



# **Waste Management and Recycling in Mangaung Metro Municipality 27 May 2014**



***Daniel Mosia***

***Senior Technical Officer, Solid Waste Management***

***Tel: 051 405 8575 Cell: 083 627 4612***

# Legislative Background

- **Waste collection is a legislative mandate provided in some pieces of legislation which includes;**

## **Core:**

- Constitution of South Africa (Act 108 of 1996)
- NEMA (Act 107 of 1998)
- National Policy on Pollution and Waste Management (2000)
- Municipal Systems Act (Act 32 of 2001)
- Polokwane Declaration (2001)
- Waste Management Bill (2006)
- National Waste Management Act (Act 59 of 2008)
- Waste Management By-Laws (25 October 2013)

## **Other Related Legislations:**

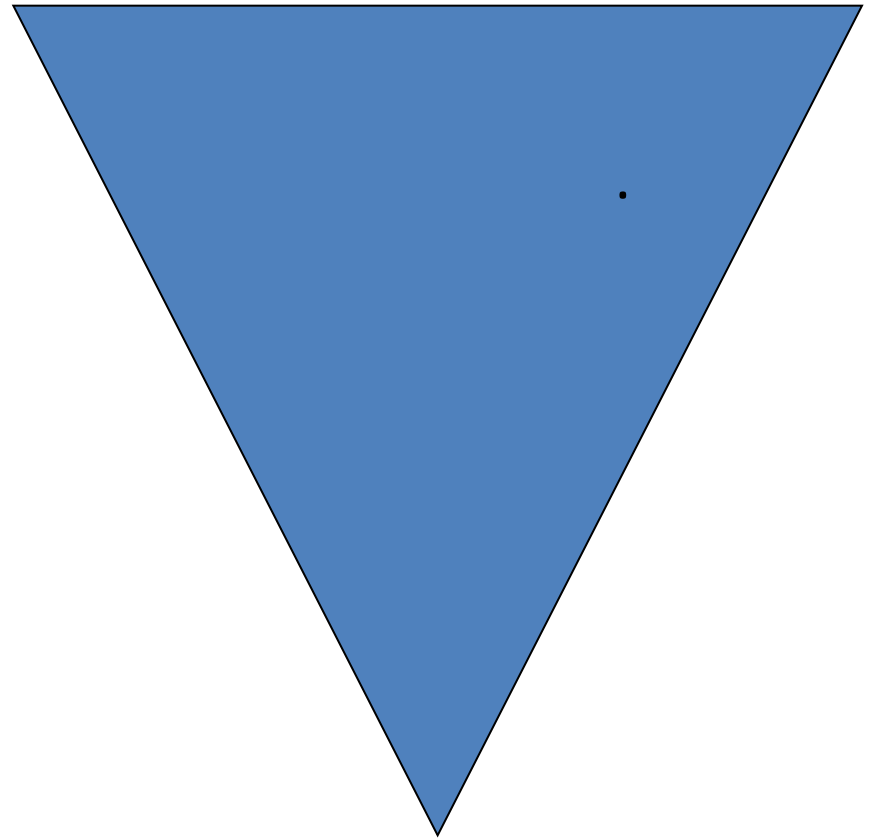
- Environmental Conservation Act (Act 73 of 1989)
- National Water Act (Act 36 of 1998)
- National Health Act (Act 61 of 2003)

# Hierarchy of Waste Management

## Approach to Waste Management

- In 2000, a national policy on pollution and waste management was published
- This policy shifts the focus of waste management away from the disposal of waste to waste avoidance, reduction, re-use and recycling before handling and final disposal

## Elements of Waste Management



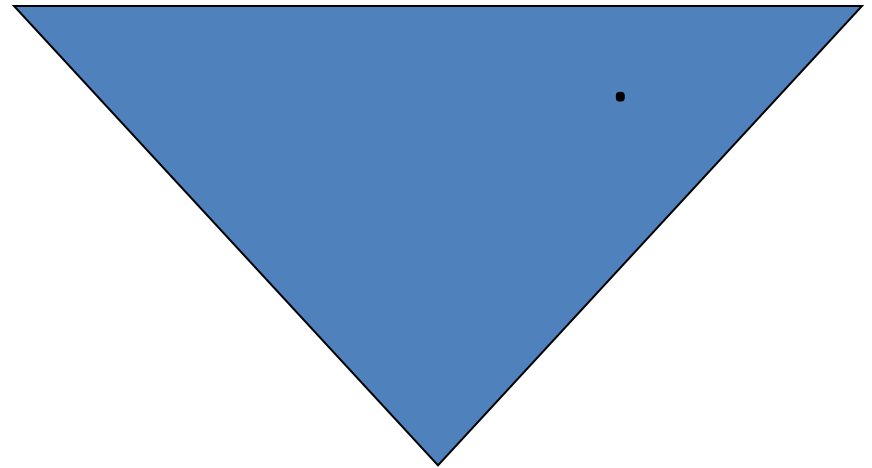
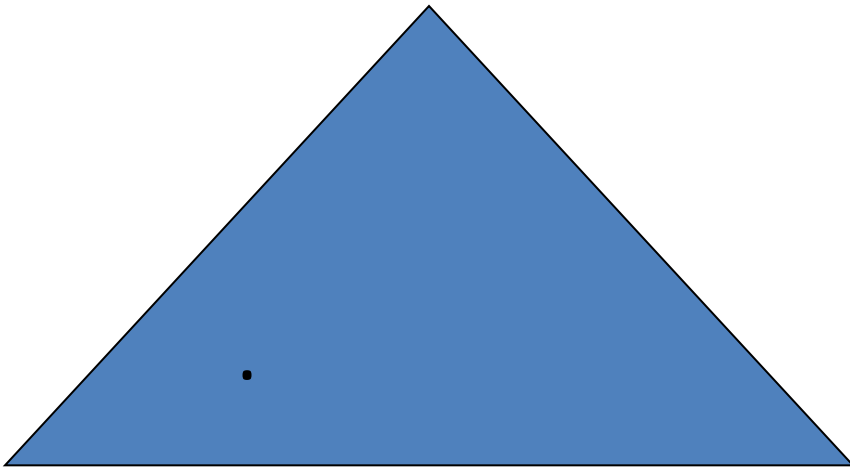
# The Changing Hierarchy of Waste Management

- **Current focus**

- Disposal of all waste generated

- **Future focus**

- Waste Avoidance
- Waste Generation
- Waste Collection
- Material Recovery; recycling; reuse; repair
- Transportation
- Disposal



# Waste is a reality

On average a person generates 1 kilogram per day





# Waste and litter all around



# Dumping or off loading?



# On-site storage, Collection(how waste is picked up), Transport and Transfer (how waste is moved)





# Southern Landfill Site, Processing and Material Recovery (how waste is treated or made useful)



# **Why manage Waste?**

**South Africa generates  
+- 700 million ton Waste  
per annum!**

**Rich & Middle class South Africans  
generate 480 kg/pp  
waste per annum!**

# **Waste in South Africa impact on environmental – social - economical issues**

**waste management in Gauteng cost  
+/-R700 million per annum**

**reclaimers / pickers on most landfills.**

**illegal dumping of waste.  
1000 ton - April - Bloemfontein**







# The **World Wildlife Fund** warn South Africa!

**Landfill sites under enormous pressure**

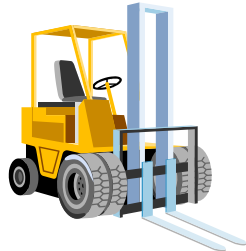
**Not much land available for landfill sites**

**80% of all waste on landfills are recyclable**

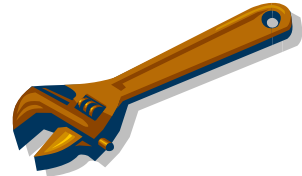


# Ways of handling waste

**Reduce**



**Repair**



**Re-use**



**Reclaim / Recycle**



# REDUCE



r.

# REPAIR

**What if an article is broken?**

**you repair it.**

**Why?**

**It is way cheaper to repair it,  
than to buy a new one.**

**.**

**You only throw it away  
if it will be more  
expensive to repair it  
than to buy another.**





# RE-USE



# Re-use

**Arts & Craft**



**Arts & Craft**





# Recycle / Reclaim

*Recycling benefits both the environment and the economy*

- ❖ Less energy is used when recycled materials are included in the manufacturing process
  - ❖ Good for the South African economy as it decreases the necessity to import raw materials
- ❖ Opportunities for income generation and alleviation of poverty through job creation
  - ❖ Prevents litter
- ❖ Contributes to a cleaner, greener and healthier South Africa
  - ❖ Less waste, creates more landfill space
    - ❖ Creates pride in our environment
    - ❖ It's your responsibility and mine.



## **Lets recycle**

**By recycling you are saving space in our precious landfill sites that are rapidly approaching maximum capacity.**

**You are also helping to put valuable materials back into the manufacturing stream.**

**All of this helps reduce the effects of global warming.**



# Is it possible?



**Yes**

***Depending on your position***

***Size of your immediate environment  
will have an effect  
on the quantity of waste to  
reclaim for recycling.***

**Do a survey before you start your recycling project.**

**Define where, when and how you will obtain your goods.**

**Define where, when, how and for which price can you sell your goods.**



**Articles must be sorted into types.**

**Glass, Paper, Steel, Plastics and Aluminium.**

**Even inside the types there is sorting to be done.**

**This is essential to obtain the best price for your goods.**



**Obtain a site for storing of articles.**

**How will you obtain articles,  
buying or collecting it.**

**How will you transport the goods,  
own transport or hiring of transport.**





# Recyclables collected by Mphatlalatsane Cooperatives from Thaba Nchu



# Bailing of recyclables (e.g. Cans / Tins)





# WHAT TO RECYCLE?







paper

# RECYCLABLE PAPERS

Office papers

Printed papers

Magazines

Fruit boxes

Wine boxes

Corrugated board

Phone books

Paper bags

Newspapers

Milk Cartons

Juice Cartons

Cereal Cartons

Brown Paper Bags

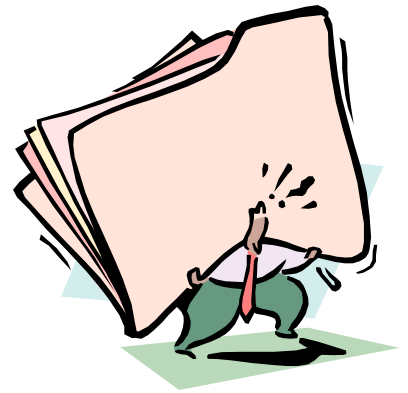




# What are recycled papers used for?

GRADE	RECYCLED INTO
Corrugated boxes	New corrugated boxes
Newspapers and magazines	Newspaper
Office papers, newspapers, magazines, printer offcuts	Bath tissue products, kitchen and industrial paper towelling
Office papers, corrugated boxes, newspapers, cartonboard trims, printer offcuts	Carton board, cereal boxes, soap cartons
Newspapers, cartonboard trims	Moulded paper products, i.e. egg boxes
Milk and juice cartons	New paper for paper manufacturing

## **HL 1 - WHITE PAPER**



***All white paper with black ink on, or less than 10 % colored ink.***

***Like photocopier and computer paper.***

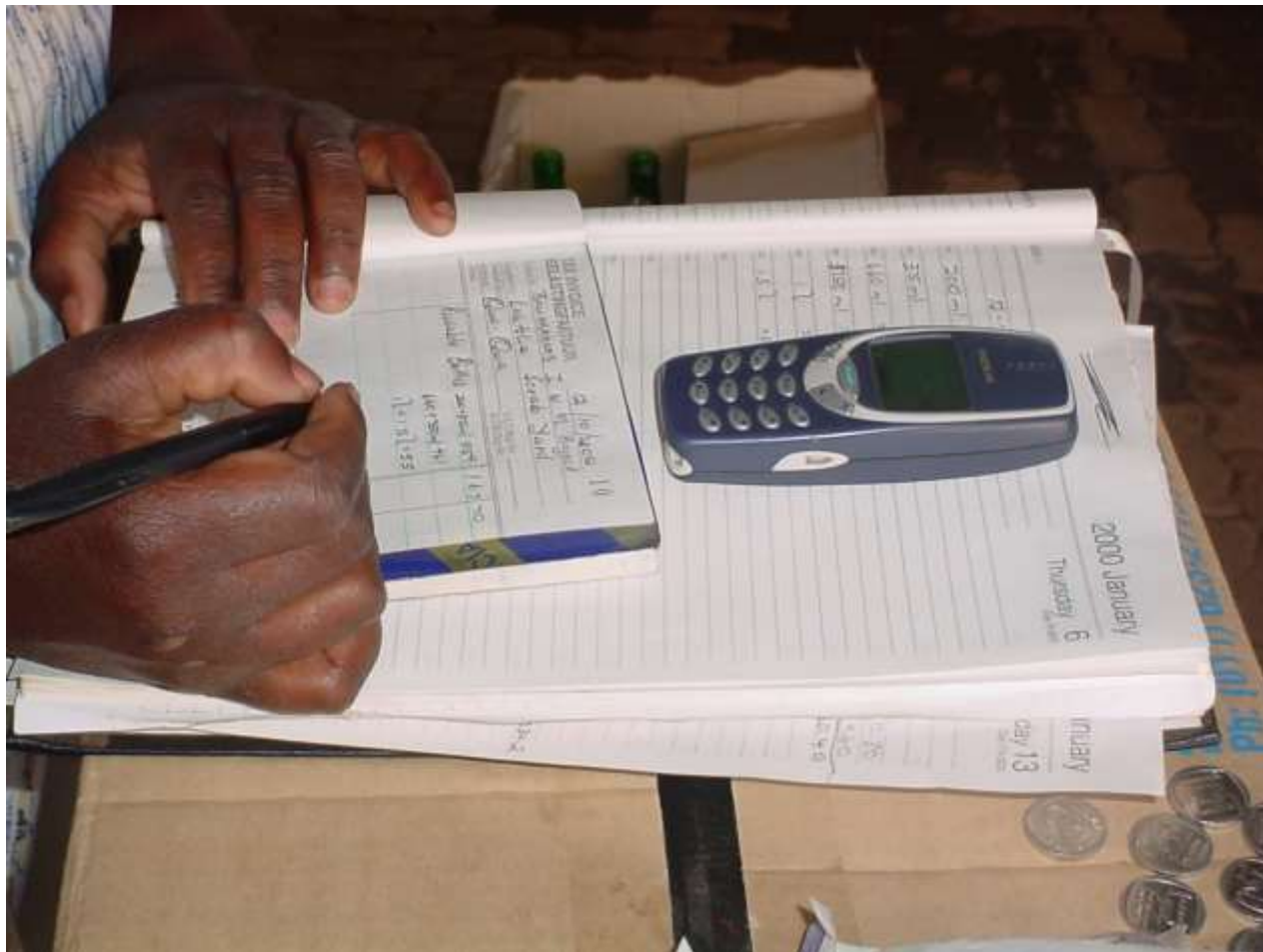
***If you tear this paper it leave a hairy tear line.***

***Like smooth fax paper, accounts, etc.***

***Papers / books with staplers is also okay.***

***Paper with gum edges like in books etc. tear it loose.***

HL 1 = white paper



# Sorting HL 1 (white paper) into K4 (box)





# HL 1 – sorted cooked into pulp



# Pulp to paper rolls - small rolls to be cut -



# Packaging toilet paper



# **DO NOT COLLECT ...**

**Banana boxes with a wax/plastic liner inside.**

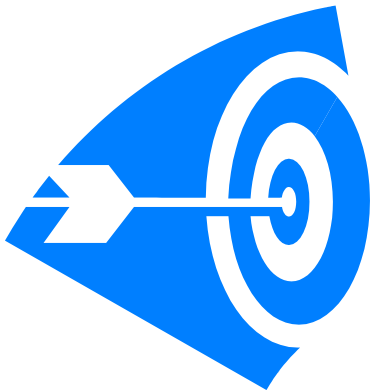
**Cement bags or bags with extensive fat or oil stains.**

**Paper with a plastic liner.**

**Carbon paper.**

**Burnt paper.**

**Rusted paper.**





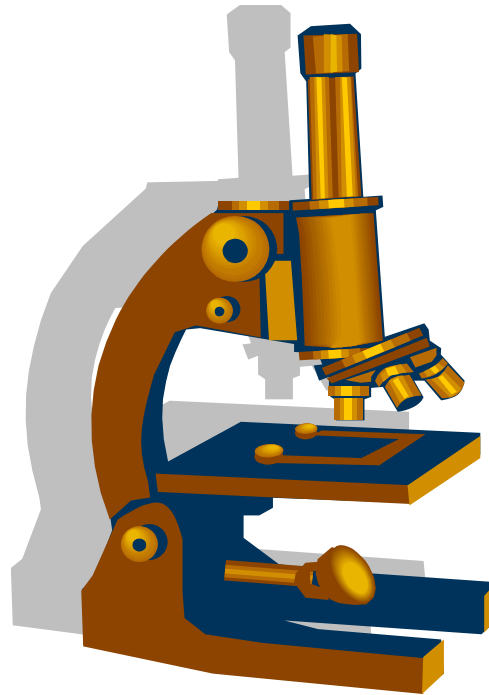
# PLASTICS

A special system of identifying plastics is used worldwide to ID packaging plastics.

A polymer identification code is put on the product. The number in the triangle denotes the type of polymer used.

This information is critical for an effective plastic waste sorting operation.

Brand owners must put this information on their plastic packaging.



QX1 - 0091



# plastics



# The PET Recycling Process







## Identification



**PET**





**Polyethylene  
Terephthalate**



## Products made from recycled PET





Identification	Products	Recovered plastics recycled into products such as
 <p><b>PE-HD</b></p> <p>High Density Polyethylene</p>	<ul style="list-style-type: none"> <li>• Milk bottles</li> <li>• Bags</li> <li>• Film</li> <li>• Juice bottles</li> <li>• Household containers</li> <li>• Shampoo</li> </ul>	<ul style="list-style-type: none"> <li>• Refuse bins and bags</li> <li>• Irrigation pipes</li> <li>• Buckets</li> <li>• Garden furniture</li> <li>• Shopping bags</li> </ul>
 <p><b>PVC</b></p> <p>Polyvinyl Chloride</p>	<ul style="list-style-type: none"> <li>• Bottles</li> <li>• Clear trays <ul style="list-style-type: none"> <li>– toiletries</li> <li>– food</li> </ul> </li> <li>• Cling film</li> </ul>	<ul style="list-style-type: none"> <li>• Shoe soles</li> <li>• Door mats</li> <li>• Hoses</li> <li>• Garden fencing</li> <li>• Car mats</li> <li>• Window frames</li> </ul>
 <p><b>PE-LD</b></p> <p>Low Density Polyethylene</p>	<ul style="list-style-type: none"> <li>• Frozen vegetable bags</li> <li>• Soft squeezable bottles</li> <li>• Bags</li> <li>• Milk sachets</li> <li>• Consumer bags – boutique</li> </ul>	<ul style="list-style-type: none"> <li>• Refuse bin liners</li> <li>• Bags</li> <li>• Building film</li> <li>• Irrigation pipes</li> <li>• Outdoor furniture</li> <li>• Containers</li> </ul>
 <p><b>PP</b></p> <p>Polypropylene</p>	<ul style="list-style-type: none"> <li>• Bottles – detergents and toiletries</li> <li>• Bottle tops and closures</li> <li>• Yoghurt cups</li> <li>• Margarine tubs</li> <li>• Icecream containers</li> </ul>	<ul style="list-style-type: none"> <li>• Bottles and containers</li> <li>• Paint trays</li> <li>• Buckets</li> <li>• Garden furniture</li> <li>• Crates and boxes</li> <li>• Ropes</li> </ul>





Identification



Polystyrene

Products made from recycled PS









# Baile to reduce volume





glass



# WHAT TO COLLECT



**Bottle glass (clear, green, brown)**

**Food jars (whole or broken)**

**Sort and take the refundable ones out, sell them apart.**

**Most bottle stores accept some wine and spirit bottles,  
bottled in SA.**

**Make sure no soil or stones get between your glass,  
it will be rejected.**



# Returnable Bottles



## GIVE BACK GET BACK

RETURNABLE  
BOTTLE  
INITIATIVE

WHEN YOU RETURN YOUR EMPTY GLASS BOTTLES\* NOT ONLY WILL YOU GET **CASH BACK**, BUT YOU WILL ALSO BE GIVING BACK TO THE ENVIRONMENT.

\* See reverse for a comprehensive list of our glass bottle range or enquire within.



**DID YOU KNOW? BY SIMPLY RETURNING YOUR USED GLASS BOTTLES YOU CAN CONTRIBUTE TOWARDS:**

- A decline in waste quantities
- A relief in pressure on the ESKOM electricity grid
- A reduction in harmful Greenhouse gases
- A saving of natural resources required to produce glass

Distell follows very stringent quality control procedures to ensure product quality is in no way compromised.  
[www.distell.co.za](http://www.distell.co.za) | [emptyreturns@distell.co.za](mailto:emptyreturns@distell.co.za)



**DISTELL**

Enjoy Responsibly. Not for Sale to Persons Under the Age of 18.



















Broken glass



# **DON'T ACCEPT**



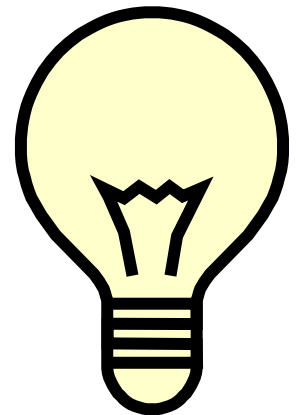
**Sheet glass (window panes, windscreens)**



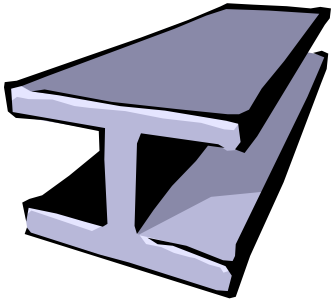
**Light bulbs.**

**Drinking glasses.**

**Ceramic/porcelain dishware.**







# **STEEL**

## **WHAT TO COLLECT**

**All articles or pieces of steel, car bodies, wire, cable and roof sheeting.**

### **GRADE**

**All pieces thicker than 3 mm.**

### **SUB GRADE**

**All pieces thinner than 3mm.**

**Food packaging tin cans.**

**Roofing sink, car bodies and wire.**

### **CANS**

**Cool drink and Beer cans, magnetic.**





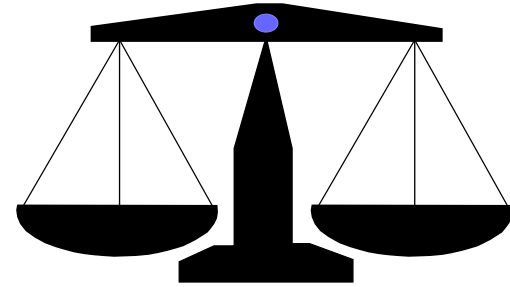


cans





# ALUMINUM



## WHAT TO COLLECT.

Use a magnet to sort alum (non magnetic) from steel

Sort thick solid aluminum apart from thin ones

Alum cans (red bull etc.) tin foil can be sorted here.

Some deodorant cans (don't mind the steel top)



# Where to ....?

	<b>cans</b> ★	Collect-a-Can	(011) 466-2939	<a href="http://www.collectacan.co.za">www.collectacan.co.za</a>
	<b>paper</b> ★	PRASA Forest Industries Education & Training Authority (FIETA)	(011) 803-5063 (011) 712-0600/1	<a href="http://www.prasa.co.za">www.prasa.co.za</a> <a href="http://www.fieta.org.za">www.fieta.org.za</a>
	<b>plastic</b> ★	Plastics Federation of SA The Plastics Industry Enviromark SAPRO (Plastic Recyclers) PETCO PSPC [Polystyrene]	(011) 314-4021  (011) 965-1437 (021) 788-9954 (012) 259-0554	<a href="http://www.plasticsinfo.co.za">www.plasticsinfo.co.za</a> <a href="http://www.plasticsinfo.co.za">www.plasticsinfo.co.za</a> <a href="http://www.preo.co.za">www.preo.co.za</a> <a href="http://www.petco.co.za">www.petco.co.za</a> <a href="http://www.polystyrenepackaging.co.za">www.polystyrenepackaging.co.za</a>
	<b>glass</b> ★	The Glass Recycling Company	0861 2 GLASS (45277) <a href="http://www.theglassrecyclingcompany.co.za">www.theglassrecyclingcompany.co.za</a>	



# Analysis of the prices offered by buyers were as follows in 2010

Recyclables	Companies in Bloemfontein/ Per kilogram	Companies in Johannesburg/ Per kilogram
Cans	30c	R4.00
PET	R1.20	R1.50
Cardboard	10c	60c
Glass bottle	5c	27c
Returnable bottle	70c	R1.50
Steel	30c	50c
Copper	R15.00	R17.00
Aluminium	R4.00	R10.00

# Price comparison between agents in Bloemfontein and National companies in Johannesburg

Recyclables	Cost Per Kilogram		
	Bloemfontein (Waste Paper)	Johannesburg	Recycling Company
Glass	10c	20c	Consol Glass
Cans	30c	80c	Collect-A-Can
Cardboard	30c	60c	Mondi Paper
Plastic bottles (PET)	80c	2.40c	Plastic Federation
Plastic (PE-LD)	40c	2.10c	Plastic Federation
White paper	1.00c	1.20c	Mondi Paper
Mixed Paper	30c	60c	Mondi Paper
Scrap metal (sub-grade)	50c	80c	Ton Scrap Metal

# In Conclusion

## Challenges

- Transport to buyers
- Lack of recycling companies in Free State
- Low prices from buyers in FS

## Benefits

- Job creation
- Saving landfill site space
- Saving the environment
- Projects
  - -Schools
  - Eco Bins
  - Institutions
  - BuyBack Centers



# GOOD LUCK

## Solid Waste Management by RECYCLING

Daniel Mosia  
Senior Technical Officer  
Mangaung Metro

Tel: 051 405 8575

Cell: 083 627 4612

[daniel.mosia@mangaung.co.za](mailto:daniel.mosia@mangaung.co.za)  
[www.mangaung.co.za](http://www.mangaung.co.za)

