locations of secondary collection sites; etc.
- Economic criteria: Costs of alternatives in terms of capital and operating costs; expected service fees to ensure cost recovery; etc.
- Social criteria: Positive and negative impacts of each alternative; opportunities for job creation; etc.
- Political criteria: Local political support; effect of policies waste collection with regard to each alternative.

7.3 *Community Consultation and Selection of System*

- The alternative collection systems should be presented to the community and the fully explained.
- The implications to the community for each alternative must be fully explained, in terms of economic, social and political effects.
- The community must then make an informed decision on the waste collection alternative best suited to it. This decision making process must be managed carefully by the environmental forum, to prevent the project from being “hi-jacked” for other reasons.

8. IMPLEMENTATION

8.1 Introduction

Once the community has given its mandate on the type of collection system it wants, the local authority must proceed with implementation. Implementation requires a number of activities to take place before the physical collection can commence. Throughout the implementation phase, the community must be kept fully informed of the process in order to ensure transparency.

These implementation guidelines are based on the generic model for waste collection in high-density areas, as given in Section 6.7, i.e. OPCs for primary collection and MSEs for secondary collection. Obviously each particular area will have its own peculiar requirements and the guidelines will have to be adjusted accordingly.

8.2 Selection of Contractors

As the intention would be to employ contractors from the community, a selection process is necessary.

- Advertise the positions for OPC primary collectors and MSE secondary collectors in the press, by radio, and through community structures.
- Establish selection criteria for the OPCs through the community environmental forum. Criteria could include:
 - The person must live in the area where he would be responsible for collection
 - The person must be unemployed
 - The person must have sufficient aptitude for the task
- Using the above criteria, select suitable candidates to undergo training for the positions of primary collectors. It is suggested that some simple method of establishing the relative levels of learning ability be used in the selection process.
- Invite interested MSEs to attend the training course (see Section 8.3).
- Draw up and issue tender documentation to enable MSEs to tender for the secondary collection contracts (after the training course has been completed).
- Adjudicate submitted tenders for the secondary collection contracts, in conjunction with the community forum.
- Award secondary collection contracts, and subject successful MSEs to training.
- After training, the selected OPCs must be appointed by way of signing contracts with the local authority.

- Contract fees for the OPCs must be agreed between the local authority and the OPCs prior to finalising the contracts.
- OPC contract documents must be concise, but must clearly spell out the responsibilities and obligations of both the OPC and the local authority.

8.3 Training of OPCs and MSEs

The selected and successful OPCs and MSEs will require training in the aspects of waste management pertaining to their required duties.

- Selected candidates might need to be divided into different groups according to learning ability levels. Potential supervisors can also be identified at this stage.
- Training should be broken down into modules such as:
 - The importance of environmental management
 - Principles of environmental health
 - Principles of Integrated waste management
 - Waste collection systems, with the focus on the system planned for implementation in the area
 - Tendering procedures
 - Principles of contracting, contract documentation, and the difference between a contractor and an employee. OPCs must fully understand the implications of the contracts they would be entering into.
 - Small business management
 - Communication skills
- The suggested period for training is approximately three to four weeks.
- The MSEs would not necessarily need to attend all of the same modules as the OPCs.
- Throughout the training course, monitoring should be carried out by a human resources specialist, as well as by local authority and community officials.
- At the end of the training course, the level of knowledge gained should be assessed, either by means of individual testing, or possibly by group practicals such as play-acting.

8.4 Equipment Procurement

Before the collection system can be implemented, the local authority will be required to procure certain equipment such as:

- Storage containers (probably plastic bags)
- Personal protective equipment for the OPCs, such as overalls, gloves, boots.

- Tools for the OPCs, such as brooms, rakes, shovels, litter spikes.
- Bulk containers (if necessary) for the secondary collection sites. Alternatively, concrete paving may be required at each secondary collection site.

8.5 Project Implementation

Once all the contracts are in place, and the necessary procurement is completed, the project should be ready for implementation.

- It is recommended that implementation of the waste collection system be preceded by a community **clean-up campaign** for the area. This is important so as to provide each OPC with a “clean” area at the start of his/her contract. It is also an effective means of publicising the new service to the broader community.
- Through the environmental forum, the entire community should be encouraged to actively participate in the clean-up campaign.
- School children, particularly primary school children, can generally be very enthusiastic and effective in a clean-up campaign.
- The local authority will be required to provide or arrange sufficient trucks and loaders to transport all the waste collected in the clean-up campaign. MSEs can also be effective in providing this service.
- During the initial stages of implementation, numerous problems with the system can be expected, as the OPCs “find their feet”, and as residents change their attitudes towards waste collection. One of the functions of the OPCs would be to communicate with the residents in his/her area, to ensure that they comply with the arrangements of the system.
- The OPCs would also have to prevent continued illegal dumping, by confronting offenders. They must therefore have the system support and status to do this.
- During operation of the collection system, the local authority will be responsible for managing all the OPC and MSE contracts, and for ensuring that all the contractors are paid timeously. It will also be responsible for monitoring the performance of each contractor.
- The local authority will also be responsible for collection of services payments.
- It is important that the environmental forum continues to encourage residents to pay for the collection service. The forum can also be the ideal vehicle for residents to bring complaints and problems concerning the service.

8.6 Discussion

It must be emphasised that the implementation phase of the waste collection service is only the start of the service. To ensure that the service is sustained in the long term both

in terms of quality of service and financial viability, dedicated ongoing involvement from all role players is required.

9. MONITORING

9.1 *Introduction*

The best means of ensuring ongoing involvement of role players and the sustainability of the waste collection service is by regular monitoring. Monitoring is a continuous activity that forms the basis of performance management. The results of the various monitoring functions will enable corrective measures to be taken on existing systems, and for adjustments to be made to plans for future waste collection programmes. This is particularly important in the case of the pilot waste collection schemes envisaged by the DEAT.

Included hereunder are suggested monitoring activities for waste collection systems in high-density unserved areas, as well as the responsibilities for monitoring.

9.2 *Responsibilities*

- National government, through DEAT, will be responsible for monitoring the implementation of the Phase 1 programme for waste collection services for 300 000 households in high-density unserved areas.
- Provincial government will be responsible for monitoring local authorities for compliance with provincial regulations for waste collection.
- Local authorities will be responsible for monitoring the performance of the waste collection systems operating within their areas of jurisdiction, particularly the performance of private sector contractors.
- The local community can play an invaluable role in monitoring, as they are always exposed to the level of operation.

9.3 *Monitoring Activities*

- Regular inspections of the served areas should be carried out to determine the overall effectiveness of the collection service.
- The performance of the individual collection contractors should be monitored to ensure that they are complying with their contract conditions.
- Regular consultation with the community should be held to determine the residents' views on the effectiveness and acceptability of the waste collection service. This is a form of monitoring that can be refined into an efficient system if appropriate.
- The records of payment for services should be monitored, to determine the level of cost recovery for the collection service provided.