



Status of Recyclable Material Recovery at Blue Gill Ecopark.

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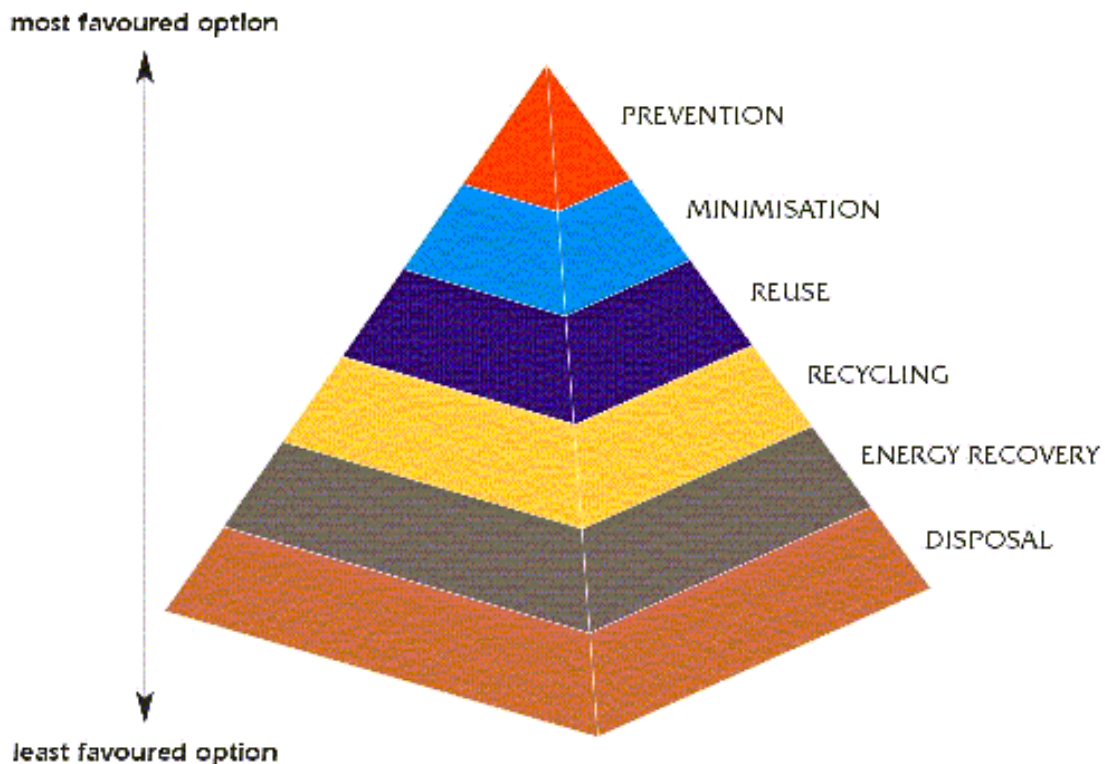
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1. BACKGROUND

In accordance with the National Environmental Management: Waste Management Act (Act 59 of 2008), a municipality may, by notice, require any person making use of the municipal collection service to separate specified types of waste from the general waste for the purposes of recovery, re-use or recycling. There is also currently in South Africa a strong move towards adherence with the Waste Hierarchy, according to which waste prevention, minimisation, reuse and recycling have preference over energy recovery and disposal.



2. INTRODUCTION

Development of the Blue Gill Ecopark was in response to a need for a user-friendly facility within Kempton Park where the full spectrum of recyclable materials could be delivered. The few recyclable material drop-off facilities currently available to members of the public are not user-friendly, catering for one or maybe two of the recyclable material categories only. This is resulting in members of the public having to travel long distances to deliver the remainder of the recyclable materials at other facilities.

From the offset it was agreed that the recyclable material drop-off facility developed for Blue Gill was to meet the following objectives:

- A single facility where the full spectrum of recyclable materials could be delivered;
- A facility that is accessible 24/7 within a safe environment;
- A facility that is under continuous supervision to ensure that recyclable materials are removed whenever the containers are full;
- A facility that is clean and tidy without generation of odours, waste spillage or littering in the surrounding area.

Having tested the Ecopark system for a period of more than a year, Buyisa-e-Bag is now in a position to combine its expertise on buyback centres with the information gained on the development of Ecoparks, thereby offering a system that could have a significant impact on the viability and long-term sustainability of recycling. With Blue Gill being situated in Kempton Park, it was proposed to pilot the combined system in the Ekurhuleni Metropolitan Municipality's area of jurisdiction.

3. DESCRIPTION OF THE BLUE GILL ECOPARK

The 365 residences in Blue Gill are managed by a Home Owners Association. The area is fully enclosed with two controlled access points. Security personnel patrol the area throughout the day and night. An estate manager, assisted by a team of general workers, maintains the security village.

Since the Blue Gill recycling project was to be community driven without any financial incentive, a door-to-door collection system for recyclable material was not considered to be financially viable or sustainable. It was therefore accepted that members of the community was to deliver recyclable materials to a central point where appropriate containers were to be provided for the bulking of recyclables. By identifying an area close to the Blue Gill administration block, it was agreed that the estate manager would exercise control over the drop-off facility. Limited input was further required from the estate manager's staff to exchange 1-m³ polypropylene bags when full.

Various models were investigated before a system was selected for implementation in Blue Gill. The system ultimately chosen consisted of a compartmentalised 30-m³ Roll-on Roll-off multi-material recycling container that allows for the separate collection of various recyclables (plastics, cans, glass, paper and cardboard) in dedicated compartments. The container was supplied and is serviced by a private contractor. The income generated from the sale of recyclable materials is used by the contractor to recover the cost of supply of the container, thus resulting in recycling by Blue Gill residents being voluntary.



Photos 1 & 2: The multi-material recycling container used for the collection of cans, bottles, plastics, paper and cardboard.

Although it was envisaged that the multi-material (glass, plastics, cans, paper and cardboard) drop-off facility was to form the core of the Blue Gill Ecopark, a need was also identified for the Ecopark to be expanded to allow for E-waste (electric and electronic waste). A separate container for E-waste was therefore added to the Ecopark. Instead of having E-waste dropped through an opening into the container (which was to result in broken glass from computer monitors), it was agreed that all E-waste be delivered to the

Blue Gill administration office, from where it is placed in the container. This container was at a nominal cost supplied to the Blue Gill community by the E-waste recycling contractor.

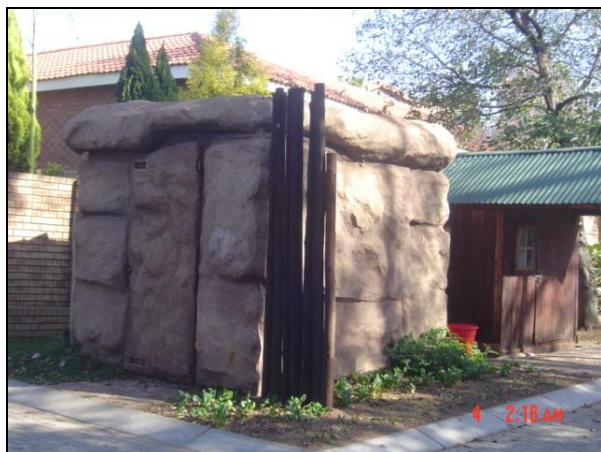


Photo 3: The container used at the Blue Gill Ecopark for the collection and storage of E-waste.

Despite the fact that the response from the Blue Gill homeowners were very positive when the Ecopark project was introduced, ongoing awareness creation and capacity building within the Blue Gill community is considered to be one of the cornerstones of the project. A dedicated capacity building programme was therefore developed and implemented.

With the recycling components successfully addressed, the next phase of the Blue Gill Ecopark will be to initiate a backyard-composting programme, together with a facility in the Ecopark where a composting contractor will provide a container for members of the community to drop-off bulky uncontaminated green garden waste. Although this is not recycling related, composting of garden waste as a method of waste minimisation and preservation of organic material is an important consideration in the National Environmental Management: Waste Management Act.

4. AWARENESS, CAPACITY BUILDING AND TRAINING.

Awareness, capacity building and training are important elements for any waste minimisation and recycling project. Even though most first world countries reached a point where waste minimisation and recycling is considered to be a way of living, South Africa has still got a long way to go for such a culture to be established.

Awareness creation can be done in a number of ways, e.g. with leaflets, posters, signboards, newspaper articles, presentations, displays and awareness activities.

Where leaflets are used, it is not only to describe the recycling system to be implemented, but should also provide homeowners with information on recyclable and non-recyclable materials. Leaflets could also inform residents on special measures to be taken like rinsing of food containers to prevent generation of odours, flattening of containers to take up less space, etc. Posters are in turn to be rotated on a daily basis to ensure that the public's attention remains on the messages contained in the posters. Communication lines are finally to be created for community members to provide feedback in terms of their level of support for any proposed waste minimisation and recycling project, as well as to make suggestions on expansion or improvement of the system.

All of the above was taken into consideration when awareness creation materials were developed for implementation in Blue Gill:

- Once the project was approved by the Blue Gill Home Owners Association, a notice was circulated to inform all residents about the project, enquiring about their level of support and asking for further suggestions;
- Based on the positive response, the container was placed at a temporary location where it was visible, allowing the public to get a clear understanding of the system;
- Awareness leaflets (See Figure 1) were then developed to illustrate the way in which the system was to work. General information on environmental awareness, the need for recycling and a list of materials that are recyclable / non-recyclable was printed on the back. The leaflets were laminated and handed to all household with a request for fridge magnets to be used to keep this information readily available in the kitchen;
- Following from the above, a presentation was made during Blue Gill's Annual General Meeting where the system was once again presented. By this time the public was however exposed to the system, thus allowing them to provide initial comments on the system;
- A series of 31 posters (one for each day of the month) with short awareness slogans were developed for display at each of the 2 security entrances. The posters are rotated on a daily basis.

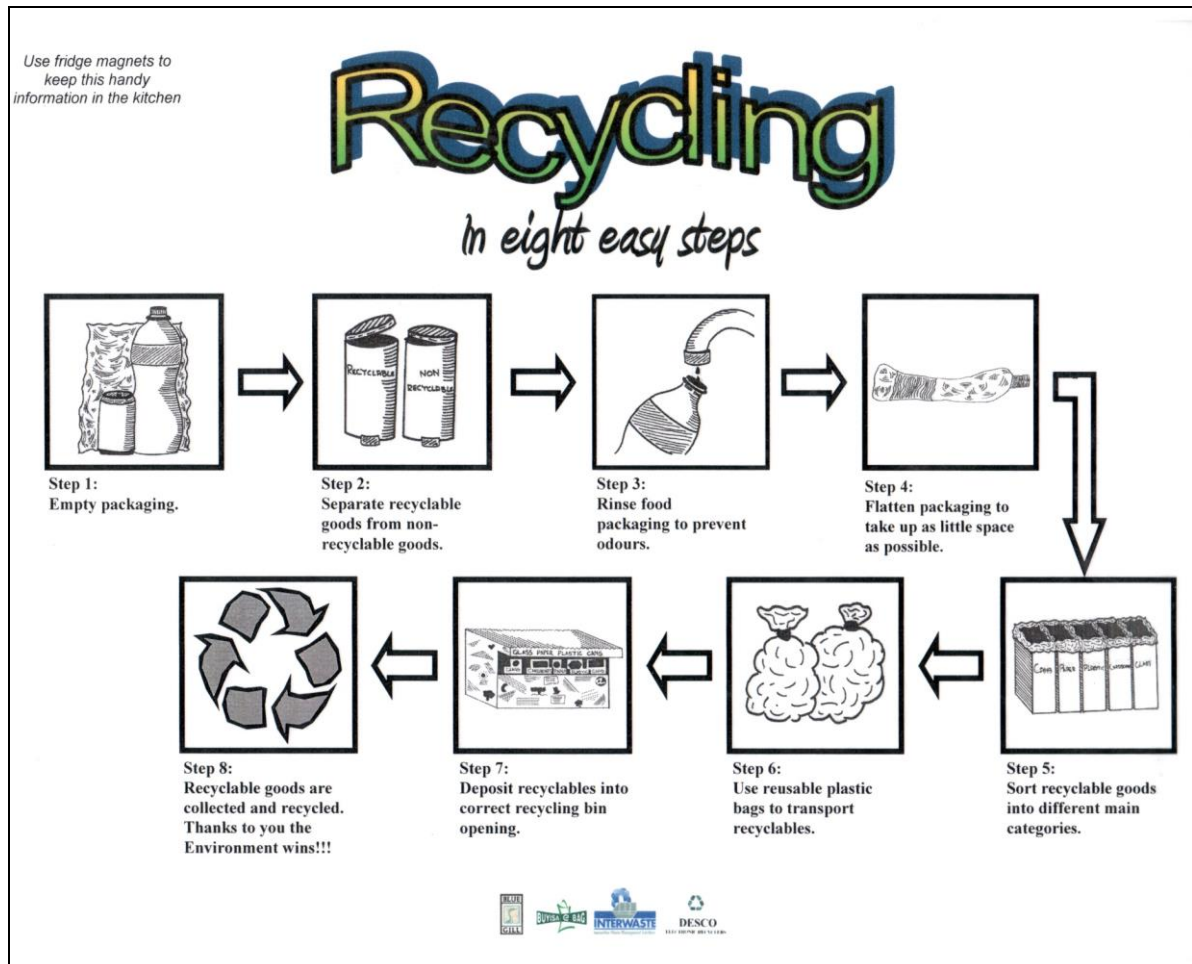


Figure 1: Part of the awareness material developed for circulation to all households within Blue Gill. General information on the need for recycling as well as a list of materials that are recyclable and non-recyclable was printed on the opposite side of the laminated leaflets.

5. RECYCLABLE MATERIAL RECOVERY RATE

An important yardstick used to measure the success of the awareness campaign, was to collect and evaluate data on recyclable material recovered on a monthly basis.

The combined load of recyclable material is weighed and not individual material categories, as polypropylene bags filled with different recyclable materials are all loaded onto the same crane truck. The full truckload is then weighed on a weighbridge at the recycling plant, thus not providing a breakdown for the various material categories.

The month-by-month recyclable waste mass collected since the pilot project commenced in June 2008 is presented in Table 1.

Month	kg/month	%
Jun-08	700	2.9
Jul-08	1620	6.6
Aug-08	1920	7.9
Sep-08	3500	14.3
Oct-08	3090	12.7
Nov-08	4570	18.7
Dec-08	3500	14.3
Jan-09	3120	12.8
Feb-09	2470	10.1
Mar-09	3990	16.4
Apr-09	2780	11.4
May-09	4350	17.8
Jun-09	2000	8.2
Jul-09	2160	8.9
Aug-09	3320	13.60
Sep-09	2100	8.60
Oct-09	3200	13.10
Average Sep-08 to Oct-09	3154	12.92

Notes:

- Average figures are for the period Sept 08 - Oct 09, as the first 3 months can be considered to be a rollout and awareness creation phase.
- The % of the recyclable waste stream is based on the overall waste stream from Blue Gill, thus including the garden waste collected from households.
- The fluctuations in recyclable tonnages is often as a result of the recyclable materials not being collected on the last day of the month, thus having material sometimes flowing over from one month to the next.

Table 1: The monthly recyclable material collection from the Blue Gill Ecopark since commencement of the pilot project.

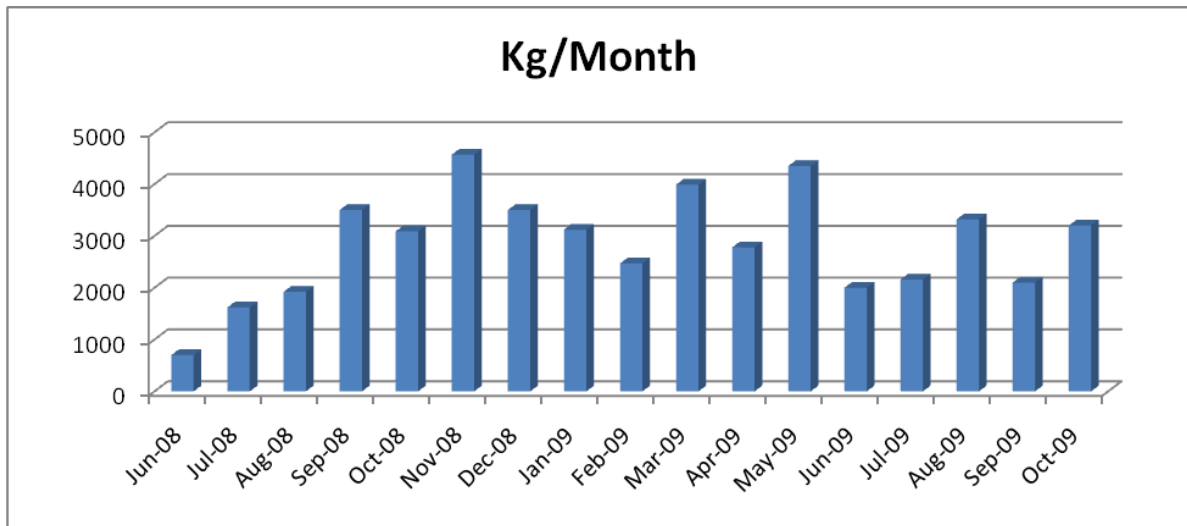


Figure 2: Monthly recyclable material recovery mass in kilogram between June 2008 and May 2009.

What is further important to note from the graph presented as Figure 3, is that based on the total waste mass of 24 397 kg/month for Blue Gill as weighed by Ekurhuleni Metropolitan Municipality, recovery with the existing awareness programmes is on average 12.92% of the **overall waste stream (including greens)**. The recovery rate based on the overall waste stream is therefore what can be expected from community members undertaking voluntary recycling for the good of the environment, without being given any further incentives to recycle.

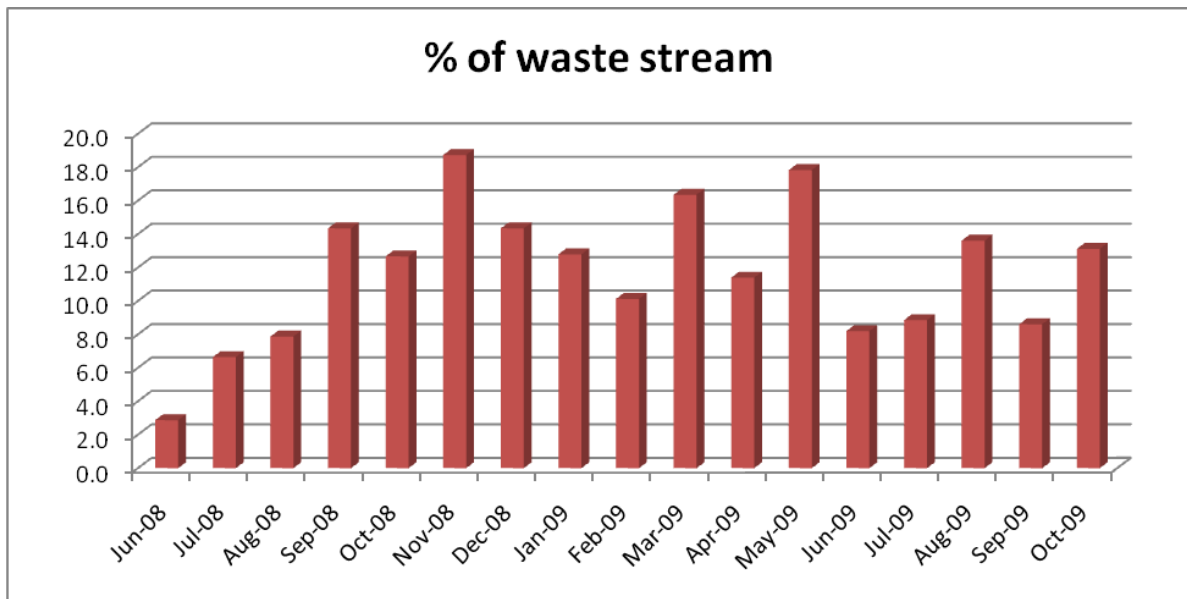


Figure 3: Monthly recyclable material recovery as a percentage of the overall waste stream from Blue Gill between June 2008 and October 2009.

Having established the information described above, Blue Gill embarked on the second phase of its awareness campaign. This allowed for the monthly recycling statistics to be made available to community members on both the Blue Gill and Buyisa-e-Bag websites. Notes will further be delivered to residences where poor participation in the recycling programme was observed, encouraging them to participate, whilst thanking those that are recycling. The effect thereof will then be evaluated.



Figure 4: The signage displayed next to the public road outside Blue Gill is aimed at increased awareness by Blue Gill residents, whilst at the same time promoting the project amongst residents from surrounding communities.

It is further to be recognised that initiatives are investigated for Blue Gill residents to separate and have compostable garden waste removed by a contractor for further processing. The latter will, together with the recycling initiative, have a significant impact on the disposable waste stream generated in Blue Gill.

6. OPERATIONAL FINDINGS

With the Blue Gill Ecopark being a pilot project, it was expected that certain adjustments would have been required once the project was operational.

It is from the offset to be mentioned that cooperation by the Blue Gill community is very good. Waste inside the container is not generating any odours, which is proof that residents rinse food containers before delivering it to the Ecopark. Waste spillage outside the container is limited and there is no occurrence of windblown litter.

Support from the Blue Gill estate manager as well as the waste removal contractor is also very good. Waste bags are removed from the container and stored when full, whilst the collection contractor is in turn punctual in removing the full bags when called upon to do so. Although the empty bags are in some instances not returned immediately after full bags are removed and emptied, this problem can be addressed by adding a few additional bags to the system.

Over the 12-month period that the pilot project has been in operation, the following adjustments to the system were required:

- Steps had to be manufactured and placed in front of the container to make the facility accessible for children wanting to drop recyclable materials into the respective openings.
- The container design had to be altered to allow for bigger openings in front through which the recyclable materials are deposited, thereby saving on the time required to drop recyclable materials into the container.
- The door width at the back of the container through which the 1-m³ polypropylene bags are removed when filled had to be widened as it was not possible to remove the full bags through the narrow doors initially provided.
- The system by which the bags are secured inside the container when in use had to be altered.

- Due to complaints about noise from bottles dropping into the polypropylene bags inside the container, bottles are for the interim collected in 3 X 240-litre wheelie bins placed next to the container until such time that some form of a chute can be developed to prevent bottles from making a noise when dropped into the bag. The wheelie bins are then emptied into polypropylene bags placed outside the container.
- As a result of complaints received about odours generated by wet paper and cardboard during and after rain storms, such bags are now stored under cover in a different part of the Ecopark. Once a suitable cover sheet can be obtained to prevent full bags from becoming wet before collection, such bags will once again be stored in the dedicated area from where it can be loaded directly onto the truck without having to be repositioned.
- A need for a low trolley that can be used for the movement of full recyclable material bags from the container to the storage area was identified. Dragging of full bags causes damage to full bags. The bags containing glass and paper are in particular heavy. This aspect is also still to be addressed.

The project is monitored and any problems identified are addressed in the shortest possible time. This information is then captured for use during development of future Ecoparks.

7. CONCLUSIONS

It is to be recognised that the bulk of domestic recyclable packaging material is generated in medium to high-income areas. Although recyclable material recovery through buyback centres is simultaneously serving the purpose of material recovery and job creation, the introduction of multi-material drop-off facilities within medium to high-income residential areas is expected to make a significant impact on the total amount of recyclable materials recovered.

Combining the development of Ecoparks with buyback centres would not only result in increased recycling, thus reducing the amount of waste to be disposed off, but it will also create much needed jobs.

It became evident from the Blue Gill Ecopark project that members of medium to high-income communities are willing to participate in waste minimisation projects without any financial compensation. This is provided that safe, clean and well-managed multi-material drop-off facilities are made available within a reasonable distance from the generators.

Results from the Blue Gill Ecopark pilot project indicate it to be a sustainable programme for voluntary recycling in medium to high income residential areas, i.e. the areas where the biggest generation of recyclable materials can be expected.