

Swaziland Environmental Authority

Pilot Project Document for development of Collection System in
Kwaluseni peri-urban area
Main Report

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List of Abbreviations

CC	City Council
CDP	Capacity Development Plan
CSO	Central Statistical Office
CT	Company Town
CTA	Central Transport Authority
DANCED	Danish Co-operation for Environment and Development
DFID	(British) Department for International Development
DPM	Deputy Prime Minister
DPMO	Deputy Prime Minister's Office
EMA	Environment Management Act, 2002
EIA	Environmental Impact Assessment
EIS	Environmental Information System
MEE	Ministry of Enterprise and Employment
MOF	Ministry of Finance
MHSW	Ministry of Health and Social Welfare
MHUD	Ministry of Housing and Urban Development
MNRE	Ministry of Natural Resources and Energy
MOAC	Ministry of Agriculture and Co-operatives
MTEC	Ministry of Tourism, Environment and Communications
MPWT	Ministry of Public Works and Transport
NDS	National Development Strategy
NEP	National Environmental Policy
NGO	Non-Governmental Organisation
NSWMS	National Solid Waste Management Strategy
POP	Persistent Organic Pollutants
PSMP	Public Sector Management Programme
SABS	South African Bureau of Standards
SADC	Southern African Development Community
SCCI	Swaziland Chamber of Commerce and Industry
SEA	Swaziland Environment Authority
SEAP	Swaziland Environmental Action Plan
SEDCO	Small Enterprises Development Company
SME	Small and Medium-sized Enterprises
TB	Town Board
TC	Town Council
WHO	World Health Organisation
WIS	Waste Information System
WR2000	Waste Regulations 2000

1. Background

The Swaziland Environmental Authority (SEA) is currently, with the support of the Danish Government, developing a National Solid Waste Management Strategy (NSWMS). The NSWMS is a strategy subsidiary to the National Environmental Policy and Draft Environmental Management Bill and serves as an enabling mechanism for the implementation and enforcement of the Waste Regulations 2000. The strategy therefore subscribes to the vision, principles, goals and regulatory approaches as set out in the above documents. The strategy applies to all government institutions, society at large and to all activities that impact on waste management. The fundamental approach to this strategy is to prevent and minimise waste and to control and remediate impacts. Through the strategy the management of waste will be done in a holistic, planned and integrated way and will extend over the entire waste cycle including generation, prevention, recycling, collection, transportation, treatment and disposal.

This strategy also covers non-rate paying peri-urban and rural areas located on Swazi Nation Land. The current legislation, Waste Regulations 2000, make provision that such areas may in future be declared as "Waste Control Areas". When this happens, the area must prepare a Waste Management Plan and establish a Waste Management System. The SEA has negotiated the testing of this strategic action in Kwaluseni by means of a pilot project. The pilot project will assist the SEA in developing approaches for the installation of waste management systems in areas that are not currently serviced. The purpose of the pilot project is to:

- § Clarify institutional issues and arrangements for waste management in rural areas related to innovative community based capacity development approaches.
- § Evaluate different institutional cooperation agreements between the communities based in these areas and the adjacent formal structures where these are appropriate.
- § Test different technical and organisational aspects.
- § Reduce illegal dumping and litter in the peri-urban areas and improve the quality of the environment in these areas.
- § Facilitate cooperation between the various ministries and, where appropriate, local authorities in bringing services to these areas.

2. Introduction

The research undertaken for the preparation of the Draft National Solid Waste Management Strategy indicated a strong need for the development of practical institutional and technical arrangements for waste management systems in peri-

urban and rural areas. Peri-urban areas which fall within the Swazi Nation Land are generally located adjacent to local authority and company town administered areas. These areas typically fall under the jurisdiction of a Chief but some settlements have been established on privately owned land.

Peri-urban areas are characterised by semi-permanent housing inhabited by low income groups and there is an increasing trend towards the establishment of more permanent dwellings inhabited by middle to financially well-off income groups. The population in these areas is rapidly increasing as a result of the migration of people from urban and rural areas to peri-urban areas where people do not pay rates to cover basic municipal services such as waste management.

Residents in peri-urban areas have been encouraged by the Rural Health Motivators to solve their waste management problems individually by burning their domestic waste in small pits located on the individual plots. However, as the settlement within the peri-urban areas densifies this strategy becomes increasingly less sustainable as the area available on individual plots for burning pits decreases. The result is the development of a series of open dumps and a severe problem with litter.

No clear responsibility has been allocated for the provision of waste management services in these areas and financial budgets are not provided for Chiefs (land managers), Regional Administrators in the Deputy Prime Minister's Office and adjacent urban authorities to provide waste management services in peri-urban areas. Further, adjacent urban authorities cannot justify to their own ratepayers the provision of free services to these areas.

The Waste Regulations 2000 provide for the declaration of "Waste Control Areas" by the Minister responsible for the Environment. The designation of any area as a Waste Control Area obliges the residents, traders, businesses, schools and the public, in general, to cooperate in formalising waste management services in the Waste Control Area so as to develop long-term waste management plans and implement the National Solid Waste Management Strategy. This includes the implementation of the "user pays" principle so that cost recovery can be effected for the waste management services provided.

There is a need to develop and test effective and affordable approaches for the implementation of a waste management system. The development of a pilot project in Kwaluseni community will be used to examine the ways in which cleansing services might be introduced to peri-urban areas.

3. The Status Quo of Waste Management in Kwaluseni

3.1 The Kwaluseni Community Structure

Customary law still applies in these areas. Such structures include the Community Development Officers reporting through the Inkhundla to the hierarchy of the Deputy Prime Minister's Office, the Rural Health Motivators who are volunteers reporting to the Ministry of Health and Social Welfare, and the Community Police. All of these also have links with the Inner Council of the Chiefdom which is presided over by the local Chief and his advisers. In most of the Chiefdoms the advisers include at least one Indvuna. The Chiefs representing the Chiefdoms in any particular Inkhundla make up the basis of that Inkhundla together with the Inkhundla Clerk who reports to the District Secretary. The District Secretaries report to the Regional Secretaries, who, in turn, report to the Deputy Prime Minister's Office.

The Kwaluseni Inkhundla is made up of three separate Chiefdoms, namely, Kwaluseni, Mhlane and Lugoba. According to 1997 estimates some 3 663 people live in the Kwaluseni Chiefdom (Central Statistics Office, 2002). The population is expected to be higher today.

The Kwaluseni Chiefdom comprises 8 zones, i.e. Zones A to H. Each zone has its own community leader but there are no physical boundaries between zones as each zone is a cluster of plots or households whose numbers vary between zones. Each plot/homestead is characterised by the presence of one or more of the following:-

- Residential houses and flats (whose occupants may include families of landlords and tenants);
- Schools;
- Formal and Informal Businesses, e.g. shops, hairdressers, green grocers etc.;
- Workshops for welding, spraypainting, carpentry, radio, shoe and automobile repairs.

Many people resettle in peri-urban areas as they are not required to pay rates for services provided. However, in Kwaluseni the cost of water and electricity is being recovered from consumers through the landowners by the relevant national supply agencies. The financially well-off groups constitute the landowners (landlords) who are building blocks of one room dwellings (flats), adjacent to their own houses. The flats are let to accommodate the new settlers in these areas. As more flats are built the settlement density increases. Apart from the landlords, the communities that settle in these areas are relatively transient because people want

to live in Kwaluseni whilst seeking work in Matsapha. Some of the work seekers come from neighbouring countries and are not necessarily Swazi Nationals.

3.2 Waste Management in Kwaluseni

When the status quo was assessed in this community no formal waste management system of any description existed. However the traditional way of waste disposal has mostly been followed by households and plotowners. This entails digging of a pit on the plot, dumping the waste in the pit and burning it. This resulted in most plots being covered by waste pits over the years with no more space available for pits.

The development of dense settlements throughout Kwaluseni, related to the numbers of flats that have been built. This resulted in a very dense settlement which makes it impossible to dispose waste in the traditional way. The situation is exacerbated by the concomitant influx of people so that the traditional waste disposal practices are no longer sustainable and contribute to environmental health problems.

The lack of space has contributed to a severe litter problem in Kwaluseni as many residents dump domestic refuse in open places such as road verges, the local cemetery, cross roads and areas adjacent to shops. Attempts are made to burn these heaps of refuse and they smoulder for days at a time thereafter. These problems have, for a long time, been a matter of concern to the residents of the area.

3.3 The regulatory system related to Kwaluseni

The regulatory framework in Swaziland is relatively complex. Elected representatives serve their constituencies in Parliament and a Ministerial Structure has evolved where essential tasks are managed through a Cabinet of Ministers reporting to the Prime Minister. However, a traditional system of government exists on Swazi Nation Land where the traditional structures managed through Chiefdoms are equally important and these structures must also be consulted when projects are being planned.

Apart from Customary Laws (the traditional system of governance alluded to above), the legislative framework governing waste management in Swaziland consists of the following elements:-

3.3.1 The Waste Regulations 2000

These regulations have existed since 21 April 2000 and specify the roles and responsibilities of waste generators, waste collectors, waste disposers as well as the roles of the SEA and the different local authorities. The regulations empower the

Minister of the Environment to declare a peri-urban or rural area a "Waste Control Area" which should facilitate the control of litter and the introduction of a formal waste management system to the designated area.

The Draft NSWMS proposes that the Office of the Deputy Prime Minister will be responsible for waste management in peri-urban and rural areas once declared a Waste Control Area. This would in practice mean that the inkhundla for a specific area will be the responsible authority for waste management for that particular area. They will be assisted strategically by the SEA and technically by the Ministry of Housing and Urban Development.

3.3.2 The Environmental Management Bill of 1999

This Bill will, when enacted, provide the enabling legislation for the Waste Regulations 2000. The Kwaluseni Waste Management pilot project is designed to inform the development process related to the provision of appropriate and environmentally acceptable waste management systems that are affordable to the communities that live in areas that have previously never benefited from waste management services.

3.3.3 The Environmental Authority Act of 1992

This is the Act that constituted the SEA.

3.3.4 The Urban Government Act No. 8/69

This Act is presently undergoing revision.

3.3.5 The Public Health Act No. 5/69

This Act is also under revision and it legislates for the employment of Health Officers by the Ministry of Health and Social Welfare. These health officers educate Rural Health Motivators in order to promote good waste management in rural areas. The Rural Health Motivators are voluntary workers who are elected by the community. Together with the Home Economic Extension Workers from the Ministry of Agriculture and Cooperatives, these people promote clean-up campaigns, the use of pit latrines and improved waste management.

The Office of the Deputy Prime Minister is responsible for monitoring and controlling waste management in rural areas (Swazi Nation Land) which includes peri-urban areas, such as Kwaluseni, and serves as the communications channel between Government and the community through the local Tinkhundla Centre and the Chiefdoms. However, the Community Development Section in this office, which assists with the training of the community in pit latrine use and improved waste management (burning of wastes and on-site burial of the residue), does not

have a legal mandate in any of its enabling legislation to support its activities with respect to environmental health management.

The waste control area regulations can be used to enforce the preparation of waste management plans and enable the installation of a formal waste management system involving waste storage, collection, transport and disposal.

4. The Pilot Project Proposal

4.1 The Kwaluseni community's draft proposal for a waste management system

4.1.1 The Kwaluseni Solid Waste Society

This body was formed during the time that the above pilot project planning exercise was taking place. The Kwaluseni Community had established its own waste management interest group and, in September 2000, a Draft Proposal for the Kwaluseni Solid Waste Management and Development Scheme (dated 2000) was submitted to the SEA by Mr Russia Mabuza on behalf of the Kwaluseni waste management interests group (see Annexure 1). Mr Mabuza is the locally elected councillor for Kwaluseni.

This organisation has operated under a number of different names, e.g. Kwaluseni Solid Waste Association and Kwaluseni Waste Committee, before the official name of Kwaluseni Solid Waste Society was chosen. The Kwaluseni Solid Waste Society is an association of interested and affected parties formed under the Chairmanship of Mr Mabuza.

4.1.2 The Kwaluseni Solid Waste Society Proposal

This involved the implementation of a discretionary system where stakeholders could elect to use the system in which case they would be required to pay for the service. The stakeholders that had been approached in Kwaluseni were the landowners. Many of these landlords had substantial numbers of tenants living in the flats that they had built on their properties. Those landlords that had been approached were convinced that they could recover the cost of the service by small increases in the rents that they charged for their flats. The service involved the provision of recycled 210 litre drums, mounted on posts, to participating households and a collection system using a light delivery vehicle and trailer. The area to be served incorporated the entire Kwaluseni Inkhundla as described in 2.1.1 above. This proposal formed the basis of a positive engagement and subsequent discussions ensued between SEA and the Kwaluseni Solid Waste Society.

4.1.3 The Kwaluseni Solid Waste Society's Objectives

These were defined in their proposal as follows:-

- To identify, develop and implement community development projects within the area;
- To assist local community members to identify alternative sources of employment;
- To develop and implement a community based solid waste management co-operative scheme which would:
 - provide employment opportunities to local residents
 - ensure a clean and safe environment in compliance with the Solid Waste Regulations 2000 and Public Health Act
 - allow for proper land use planning in the area

This proposal, prepared by the Kwaluseni Solid Waste Society as well as the revised proposal and the associated action plan is attached in Annexure 1.

4.2 The Revised Proposal

The Kwaluseni Waste society's proposal was revised in collaboration with the kwaluseni community through various meetings and workshops. A copy of this revised proposal is attached as Annexure 1. As a final result the following objectives and outputs were agreed to.

4.2.1 Pilot Project Objective(s)

“To develop and instil a sustainable waste management system and practices in Kwaluseni peri-urban area”

4.2.2 Pilot Project Outputs

- A Waste Management Plan for Kwaluseni
- An operational waste management system for Kwaluseni to manage waste collection and disposal. (Recycling and composting will be of second priority and only be included pending the availability of resources)
- A capable structure, organisation and staff to manage the system.
- A cost-recovery system/financing schedule and plan based on the polluter pays principle that will assure the operation and maintenance of the waste system.

- A project related community awareness campaign

5. The implementation process followed

The Danced consultants conducted a feasibility study on the Kwaluseni Solid Waste Society's proposal which demonstrated that the original system proposed was not financially sustainable. As a result, the SEA, supported by the consultants, offered to assist the Kwaluseni Solid Waste Society in:-

- Finding a viable approach to solving the waste management problems in the area;
- Drafting the required waste management plan; and
- Installing and implementing the system in Kwaluseni.

The proposal produced by the Kwaluseni Solid Waste Society proved to be the catalyst for the subsequent investigatory work that was carried out in the development of a revised Pilot Project Proposal, Action Plan as well as a Project Implementation Plan for the pilot project that would test the system proposed below.

It was demonstrated to the Kwaluseni Solid Waste Society that the establishment of community based waste management systems involved many more considerations than those related to the procurement of waste bins and the means of transport to take the waste away. The cost of the system is most important because the community itself would have to fund the system. Therefore, it was important that systems acceptable to the community be developed, that appropriate cost effective equipment be procured and that an effective management structure be established so that the waste management services would be affordable, and therefore, sustainable. However, it was clear to all the participants that these objectives could only be reached when sufficient data about the community and the waste being produced was available. The buy-in and commitments of the community to such a waste collection system was also necessary to ensure success.

In view of this, waste management planning appropriate to non-serviced areas had to be approached using business planning disciplines. The planning process was divided into two stages: -

STAGE 1: Collection of data and information for the design of waste management system

This included:

- Information about the community;
- Information about the waste being produced in the community;
- Community management, awareness and buy-in.

STAGE 2: Waste collection system design and waste management planning

This included consideration of the following:-

- How will waste be stored for collection?
- How will waste be collected and transported?
- How will costs be recovered?
- How and by whom will the system be managed?

It was also important for the Kwaluseni Solid Waste Society to understand that the system had to be made compulsory rather than discretionary because there were always difficulties associated with fee collection. It was also observed that contracts had to be honoured by the Kwaluseni Solid Waste Society. It was noted that a compulsory system would be facilitated by the declaration of the area to be serviced as a "Waste Control Area".

5.1 Data and Information Collection

5.1.1 Community Survey

The survey report can be found as Annexure 3 to the report.

Approach to the Survey. In order to facilitate the identification of a suitable waste management system, sufficient information about the community and the study area was required. The community survey also involved consideration of the existing road and path infrastructure in the study area. The objective of the community survey was to gather the following information:-

- The number of formal and informal houses to be covered and their location. The proposed system is linked to landlords and hence "plots" where a number of households are living. Data on the total number of plots in the area to be serviced and the number of households that are located on each plot was required, as well as the number of residents of each household or dwelling.
- The number, location and size (no. of students) of schools and other institutions in the area.
- The number, location, nature of business and size of shops, small and medium industries, small businesses and markets. Such entities normally produce a lot of waste some of which may be recycled. In this context information on the extent and organisation of existing recycling was also sought.

- Information about clinics, private practitioners, veterinarians and traditional medical services.

This information listed above was necessary for the consideration of the capacity required from the system, the number and possible location of collection points, and the number of drums/bins that would be required.

Findings of the Community Survey The public consultation process was initiated during February 2002. A summary of the findings of the community survey has been provided below, refer to Annexure 3 for further detail:-

Awareness and acceptance - Amongst landlords, their tenants and some business operators was quite good and most viewed poor solid waste management as a serious problem. Most indicated that they were willing to pay for waste management services provided that the charges were discussed and agreed upon by all the parties concerned.

Perceptions about the existing situation -

- Management - The general feeling was that the problem of solid waste management was exacerbated by the lack of cooperation among the residents, especially with respect to keeping the areas outside their premises clean whilst adhering to standards recommended by the Rural Health Motivators.
- Storage - Storage of waste indoors for long periods was cited as a problem because, apart from the multi-roomed houses inhabited by the landlords, most of the flats were single-roomed dwellings with little space for waste storage. Further, the storage of waste outside dwellings led to scavenging by dogs and the associated scattering of waste was regarded as a serious problem. Lack of waste storage facilities such as bins in public places and along streets was also cited as a serious concern.
- Disposal - There was insufficient land available on each plot for waste disposal by controlled burning in pits. This has resulted in indiscriminate waste disposal and widespread dumping of waste along roadways, near the cemetery and on the banks of the Luntsantsama River. The increasing demand for rented accommodation has compounded the problem.

Suggestions from the Respondents - These varied slightly but generally showed insight derived from an awareness of the problem of poor waste management:-

Authoritative Body - 83% of all the landlords interviewed felt that it was necessary to form and put in place an Authority Body to manage and coordinate waste management issues in Kwaluseni.

Disposal - The majority of respondents (44%) thought it would be good to use existing waste disposal facilities that had already been developed, managed and operated by either the Manzini City Council or the Matsapha Town Board.

Waste Storage for Collection - 35% of the residents believed that the use of appropriate refuse bags together with bins/drums was an acceptable storage method. In this group the landlords preferred this method. There was no significant difference in opinion between the landlords and the tenants. However, business operators preferred the use of refuse bags because many, in the formal sector, use their own transport to haul the waste at convenient times before dogs and other animals can tear the bags.

Location and Servicing of Bins - 55% of the residents agreed with the proposal that bins/drums be installed on each plot and that waste be placed in the bins by residents of that plot only. They also preferred that the waste be collected on certain days per week, and that they themselves be responsible for transferring the waste to bins located at the roadside next to their premises on the specified pick-up dates.

Frequency of Waste Collection - Landlords, tenants and businesses unanimously preferred that waste be collected twice a week.

Optional versus Compulsory Participation - Almost 89% of those interviewed preferred the waste management system for Kwaluseni to be compulsory. There was no difference in opinion among landlords, tenants, businesses and other focus groups in this regard. Most participants at the Esibayeni Lodge workshop agreed with this. One reason for preferring this method was the fact that it would make a difference in terms of cleanliness if the system were to be implemented uniformly. Another reason was that it would be possible for non-participating residents to undermine the waste management efforts by dumping waste in those areas that would be serviced by the system, or even on the surroundings of the holding areas. In the latter case, non-participants would have no incentive to eventually participate in the system.

Willingness to Pay - About 76% of the community supported the "user pays" principle for waste management services. Most of the 23% who said that they would not be willing to pay for the services cited affordability as the reason.

Other Possible Stakeholders and their Roles - The involvement of the Kwaluseni Inkhundla for purposes of receiving payments for waste management services ranked lowest in the survey with most people preferring to make payments either at the post office or at offices of the Kwaluseni Solid Waste Society.

Education and Awareness - All the different stakeholders consulted identified certain areas where they needed assistance in terms of education, information dissemination and awareness raising.

5.1.2 Waste Survey

Approach to the survey - The nature of the waste is varied and as a result different types of waste sometimes need to be handled in different ways. The majority of the waste produced in Kwaluseni is household (domestic) and commercial waste, however, the composition of this waste is unknown. The composition of the waste produced (i.e. volumes of "wet" and "dry" waste) has implications for the way in which the waste is managed. The affect of the inclusion of waste from schools, commercial and industrial enterprises on the overall composition of the waste needs to be considered. The possibility of income generation from recycling requires investigation. A waste survey was required within the selected area to identify the different waste types produced by the different sectors as well as the volumes produced. The method used for the waste survey was agreed in consultation with the community.

The objective of the survey was to record the mass of the waste (kg/bag), the waste types, e.g. paper, plastic, glass, tins and degradable organic waste as a percentage of the bag contents, as well as other waste types (hazardous wastes) for:-

- Households - the number of households per plot and residents per household;
- Commercial centres - the number and types of shops in the area;
- Schools/University - the number of schools and students in the area, the number of bags per day;
- Clinics - the number of clinics/vets in the area and the number of bags per day;
- Agricultural holdings - the number of Agricultural holdings in the area and the number of bags per holding.

The functional roles of the Rural Health Motivators and Community Development Officers need to be established in order to involve these officials in the process at the beginning of the project so that they can assist in the educational and awareness process. This was discussed with MHSW and the Deputy Prime Minister's Office as well as the Kwaluseni Solid Waste Society.

Findings of the Waste Survey - After obtaining the agreement of the Kwaluseni Solid Waste Society, a waste survey was carried out in Zones F, G and H of the Kwaluseni Chiefdom. The data gathered in this survey is presented in Annexure 4. Analysis of the survey data yielded the following information with regard to the volumes of waste produced and the different types of waste generated in the study area.

Volumes of waste produced – These are not significantly different from those determined in other developing communities in Southern Africa:-

- Households generate 0.26 kg/capita/day which relates well to information derived from similar surveys carried out in other developing countries under similar circumstance;
- Shops produce 3.9 kg/shop/day;
- Schools produce 2.4 kg/school/day - it is thought that schools are burning most of their waste as they have the space to manage burning pits;
- Clinics report up to 8.2 kg/clinic/day.

The types of waste generated – These were typical of a domestic waste stream and the average composition of the waste stream was as follows:-

Organic waste:	38%
Plastic:	32%
Paper:	21%
Metal:	5%
Textile:	2%
Glass:	1%

5.2 Community Management, Awareness and Buy-In

The community's involvement assessing the waste situation, prioritising the need for action to be taken and designing the waste collection system for implementation is important. The value of community involvement, awareness and education in the success of the pilot project was identified early in the planning phase. As a result, an investigation into the development and implementation of an awareness-raising programme was undertaken (refer to Annexure 5): Awareness raising approach for pilot project in Kwaluseni peri-urban community). The support of the community must be obtained before a waste management system can be established takes place and this will require the following:-

5.2.1 The Role of the Inkhundla

The waste management system must be linked to the Inkhundla at its inception. The Inkhundla is the respected authority in the community and must play a key role in the community consultation process. The consultation process involves:-

- Creation of awareness of the initiative among the community;
- Providing all community stakeholders with the opportunity to participate;
- Inclusion of elected councillors and/or opinion makers in the consultation process;
- A consultation structure that is designed to allow for both formal and informal consultations;

- Consultation on proposals/options made for a collection and payment system

5.2.2 Community Awareness and Education

It is also important to obtain support for the introduction of waste management systems in peri-urban and rural areas. Programmes of this nature must be carefully planned in consultation with the community and the objectives should include the following:-

- Generate interest and awareness on the current waste situation;
- Information about possible ways of improving the waste situation, and support the waste system that is eventually agreed upon; and
- Respect literacy levels, be accessible and flexible and they should promote a dialogue.

Rural Health Motivators and/or Community Development Workers should be involved in the design and facilitation of the awareness programmes. Awareness raising activities should be run throughout the planning and implementation period. This has been facilitated through the regular meetings that have been held between the SEA, the consultants and the Kwaluseni Solid Waste Society where the Rural Health Motivators have attended. Several public meetings have also been held with interested and affected members of the community on a number of Sundays for information sharing. These meetings were facilitated by Mr Mabuza in his capacity as local Councillor and Chairman of the Kwaluseni Solid Waste Society.

5.2.3 Willingness To Participate

Relative to the Kwaluseni Solid Waste Society proposal it had been established that a number of landlords had indicated their willingness to participate by paying 50 Emalangenzi in advance as a subscription fee. The survey that was subsequently carried out and its findings have been reported in chapter 4 above. The survey established that the community was willing to participate in the system, and their willingness and ability to pay for the service.

5.2.4 Community Consultation

There is a need to agree with the community on the waste collection service to be provided. Several community meetings to discuss the nature and amount of waste to be collected, how waste will be collected (e.g. refuse bags and bin/drum system), who will collect it and on the location of the collection points have taken place.

5.2.5 Community Management Structures

The Role of the Inkhundla - This structure may decide to establish a Waste Management Task Team/Committee/ Association and make it responsible for the practical work involved in drawing up a Waste Management System and Plan and implementing the system. This sub-structure will be accountable to, and report back to, the Inkhundla. The Inkhundla has a formal link to the Regional Secretaries and hence to the Deputy Prime Minister's Office. This is the same link that was proposed to be utilised in the implementation of the National Solid Waste Management Strategy and would also be a likely outcome when a community is declared "a Waste Control Area" in terms of the Waste Regulations 2000. The Inkhundla has been involved through the Deputy Prime Minister's Office and it has been accepted that there is sufficient support in the community to allow the pilot project to progress in the test zones of the Kwaluseni Chiefdom (Zones G & H). The Kwaluseni Solid Waste Society is the organisation that has been accepted as the management sub-structure that will report through the Kwaluseni Inkhundla to the Regional Secretary for the area in the Office of the Deputy Prime Minister.

The Role of the Kwaluseni Solid Waste Society – The organisation must carry out the day to day management of the project under the authority of the Inkhundla. The placing the official office of the Waste Management Task Team at the Inkhundla Centre should be considered as there are many advantages in having this office as the place where waste service fees could be safely paid, and where refuse bags could be sold. The location of the office at the Inkhundla Centre would confirm the role of the Inkhundla in solving future problems related to theft of equipment, vandalism, non-payment of service fees, adjustment of service fees, financial management and in expanding the system into other areas of the Inkhundla. However, the Kwaluseni Solid Waste Society has elected to locate its offices at the Kwaluseni Post Office and Business Centre and the Red Cross Building. These buildings are adjacent to each other and much closer than the Inkhundla Offices. It has been decided to re-evaluate the situation when the pilot project is scaled up and expanded to the rest of Kwaluseni.

6. Pilot Project Service provided by Kwaluseni SW-Society

6.1 Area to be serviced

The Pilot Project will be restricted to an area designated as encompassing Zones G & H of the Kwaluseni Chiefdom within the Greater Kwaluseni Inkhundla Area.

Once the Pilot Project has been evaluated, and this will take place in a short period (3 months), the system will be gradually and systematically expanded to cover the entire Kwaluseni Inkhundla, i.e. the other zones in Kwaluseni, as well as Lugoba

and Hlane. Thus, the objective that everyone will receive a refuse collection service will eventually be met.

6.2 Kwaluseni Solid Waste Society

The members of the original Kwaluseni Solid Waste Association applied for registration as a Cooperative Society under the Ministry of Agriculture and Cooperatives. The Constitution has been ratified by the Ministry of Agriculture and Cooperatives and the organisation is henceforth registered as a Cooperative Society and will operate as the Kwaluseni Solid Waste Society. A copy of the Constitution of the Kwaluseni Solid Waste Society is appended for reference as Annexure 6.

6.3 Legislation

The Waste Regulations 2000 will become effective immediately once the Kwaluseni Area is designated a Waste Control Area. These regulations which control waste management are administered by the SEA and require the Kwaluseni Solid Waste Society to comply with the following: -

6.3.1 Waste Management Licence

The Kwaluseni Solid Waste Society will have to apply on the prescribed forms to the SEA for a Waste Management Licence.

6.3.2 Waste Management Plans

A long-term plan for the management of waste that conforms to the requirements of the Swaziland Environmental Authority will have to be prepared within a period of one (1) year of the area being designated a Waste Control Area.

6.3.3 Recovery of Waste

This will take place later after the evaluation of the Pilot Project period and will proceed relative to the implementation of the National Solid Waste Management Strategy. When application is made for the Waste Management Licence by the Kwaluseni Solid Waste Society allowance must be made for future recycling activities.

6.3.4 Littering and Abandoned Vehicles

It will be the responsibility of the Kwaluseni Solid Waste Society to control littering through the provision of adequate refuse bins in public places and prevent the dumping of abandoned vehicles in the area.

6.4 Waste Management System

6.4.1 Primary Collection Service

Diagram 1 illustrates the waste management system that has been proposed for implementation in Kwaluseni.

Provision of refuse bins - Refuse Bins will be provided for plots in the Study Area. It has been estimated by the Kwaluseni Solid Waste Society that each of the zones to be serviced during the pilot project will require one hundred (100) refuse bins. Therefore, two hundred (200) refuse bins will be manufactured from recycled 210 litre oil drums by a local contractor (DPM Panelbeaters and Spray Painters).

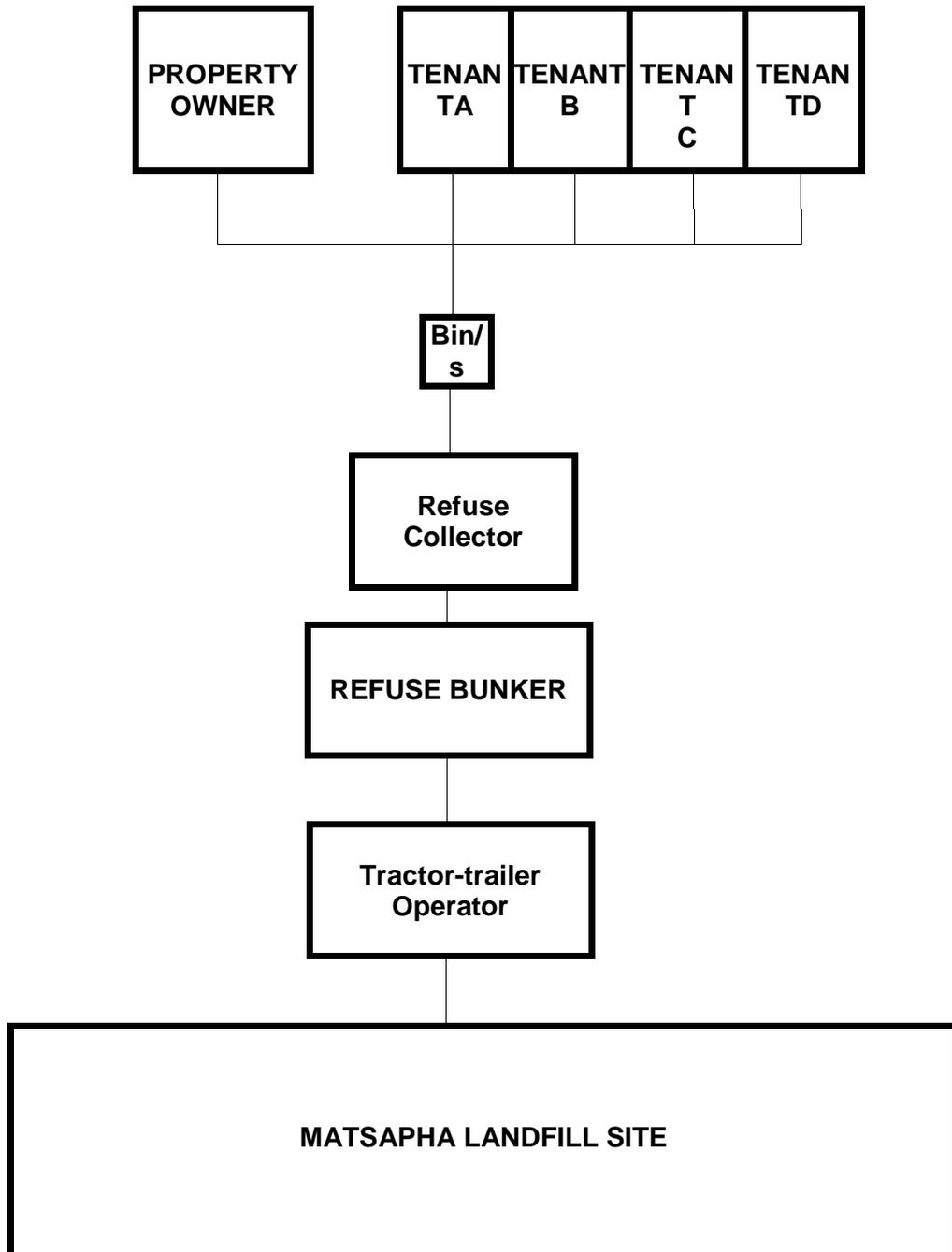
Each bin will have drainage holes punched in its base to facilitate drainage so that rainwater does not accumulate in the bin. The bins will be painted red and the letters KSWS will be stencilled in black onto the red background to identify the bins as belonging to the Kwaluseni Solid Waste Society. Each bin will be mounted on red painted steel poles in such a way that the bin may be pivoted to facilitate the removal of the refuse on waste collection days. The support poles will be concreted into the soil at each refuse bin location.

Each residential plot must have at least one refuse bin and if the number of households per plot, including the landlord's dwelling, exceeds 8 then a second refuse bin will be provided to that plot and so on.

Provision of refuse bags - The community survey that was carried out in the area indicated that, on average, each plot will produce the waste equivalent of 7.2 standard plastic refuse bags per week. This means that each household will not fill a standard refuse bag per week. Standard refuse bags will be initially issued to the residents to kickstart the system.

The standard refuse bags will be kept in stock by the Post Office that could be purchased by the residents. However, used plastic shopping bags can also be used to store refuse. As the bags are filled by the participants in the service they will be transferred from the shop or household place of storage to the refuse bin serving the shop or property.

**DIAGRAM 1:
THE KWALUSENI SOLID WASTE SOCIETY COLLECTION SERVICE
FOR ANY PROPERTY OWNER AND HIS/HER TENANTS**



Method of primary collection - Primary Collection Contractors will be appointed in consultation with the Rural Health Motivators. It is recommended that two (2) contractors be selected from amongst the Kwaluseni Community. Each contractor will be issued with a specially designed, purpose-built, refuse collection handcart.

The Primary Collection Contractors' will be required to empty the refuse bins at each plot, including shopping areas, twice a week. The refuse bin contents will be placed in the refuse collection handcart. When the contractor estimates that the handcart is full it will be hauled to the Temporary Waste Storage Area or Refuse Bunker.

6.4.2 Temporary Waste Storage Areas

Provision of refuse bunkers - Two refuse bunkers will be constructed as follows:

- 100 mm thick concrete slab of 6 m in length and 4 m in width;
- Concrete block walls to a height of 1.5 m above normal ground level;
- Corrugated sheet iron roof at 2.25 m above normal ground level, welded to a steel frame supported by steel poles embedded in the concrete floor and concrete block walls;
- Expanded steel mesh, or palisade-type, lockable gate will be provided to control access the interior of the Refuse Bunker and,
- The gap between the corrugated iron roof and the concrete block wall will be protected with a welded burglar guard to prevent unauthorised entry.

Location of refuse bunkers - One refuse bunker will be located near the shops in Zone G and the other will be located near the cemetery in Zone H. The areas where the refuse bunkers will be located have been approved by the King's Council.

6.4.3 Final Collection and Transport to Landfill

Another private contractor will be appointed from within the community to service the refuse bunkers. This contractor will transfer the waste from the refuse bunkers to a tractor drawn trailer for transport to the Matsapha Landfill Site for final disposal. The Contractor must have a back-up tractor so that service will not be interrupted if there is a break down. Each refuse bunker will be emptied on a daily basis during the normal working week period, i.e. Monday to Friday.

6.4.4 Landfill

The Matsapha Landfill Site is the nearest landfill site accessible to the waste from the Kwaluseni Pilot Project area and its use has been approved by the SEA.

Therefore, the Contractor will haul the waste transferred from the refuse bunkers to this landfill for ultimate disposal.

6.4.5 Financial aspects

Sampling - It was decided by the Kwaluseni Solid Waste Society that the pilot project should run in two zones, i.e. Zones G & H. These zones were sampled to quantify the amount of waste that is produced in order to determine the scope, and cost, of the proposed pilot project. There are no accurate population data available for peri-urban areas but, as has been noted above the population is growing rapidly and landowners are erecting single room “flats” to accommodate people that are seeking employment in Matsapha which is nearby. The sampling exercise was carried out on a randomised basis within the designated zones. The sample data for Zones G & H is reported in Annexure 4.

Determination of refuse volumes generated within the service zones - The pilot project service would be limited to the number of households (and shops) whose refuse could be handled using 200 refuse bins on a twice a week collection basis. Each refuse bin would be made up of a recycled 210 litre drum. The waste generation survey was undertaken using a simple spring scale and the generation data, recorded in kilograms, are reported in Annexure 4. The generation data were used to determine the amount of waste generated in the proposed service area and to evaluate the effectiveness of the proposed waste collection system as specified above.

Zones G and H will generate the following mass of waste per week:-

Element	Numbers	kg/day	kg/week
Shops	13	76	532
Residents	6034	1569	10982
Total			11514

The density had not been determined during the survey but the waste had been sorted into its various components as reported above. This analysis showed that the waste was of a comparatively low density (range 100 to 200 kg/m³). Consequently, it was possible to determine the capacity of the proposed system relative to the bins, and the collection handcart, storage capacity.

Density kg/m ³	m ³ /week	Bins/week	Cartloads/day
100	115	677	5
125	92	542	4
150	77	451	3
200	58	339	2

Determination of the cost of the proposed service: Appendix 8 reports on the development of the financial model that was used to inform the Summarised Income Statement reported below:-

Capital Cost of Equipment	No.	E Unit	E Total
Carts	3	5000.00	15000.00
Bins	200	85.00	17000.00
Collection Bunkers	2	5325.00	10650.00
Total			42650.00

Operating Cost	E Total
Administration	29340.00
Collection	104592.00
Disposal	5796.00
Interest and Depreciation	14501.00
Total	154229.00

Cost/Bin/Month	200	E 64.29
Cost/Bin/hsehd/Month	8.8 households/plot	E 7.30

Revenue	Number	E Unit	E Total
Bin Service	200	85.00	204000.00
Refuse Bag Sales	5504	1.00	5504.00
Total			209504.00

It was estimated that even if only 75 % of the waste service fee could be recovered the operation would achieve break-even. The cost schedules for the Kwaluseni waste management system is provided in Annexure 8.

6.5 Safety and Health Requirements

Although authoritative figures are not available on accident rates for solid waste workers in Swaziland, such data as are available in developed countries suggests that the expectation of the waste worker for a serious or even fatal accident is much higher than the average for industry in general.

Instruction and training are needed and are of crucial importance to safety but there is a tendency to regard such by many waste management organisations as being simply a matter of common sense. Important factors such as good communication, protective clothing, first aid kits and the training required to apply first aid are often overlooked.

6.5.1 Summary of Hazards

Lifting Injuries & Falls - The World Health Organisation has estimated that 80% of all industrial accidents have simple causes, such as tripping or dropping objects. The waste management worker usually works in far from ideal circumstances compared to a typical factory worker. For instance, he may have to lift heavy weights, carry them over uneven and/or steeply sloping surfaces and step into the roads before placing his load.

Lacerations & Injection Wounds - Lacerations especially from contaminated jagged edges) besides causing pain and disability can give rise to infections which might have implications more severe than the original injury, and yet it is not easy to prevent such injuries to the refuse collector. Being employed in the open air, there is a tendency for workers to discard safety equipment. The problem associated with handling refuse bags on collection rounds is particularly severe because of the nature of the materials that are placed in the bags, e.g. broken bottles, shards of glass from windows, mirrors etc., needles (including hypodermic needles) and all of these may be contaminated with food wastes and other putrescible wastes.

Mechanical Hazards - In addition to the self-evident risk of being struck by moving vehicles, the untidy state of some operations, tends to increase the risk of simple accidents, especially involving vehicles reversing under conditions of poor visibility.

Inhalation - Due to uncertainties over the precise nature of many of the wastes being handled this represents a high potential for concern. In the case of inhalation of dust, fumes or gases sufficient exposure may occur to exceed short term exposure levels during tipping or disturbance of wastes (e.g. asbestos) despite the operation taking place in the open air. Less obvious sources of toxic emissions are the wetting of reactive wastes and the mixing of incompatible wastes (e.g. Hy-

pochlorites). Such materials are not limited to chemical factories but can even be encountered in cleaning aids. Toxic gases such as carbon monoxide, hydrogen chloride and hydrogen cyanide can also be produced by fires on waste disposal sites. Fires are not uncommon on poorly managed waste disposal sites.

Absorption - Some toxic substances can affect operators through absorption through the intact skin where exposure may arise through manual operations. A dermatitis hazard might be associated with prolonged or intermittent exposure to a wide range of material commonly found in household cleaning aids.

Ingestion - Significant intake of toxic materials through the digestive system should not be a concern because eating and drinking on the job should be avoided when handling wastes and should only take place after the hands have been carefully washed.

Infectious Agents - The potential presence of infectious material containing bacteria and viruses must be taken into account when assessing the risk that workers will contact disease during any operation.

Gas Emissions - Landfill gas is starting to receive attention in Southern Africa as it is potentially explosive and inflammable. Thus collectors must be prohibited from smoking when delivering and tipping waste at the landfill site. The alterations which can occur in the quality of the air in a refuse bunker can be significant within a few hours of the waste being deposited in the relatively confined space of the bunker.

6.5.2 Safety Rules in Domestic and Commercial Wastes Collection

Always -

- Provide comprehensive training to waste collection staff with special emphasis on the dangers associated with the collection of waste;
- Ensure that protective clothing is worn and this should include high visibility overalls, gloves as well as safety boots;
- Be alert for oncoming traffic;
- Take particular care with waste that might contain broken glass;
- Lift plastic refuse bags by the neck with, if necessary, a gloved hand underneath to support the bottom if the refuse bag seems unduly heavier than normal;
- Hold the bag away from the body and legs;
- Get advice before moving refuse which arouse suspicion, i.e. gives off fumes, has an unusual smell, etc.;

- Carry out regular checks to ensure that the collection cart has no prominent sharp edges which could snag clothing or inflict injuries to hands, limbs, etc.;
- Record and report accidents;
- Wash your hands before eating food or drinking beverages and,
- Do not consume alcoholic beverages whilst collecting wastes.

Never -

- Try to lift a load that feels too heavy for you - get help;
- Carry a dustbin or a refuse bag in such a way that your vision is impaired;
- Attempt to pick through the contents of a refuse bag in order to salvage material;

6.6 Institutional Arrangements

Diagram 2 illustrates the way in which the Kwaluseni Waste Management system will be managed. This system arose following a workshop that was held on 22 August 2002 at the Park Hotel in Manzini where constraints to the implementation of the system were discussed and the responsibilities of the various roleplayers were evaluated. Training and capacity development in order to develop the abilities of all the roleplayers is required.

6.6.1 Waste Control Area

The Kwaluseni Area must still be declared a "Waste Control Area" by the Minister responsible for the Environment including any amendments published under the directions of the same minister. Relative to the Ministerial Declaration of the Kwaluseni Waste Control Area, the Kwaluseni Solid Waste Society will comply with the Waste Regulations 2000 in every respect.

6.6.2 Kwaluseni Waste Management Guidelines

A set of Guidelines governing the operation of the Waste Management System have been drafted by the Swaziland Environmental Authority. These Guidelines are additional to the Waste Regulations 2000 and shall apply to the Kwaluseni Waste Control Area. Copies of the Kwaluseni Waste Management Guidelines are appended to this document as Annexure 7 for reference.

6.6.3 The Role of the Deputy Prime Minister's Office

The Community Development Officers from the Inkhundla shall be responsible for the inspection of the zones and ensure that the waste is managed in accordance with the Waste Regulations 2000 and the Guidelines. The implementation of The

Kwaluseni Waste Management Guidelines shall be supervised by the Deputy Prime Minister's Office through the Regional Administration and the Kwaluseni Inkhundla.

The DPM's office will play a regulatory role as follows:

System

Assist the SEA and participate actively in the development and implementation of all aspects of the system.

Boundaries

- i) Assist SEA and the community in defining the boundary for the pilot project area.
- ii) Assist the relevant community in zoning the area and dissemination of relevant information timeously
- iii) In consultation with the community, identify suitable location for construction
 - i) of holding areas in each zone as well as the waste disposal sites
- iv) Obtain in writing, the necessary approval from the relevant authorities for the use of the holding areas in each zone
- v) Implement disciplinary measures for non compliance

Registration

- i) All persons employed in the WMS should be registered with the Inkhundla
- ii) Register people undertaking waste recycling

Recycling

- i) Encourage the use of appropriate refuse bags
- ii) Encourage waste recovery and separation

6.6.4 Other Responsibilities

- i) Ensure that the Waste Regulations 2000 are applied uniformly and ensure continuity in cases where the WMC disbands or becomes ineffective.
- ii) Provide office space for WMC and provide venue for monthly meetings

- iii) Approve and assist in preparation of Contract documents
- iv) Review tenders, where tendering becomes necessary
- v) Enforce compliance to regulations through the Health Inspectors
- vi) Monitor the implementation of the system on a regular basis and take the necessary steps to ensure an effective implementation of the system where necessary.

6.6.5 The Role of the Ministry of Health and Social Welfare

The Health Officers working through the Rural Health Motivators will provide the motivation and awareness required to facilitate the commitment of the residents to the system.

6.6.6 The Role of the Ministry of Agriculture and Cooperatives

The Ministry of Agriculture and Cooperatives provides a business auditing and advisory service at no charge to the Kwaluseni Solid Waste Society, which will facilitate the auditing function required of the Deputy Prime Minister's Office.

6.6.7 The Role of the Ministry of Housing and Urban Development

The Health Inspectors and the Ministry of Housing and Urban Development shall provide the Inkhundla with technical support. The location of the waste bins shall be decided in collaboration with these Health Inspectors.

6.6.8 The Role of the Swaziland Environmental Authority

The Swaziland Environmental Authority shall ensure that the Deputy Prime Minister's Office is enforcing the Waste Regulations 2000 in the Waste Control Area. The design of the refuse bunkers shall be decided in collaboration with the SEA. The SEA shall provide on request the necessary training in waste management to all stakeholders.

The SEA shall provide overall administration of the system in Kwaluseni as follows:

Administration , Training and Awareness Creation Campaigns

- i) Agree with the DPMO on peri-urban and rural areas to be targeted.
- ii) Process the declaration of waste control areas.
- iii) Facilitate the application for a license.
- iv) Identify and liaise with relevant individuals and training institutions and government institutions such Ministry of Health and Social Welfare, etc, for the provision of training needs.

- v) Identify special training needs for the different community members or groups and channel training according to these special needs
- vi) Disseminate relevant information about Waste Regulations, 2000 and the process of declaration of Waste Control Areas.

Equipment Procurement

- i) Arrange for purchase of suitable equipment for the Waste Management System
- ii) Arrange for delivery of equipment at the Inkhundla for safe keeping and distribution

Implementation and Monitoring (in close collaboration with the Inkhundla)

- iii) Agree with the community and other relevant authorities on the boundary for the pilot project
- iv) Facilitate the establishment of a Waste Committee (Society)
- v) Facilitate the development of a Waste Management System for the area in collaboration with the DPMO (Inkhundla) and discuss it with the affected community, including traditional authorities
- vi) Develop waste management guidelines and disseminate information on the implications of such procedures
- vii) Facilitate the collection, recording and analysis of waste types, volumes, and other important statistics for the relevant communities.
- viii) Agree with the community and other relevant authorities on the location and numbers of temporary holding areas
- ix) Facilitate the construction of holding areas and a dumpsite
- x) Facilitate the erection of bins, drums or other relevant equipment as had been agreed upon at selected places within each zone
- xi) Agree with the community and other relevant authorities and approve locality of the waste disposal site.
- xii) Facilitate and assist with the implementation of the agreed system.
- xiii) Monitor overall implementation of all the different aspects of the proposed Waste Management System and ensure that the system is in line with the provisions of the Waste Regulations 2000.
- xiv) Provide technical inputs as and when necessary, e.g. in selection of dumpsite, treatment of the different kinds of waste, appropriate waste recycling and reclamation, etc.
- xv) Facilitate the relevant training activities e.g. workshops, posters, etc.

Costs

- i) Assist with the cost accounting of the system.

- ii) Facilitate the disseminate information about system cost to the affected communities
- iii) Encourage Inkhundla and other stakeholders to set monthly subscriptions that would reflect the cost for the system

6.6.9 The Responsibilities of the Participants

Although posters and information leaflets have been produced and distributed there is a serious lack of awareness amongst the general public. The users of the system will need back-up inputs on a regular basis to reinforce their participation and amend current behaviour patterns. As the Guidelines clearly state "all participants shall without fail have the responsibility to participate in the Waste Management System of the Waste Control Area. Every participant shall keep the waste in waste bags within his/her premises, and place the full bags in the waste bins that have been provided at the boundary of the plot for collection by the waste collectors. All participants shall without fail pay for the waste management services through the Kwaluseni Solid Waste Society." However, there is no enforcing legislation in place until Kwaluseni has been declared a "Waste Control Area". Thus the system will in the interim rely on the powers vested in the Inkhundla for enforcement and the encouragement of the Rural Health Motivators for awareness re-inforcement.

6.6.10 The Responsibilities of the Kwaluseni Solid Waste Society

The Kwaluseni Solid Waste Society shall ensure that refuse bunkers are maintained in good condition in all the designated areas. The Kwaluseni Solid Waste Society will provide adequate refuse bins in all public places, strategically placed to cater for customers and passers-by.

The Kwaluseni Solid Waste Society will ensure that adequate refuse bins are provided for every residential plot. The Kwaluseni Solid Waste Society will ensure that adequate hand pulled carts are available for the appointed Primary Collection Contractors to transport waste from the refuse bins to the refuse bunkers. The Kwaluseni Solid Waste Society will ensure that a Contractor is appointed to transport the waste from the refuse bunkers to the Matsapha Landfill Site.

An office shall be established from which the Kwaluseni Solid Waste Society shall manage the Waste Management System. Funds paid by the participants, or solicited anywhere under the auspices of waste management, shall be strictly used to further the cause of waste management in The Kwaluseni Waste Control Area. The Kwaluseni Solid Waste Society shall be responsible for the management of the funds and shall practice proper bookkeeping. The Kwaluseni Solid Waste So-

ciety shall independently decide how the funds are spent on The Waste Management System.

Waste Management Committee (WMC)

Composition the Executive of the WMC

The WMC will consist of representatives from within the Waste Control Area and should ideally consist of the following members:

- i) Chairperson
- ii) Vice Chairperson
- iii) Secretary
- iv) Vice secretary
- v) Treasurer
- vi) Two additional members

The Inkhundla should be represented on the committee.

WMC Responsibilities

- i) Implement the agreed system in the community.
- ii) Disseminate information from the Inkhundla to the community
- iii) Distribute bins to designated areas and within the WCA or project area
- iv) Do onsite monitoring
- v) Disseminate information about, Waste Management Regulations, 2000 and its implications for Siphofaneni WCA
- vi) In collaboration with Inkhundla, develop contract documents and review tenders
- vii) In collaboration with the community, determine the payment structure for waste collectors
- viii) Coordinate participation in training workshops
- ix) Participate in awareness raising campaigns, putting up warnings, posters and bill boards
- x) Waste collectors will be employed by the WMC to service the different zone
- xi) Take responsibility for maintenance and/or replacement of holding areas and bins
- xii) Determine cost recovery charges for use of the bins and other facilities
- xiii) Develop Contract documents and review tenders
- xiv) Employ waste collectors, engage contractors and other service providers. Each zone should have one waste collector to be hired and paid for from the monthly subscription fees

- xv) In collaboration with the community, set the payment structure for the community collectors and of service providers
- xvi) After receiving training, participate in Public Awareness Campaigns; putting up posters, coordinate participation in workshops, etc
- xvii) In consultation with the communities that they represent, SEA and DPM's Office, determine the fees to be paid towards operation of the of the system
- xviii) Determine payment dates at the Inkhundla/DPM's Office
- xix) Prepare a constitution and a business plan
- xx) Open and operate a business account with a bank
- xxi) Encourage waste collectors to record information on local waste types, volumes, etc.
- xxii) develop a system for keeping information on local waste types, volumes, etc.

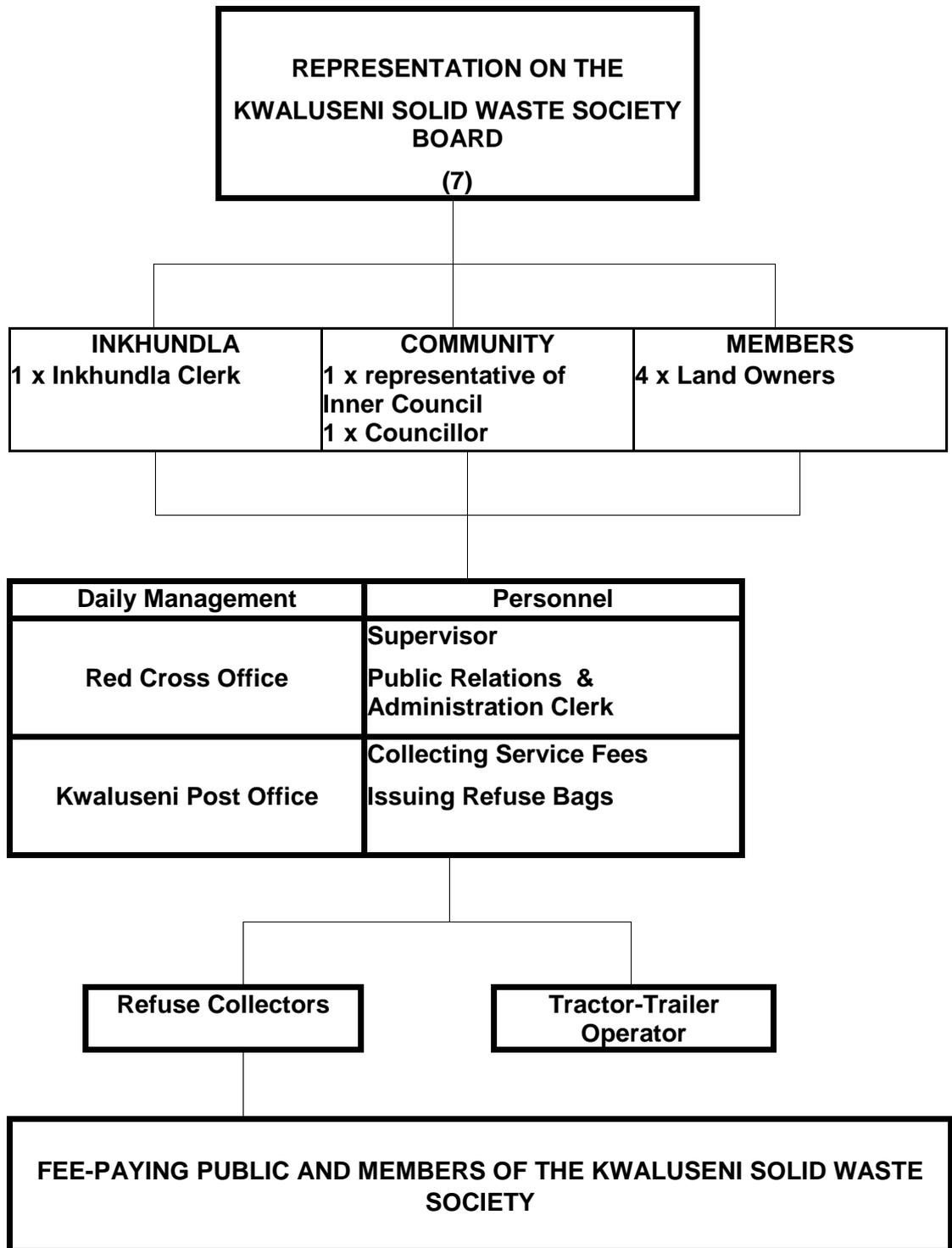
Duties of the Waste Collectors

- i) Ensure that waste is kept in bins and refuse bags
- ii) Report any irregularities to the WMC
- iii) Empty bins on a regular basis as determined by the WMC.as into temporary holding areas (bunkers)
- iv) Ensure that only waste in refuse bags may be deposited into holding areas

Duties of Waste transporter

- i) Collecting the waste from the holding areas (bunkers) to the waste disposal site is
- i) to be contracted out to a suitable contractor with the necessary equipment eg.
- ii) Tractor and traylor or truck.
- iii) The Waste transporter will collect the waste from the holding areas at regular
- iv) intervals and at times agreed with the WMC and transport the waste to the
- v) dumpsite.
- ii) The transporter will dispose of the waste in the designated dumpsite in a way as
- vi) prescribed by the WMC.

DIAGRAM 2 : THE KWALUSENI SOLID WASTE SOCIETY MANAGEMENT STRUCTURE



6.7 Managing the System

It was originally proposed by the Kwaluseni Solid Waste Society that a Management Committee would manage the system. However, the Park Hotel Workshop arrived at a different conclusion after they had completed their deliberations. It was jointly decided that the Management Committee would be replaced by an elected Board the members of which would be representative of the formally constituted authorities, the traditional structures and the residents. This structure is illustrated in Diagram 2 above.

It was also decided that the day to day management of the system would be effected by a Supervisor and an Administration Clerk. The job descriptions of these two positions are appended as Annexure 9. These two positions would operate from the Red Cross Building in Kwaluseni.

Fees would still be collected and refuse bags issued at the Kwaluseni Post Office and Business Centre. In this regard a contract must still be concluded with the owner of that business and a proforma contract is appended as Annexure 10.

6.8 Monitoring and Auditing the System

Monitoring of the pilot project must serve two purposes:

- Monitoring linked to the objective, Outputs and Activities agreed for the Pilot Project;
- Monitoring linked to the purpose of extracting learning lessons and experience of relevance for the further refinement of the National Solid Waste Management Strategy.

The monitoring parameters may be different to serve the two purposes.

The first focuses on monitoring progress at the day to day operational level to reaffirm that the project is on track and this monitoring is mainly for use locally as well as nationally with SEA. A proposed monitoring frame for that purpose has been outlined below.

The second focuses on all the matters and issues arising before a way forward is found on a particular issue. This monitoring framework is predominantly for use by the SEA (the Liaison Committee) and it serves the purpose of refining the National Solid Waste Management Strategy.

6.9 Proposed reporting System

The Kwaluseni Solid Waste Society will not be expected to produce comprehensive reports. Thus, a simple financial reporting system will be developed and linked mainly to the operational and implementation side of the project. However, for the purpose of refining the Draft National Solid Waste Management Strategy, SEA needs to capture more detailed and more qualitative than quantitative data on the project. A special reporting system will be designed by the SEA Liaison Committee to serve this purpose. The following operational reporting system is proposed:-

- Monthly reports by the Kwaluseni Solid Waste Project to SEA. These reports will cover the following:
 - Progress with implementation (on each aspect of the implementation plan)
 - Problems encountered
 - Recommendations on proposed amendments

A format for this report will be prepared by the SEA.

- Appointment to and attendance of a SEA Liaison Committee member in the Task Team Meetings of the Kwaluseni Solid Waste Management Project. This representative will be responsible for the capture and documenting of issues that have emerged since the previous meeting.
- Attendance of Manager (the person who is responsible for and involved in the day-to-day implementation) of the Kwaluseni Solid Waste Project in the SEA Liaison Committee Meetings.
- Notes must be taken from any ad hoc meetings and attached to the monthly report back to the SEA Liaison Committee.

6.10 Means of Verification

The following means of verification will be used to monitor progress on the pilot project:

- Reports and studies undertaken on the Kwaluseni Solid Waste Project;
- Monthly reports by the Kwaluseni Solid Waste Society to the Liaison Committee
- Liaison Committee Member Notes from Task Team Meetings
- Any official correspondence on matters pertaining to the project will be copied to the Liaison Committee
- Reports from Liaison Committee to the Project Management Group
- Reports from the Project Management Group to the Project Steering Committee

- Inspection visits to Kwaluseni to monitor visible improvements and awareness among community residents.

7. Capacity Development

7.1 Introduction

The detailed capacity development report is attached as Annexure 11. The overall capacity development approach incorporated issues like planning and design, community mobilisation, analysis, systems design, financial planning. Most of these has been undertaken in terms of consulting services provided through the joint SEA/Danced sponsored National Solid Waste Management Strategy Project (NSWMS).

The capacity gap analysis has been based on a waste collection system which has not yet proven its suitability. Amendments to the collection system should therefore result in amendments to the capacity development plan.

The lack of a legal framework has made it difficult to undertake a needs assessment based on the requirements placed by such. Moreover, while the waste collection system established in Kwaluseni is considered a pilot project from the perspective of the NSWMS Strategy Project, this is not so from the perspective of the Kwaluseni community. Here a sustainable waste collection system is sought for. Hence an attempt has been made to design a capacity development plan that supports the intention of the Kwaluseni Community to establish a sustainable waste collection system

The first step of capacity development planning is always to assess the capacity requirements that the programme must respond to. These requirements were found to be diverse. Some related to community awareness and community education; other related to the financial situation of the community whereas yet other related to the management and operation of the waste collection system.

Several workshops (formal and informal) with the Kwaluseni representatives were held in the process.

7.2 Capacity Gap Analysis

The “performance” of an organisation or a system (for example the waste collection system at Kwaluseni) can be said to be the same as the “capacity” of the organisation. Capacity in Kwaluseni was assessed under six main headings, which for the purpose of Kwaluseni can be defined as follows:

Strategic Issues (1)

Could be said to summarise the five issues (2-6) in order to pursue sustainable waste collection in Kwaluseni. This could include:

- Does the KSWs have clearly formulated approaches to achieve its objectives for waste collection.
- Does the KSWs have a structure and ownership that supports the sustainability of the proposed waste collection system.
- Proposed allocation of duties
- Does the KSWs feel that the allocated duties and responsibilities have been adequately defined and described.
- Does it appear realistic, that the proposed financing model, will be sufficient to financially sustain waste collection services as planned.
- Does the KSWs have an approved and widely accepted “Constitution” to guide its work.
- Is the organisational status of the KSWs appropriate (e.g. to register as a cooperative)

Structure Issues (2)

Structure indicates the division and organisation of work amongst the staff and lines of command and communication within the KSWs, between the KSWs and the Community and between the KSWs and its Contractors.. The capacity assessment should hence look into the following:

- Is the proposed structure and organisation of KSWs appropriate to deal with both current and expected future duties and responsibilities
- Have the necessary linkages to local, regional and national structures been described and formalised.
- Is the KSWs in a position to recruit, employ and retain the required staff,
- Is the KSWs in a position to enter into agreements with sub-suppliers

System Tool Issues (3)

System Tools denotes the tools of the KSWs including hardware (equipment and machines) as well as software (work systems and procedures) to undertake its waste collection responsibilities. Such may include:

Is the required legislation (e.g. declaration of a Waste Control Area) in place to support the operation of KSWs.

- Is there a management system in place to capture data and to report back on the performance of waste collection (local, regional and national reporting)
- Is the required equipment for waste collection installed, available and/or ordered and is it appropriate
- Are the required administrative systems and procedures in place
- Are the required financial systems and procedures in place
- Are maintenance routines in place
- Are collection schedules defined
- Are monitoring and supervision routines of waste collectors and contractors in place

Skills, Knowledge and Awareness Issues (4)

The issues relate to the ability of KSWs staff including the Management Team, Waste Collectors and Hauler and Payment Contractors, the Board, Landlords and Community residents to perform their assigned duties and responsibilities. This may include that::

- all of the above mentioned have sufficient knowledge on waste management and the waste collection system including hygiene and occupational health and safety, communication and community education and mobilisation, Board Management; General and Contract Management and Administration, Financial Management, Accounting and Cost Recovery etc.
- all of the above have the required skills to perform their assigned duties and responsibilities in relation to the installation and operation of the new waste collection system.
- That bad/adverse” attitude/behaviour both by KSWs staff, Contractors and Board members have been minimised and where acquired knowledge and skills are being brought to fruitful use.
- That the KSWs, if necessary, has access to complementary and specialised expertise if required to undertake its allocated responsibilities. This could be provide through the SEA; MHUD; MHSW and DPM’s Office

Inter-relations (5)

Inter-relations issues deal with the way all the different stakeholders of the KSWs and the waste collection system relate to each other. This could include:

- Relationships and hierarchies between different staff members of the KSWs
- Relationships between landlords and tenants/residents
- Relationships between landlords and the KSWs
- Relationships between tenants/residents and the KSWs
- Relationships between all others and the Inkhundla
- Relationships between SEA, MHUD; MHSW and DPM’s Office and the KSWs
- Relationship to participating and non-participating zones
- Power Structures and politics in the community
- Credibility of the KSWs vis-à-vis the general public and the private and commercial sector
- Community support can be developed to support the KSWs to develop and operate the waste collection system.

Positive and Negative Incentives (6)

The enabling environment constitutes a range of factors that will affect both individual and organisational performance of the KSWs. Such issues may include:

- Payment of staff and contractors on time

- National and local priorities and encouragement given to solid waste management.
- Sound finances

It should be evident from the above, that the capacity needs assessment takes a broader perspective than a training needs assessment, and from that, that training would most likely only be a partial response to the identified problems.

What is mentioned in this report should however be considered as an outline of pointer to where performance gaps should be expected and where further needs analysis needs to be undertaken. At best the capacity assessment finds its justification at the organisational and occupational level.

7.3 Capacity Development Programme

The capacity development programme is restricted to cater for the management, financial, technical and administrative aspects of the waste collection system at Kwaluseni. The full programme is described in Annex ? Capacity gaps associated with community awareness and mobilisation are anticipated to have been addressed by the proposed awareness raising program.

It is recommended that capacity development activities be also undertaken for key stakeholders at regional and national level. Such a programme will assist in building an understanding of the efforts required to establish sustainable waste management services in non-declared areas of Swaziland and also in discussing and agreeing on roles and responsibilities associated with taking legislation into such areas and on how to monitor

The participants of the capacity development programme are envisaged to be:

Community Level

- Board Members (5-7 from landowners, councillors/headmen and Inkhundla)
- Project Manager (1)
- Treasurer/Public Relations & Administrator (1)
- Community Waste Collectors (2-4)
- Waste Hauler Contractor (1)
- Waste Hauler Contractor Staff (2-3)
- Receiver of waste collection charges (e.g. the Post Office) (1)

The total number of participants in the programme will be around 12 – 17.

Regional and National level

A programme may also be run for representatives from regional and national level, in what case the following representatives should attend:

- v Representative from the Regional Secretary's Office
- v Representative from the DPM's Office (Mbabane)
- v Representative from the SEA
- v Representative from MHUD
- v Representative from MHSW
- v Ministry of Agriculture and Cooperatives
- v Representative from the Tibiyo (optional)

8. REVISION OF THE STRATEGY

The outcomes of the Kwaluseni Pilot Project will be monitored and compared with the desired results of the strategy. Deviations in the performance of the Kwaluseni waste management system will be examined and the pilot project adjusted until optimum performance of the system is achieved. The lessons learned from this process will be used to inform and modify the National Solid Waste Management Strategy as related

to service provision in peri-urban areas.

