

Swaziland Environmental Authority

Recycling Pilot Project in Mbabane
Main Report

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1. BACKGROUND

The Swaziland Environmental Authority (SEA) is currently, with the support of the Danish Government, developing a National Solid Waste Management Strategy (NSWMS) for Swaziland. The NSWMS is a strategy subsidiary to the Draft Environmental Management Bill and serves as an enabling mechanism for the implementation and enforcement of the Waste Regulations 2000. The strategy subscribes to the vision, principles, goals and regulatory approaches set out in the above documents. The strategy applies to all government institutions, society in general and to all activities that impact on waste management. The fundamental approach to the strategy is to prevent and minimise waste production as well as controlling and remediating the impacts resulting from the generation of waste. The implementation of the NSWMS will result in a waste management system that is integrated, holistic and planned such that it extends over the entire waste cycle to include generation, prevention, recycling, collection, transportation, treatment and disposal.

In the preparation of the draft strategy it became clear that there was a strong need for the implementation of practical and affordable waste management systems in Swaziland. A number of pilot projects have been developed by the SEA to address the implementation of various elements of the NSWMS.

The purpose of this pilot project is to:

- Clarify institutional issues and arrangements for the management of recycling facilities in areas regulated by local authorities.
- Evaluate different institutional co-operation agreements between local authorities and private contractors.
- Test different technical and organisational aspects.
- Reduce illegal dumping and litter in urban areas.
- Improve recycling in urban areas
- Facilitate cooperation between the various ministries and local authorities in the stimulation of recycling.

2. INTRODUCTION

The research undertaken during the preparation of the Draft National Waste Management Strategy indicated a strong need for the development of a recycling initiative which would stimulate the existing recovery system of post consumer waste in urban areas within Swaziland.

Mbabane is the capital and the second largest city in Swaziland with a population of approximately 70 000 and an estimated growth rate of approximately 4%. Mbabane is the national capital resulting in the majority of the government ministries being situated here. The industrial sites tend to attract service providers (i.e. companies involved in transportation, warehousing and distribution activities) and other service activities.

The centre of Mbabane is characterised by the central business district (CBD), the town industrial area and a number of formal residential areas. Various other commercial activities, central government offices and schools are located to the south of the CBD. Middle to high income residential areas lies north and east of the CBD. To the north, low-income housing estates have been developed. Informal settlements have developed on the peripheries of the city in areas difficult to service and are areas which lack community facilities. The informal settlements in Mbabane, such as Msunduzi, Mabhodleni, Sidwashini and Nkwalini, have population densities far exceeding the rest of the urban area.

Poor economic growth and immigration from neighbouring countries has resulted in the recent exponential growth of informal sector activities in Swaziland, particularly in Mbabane. High levels of informal sector employment are a result of poverty, lack of skill and education and unemployment in the formal sector.

3. THE STATUS QUO OF RECYCLING IN SWAZILAND

There are no formal or public recycling schemes operating in Swaziland, only private and informal recycling initiatives exist. The private recycling initiatives deal predominantly with commercial and industrial waste. They do not cover domestic waste. Informal recycling activities in the form of waste picking at the landfills and dumpsites are widespread. The materials sorted out are primarily plastic, cans and cardboard, but other types of waste such food wastes and metals are also collected.

The Mbabane City Council have indicated that they would like to sort their waste for recycling in order to conserve landfill airspace, however no additional staff are available for this activity. The Mbabane landfill site, financed through a World Bank loan to the Ministry of Housing and Urban Development, was established in 1998. It was originally specified that waste picking would not be allowed on this site, but the Ministry of Enterprise and Employment intervened to allow the development of new employment opportunities.

Landfill scavenging is partially organised, in that waste pickers sort out flint glass, paper, cardboard, aluminium cans and tin-plate steel cans before the waste is compacted. The stockpiles of recycled materials are segregated from the landfill by

some large rocks adjacent to the weighbridge and office buildings and the recovered materials are neatly stored in large woven polypropylene bags. The recyclable materials are sold to a number of organisations active in the recycling industry. There is currently no market for coloured glass and the market for recycled plastics is small.

The landfill has a projected operational life of 25 years but it has been forecasted that its design life is shorter. It is likely that the Mbabane City Council might agree to receive waste from nearby towns at a charge.

3.1 RECYCLERS IN SWAZILAND

A number of the main role players in the Swaziland Recycling Industry were interviewed in an attempt to obtain and share the following information:-

- Obtain up-to-date information on the status quo of the recycling industry in Swaziland
- Establish the attitudes of these role players to the desirability of Buy-Back Centres in the City of Mbabane.
- Inform the role players interviewed about the Swaziland National Solid Waste Management Strategy process.
- Determine the market for recyclable materials and assure the sustainability of the proposed recycling programme.

The following companies in the recycling industry were interviewed:

Ngwenya Glass: - Ngwenya Glass recycles used flint glass which has been recovered in Swaziland. They currently consume 800 kg of glass per day. A new glass kiln is planned at Ngwenya Glass and this will facilitate the recycling of coloured glass.

Reclam: - Reclam has an interest in the recycling of all types of materials (paper, plastics, scrap metals, cans and glass. They rely on independent collectors to supply recycled materials.

Swazi Paper Mills: - Swazi Paper Mills is a medium sized paper mill operating entirely on recycled paper and mainly producing tissue paper. It is owned by the Sharma Group that also has business interests in Swaziland, Zimbabwe, Zambia, South Africa and Botswana.

Mondi Paper Recycling: - Mondi Paper Recycling, South Africa, are prepared to accept recycled paper from Swaziland at its Piet Retief Mill.

Swazi Enviro Scrap: - Enviroscrap is involved in the recycling of cans and scrap metal generated in Swaziland. Mr Michael Dlamini of Enviroscrap has been ac-

tively involved in the initiation of the pilot project as a member of the Recycling Task Team representing Swaziland business interests.

SABIL Foundation:- SABIL Foundation, an NGO organised by Swaziland Brewers Ltd, are primarily concerned with the collection of tin-plate steel and aluminium cans and deliver baled cans to Collect-a-Can in South Africa. However, they are only operating in the Breweries and Coca-Cola waste streams.

Collect-a- Can: - Collect-a-Can, a South African based company, have indicated that they would pay per tons of high density baled cans delivered to their Pretoria Depot.

Swazi Plastic Industries: - Swazi Plastic Industries produces refuse bags with up to 10% recycled plastic material and can formulate plastic bags with mixtures of the different grades of plastics to provide good tear resistance. They also recycle the relatively clean plastic waste from their own production floor.

South African Polyester Recyclers (Pty) Ltd: - This South African based company is primarily concerned with the recycling of PET bottles delivered to their Germiston Plant.

Phumululele Consortium: - Phumululele Consortium is a Swazi based company with an interest in recovering used oil in Swaziland.

Rose Foundation: - The Rose Foundation is a South African based company involved in the recycling of oil. Oilkol is the agent for the Rose Foundation and pays for oil delivered to its premises in Gauteng. The Rose Foundation have recommended that old oil be stored at one of the major oil company depots in Matsapha and be blended with HFO supplied to companies using oil-fired boilers.

Fuel Firing Systems Refiners: - FFS Refiners, a South African company, is interested in accepting used oils from Swaziland at its Secunda Depot.

Swaziland Waste Recyclers (Pty) Ltd:- Swaziland Waste Recyclers (Pty) Ltd are primarily concerned with the collection of waste paper and plastic but are also involved in the collection of other materials such as glass. The collected materials are sold to various recycling companies. The plastic that is recovered is baled and transported to Plastic Recycling (Pty) Ltd in Durban. This activity is not currently operating as the plastic bailing machine is out of commission.

Swazi Waste Collectors: - This collection company has a contract to supply recycled paper to Swazi Paper Mills. Swazi Waste Collectors have a fleet of light delivery vehicles to transport paper to Swazi Paper Mills. In addition, they recover paper from government offices and the large shopping centres. Swazi Waste Col-

lectors operate from Mbabane and have satellite operations in Nhlangano and Siteki.

Ashraf Plastic Recyclers: - Ashraf Plastic Recyclers operate a recycling plant at Lobamba which processes recycled plastic to produce recycled plastic bags. The recycled plastic is sorted, shredded, washed, melted and pelletised at another plant. The pellets are used to produce low cost plastic bags.

More detailed information is obtainable in Appendices 1 and 2 which are Interviews with Swaziland based Recyclers and A Recycling Market Security Evaluation respectively.

3.2 PREFERRED SOLUTIONS

The Status Quo Analysis Report and the Preferred Solutions Document prepared in August and November 2000 as phases in the development of the Swaziland National Solid Waste Management Strategy pointed to the following needs:-

3.2.1 Recycling of hazardous waste from commerce, garages and industry

Recycling of hazardous waste from commerce

Solution 1: Recycling of hazardous waste from garages (waste oil, car batteries, scrap tyres) - regulations ensuring a mandatory waste management and recycling system for hazardous waste from all garages in Swaziland.

Solution 2: Collection of other recyclable hazardous waste from commerce - in the long term recycling of other wastes such as fluorescent tubes, nickel-cadmium batteries and mercury batteries to be considered.

Recycling of hazardous waste from industry

Solution 1: Waste collection and recycling system - regulations to ensure collection and recycling of waste oil from all industries. Industries should be obliged to store and deliver oil to existing collection points located at petrol stations.

Solution 2: Hazardous waste management system - regulations ensuring a mandatory hazardous waste management system, including recycling hazardous waste from all industries.

3.2.2 Recycling organic waste from households, commerce and industry:

Composting of organic household waste

Solution 1: Promotion of home composting - each household separates and composts their own organic waste.

Solution 2: Communal composting - households separate organic waste from the rest of the waste stream and bring the organic waste to a communal composting facility.

Solution 3: Central composting facility - households store organic waste in a separate bag/bin which is collected and transported to a central composting plant which serves the whole city, town or area.

Composting of organic commercial waste

Solution 1: Composting sites by market places - market stalls deliver organic waste to the composting facility run by a local contractor. Compost could be sold at the market place or sold for organic farming.

Solution 2: Food waste from hotels and restaurants for use as animal food - delivery of food waste from larger hotels and restaurants to nearby pig farms on a voluntary basis.

Recycling of organic industrial waste:

Solution 1: Recycling of organic industrial waste by the industry itself - composting or utilisation of organic waste as animal feed.

3.2.3 Recycling non-hazardous waste from industry, including demolition and construction waste:

Solution 1: Promotion of recycling of non-hazardous industrial waste - recycling in the food, textile and scrap metal industries should be targeted first. In the long term other industrial sectors in Swaziland should be targeted.

3.2.4 Recycling of packaging waste from households, commerce and industry

Recycling of packaging waste from households

Solution 1: Door-to door collection of recyclable materials - community based contractors perform door-to-door collection and transport of recyclable materials to transfer stations where the waste would be further transported to recycling facilities.

Solution 2: Drop-off points/collection banks - establishment of drop-off point/collection banks for specific recyclable materials at shopping centres where recyclables can be delivered voluntarily.

Solution 3: Buy-back centres for recyclable materials - establishment of a recycling centre where residents can deliver source separated recyclable materials, and residents will be paid a fixed price per unit for materials.

Recycling of packaging waste and waste paper from commerce:

Solution 1: Improved recycling of packaging waste from shops, supermarkets and wholesalers - waste generators are responsible for their own waste, all trucks delivering goods should be obliged to take back and deliver all the source separated packaging waste at recycling stations established by the commercial sector/private companies.

Solution 2: Improved recycling of waste paper from government offices - recycling of materials from offices should be promoted in all governmental offices.

Solution 3: Government procurement policy - ministries to amend their procurement policy to include specifications for recycled content for products that they purchase, thereby, creating a stronger market for recycled products.

Recycling of packaging waste from industry:

Solution 1: Improved recycling of packaging waste from industry - In parallel with recycling of packaging waste from the commercial sector, recycling of industrial packaging should be based on the principle of the waste generators taking responsibility for their own waste. The development of regional recycling stations would ensure further recycling.

3.3 MARKETS AND CONSTRAINTS

The market for recovered materials in Swaziland is limited to Ngwenya Glass, Swazi Plastic Industries and the Swazi Paper Mills. Other recycling activities relate to the export of recovered material to South Africa (cans and used oil). The limited recycling maybe attributed to a lack of regulatory or economic incentives for recycling.

The Status Quo Analysis Report produced during August 2000, i.e. during the design phase of the NSWMS identified a number of constraints relating to recycling activities. The main problems arising from current household, commercial and industrial waste recycling are:

- The recycling that takes place at landfills has the potential to create health problems.
- The potential for recycling several waste types may be high but no incentives exist to encourage environmentally friendly recycling.

3.4 THE REGULATORY SYSTEM IN SWAZILAND

In 1992 the Government of Swaziland established Swaziland Environmental Authority (SEA) as a cooperative body on environmental issues. The SEA Board

advises the Minister of Tourism, Environment and Communications (MTEC) on environmental issues.

In August 1997 the SEA issued the Swaziland Environmental Action Plan (SEAP) which clearly identified the need for development of a National Solid Waste Management Strategy (NSWMS).

In order to establish a framework for environmental protection and the integration of natural resources on a sustainable basis the SEA has drafted an Environmental Management Bill of 1999. This Bill, when enacted, will provide the enabling legislation for the NSWMS, and will specify the role and functions of the SEA, the obligations of local governments and the duty of care of all entities regarding waste management.

The Environmental Management Bill makes provision for the following principles:

- Generation of waste shall be minimised wherever practicable and waste must, in order of priority be reused, recycled, recovered and disposed of safely;
- Non-renewable natural resources should only be used prudently and renewable resources and ecosystems should only be used in a manner that is sustainable.
- The "Polluter Pays Principle" and the precautionary principle shall be adhered to.

The detailed regulations on waste management prepared by the SEA are laid down in the Swaziland Waste Regulations 2000, which came into force in April 2000. These regulations specify the roles and responsibilities of waste generators, waste collectors, and waste disposers as well as the role of the SEA and different authorities.

3.5 NEEDS

The Preferred Solutions Document has recommended that the recycling of hazardous waste should be given a high priority along with the development of sustainable systems for the low cost recovery of non-hazardous waste. This report also recommended that waste salvaging at landfill sites should be replaced by separation at source in order to create sustainable jobs in the formal recycling sector involving the collection, sorting and processing of recyclable material.

Recycling must be encouraged and incentives established to make recycling more viable than disposal. This might mean intervention through the promulgation of appropriate legislation designed to regulate waste management. Education would

also be required in the development of entrepreneurship skills to promote recycling.

All of the above would require the implementation of awareness campaigns to increase awareness amongst the public.

4. PILOT PROPOSAL FOR BUY-BACK CENTRES IN MBABANE

4.1 PROBLEMS TO BE ADDRESSED BY THE PILOT PROJECT

There is an increasing litter problem in many of the built up areas of the Kingdom of Swaziland which is associated with the careless disposal of post consumer packaging waste. Post consumer packaging waste refers to those elements of the waste stream that are discarded after the contents have been consumed, e.g. soft drink cans, glass and plastic bottles, cardboard boxes, plastic shopping bags, newspapers and other paper waste.

The pilot project will test the effectiveness of a combination of the Drop-Off Centre and Buy-Back Centre approach as a means of recovering post consumer packaging and paper waste. These centres will be located in areas where there is substantial commuter traffic, e.g. in the centre of the City of Mbabane.

In an attempt to boost the availability of recycled paper in Swaziland waste paper will also be collected from government and other offices.

The recyclers already established in Swaziland will be encouraged to extend and improve the recovery of the recyclable materials.

4.1.1 Pilot Project Objective(s)

To establish and maintain a recycling system in Mbabane for all post consumer packaging and commercial waste, as well as waste paper from government offices.

4.1.2 Pilot Project Outputs

- To launch and maintain an awareness campaign in the City.
- To recover 50% of the recyclable used paper from Government Offices.
- To collect and recycle 30% of the post consumer recyclable materials.
- To collect and recycle 50% of all recyclable materials from commercial centres in the City.

4.2 IDENTIFICATION OF ALTERNATIVES

The initial phase of the development a recycling pilot project in Mbabane considered the different types of recycling facilities that can be established. Three basic models for recycling were considered and are discussed briefly below:

4.2.1 Drop-off Centres

Drop-off centres rely on voluntary recycling of materials by the general public who do not expect to be paid for the material delivered to these centres. Drop-off centres are generally located in middle to high income areas as opposed to lower income areas. This type of recycling facility can also work successfully in industrial areas.

The recycling company provides specialised storage containers (i.e. Igloos for glass, paper banks for paper and mesh cages for plastics) at agreed locations. These containers are also used for the transportation of recovered materials to the recyclers' processing plant/s.

Drop-off centres can become unsightly open dumps if strict supervision is not exercised over the deposition of recycled material. These centres generally work well when placed under the direct control of local authorities who can enforce by-laws that prevent littering. These centres also work successfully when located at garden refuse transfer stations that are managed by local authorities.

4.2.2 Buy-back Centres

Buy-back centres, as the name suggests, pay for recyclable materials brought to the centre. These types of recycling facilities operate successfully in low income areas as they provide an economic opportunity, encourage entrepreneurship and provide an economic incentive for recycling. Buy-back centres also work well in industrial areas.

Two types of buy-back centre operations were identified:

(a) *Entrepreneur-based centres*

Entrepreneur-based buy-back centres are run by entrepreneurs identified by the community. These entrepreneurs are independent of the recyclers but operate in terms of negotiated contracts which specify tariffs that will be received for the recovered materials. These tariffs empower the entrepreneur to develop his/her own pricing structure and the profit made is for the benefit of the entrepreneur.

(b) *Company-operated centres*

Company-operated buy-back centres are operated by personnel of the recycling companies. These personnel have been selected and trained by the recycling company and placed at the buy-back centre. The personnel running the buy-back centre are on the recycling company's payroll. The recycling company sets the tariffs which are paid out to collectors and salvagers for recyclable materials.

4.2.3 Private Collection Contracts/Direct Pick-up

This involves the direct collection of recyclable materials by recyclers from facilities such as shopping centres, or from organisations and institutions such as schools and NGO's. Recyclers contract directly with organisations to collect waste paper and cardboard as well as other materials. This type of recycling activity is operated by arrangement and an agreed rate is paid to the organisation for the materials collected. Therefore, private collection contracts offer an opportunity for institutions such as schools, organisations and NGO's to benefit from the revenue derived from the sale of recyclable materials.

4.3 WORKSHOP WITH STAKEHOLDERS

The Swaziland Environmental Authority took the initiative to set up a workshop to discuss the possible institutional set-up for recycling in Mbabane. The workshop took place at the Esibayeni Lodge in February 2002 and was attended by representatives from the following sectors:

- Industry
- Government (national and local)
- NGO's
- Schools

It was agreed at the workshop that there is a need for a recycling system to be established which is accessible to all. The system should be targeted to the poor so that job opportunities can be created, and to the more wealthy population as this sector produces more waste than the poor. The different kinds of recycling centres were presented and discussed (see Section 3.1). It was agreed that the most suitable option was the buy-back centre system. The other attributes of the original strategy were put on hold pending the adaptations due to lessons that may be learnt from the implementation of buy-back centres and the schools drop-off centres.

The proceedings of this important workshop are referenced as Annexure 3.

4.4 THE TASK TEAM

4.4.1 Establishment of task team

As an outcome of the project workshop held in February 2000 (refer to Section 3.3 above), a task team of interested parties was formed to promote the development and implementation of a pilot project to test the idea of recycling centres in Swaziland. The task team includes representatives from Mbabane City Council, SEA, NGO's, industry, and the educational sector. Terms of reference have been developed for the task team.

The task team is chaired by a representative of the Mbabane City Council and meets on a regular basis. A total of five meetings have been held whereby the logistics for the establishment of a recycling pilot project in Mbabane have been discussed.

4.4.2 Task team objectives and responsibilities

The objectives of the task team are as follows:

- to guide and manage the establishment of a recycling system in Mbabane;
- to ensure the monitoring and capturing of experience from the recycling system; and
- to represent the different stakeholders to be involved in the recycling system, that is the local authority, government, NGO's, schools and recycling industry.
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The responsibilities of the task team are to:

- manage the implementation of the pilot project;
- ensure involvement of all relevant role-players; and
- report on progress with regard to activities, problems and successes, and recommendations.

4.4.3 Role of the task team in awareness raising and education

Public awareness raising is often an activity taken on by NGO's but the NGO called Clean and Beautiful Swaziland is dormant (although now being revived). Another NGO by the name of Yonge Nawe is very much occupied with other activities, however, Yonge Nawe has a radio programme well suited to present the environmental initiatives of the City Council. The potential of the NGO representatives on the task team needs to be encouraged.

The Waterford College, representing school on the task team, has shown great commitment to the initiative. The Waterford College has an important role to play in encouraging recycling activities in other schools in Mbabane and spreading information on the buy-back centres through their community outreach programme. The minutes of the meetings of the Task Team have been summarised in a docu-

ment that has been titled Synopsis of Recycling Task Team Minutes which is attached as Annexure 6.

4.5 AWARENESS AND EDUCATION

It was acknowledged at the outset of the project that public awareness raising was central to the success of the proposed buy-back centres. An awareness raising programme is essential to mobilise a sufficient supply of recyclable materials to be marketed to identify recycling industries. To keep the proposed waste management service running, community interest and participation is required on a continuous basis.

The development of an awareness raising approach for this pilot project was based on the following:

- Consideration of international lessons learnt from waste recycling projects
- Consideration of the trends in the urbanisation of Mbabane and identification of the different social target groups for the awareness raising programme
- A brief assessment of the capacity and resources of the Mbabane City Council and the identification of relevant organisations to carry out an awareness and education programme

The tasks above have been addressed in the report attached in Annexure 10 which is titled Awareness Raising Approach for Recycling Pilot Project.

A systematic strategy for public awareness raising is required. It is recommended that the task team develop a strategy which would combine waste reduction while addressing the poverty concerns within the city.

5. BUY-BACK CENTRE -CITY COUNCIL ROLE

The pilot project will test the effectiveness of a combination of the Drop-Off Centre and Buy-Back Centre approach as a means of recovering materials. The pilot project would involve the establishment of two buy-back centres in Mbabane. It is anticipated that the buy-back centres will be supplied from the commercial sector, the household sector and the government institutions including offices and educational institutions. Drop-Off Centres will be established at schools to encourage voluntary recycling of materials by the general public.

5.1 ROLE OF SWAZILAND GOVERNMENT

The Government of Swaziland would share in the development of the Buy-Back Centres by contributing funding required to develop and implement the pilot projects. However, initially, only the Danish Government's funding contribution was available to the project which meant that only the Mbabane Industrial Site Buy-Back Centre could undergo development and implementation. The Swaziland Government contributions had eventually become available in late September 2002 which meant that the Sidwashini Buy-Back Centre could be developed. The Ministry of Public Works and Transport would supervise construction at the Buy-Back Centres in Mbabane.

5.1.1 The Role of the Ministry of Housing and Urban Development

The Ministry of Housing and Urban Development shall provide the Buy Back Centre with technical support where necessary.

5.1.2 The Role of the Swaziland Environmental Authority

The Swaziland Environmental Authority shall ensure that the Local Authority is enforcing the Waste Regulations 2000 on the Buy Back Centre. The design of the Buy Back Centre 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

- Agree with MHUD on the areas to be targeted.
- Facilitate the application for a license.
- Identify and liaise with relevant individuals and training institutions and government institutions such Ministry of Housing and Urban Development for the provision of training needs.
- Identify special training needs for the Buy Back Centres and channel training according to these special needs
- Disseminate relevant information about Waste Regulations, 2000.

Equipment Procurement

Assist with the procurement of suitable equipment for the Buy Back Centres

Implementation and Monitoring (in close collaboration with the Local Authority)

- Agree with the community and other relevant authorities on the placement of the Buy back Centre
- Facilitate the establishment of a Committee
- Facilitate the development of a Buy Back Centre for the area in collaboration with MHUD/the DPMO (Inkhundla) and discuss it with the affected community, including traditional authorities
- Develop guidelines on the Buy Back Centre and disseminate information on the implications of such procedures
- Facilitate the collection, recording and analysis of waste types, volumes, and other important statistics for the relevant communities.
- Facilitate the construction of the Buy Back Centre
- Facilitate the erection of bins, drums or other relevant equipment as had been agreed upon at selected places within each zone
- Agree with the community and other relevant authorities and approve locality of the Buy Back Centre.
- Facilitate and assist with the implementation of the Buy Back Centre
- Monitor overall implementation of all the different aspects of the Buy Back Centre and ensure that it is in line with the provisions of the Waste Regulations 2000.
- Provide technical inputs as and when necessary.
- Facilitate the relevant training activities e.g. workshops, posters, etc.

Costs

- Assist with the cost accounting of the Buy Back Centre.
- Facilitate the disseminate information about cost to the affected communities
- Encourage the Local Authority/Inkhundla to pay market related prices for the recyclable materials.

5.2 MBABANE CITY COUNCIL'S ROLE

The Buy-Back Centres would operate as recycling projects managed by the City Council of Mbabane.

5.2.1 Application for Licences

The SEA had prepared a comprehensive letter to all institutions dealing with waste advising them of the necessity to apply for licences to manage waste. It was noted that a workshop was required to inform and capacitate all the stakeholders in the requirements for licence applications. It was confirmed by the Mbabane City Council that they had received the above mentioned correspondence from the SEA. A Licence Fee of E 500.00 must be paid to the SEA with the application.

5.2.2 Sites

The land would be provided by the Mbabane City Council.

5.2.3 Building the Buy-Back Centres

Following instructions received from the Task Team a sketch plan had been produced and a quotation was obtained on the basis of that sketch plan. This quotation and costing exercise is attached as Annexure 8. However, the Mbabane City Council would have to approve the design of the buildings and there were many details that required their approval. The sketch plans had to be redrafted by the Drawing Office in the City Engineers' Department of the Mbabane City Council.

After the City had redrafted the Buy-Back Centre design and approved the development a second quotation was received from a contractor to build the Mbabane Industrial Area and the Sidwashini Buy-Back Centres. The total cost was E 133 000.00 for each centre. It must be noted that paving had not been considered. However, at this cost the DANCED funding had only allowed for the development of one Buy-Back Centre and that would be the Mbabane Industrial Site centre. The Sidwashini site would have to be funded by government funds once those were available.

An agreement was signed with the building contractor in July 2002. Once this centre had been completed the operation would be launched without waiting for the Sidwashini project.

By mid-September building had been completed and the connections by the Swaziland Electricity Board and the Swaziland Water Services Corporation had been made but the winning recycling contractor, Swazi Paper Mills, still had to arrange for the connection to be made in his name.

Levelling and Paving of the site would be undertaken by the Swazi Paper Mills who would negotiate the recovery of the cost with the Mbabane City Council. Swazi Paper Mills would also erect a roof over the used oil tank.

5.2.4 Advertisement inviting proposals for Buy-Back Centres Operation

The advertisement and guidelines for the Centres had to be drafted. A copy of the advertisement inviting proposals and expressions of interest in the management of the Buy-Back Centres was drafted and placed by the Mbabane City Council in local newspapers in June 2002. A copy of the advertisement is attached as Annexure 7.

5.2.5 Operation of the Buy-Back Centres

The Mbabane City Council would charge rentals for the use of the Buy-Back Centres. This would be arranged through a lease contract/agreement drawn up by the Mbabane City Council and agreed by the contractors. A copy of the draft lease agreement is attached as Annexure 9. However, at the time of drafting this report the Swaziland Paper Mills had not yet signed the lease with Mbabane City Council and there was concern that the lease agreement needed the appropriate clauses to prevent exploitation of the Buy-Back Centre lease agreement.

The centres would only accept sorted wastes.

A large area was to be provided for scrap metals.

A used oil storage area was required.

Swaziland Paper Mills to advise on the grades of paper that they would accept at the Mbabane Industrial Centre.

Agreements between the Buy-Back Centres and the Recyclers would be required, e.g. paper to Swaziland Paper Mills, scrap metals and cans to scrap metal dealers, flint glass to Ngwenya Glass.

Prices needed to be steadier and more sustainable than at present although it was recognised that it was not possible to fix prices for the duration of the contract period. It was noted that there were many people collecting paper for Swaziland Paper Mills, that there were at least three scrap metal dealers and a plastic recycler.

There was concern about reasonable prices being paid to the public for material brought in to the Buy-Back Centres. Thus it was important that the contracts to manage the two Buy-Back Centres be awarded to different recycling contractors in order to encourage competition. However, even in this case the projects should be closely monitored to avoid price collusion. The public would not support the centres if there was any suspicion that they were not receiving fair and market related prices. For example, it was known that recycled paper was being imported by Swaziland Paper Mills thus locally sourced paper should command a fair price.

5.2.6 Proposals for the operation of the Buy-Back Centres

Proposals had been received 7 June 2002 for the operation/management of the Buy-Back Centres on behalf of the Mbabane City Council.

It had been agreed that carrying out a cash flow analysis on a project where there was a great deal of uncertainty with respect to the quantities of materials that could be expected was almost impossible; consequently this requirement had been dropped.

The proposals had been adjudicated by the Evaluation Committee of the Task Team and the Council had approved of the awarding of the tenders.

5.2.7 Awareness Creating

Public Information Announcements by the City of Mbabane - There was the need for a mass mobilisation cascading approach to create awareness within two months in the City of Mbabane. People must be invited to a workshop to become fully informed so that the pilot project will succeed. Community Leaders and Zone Leaders could be involved in disseminating the message.

Press Release by Mbabane City Council. The City Council would also reach Community Groups through the work of their Environmental Health Inspectors.

Radio - It was agreed that radio was probably the best medium to reach most of the population. Television airtime was too expensive and probably reached the wrong target audience. A number of channels to be considered:-

- "SNTC was ready to receive inputs on the Buy-Back Centres from any members of the Task Team as a 15 minutes environmental slot was run by SNTC on the siSwati Channel twice a week.
- "Mbabane City Council Radio Slot with SBIS would be re-established to facilitate the broadcasting of information on the Buy-Back Centres.
- "The NGO, Yonge Nawe, deals with schools, communities and have their own radio programme which could also be used to broadcast promotional messages about recycling. Yonge Nawe to be requested in writing that awareness on recycling be raised in their slot.
- "One general radio programme had already received a good response from the public.

Posters - the Mbabane City Council recycling posters had been reworked, quotes had been received and 300 posters had been printed. The message was provided in English and siSwati.

Pamphlets - these had been translated into siSwati and 2000 pamphlets had been printed for distribution via the newspapers.

Newspaper - a number of channels were available in the newspapers:-

- "Yonge Nawe could arrange for articles to be published in the World Summit for Sustainable Development Column in the Times of Swaziland.
- "Articles on waste management and recycling would be published in the Sunday newspapers by Mr N de Silva.

Schools - a number of options would be used in Schools:-

"The Community Service Programme at the Waterford School would be used to launch the school's recycling initiative and this took place in June 2002 and the programme message would be extended to other schools.

"The visiting of schools had commenced.

"Clean up campaigns would be managed by certain schools with the support of the Mbabane City Council

T Shirts - 120 had been produced for the launch of the Mbabane Industrial Area Buy-Back Centre. These would be distributed to the Task Team members, school children and some dignitaries taking part in the launch at the beginning of October.

A tape recorder - for use in meetings in peri-urban and rural areas as a presentation aid by the SEA had been bought. The SEA staff would require training in its operation and maintenance.

Clean & Beautiful Swaziland - it was suggested that this programme could be revived.

5.3 CONTRACTORS' INVOLVEMENT

Two Buy-Back Centres would be established and these would be operated by business people.

The contract would be for a limited period, subject to regular review and renewal if the material is moving. The contract would be for a limited period, subject to regular review and renewal if the material is moving. The substance of the contract is recorded in Annexure 9.

Swaziland Paper Mills, Enviro Swazi Scrap, the Reclamation Group and Swazi waste Collectors submitted proposals.

Swaziland Paper Mills was awarded the Mbabane Buy-Back Centre and Swazi Enviro Scrap awarded the Sidwashini Buy-Back Centre.

Swaziland Paper Mills would erect a shelter for the oil tank.

5.4 AREA TO BE SERVED

The location of the two buy-back centres was determined on the basis that they must serve the entire city of Mbabane as well as specific localities, and as such are situated at opposite ends of the Mbabane city area. One buy-back centre is proposed to the southeast of Mbabane on the outskirts of an industrial area, close to

the Central Business District (CBD). It has been proposed that the second buy-back centre be located on the outskirts of the city in Sidwashini, northwest of Mbabane. Both sites are easily accessible by road and area located adjacent to an industrial area with neighbouring informal settlement areas. The location of the two centres considered the fact that these centres have the ability to provide income opportunities to the poorer residents of Mbabane who were living in the adjacent residential areas.

5.5 PROPOSED SITES FOR THE BUY-BACK CENTRES

5.5.1 The Mbabane Industrial Area Buy-Back Centre

The proposed site for the downtown buy-back centre is at the end of one of the main roads in the industrial centre close to the city centre. This site is ideal as it is well located to service the industrial area, the CBD and the residential areas nearby including institutions and organisations such as schools, the Salvation Army, etc.

5.5.2 The Sidwashini Buy-Back Centre

The second site for a buy-back centre is proposed for the Sidwashini area. An industrial area consisting of workshops, construction companies and warehousing facilities is located close by. The centre is located in the vicinity of a senior primary school and a commercial area which includes a supermarket, butchery and bottle store is no more than a kilometre away. The site would also service the middle to lower class residential areas and schools in the area. The Waterford College is located in the area and has shown keen commitment to a recycling system and environmental awareness raising activities.

5.5.3 Proposed Drop-Off Centres

Waterford College has been actively involved in the task team and has shown great commitment to the recycling pilot project initiative. The development of drop-off centres will be driven by Waterford College through their existing community outreach programme. It is envisaged that a drop-off centre will be developed at Waterford College and other schools in Mbabane will be encouraged to develop similar centres. The development of drop-off centres. As drop-off centres rely on voluntary recycling of materials by the general public, the schools operating these centres have the ability to generate revenue from this activity.

5.6 MATERIALS AND MARKETS

5.6.1 Materials to be targeted and requirements for materials

The following recyclable materials will be targeted:

Paper: Newspapers, magazines, cardboard, books, school and office paper
Glass: Clear, brown, and green glass, re-usable bottles
Cans: Mineral/beverage cans, food cans, paint and oil cans
Scrap metal: Sub grade (car bodies), scrap batteries (lead), copper, aluminium, brass, bronze, cast iron, stainless steel, etc.

5.6.2 Available markets

The market for the recyclable materials collected at the buy-back centres has been established in so far as interested parties have been identified, e.g. Swaziland Paper Mills, Ngwenya Glass and Reclam. The prices that these organisations are willing to pay have yet to be determined. All of these industries believe that there is room for expansion in the recycling industry and are supportive of the proposed buy-back centres. On the other hand, collectors consider the existing market for their services to be tough and expect that the establishment of buy-back centres will result in stiff competition.

5.7 MANAGING THE SYSTEM

5.7.1 Operation of the buy-back centre facilities

The task team has developed guidelines for the operation of buy-back centres. These requirements outline the responsibilities of the entrepreneur operating under the supervision of the Mbabane City Council and the support to be provided by the city council. The guidelines include an obligation that the public be regularly informed of the operation of the buy-back centres and the services offered by these centres.

The guidelines explain that this type of recycling system is a business enterprise dependent on general market conditions. The entrepreneur would be free to operate his/her own collection system, however access must be given to independent collectors and civic organisations. The guidelines for buy-back centres developed by the task team are attached in Annexure 7 as part of the contract document.

5.7.2 Safety and Health Requirements

∅Introduction and general principles of health and safety

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 obviously of crucial importance to safety but there is a tendency to regard such much waste management organisation 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.

- **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 recycled materials is severe because of the nature of the materials, e.g. broken bottles, shards of glass from windows, mirrors etc. and all of these may be contaminated with all sorts of materials.

"Mechanical Hazards - In addition to the self-evident risk of being struck by vehicles moving in the confined space of the Buy-Back Centre, 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 handling (e.g. lead acid batteries) 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. Hypochlorites). 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 recycling operations.

"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 - Aerosol cans are recyclable and the propellants are inflammable if not potentially explosive. Thus workers must be prohibited from smoking when working with the materials. This will also help to reduce the fire hazard associated with the careless disposal of cigarette butts.

- **Safety Rules in Domestic and Commercial Wastes Collection**

Always

- "give comprehensive training to recycling staff with special emphasis on the dangers associated with the handling of waste;
- "ensure that protective clothing is worn and this should include high visibility overalls, gloves as well as safety boots;
- "be alert for vehicles moving in the yard;
- "take particular care with broken glass;
- "lift bags by the neck with, if necessary, a gloved hand underneath to support the bottom if the bag seems unduly heavier than normal;
- "hold the bag away from the body and legs;
- "get advice before moving materials which arouse suspicion, i.e. gives off fumes, has an unusual smell, etc.;
- "carry out regular checks to ensure that the materials handling equipment 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 box or bag in such a way that your vision is impaired;
"attempt to pick through the contents of a bag in order to salvage material. Tip the contents out onto the floor so as to see what is present.

5.7.3 Financial aspects

As the prices of the various recyclable materials fluctuate considerably it is not possible to fix prices for the various commodities. It is however important that market related prices are paid for the various commodities. It is therefore the responsibility of the relevant Local Authority to ensure that this happens

5.7.4 Means of Verification

Monitoring of the pilot project must be linked to the objectives, outputs and activities agreed for the pilot project. This would involve the monitoring of progress at a day to day operational level to confirm that the project is on track.

Monitoring must also be linked to the purpose of extracting learning lessons and experience of relevance for further refinement of the NSWMS for Swaziland. This level of monitoring is predominantly for use by the SEA.

6. REVISION OF THE STRATEGY

It is recommended that the operations of the recycling centres be re-evaluated after three months of operation.