

## APPENDIX 7

BROCHURE FOR 3RS  
(MPPP, MPSJ AND MBM)



## 7.1 MPPP BROCHURES



7.1 3Rs Brochures in 3 Languages (MPPP)

**Simple 3RS**  
**REDUCE**  
**REUSE**  
**RECYCLE**

**CONSERVE ENERGY**  
Switch off all electrical and electronic appliances when not in use

**SAVE WATER**  
Turn off the tap properly after use  
Repair all leaks

**WHEN BUYING**  
Bring along  
- own bags when shopping  
- tiffin carriers for takeaway food

**AVOID OVER-PACKAGING**  
Is it necessary to have so many packages?  
Give a thought to how items are over packaged

For further enquiries, please contact:  
**Recycling Network Unit**  
c/o Majlis Perbandaran Pulau Pinang  
Jalan Padang Kota Lama, 10200 Penang  
Tel: 04-263 3000 Fax: 04-263 3036  
E-mail: mumppp@gmail.com  
Website: www.mumppon.net

Ministry of Housing & Local Government Malaysia  
Majlis Perbandaran Pulau Pinang  
JICA  
Japan International Cooperation Agency

3R Brochure in English (page 1)

### OTHER PLASTIC CONTAINERS

- ♻️ Empty contents
- ♻️ Clean
- ♻️ Store for recycling



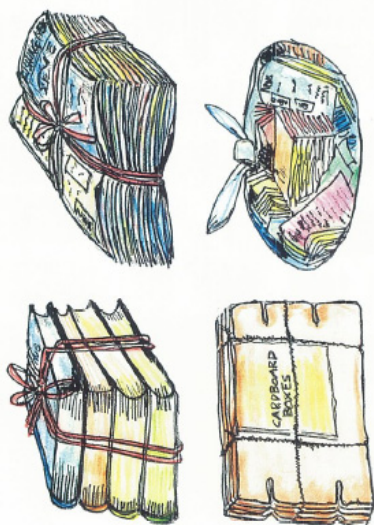
### PLASTIC - Drinking Bottles

- ♻️ Remove cap
- ♻️ Empty bottle
- ♻️ Rinse
- ♻️ Crush and store for recycling



### PAPER

- ♻️ Tie into bundles
- ♻️ Put loose paper into plastic bags



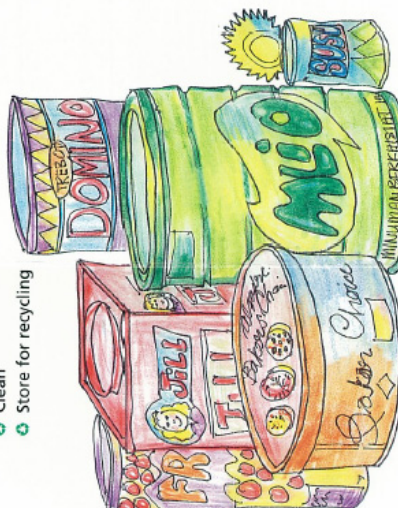
### ALUMINIUM CANS

- ♻️ Empty contents
- ♻️ Rinse
- ♻️ Dry
- ♻️ Crush and store for recycling



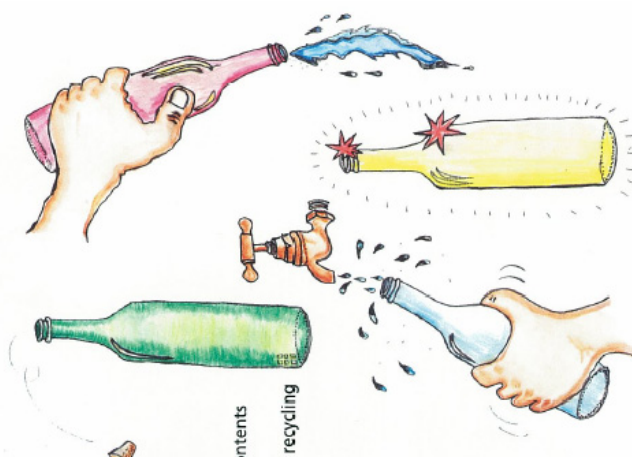
### OTHER METAL CONTAINERS

- ♻️ Empty contents
- ♻️ Clean
- ♻️ Store for recycling



### GLASS

- ♻️ Empty contents
- ♻️ Clean
- ♻️ Store for recycling



Prepared by: DEPIKHA GOB & KHAIR HANI TEUK  
 Illustrated by: SYED AMAN SYED OMAR

### JIMATKAN TENAGA

Matikan semua suis alat elektrik dan elektronik jika tidak digunakan

### JIMATKAN AIR

Tutup pili air setelah digunakan  
Perbaiki semua kebocoran

### ELAKKAN LEBIH Bungkusan

Adakah perlu menggunakan bungkusan yang berlebihan?  
Beri perhatian terhadap barangan yang dibungkus secara berlebihan

### APABILA MEMBELI-BELAH

Bawa bersama  
- beg sendiri apabila membeli-belah  
- bekas bertingkat untuk membawa salk makanan

Untuk keterangan selanjutnya, sila hubungi:  
**Recycling Network Unit**  
di Majlis Perbandaran Pulau Pinang  
Jalan Padang Kota Lama, 10200 Pulau Pinang  
Tel: 04-263 3000 Fax: 04-263 3036  
E-mail: rnumpp@gmail.com  
Website: www.rnumpp.net

# Konsep Mudah 3R

# REDUCE

# REUSE

# RECYCLE

### KERTAS

- Ikut dengan kemas
- Simpan kertas cerai ke dalam beg plastik untuk dikitar semula

### BEKAS MINUMAN PLASTIK

- Buka penutup
- Kosongkan bekas
- Cuci
- Mampatkan dan simpan untuk dikitar semula

### LAIN-LAIN BEKAS PLASTIK

- Kosongkan bekas
- Cuci
- Simpan untuk dikitar semula

### BEKAS MINUMAN ALUMINIUM

- Kosongkan bekas
- Cuci
- Keringkan
- Mampatkan dan simpan untuk dikitar semula

### LAIN-LAIN BEKAS LOGAM

- Kosongkan bekas
- Cuci
- Simpan untuk dikitar semula

### KACA

- Kosongkan bekas
- Cuci
- Simpan untuk dikitar semula

### 节约能源

将使用过的电器的电源关上

### 精明购物

在市场购物时，使用自己的购物袋  
在购买外带食物时，使用自己的食物容器

### 节约水源

将水笼头关好  
将漏水的水管修好

### 避免多余的包装

我们需要那么多的包装吗？  
想想哪些包装是多余的

想了解更多详情，请联系：  
Recycling Network Unit  
c/o Majlis Perbandaran Pulau Pinang  
Jalan Padang Kota Lama, 10200 Penang  
Tel: 04-263 3000 Fax: 04-263 3036  
E-mail: nmuppp@gmail.com  
Website: www.nmuppp.net

# 环保三步骤

# REDUCE

# REUSE

# RECYCLE

### 纸张

- 将旧报纸、书籍、纸皮捆成一叠
- 将其他废纸装入袋子以便回收

### 塑胶-塑料水瓶

- 取下水瓶的盖子
- 将残余物清除
- 将水瓶洗净
- 压扁以便回收

### 其他塑胶容器

- 将残余物清除
- 将水瓶洗净
- 储藏以便回收

### 铝罐

- 将残余物清除
- 将铝罐洗净
- 晾干
- 压扁以便回收

### 其他金属容器

- 将残余物清除
- 洗净
- 储藏以便回收

### 玻璃容器

- 将残余物清除
- 洗净
- 储藏以便回收

编辑: Daphne Goh & Khor Heng Teik 插图: Syed Alwi Syed Omar

## 7.2 MPSJ BROCHURES



## 7.2.1 3Rs Brochure (General)

Where can you bring your recyclable materials?

**Recycling Bins**  
For smaller amounts of recyclable items, bring them to over 100 recycling bins all over MPSJ. Brown bins are for glass, blue bins for paper and orange bins for plastic/steel/aluminium. Find them in schools, petrol stations, religious institutions, shopping complexes, government complexes, bus stations and several public areas.



**Collection Centre / Recycling Centre**  
For bigger size and larger amounts of recyclable items, there are many collection centres at strategic centres around MPSJ to receive them. Find them in residential areas, shopping complexes or community centres.



**Where Do They Go From There?**  
Collected recyclable items from recycling bins and collection centres are then sorted, cleaned and sold to factories that will in turn put them through manufacturing processes which transform them into another product or the same product.



If you have enquiries, kindly contact us:

**Recycling Network Unit**  
Majlis Perbandam Subang Jaya  
Persiaran Perpaduan, Jalan USJ 5  
47610 Subang Jaya

Tel : 03-8025 1749  
Fax: 03-8026  
[www.mumpsi.net](http://www.mumpsi.net)



### 3Rs Guide

Waste prevention, or "source reduction," means consuming less, reusing and recycling products and therefore disposing less. It includes:

**REDUCE**

- To buy long life products
- To use products as long as possible
- To select products with the least unnecessary packaging
- To reduce the amount of plastics bags by using reusable bag when shopping

**REUSE**

Reusing items -- by fixing them, donating them to charity and community groups, or selling them -- also reduces waste. Reusing products, when possible, is even better than recycling because the item does not need to be reprocessed before it can be used again.

**RECYCLE**

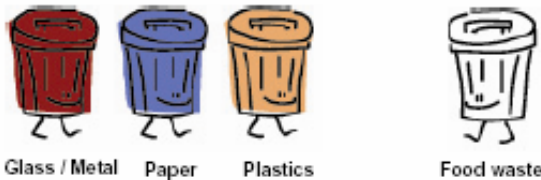
Recycling transforms materials that would become waste into valuable resources. Glass, metal, plastics, and paper are the type of materials that can be collected, separated and sent to facilities that can process them into new materials or products.



**THINK BEFORE YOU THROW**  
Reduce - Reuse Recycle

### How to recycle?

In an ideal scenario one will separate his/her recyclable materials at home by having different recycling bins - one for paper, one for glass & metal and one for plastics. Most importantly, recyclables materials have to be separated from the usual food waste.







← Recyclable materials →

**Tips before to separate your recyclable materials:**

|   |  |
|---|--|
| <p style="text-align: center;"><b>Plastic</b></p> <ul style="list-style-type: none"> <li>Remove leftover contents/caps</li> <li>Clean and dry plastic bottles/dirty bags</li> <li>Throw into orange recycling bins or bring to a collection centre</li> </ul> | <p style="text-align: center;"><b>Glass</b></p> <ul style="list-style-type: none"> <li>Remove leftover contents, caps, any plastic or metal appendages and labels</li> <li>Clean and dry bottles or jars</li> <li>Throw into brown recycling bins or bring to a collection centre</li> </ul> |
| <p style="text-align: center;"><b>Paper</b></p> <ul style="list-style-type: none"> <li>Bundle newspapers and books separately</li> <li>Open cardboard boxes and flatten</li> <li>Bundle neatly</li> <li>Throw into blue recycling bins</li> </ul>             | <p style="text-align: center;"><b>Aluminium Can</b></p> <ul style="list-style-type: none"> <li>Remove leftover contents</li> <li>Clean and dry cans or tins</li> <li>Crush cans</li> <li>Throw into orange recycling bins or bring to a collection centre</li> </ul>                         |

or bring to a collection centre

### What can be recycled?

|   |  |
|---|--|
| <br><b>Plastics</b>          | All coloured and non-coloured plastics like shopping bags, supermarket bags, drink plastic bottles, mineral water bottles, clean food containers, detergent bottles and vitamin containers. <b>EXCEPT paint containers, toxic containers, laboratory apparatus and Styrofoam.</b>                        |
| <br><b>Glass</b>             | All coloured and non-coloured glass like drink bottles, food jars, vitamin and cosmetic bottles. <b>EXCEPT crystal, mirrors, window panes, vehicle screens, porcelain, ceramic, bulbs, laboratory apparatus and toxic containers.</b>  |
| <br><b>Paper</b>             | All coloured and non-coloured paper such as newspapers, magazines, books, paper scraps (A4, A3 and F4 sizes), catalogues, pamphlets, calendars, cards, envelopes, and carton boxes. <b>EXCEPT tissue paper, carbon paper, aluminium foilwaxed paper, plastic laminated paper and contaminated paper.</b> |
| <br><b>Metal / Aluminium</b> | All types of aluminium and steel cans like drink and food cans. <b>EXCEPT paint containers, toxic containers, glue containers and solvent containers</b>   |
| <b>Others</b>   | <b>E-waste / Clothes / Furniture</b>   |

## 7.2.2 3Rs Brochure (De Palma Condominium)

**WHY RECYCLING ?**

**HELP THE ENVIRONMENT:**

Recycling promotes the reuse of materials produced. This ultimately leads to less consumption of virgin materials. Thus conserving our natural resources. Recycling contributes also in limiting the amounts of waste in landfills which are becoming bigger over time. Badly managed landfill contribute to negative impact on the environment as well as health & safety of the local population.

Income from the sale of the recyclable materials collected will be channeled back to De Palma's resident committee



**JICA STUDY TEAM**  
c/o Majlis Perbandaran Subang Jaya  
Persiaran Perpaduan, Jalan USJ 5  
47610 Subang Jaya

Tel: 03-8025 1749  
Fax: 03-8023 7673

*Kindly contact us for queries  
or other information*



**SOURCE SEPARATION PROJECT**

**DE PALMA Condominium**




**JICA STUDY TEAM**

EXPLANATORY MEETING  
Thursday 18 August

**DE PALMA PROJECT**

**Objectives of the project**

To establish a sustainable recycling system in De Palma condominium.

To introduce source separation of recyclable materials at the household level.

**Scope of the project**

- Waste stream assessment
- Source separation
- Survey

*Your assistance is the key element to the success of this project !!*

*Thank you in advance for your participation*

**Requirements from Household**

**1 Source Separation :**  
Pilot project:

- Duration of Pilot Project: 8 weeks.
- 3 colored bags supplied per household weekly each bag for one type of recyclable materials\*.
- Special bins will be placed at 4 strategic locations to discharge the recyclable materials.
- Non recyclable waste such as food and other organic waste to be disposed as usual.

**Long term project**


- After the pilot project, households should continue the source separation activity by disposing recycling materials in the special recycling bins

**2 Public awareness survey:**


- A survey questionnaire will be distributed to each household before, during and after the Pilot Project.
- The purpose is to analyze the waste stream and public awareness on recycling activities taking place in De Palma.

\* Recyclable materials are separated in 3 different bags to facilitate the waste stream assessment.


PROJECT




PAPER  
BAG #1



PLASTICS (bottle, packaging ...)  
BAG #2



Metals (Aluminum, ferrous ...)  
BAG #3



NON RECYCLABLE WASTE (waste food, contaminated waste ...)  
USUAL BIN


AS USUAL NO CHANGE

## 7.2.3 3Rs Brochure (MPSJ Complex)


### 3Rs Paper Campaign - MPSJ Complex

**Recycling Agents:**

|    | Jabatan / Unit                | Nama urusetia                                   |
|----|-------------------------------|---|
| 1  | Perancangan Korporat          | Nazri Faiz Zainal<br>Fazilah Mohd Johari        |
| 2  | Perpustakaan Hipermedia       | Mohamat Ali Othman<br>Khairul Azran Abdullah    |
| 3  | Jabatan Perbendaharaan        | Nohaslizawati abd. Karim<br>Mohd Haznizam Ramly |
| 4  | Penilaian & Pengurusan Harta  | Shezri Hezrin abu bakar                         |
| 5  | Audit Dalam                   | Rizal Razali                                    |
| 6  | Bangunan                      | Azmi Maricar Ahmad<br>Hambiah Daros             |
| 7  | Khidmat Masyarakat            | Mohd Yunus Baharom<br>Norrah Azza Abd Rahman    |
| 8  | Pelesenan                     | Jamaludin Anuar<br>Hisham Mohammed              |
| 9  | Penguathuasaan                | Tarmidi Kadri<br>Mohd Zabidi Mohd Ali           |
| 10 | Penasihat Undang -Undang      | Aziana Mohd Aripin<br>Intan Rozlina Hani        |
| 11 | Khidmat Pengurusan            | Asri Kamarudin<br>Malisa Jamaludin              |
| 12 | Pembangunan & penyelenggaraan | Achran Derhman<br>Nurhasima Mohd Shariff        |
| 13 | Perancangan Pembangunan       | Mohd Azvil                                      |



### 3Rs Paper Campaign - MPSJ Complex



**MPSJ Pilot Project:**  
Majlis Perbandaran Subang Jaya (MPSJ) has been chosen to develop a pilot project as part of the national waste minimization study in cooperation with the Ministry of Housing and Local Government and Japan International Cooperation Agency (JICA)

The Pilot Project has 2 mains components:

- Establishment of a recycling Network Unit (RNU) in MPSJ
- Source separation of Municipal Solid Waste:
  - In a condominium: De Palma
  - In a shopping complex: South City Plaza
  - In an institution : MPSJ Complex

For the source separation we are trying to develop a sustainable society who adopts the 3Rs attitude:

**Reduce - Reuse - Recycle**

One of the main elements of the source separation is a paper separation campaign within the MPSJ complex. That is why each department have been equipped with a set of 3 bins where staff can dispose used paper and others recyclable materials.

Please remember, MPSJ has started several recycling programme within its locality. **MPSJ complex has to lead by example and practice what we preach!**

Waste management is a really expensive for MPSJ so kindly participate in our 3Rs effort

### PAPER CAMPAIGN

**How can you participate in the 3Rs paper project in MPSJ?**

**Reduce:**


- Use lighter weight paper when possible
- Reduce the number of copies of documents by establishing a centralized filing system
- Eliminate needless form
- Eliminate blank space & reduce the print size when appropriate
- Use electronic or computer mail
- Share documents
- Use bulletin boards instead of sending individual memo

**Reuse:**

- Use dual -sided copying whenever possible
- Use obsolete forms for drafts and to make memo pads
- Reuse interoffice envelopes, file folders & corrugated boxes

**Recycle:**

- Dispose used paper in the recycling bins installed in your department.



### 3Rs Paper Campaign - MPSJ Complex

**What is asked from you?**


**Adopt a 3Rs attitude**

A recycling agent has been appointed in each department. (He/she is the contact person if you have questions. You can also contact the recycling network unit located in the department of Health and Urban service).


The recycling agent has to make sure the paper bins are brought every **Thursday between 10 AM & 2 PM** at the recycling station (nearby the car park). There the used paper will be weighed and the data collected (You can rotate among the staff to bring the used paper or ask the cleaners to do it for you).

**The next used paper collection will be Thursday 13 OCTOBER**


**What about the competition?**  
The recycling competition as you knew it no longer exist. We are working at the moment to find a way to reward the staff of the department which has adopted a 3 Rs attitude and Reduce, Reuse and Recycle its paper consumption.



AT MPSJ, WE RECYCLE!





## 7.2.4 3Rs Brochure (South City Plaza)




**OPENING OF A RECYCLING BUYBACK CENTER IN SOUTH CITY PLAZA !!!**

Starting 7 of November, tenants, customers and nearby residents will have the chance to sell their recyclables materials in a buyback centre located within South City Plaza.

| Recyclable Items you can sell | Buying Price (RM/Kg) |
|-------------------------------|----------------------|
| Old newspapers, magazines     | 0.15                 |
| Cardboards                    | 0.10                 |
| White papers                  | 0.20                 |
| Mix papers                    | 0.10                 |
| Glass bottles                 | 0.05                 |
| Plastics bottles              | 0.10                 |
| Mix metals                    | 0.10                 |
| Aluminiums                    | 1.80                 |
| Computers (CPUs, monitors)    | 4.00/unit            |
| Computers (printers)          | 1.00/unit            |
| Tetrapacks (beverage carton)  | 0.80                 |



**Think before you throw** Recycle at South City Plaza




**PEMBUKAAN PUSAT KITAR SEMULA DI SOUTH CITY PLAZA !!!**

Bermula pada Jumaat 7 Novembar, penyewa, pelanggan dan penduduk berdekatan akan berpeluang untuk menjual barangan kitar semula di pusat kitar semula di kawasan South City Plaza.

| Barangan yang boleh dijual | Buying Price (RM/Kg) |
|----------------------------|----------------------|
| Surat Khabar, majalah      | 0.15                 |
| Kadbod, kotak              | 0.10                 |
| Kertas putih               | 0.20                 |
| Kertas campur              | 0.10                 |
| Botol kaca                 | 0.05                 |
| Botol plastik              | 0.10                 |
| Besi Campur                | 0.10                 |
| Aluminium                  | 1.80                 |
| Komputer (CPU, monitor)    | 4.00/unit            |
| Komputer (printer)         | 1.00/unit            |
| Tetrapack (kotak minuman)  | 0.80                 |

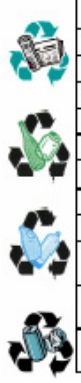

**Think before you throw** Recycle at South City Plaza



**SOUTH CITY PLAZA 再循环回收中心的开幕!!!**

从十一月七号开始, 所有租户, 顾客以及在附近的居民将会有机会把再循环物品售卖给在 South City Plaza 里的再循环回收中心。

| 可以售卖的再循环物品        | 回收价格 (RM/公斤) |
|-------------------|--------------|
| 旧报纸, 杂志           | 0.15         |
| 硬纸皮               | 0.10         |
| 白纸                | 0.20         |
| 各类纸张              | 0.10         |
| 玻璃罐               | 0.05         |
| 塑料罐               | 0.10         |
| 混合金属              | 0.10         |
| 铝                 | 1.80         |
| 电脑 (CPU, monitor) | 4.00/unit    |
| 电脑 (打印机)          | 1.00/unit    |
| 饮料盒 (Tetrapack)   | 0.80         |

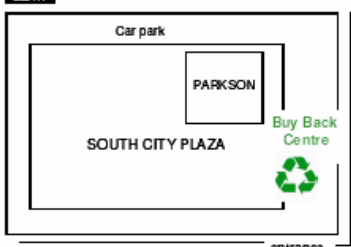



**Think before you throw** Recycle at South City Plaza


**再循环回收中心的营业时间:**

星期四至星期一  
早上 10 点至 下午 5 点  
(午休: 11 点 45 分 至 12 点 45 分)

**地点:**



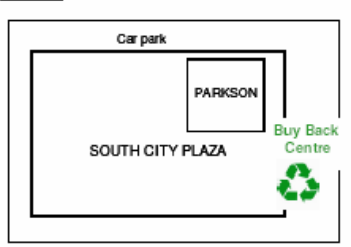
**Recycling Network Unit**  
Majlis Perbandaran Subang Jaya  
Persiaran Perpaduan, Jalan USJ 5  
47610 Subang Jaya  
Phone: 03 - 8025 1749  
Fax: 03 - 8026 7673  
E-mail: rnu.mpsj@gmail.com  
Web-site: http://www.rnumpsj.net




**Masa Operasi Pusat Kitar Semula:**

Khamis - Isnin  
10 pagi - 5 petang  
(Rehat: 11.45 pagi - 12.45 tengahari)

**Lokasi:**



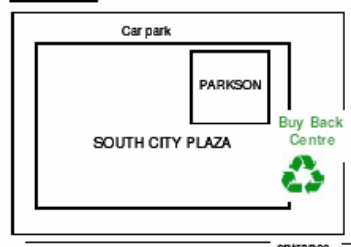
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47610 Subang Jaya  
Telefon: 03 - 8025 1749  
Faks: 03 - 8026 7673  
E-me: rnu.mpsj@gmail.com  
Laman web: http://www.rnumpsj.net




**Opening Time of the buyback centre:**

Thursday to Monday  
10 am to 5 pm  
(Lunch break: 11h45 to 12h45)


**Location:**




**Recycling Network Unit**  
Majlis Perbandaran Subang Jaya  
Persiaran Perpaduan, Jalan USJ 5  
47610 Subang Jaya  
Phone: 03 - 8025 1749  
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




## 7.2.5 Poster for South City Plaza Buy-back Centre




# OPENING of a BUY-BACK CENTRE in SOUTH CITY PLAZA



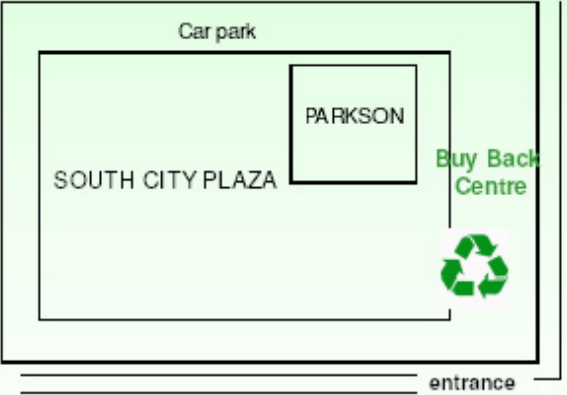
Starting 7 of November tenants, customers and nearby residents will have the chance to sell their recyclables materials in a buyback centre located within South City Plaza.

|   | Recyclable Items you can sell | Buying Price (RM/Kg) |
|---|-------------------------------|----------------------|
|    | Old newspaper, magazines      | 0.15                 |
|    | Cardboard                     | 0.10                 |
|   | White paper                   | 0.20                 |
|  | Mix paper                     | 0.10                 |
|  | Glass bottle                  | 0.05                 |
|  | Plastics bottle               | 0.10                 |
|  | Mix metal                     | 0.10                 |
|  | Aluminum                      | 1.80                 |
|  | Computer (CPU,monitor)        | 4.00/unit            |
|  | Tetrapack (beverage carton)   | 0.80                 |



**Advantages of recycling for business:**


- It can reduce waste volume and disposal cost,
- It provides revenue from the sale of recyclable materials & reduces operating costs,
- It enhances company's image



**Advantages of recycling for public:**

- It protects our environment
- Get money from the sale of recyclable material

**Buy-Back Centre will be opened Thursday to Monday from 10 am to 5 pm (lunch break from 11h45 to 12h45)**



Think before you throw

Recycle at South City Plaza



## 7.3 MBM BROCHURES



### 7.3.1 General 3-R Brochure for Public Awareness

#### What you can recycle?

- ✓ **Aluminium cans**  
 Tin cans / scrap metal  
Aluminium cans
- ✓ **Paper and cardboard**  
 Books  
Magazines  
Black and white paper  
Mixed paper
- ✓ **Newspapers**  
 Old newspaper
- ✓ **PET plastic soft drink bottles**  
 Mineral water bottles  
Soft drink bottles  
PET, HDPE, PE, PP,  
Polystyrene etc.
- ✓ **Glass**  
 Maggi tomato/ chilli sauce,  
soya sauce, sesame sauce,  
Guinness, vinegar, wine  
(cooking), beer, and  
Nescafe & peppermint  
green tea.



**For more information contact:**

  
**Miri City Council**  
 Public Services Section/  
 Recycling Network Unit (RNU)  
 Jalan Kingway, 98000 Miri  
 Ms. Chen Saw Ling, Ms. Chang Siow Yen  
 or Mr. Jackson  
 085-426984  
 Email: rnu.mbrn@gmail.com

#### The Study on National Waste Minimisation in Malaysia Pilot Project in Miri

  
**Reduce**  
**Recycle**  
**Reuse**

  
 Miri City Council  
  
 Ministry of Housing and Local Government  
  
 JICA  
 Japan International Cooperation Agency

#### 3Rs



**Conserves  
valuable  
resources,  
reduces  
your waste, and  
saves money & the  
environment!**

Miri obtained City Status in May 2005. Today its population has grown to 250,000. Everyday, the city produces 130 tonnes of solid wastes. 20% of the waste consists of newspaper, magazines and other paper products. The rest includes plastics, glass, aluminium cans and textiles. All these wastes go to landfill. But not all of them need to go to landfill. You can help reduce the amount of wastes that have to be disposed. How?

When you use things more than once and recycle whatever you can, you will save money and help the environment too!



#### Easy ways to Reduce, Reuse & Recycle waste:

- Buy products such as flour, rice, nuts in bulk (it costs less per kg)  

- Reduce disposables, and buy things you can use many times
- Buy things that can be used more than once like cloth napkins, handkerchiefs, and food storage containers.  

- Recycle whatever you can (see back for list of things that can be recycled).
- Use tupperware or empty food containers to store leftovers or to carry your lunch.
- Walk, ride your bike, or take the bus; save fuel and keep the air cleaner.



- Share magazines and books with others and use the library.
- Teach your children how to recycle and protect the environment.  

- Participate recycling programmes that will help you cut down on the amount of material you throw into a garbage can.
- Use both sides of paper because you save trees, energy and water, which are all used to make paper.  


### 7.3.2 Example of Information Leaflets to Encourage Source Sorting

**RECYCLABLE ITEMS FROM HOUSEHOLDS 可再循环品**

**PLASTICS 塑胶**



Plastic Bottles 透明瓶



Plastic Plastic Container 塑胶罐

**PAPERS 纸张**



Old Newspaper 旧报纸



Black and white paper 黑白纸



Mixed Paper 杂纸



Old Corrugated Cardboard 旧盒子

**ALUMINIUM CANS 铝罐****METAL 铁罐**



Aluminium Can



Tin Steel Can

**GLASS BOTTLES 玻璃瓶**



Brown Glass Bottle 棕色玻璃



White Glass Bottle 无色玻璃瓶



Miri City Council



Ministry of Housing and Local Government



Japan International Cooperation Agency

**How to handle the recyclable items? 怎样处理回收物品?**



### Paper Product 纸张



Recycling Box for paper product  
回收纸盒



Black and white paper 黑白纸



Mixed Paper (Phone Book, Text Book, Magazines etc.), 杂纸 (电话簿, 书本, 杂志等等)

---

### Aluminium Cans/ Plastic Product/ Glass Bottles 铝罐/塑胶/玻璃瓶

Empty content, rinse before entering the green bag. 清洗干净, 然后放进青色塑胶袋







Plastic Bottles 透明瓶



Aluminium cans 铝罐



Glass bottles 玻璃瓶

Plastic bags is for plastic product, glass and aluminium cans 透明瓶, 铝罐, 和玻璃瓶装进塑胶纸袋

---

### Newspaper/ Old Corrugated Cardboard 旧报纸/旧盒子



Old Newspaper 旧报纸



Old Corrugated Cardboard 旧盒子

Tie up neatly 整齐的绑起来

Collection of the recyclables will be carried out every Saturday from 7am to 10am. Please kindly place your recyclable items beside your normal bins and do not mix the recyclables with the garbage.

A7-3-3

### 7.3.3 Door to door collection schedule for Krokop distributed

#### Tentative date for recyclables collection

#### 回收时间表

#### Door-to-door collection (Krokop 10 & Tadika Road)

Collection frequency – fortnightly (two week)

Collector - MCC and Buddhist Tzu-Chi Association

All collection will be donated to Buddhist Tzu-Chi Association

The tentative date for collection as shown below

#### 上门收集边(珠芭十号路与幼稚园路)

- 收集次数 – 每两个星期
- 收集单位 – 美里市政局和慈济功德会
- 全部收集品将捐献给慈济功德会
- 收集时间如下:

| SEPTEMBER 九月 |     |     |     |       |     |     |
|--------------|-----|-----|-----|-------|-----|-----|
| Sun          | Mon | Tue | Wed | Thurs | Fri | Sat |
|              |     |     |     | 1     | 2   | 3   |
| 4            | 5   | 6   | 7   | 8     | 9   | 10  |
| 11           | 12  | 13  | 14  | 15    | 16  | 17  |
| 18           | 19  | 20  | 21  | 22    | 23  | 24  |
| 25           | 26  | 27  | 28  | 29    | 30  | 31  |

| OCTOBER 十月 |     |     |     |       |     |     |
|------------|-----|-----|-----|-------|-----|-----|
| Sun        | Mon | Tue | Wed | Thurs | Fri | Sat |
| 30         | 31  |     |     |       |     | 1   |
| 2          | 3   | 4   | 5   | 6     | 7   | 8   |
| 9          | 10  | 11  | 12  | 13    | 14  | 15  |
| 16         | 17  | 18  | 19  | 20    | 21  | 22  |
| 23         | 24  | 25  | 26  | 27    | 28  | 29  |

| NOVEMBER 十一月 |     |     |     |       |     |     |
|--------------|-----|-----|-----|-------|-----|-----|
| Sun          | Mon | Tue | Wed | Thurs | Fri | Sat |
|              |     | 1   | 2   | 3     | 4   | 5   |
| 6            | 7   | 8   | 9   | 10    | 11  | 12  |
| 13           | 14  | 15  | 16  | 17    | 18  | 19  |
| 20           | 21  | 22  | 23  | 24    | 25  | 26  |
| 27           | 28  | 29  | 30  |       |     |     |

Miri City Council (MCC) 美里市政局

回收中心(珠芭十号路, 樟查人造湖公园)  
 Buddhist Tzu-Chi Association 慈济功德会 时开放

#### Collection Centre (Krokop 5 & Bulatan Park)

Open on every Sunday from 9.00am until 11.00am

收集时间若有任何更换, 将以报纸通知

Please refer to press release if have any changes of the collection  
 date

## 7.3.4 Background information for Krokop 6

### Source Separation (Door to door collection) Pilot Project in Krokop 6, Miri

Miri has been selected as one of the three cities (Penang & Subang Jaya as the other two) in Malaysia to undertake a pilot project focusing on waste minimization and recycling. The project is funded by the Japanese International Cooperation Agency (JICA) and will be implemented through the Miri City Council with the participation of all the other stakeholders i.e. NGOs, schools, recycling agents and so forth.

The project will include the introduction of source separation system for recyclable items in residential area. This will be an important part of 3R (Reduce, Reuse & Recycling) activities. The selected area for source separation is Krokop housing area.

Source separation and door to door collection has already been implemented along Krokop Lorong 10 since August 2005. As a step to extend the pilot project to gain more experiences, **Krokop Lorong 6** is selected as a new target area to implement a new collection system. Recyclable items will be collected every Saturday by the ordinary garbage truck together with the collection of garbage from 7am to 10am. The participation of the residents in this area is crucial to ensure the success of the project.

**NOTE:**

**Please kindly place your recyclable items beside your normal garbage bins and do not mix the recyclables with the garbage.**

Further Information, Please contact

Ms. Chang/Ms. Chen/Mr. Jackson Agan

Contact: 085-426984

Address: Public Cleansing Maintenance/  
Recycling Network Unit

Miri City Council

Jalan Kingsway, 98000 Miri.

Email: rnu.mbm@gmail.com



Miri City Council



Ministry of Housing and Local Government



Japan International Cooperation Agency

### 7.3.5 Brochures for Dynasty Hotel



#### What is Source Separation???

The practice by waste generators such as households and businesses, of separating waste-generated within the household or commercial operation into separate fractions, such as all paper together, all plastic together, etc. and of placing them in separate containers for pickup by the waste contractor.

#### HOW TO ..... WASTE?

**REDUCE**

- Use own shopping bag; Avoid using many plastic bags when shopping

**REUSE**


- Use both sides of paper
- Encourage reuse of towels

**RECYCLE**

- Do source separation & recycle whatever you can




For more information please contact:



Dynasty Hotel  
Housekeeping Department  
Ext. 6



Miri City Council  
Public Cleansing & Maintenance Section/  
Recycling Network Unit (RNU)  
Jalan Kingsway, 98000 Miri  
Mr. Jackson Agon 085-433501(Ext.260)

Email: [rnu.mbn@gmail.com](mailto:rnu.mbn@gmail.com)  
Website: [www.miri3R.net.my](http://www.miri3R.net.my)

#### The Study on National Waste Minimisation in Malaysia Pilot Project in Miri

## DYNASTY HOTEL



Implemented by  Miri City Council  
Ministry of Housing and Local Government

Supported by  JICA Japan International Cooperation Agency



#### Background of Pilot Project on Waste Minimisation in Miri



With the fast development pace in Miri, the generation of waste is expected to increase and there is a need to address the issue urgently.

Miri has been selected as one of the three cities (Penang & Subang Jaya as the other two) in Malaysia to undertake a pilot project focusing on waste minimisation and recycling. The project is funded by the Japan International Cooperation Agency (JICA) and will be implemented through the Miri City Council (MCC) with the participation of all the other stakeholders i.e. NGOs, schools, recycling agents and so forth.

The project will include setting up a Recycling Network Unit (RNU) to coordinate the recycling effort in Miri, introduction of source separation as well as 3Rs (Reduce, Reuse & Recycling) activities for schools in Miri. The selected area for source separation includes Krokop housing area (Leong 10), **Dynasty Hotel** and selected schools.



Reduce ♻️ Then Recycle ♻️

#### What thing can be recycle in Dynasty Hotel?

- Papers**
  - old newspapers
  - black & white
  - Old corrugated cardboard
  - magazine /mixed paper
- Plastics**
  - mineral water / soft drink bottle
  - other plastic container




- Glass Bottles**
  - coloured bottle
  - clear bottle
- Aluminium Cans/ Metals**
  - aluminium can
  - metal tin

#### How to handle?

Please bring your recyclables to Dynasty drop-off point



\* Only available in 3rd & 4th floor

## APPENDIX 8

# “RECYCLING WHEEL” IN PENANG ISLAND



**“RECYCLING WHEEL”  
IN  
PENANG ISLAND  
THE PENANG MUNICIPAL COUNCIL  
EXPERIENCE IN  
SOLID WASTE MANAGEMENT**

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## ABSTRACT

The Penang Island Municipal Council is essentially the body providing local authority services on Penang Island and is one of the largest public sector employers in the state with more than 3,000 employees. It has an administration area of about 299.65 sq km with 1 nautical mile off the shore inclusive. One of its priority functions is the collection and disposal of waste, which is under the jurisdiction of the Urban Services Department.

Penang Island generates about 690 tons of garbage a day. The Penang Island Municipal Council is responsible to collect transfer and dispose waste. This service covers 95% of the population. The collection and disposal of waste include domestic, industrial as well as waste in the sea and rivers. This paper discusses the structure, roles and activities of the Council, the infrastructure and mechanisms for waste collection, its complexities, issues and challenges faced by the Council in the daunting task of servicing a modern and thriving city.

The paper also highlights the successful recycling programmes implemented by the State Government with the help Penang Environmental Working Group (PEWOG) under the auspices of the Penang Local Government Consultative Forum (PLGCF). This is a voluntary working group (LA 21 styled) that is actively involved in both planning and implementing such programmes on the ground with the Penang Island Municipal Council. Programmes implemented by PEWOG also include the community organization, setting up networks for recycling agents, buyers and factories and developing mechanisms so that the recycling programme works smoothly and efficiently as well as in a sustainable manner. Through this effort, numerous communities have started recycling activities. This is a Public-Private Partnership (PPP) between the Government, community groups, private businesses and volunteers to tackle the waste problem through recycling and composting.

The recycling programme has gone from merely recycling into the collection of household hazardous waste (fluorescent lamps, dry cell and mobile phone batteries and aerosol cans) by supermarkets, which is a first in the country.

This collection will be extended to wet markets that are under the purview of the Penang Island Municipal Council.

Ongoing and future programmes include the separation of wet and dry waste at household level and its collection, community composting as well as the establishments of community resource recovery centres. Penang is also the first State to publish a recycling guide book as well as a manual for household composting. We are looking into big scale commercial composting to help remove around 40% of wet, organic waste from the waste stream.

The Penang Island Municipal Council has also commissioned a survey of e-waste (electronic waste comprising computer and peripherals, electrical appliances), and will be working out mechanisms for effective collection and safe disposal of these with the collaborative efforts from civil society and private enterprises.

Penang's SWM Strategy for waste minimization and diversion from its landfill are finally:

Clean Production with the use of non-toxic, recyclable, biodegradable components in manufacturing and packaging of products, emphasize on Corporate Producer Responsibility; and Resource Recovery. Resource Recovery would include waste separation at source composting of organic materials and removal of household hazardous waste from the waste stream. It is hoped that with the implementation of proper strategies, Penang will move towards "ZERO WASTE". We are not there yet but we are on our way!

## **1. INTRODUCTION :**

Penang is one of the thirteen states of Malaysia situated north of the Peninsular with the total area of 299.65sq/Km. It has a multi racial population of 660,000 people. The ethnic group distributions on the island are Chinese 68%, Malay 24%, Indian 4%, others 4%.

Penang Island is a tourism island nicknamed as Pearl of The Orient. The island is also known as the Silicon Island of Malaysia due the large number of electronic industries available. The island economy depended mainly on tourism, manufacturing, construction, agricultural, fishing and services respectively.

Being a tourist island, solid waste management are constantly monitored and discussed by many authorities including Ministry of Culture and Tourism.

The large number of industries and opportunity available has attracted many migrants locally and foreign immigrants to migrate to the island thus causing quite a challenge on social and solid waste management.

## **2. PENANG ISLAND MUNICIPAL COUNCIL:**

Local Government is the third tier in the Malaysia Government structure. In Penang Island, the origins of local government can be traced as far back as 1856. Today the Municipal Council of Penang Island has a local administration area of about 299.65 sq/km with 1 nautical mile off the shore inclusive.

Prior to 1.7.1974 there were two Councils in Penang Island i.e. City Council of Georgetown and the Rural District Council. The two councils were integrated on 1.7.1974 and known as the Municipal Council of Penang Island. The council is financially autonomous and is essentially an organisation providing

local authority services on Penang Island and is one of the largest public sector employers in the state with more than 3,000 employees.

The council executive body comprises a President and 24 Councilors appointed by the State Government under the Local Government Act 1976.

The Full Council meets every fortnightly. There are several standing committees concerned with the primary functions of Council.

The main source of income of the Council is derived from rates levied on all properties except places of religious worship, licensed burial ground or crematoria, public schools, public places for charitable purposes or for the purpose of science, literature or fine arts.

Management control devolves from the President through the Municipal Secretary to the 10 departments as follows:

1. Secretariat
2. Engineering Department
3. Finance Department
4. Public Health Department
5. Building Department
6. Valuation Department
7. **Urban Services Department**
8. Town Planning And  
Development Department
9. Legal Department
10. Licensing Department

In this context, we will focus on the Urban Services Department. The main functions of the Department are managing the collection, transport and disposal of solid waste as well as maintaining the cleanliness of public areas such as roads, drains, markets, food complexes, hawkker sites, public toilets, beaches, rivers and sea. The Department also handles Recycling Programme as well as assist *gotong royong* activities which are frequently held during the year by providing materials, equipment and vehicles.

The Urban Services Department was established on 16 January 1992 following the Council's decision to restructure its organisation in order to create specialisation of functions based on the study by Japan International Cooperation Agency (JICA). The Urban Services Department is divided into 2 sections, i.e. Administration Section and Cleansing Section.

### **3. THE GOVERNMENT SET UP**

As mentioned earlier, the Local Government is the third tier government. It is important to know the role of each tier of government and its role.

#### **3.1 The First Tier: The Federal Government.**

The major roles are to provide and formulate national policies or laws related to solid waste management including recycling and relevant environmental issues. The agency involved at the federal level is Ministry of Housing and Local Government.

The Ministry of Housing and Local Government is directly in charge of all the Local Authorities in Malaysia. It will direct policies passed by the parliament to all relevant Local Authority through the second tier government known as the State Government.

#### **3.2 The Second Tier Government: The State Government**

The State Government will study and deliberate issues or policies passed by the Ministry of Housing and Local Government. Related matters are brought for

deliberation to the EXCO members. In the case of Penang Island Municipal Council, the EXCO involved is the Local Authority and Traffic Standing Committee.

There are 147 Local Authorities in Malaysia. Each of them has a different set of by-laws that suits the local scenario.

Although each of the Local Authority has different sets of law but all by-laws created must be based under the main law i.e. Local Government Act 1976 and approved by the state Government.

If the state EXCO member agrees with the policy or policies passed down by the Ministry of Housing and Local Government, it will then be directed to the Local Authority involved for it to be executed.

### **3.3 The Third Tier Government: The Local Authority.**

The Local Authority upon receiving the policy or policies will have to execute it. There is no much room for deliberation or discussion given at the Local Authority level. Sometimes these situations create a non-conductive relation between the State Government and the Local Authority. Basically the Local Authority has to carry out whatever policies given upon. Normally policies or issues forwarded by the Ministry of Housing and Local Government will then be deliberated at the Council level. As far as solid waste matters are concerned the matters will be brought forward to the Cleansing Health and Public Education Standing Committee. As mentioned earlier, the standing committee can deliberate the matter but most of the time it carries no weight.

## **4. LAW AND POLICIES**

Currently there is no national policy on solid waste management. However the government is formulating the National Solid Waste Act. It is in the process of tabling to the parliament for approval. The Ministry of Housing and Local Government has

been given the task to formulate the mentioned act. The secrecy and the silence of it have caused restlessness among the NGOs and environmental activist.

Most of the NGOs and environmental activist viewed that public input should be considered before drafting the act.

The National Solid Waste Act will incorporate an integrated solid waste management system that covers the collection to disposal of waste in a more systematic and standardised manner.

The Federal Government intended to privatised the solid waste management to most of the west coast of the country under the national privatization programme.

Under the act, the nation will be sectionalized into 3 zones. The Northern, The Central and Southern Zone. Currently the Central and Southern Zones is already being privatised and operational.

The Northern Zone will include 3 more states under the national privatisation programme.

Among other reasons the government decided to privatised the solid waste management is to curb the irregular practices by local councils. It is also meant to solve the critical problem of manpower faced by most council in the country due to the government policy to downsize the public services sector.

Most of the local council in the country does have a sanitary landfill. It is hope that with the integration of solid waste management to the local councils through this privatization programme will help to solve the problems in the long run.

The present law which most of the Local Authority in Malaysia is applying on solid waste management is:

- LOCAL GOVERNMENT ACT 1976 (National Law)
- STREET DRAINAGE AND BUILDING ACT 1974 (National Law)
- PUBLIC CLEANSING AND SAFETY BY-LAWS 1980 (Applicable to Penang Island Municipal Council)

Note that it was mentioned earlier that each Local Authority has its own set of by-laws. Some of the by-laws may be identical, as Local Councils duplicate each other's law where applicable. Some may be modified to suit the local needs. Most of the time small Local Authority learned and duplicate laws from the bigger Local Authority.

By-laws are essential to Local Authorities as they provide more enforcement powers. Most of the national acts provide power to enable Local Authority to take legal matters to court whereas by-laws provides power to compound the offender. The acts have the proviso to compound but it is only to certain offences. Therefore the Local Government Act provides a clause to enable Local Authority to create its own by-laws.

Most Local Authority in Malaysia prefers to compound the offender as it fast and effective. Legal matters taken to court takes time, sometimes years to settle due to large number of other unrelated cases.

Several Local Authorities had built their own court i.e. Municipal Court to settle all the municipal cases without involving non-municipal cases. The Federal Government encourages Local Authorities to set up their own Municipal Court. Even though the encouragement is well received by some Local Authority but many could not build their own court due to unavailability of magistrates, staff, lands, space and funds. Other factors are that the Magistrate appointed must be from the Federal Government but the paycheck will be borne by the Local Authority involved. Whatever fines imposed upon the offender will go to the Federal Government.

## 5. THE PRESENT SITUATION ON SOLID WASTE MANAGEMENT

### 5.1 THE COLLECTION

The Penang Island generates about 650 tons a day of garbage. The Penang Municipal Council is responsible to collect transfer and dispose them.

The Penang Municipal Council covers about **95% of the population** on garbage collection as major portion of the Island is well developed. 5% are the premises that are not within reach. These are premises situated on hills and isolated. It is not economical to provide services to such extend. The residents of the premises mentioned are mostly involved in market garden businesses and plantations. They normally burn or bury their garbage. Few depended on composting for their plantations and market gardens due to readily available of chemical and organic fertilizers. However, composting is practiced by some of them at a small scale.

The Council has privatised its collection since the early 80's. It covers only the city of Georgetown. In 1984, 6 contractors were appointed to cover greater part of the Island. Council later made a decision to appoint only 4 contractors to cover 80% of the Island in 1993. The private contractors covers 80% of the Island collection and the remainder 20% is by the Penang Municipal Council. The Council keeps the remainder 20% as a back up service in case any of the contractors fail to carry out their duty or terminated.

In the beginning, the Council pays the contractors by weight but there were some misconduct on the side of the contractors. They begin to cheat the Council by adding water, rocks, planks, concrete or whatever available to increase the weight of the garbage. The Council saw this and optioned to pay by flat rate.

A new problem arose from this flat rate system. As mentioned earlier development in Penang Island is rapid. More high rise buildings erected, more industries emerged, more commercial areas developed but the same number of contractors involved. Consequently the contractors are facing quite a pressure. The contractors are

operating with an extended workforce but gets the same amount as agreed in the agreement. This has caused the contractors to slack down on services.

Another problem encountered was, in the agreement, the Council clearly stipulated the use of compactor lorries and the ro-ro bins. The contractors have to use 100% compactor lorries for collection. The ro-ro or multi-lift as it is called in Penang are only allowed for commercial areas with high generation of garbage i.e. markets, supermarkets and hypermarkets.

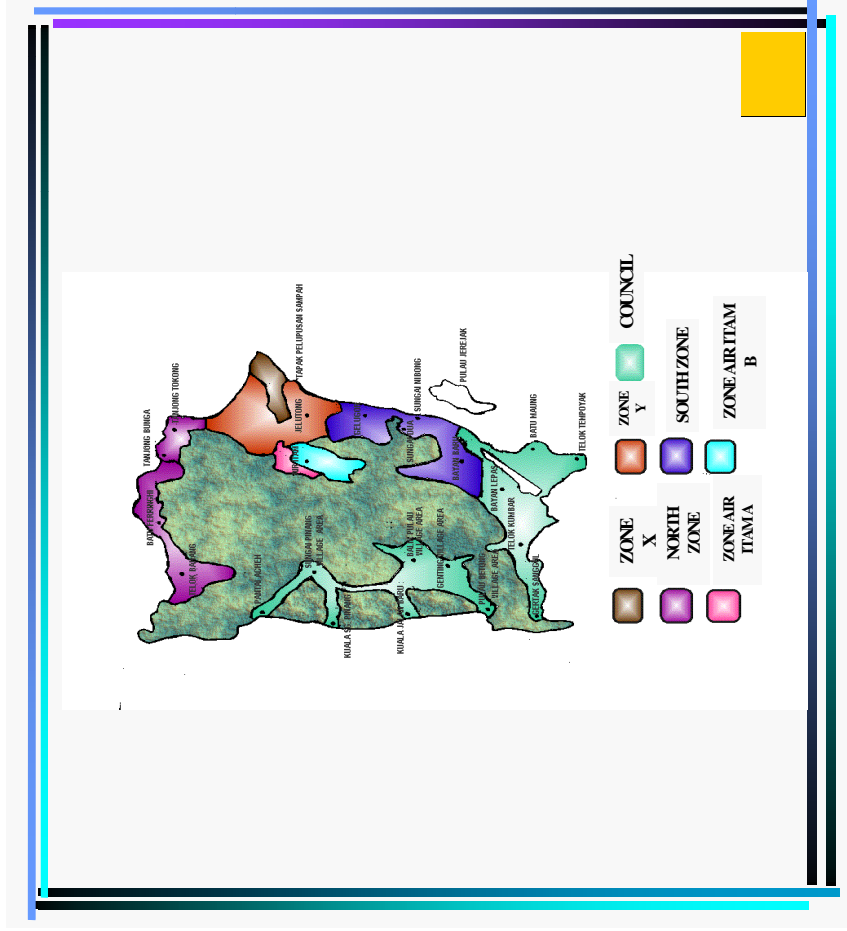
This arose from the habit of contractors creating little dumpsites all over the Island. The contractors were then practicing double-handling system, which is against the Council's policy. Garbage collected by the labourers from premises is dumped at little dumpsites. The lorries will then pick it up to the landfill. This has stirred up media and public outcry. Objections from political sectors came pouring in. Not to mention from the tourism sector. Under pressure, the Council came out with the ultimatum for the contractors to practice single-handling system i.e. house to house collection.

Development may be rapid in Penang but there are still underdeveloped areas on the island. The existence of illegal squatter areas is one of the problems although not a major one. These areas are mostly inaccessible by lorries or even mini compactors. The way out is to place ro-ro bins or multi-lift bins. Again it goes back to double-handling system but the problems of little dumpsites are taken care of. Please note that the Council also serviced the illegal squatters.

Penang Island Municipal Council practices "A People Friendly Council" approach. Since 1995 to the end of 2002 the Council supplied 57,692 units of free 80 liter HDPE bins to all landed property premises. Henceforth, started its first alternate day collection services with the 4 appointed contractors.

Collections are free of charge. Assessment charge is levied on ratepayers. The assessment rate covers all the services rendered by the Council but did not specify the amount for collection services. The assessment rates are determined by the Valuation Department of the Council.

The Council divided the Island into 7 zones for collection services. 6 zones by the contractors and 1 zone were by the Council.



The map above shows the distribution of the 7 zones. Note that the Council controls a large portion of the island. However, this portion is not highly developed.

**Table 1: Penang State Waste Composition Data**

| Composition                            | Total Waste (%) | Municipal Waste (%) | Difference (%) |
|--|-----------------|---------------------|----------------|
| Food                                   | 39.51           | 53.24               | (13.73)        |
| Paper                                  | 12.64           | 13.49               | (0.85)         |
| Greens                                 | 5.59            | 1.75                | 3.84           |
| Wood                                   | 1.96            | 1.31                | 0.65           |
| Plastics                               | 10.73           | 10.54               | 0.19           |
| Textiles                               | 2.16            | 2.87                | (0.71)         |
| Rubber                                 | 0.04            | 0.04                | -              |
| Glass                                  | 1.77            | 2.35                | (0.58)         |
| Metals                                 | 5.79            | 4.79                | 1.00           |
| Bulk                                   | 1.25            | 1.75                | (0.50)         |
| Aggregates (Construction & Demolition) | 12.70           | 0.87                | 11.83          |
| Water                                  | 5.86            | 6.99                | (1.13)         |
| <b>Total</b>                           | <b>100.00</b>   | <b>99.99</b>        | 0.01           |

Source: NWI Technical Masterplan for Privatisation of Solid Waste Management: Northern Region, 1996

**Table 2: Penang: Sectoral Share of Gross Domestic Product (%)**

|                         | 1990         | 1995         | 2000         | 2001         | 2002          | 2003(f)       |
|-------------------------|--------------|--------------|--------------|--------------|---------------|---------------|
| Agri, forestry, fishing | 2.9          | 1.6          | 1.3          | 1.6          | 1.6           | 1.5           |
| M&Q                     | 0.3          | 1.2          | 1.1          | 1.2          | 1.1           | 1.1           |
| Manufacturing           | 43.1         | 43.9         | 45.7         | 41.3         | 41.3          | 41.6          |
| Construction            | 3.1          | 3.3          | 2.4          | 2.4          | 2.1           | 2.1           |
| Tertiary                | 50.6         | 50.0         | 49.5         | 53.5         | 53.8          | 53.7          |
| <b>Total</b>            | <b>100.0</b> | <b>100.0</b> | <b>100.0</b> | <b>100.0</b> | <b>100.00</b> | <b>100.00</b> |

Source: Penang Strategic Development Plan 2 (PSDP2) & SERI

The main contributors to Penang's GDP are the manufacturing sector (41.6%) and the tertiary sector (53.7%). These figures indicate the presence of many multinational companies as well as small and medium industries in Penang. Penang's tertiary sector comprises mainly of services, which cater for the tourism sector.

The garbage collected are categorized into 4 different types currently:

1. Domestic Waste
2. Industrial Waste
3. Bulk Waste
4. Sea Waste
5. River Waste – effective in 2004, 21 rivers in the Island will be surrendered to the Council.

The vehicles used for the collection are as follows:

**TYPES OF VEHICLES USED FOR COLLECTION**

| TYPE                   | COUNCIL   | CONTRACTORS |
|------------------------|-----------|-------------|
| COMPACTOR (12 Cu.M)    | 7         | 50          |
| COMPACTOR ( 6 Cu.M)    | 5         |             |
| SIDE LOADER (7.5 Cu.M) | 3         | 2           |
| RORO ( 12 Cu.M)        | 7         | 3           |
| RORO ( 6 Cu.M)         | 7         |             |
| HIGH SIDE TIPPER       | 10        |             |
| UTILITY VAN            | 3         | 2           |
| <b>TOTAL</b>           | <b>42</b> | <b>57</b>   |

## TYPES OF VEHICLES USED FOR COLLECTION AND CLEANSING SERVICES

| TYPE                       | COST (RM) |
|----------------------------|-----------|
| COMPACTOR (12 Cu.M)        | 208,800   |
| COMPACTOR ( 6 Cu.M)        | 111,200   |
| SIDE LOADER (7.5 Cu.M)     |           |
| RORO ( 12 Cu.M)            | 110,000   |
| RORO ( 6 Cu.M)             | 96,200    |
| HIGH SIDE TIPPER           | 163,000   |
| 4 X 4 PICK UP VAN          | 77,742.88 |
| UTILITY VAN                | 48,685.35 |
| ART GULLY EMPTIER          | 347,000   |
| ALL LITTER VACCUM (RS)     | 99,800    |
| ROAD SWEEPER (4.5 Cu.M)    | 349,500   |
| ROAD SWEEPER (6 Cu.M)      | 550,000   |
| RUBBER / DRYERS            | 36,000    |
| STREET WASHER              | 96,000    |
| SKID STEER LOADER          | 108,000   |
| MINI MOBILE HIGH PRES. JET | 208,000   |

Note: 1USD = RM3.80

Certain premises such as industries and hotels have their own contractor to collect their garbage. The Council allows the practice but the contractors appointed must be notified to the Council including their vehicle registration numbers. This is essential to monitor the garbage collected and disposed.

All garbage vehicles will be registered at the weighbridge (Transfer Station) for data collection purposes and to ensure that all garbage vehicles dump their garbage at the Council's transfer station.

The Council has made it mandatory for all organic, domestic and industrial waste to be dumped at the Council's Transfer Station. Non-organic waste is prohibited at the Council's Transfer Station.

Bulk waste and non-organic waste is dumped at the Jelutong Landfill. Bulk waste consists of furniture, construction debris, refrigerators, other bulky appliances, bulk metals, trees and such.

Dumping of organic waste at the Jelutong Landfill is strictly prohibited.

The Council does not levy any charge to any public who wants to dump their waste at the Jelutong Landfill or the Council's Transfer Station. This practice started in the early 2002 to curb the problem of public dumping their garbage at public or hidden places. However, the public needs to inform the Engineering Department of their intention for administrative purposes.

Before this practice, the Engineering Department levied a charge of RM10.00 for a permit to dump. It is not the charge that hinders the public but the hassle of having to go through the administrative procedures. Knowing this being a problem, the Council decided to do away with the charge.

It is hoped that by making things simple for the public, it will encourage them to stop disposing their waste indiscriminately but the dump continues, very minimal though.

### 5.1.1 Frequency of Collection

#### *Domestic Waste:*

Prior to 1995 the Council practice a daily collection through out the Island. Under the recommendation of Japanese International Cooperation Agency, the frequency was altered to alternate day collection. It was advised that a daily collection incurs a lot of expenditure. Consequently it had been change to the present system – the alternate day collection.

Nevertheless the people of Penang accepted daily discharge of waste as a "way of life". To date there are still people that could not accept the alternate day collection system thus continues to dump their garbage outside the collection day.

The alternate day collection system is applicable to landed property premises only. For the high rise residential, a daily collection has to be carried out due to high generation of waste.

The total cost for the various services are found in the table below:

**Table 3: Costs for Waste Collection, Transfer and Disposal at Landfill**

| Operation  | Cost per Ton (RM) |
|------------|-------------------|
| Collection | 70.00             |
| Transfer   | 35.90             |
| Landfill   | 27.00             |
| Total      | 132.90            |
| USD        | 35.00             |

*Industrial Waste:*

Most of the industrial premises have their own contract with contractors. The frequency of collection depends on the demand and needs of the particular industry.

Majority of the industries prefer the Roro bin system due to heavy generation of garbage and availability of space to place the Roro bin. It is being a preference because it is convenient and fast. It is easy to remove and replace without much labour force and the capacity suits the generation of waste.

*Bulk Waste:*

The Council provides a free weekly bulk waste to the public. Nevertheless, if the public needs an urgent service outside the collection day, he or she will have to pay RM 50.00 for a trip of clearance.

The charge levied is a subsidised rate at RM50.00 per trip compare to private lorry company that charges around RM220.00 per trip.

*Sea Waste:*

Since Council is also the authority within 1 nautical mile off the coast, the task of sea cleaning is the responsible of the Council. Following that, on January 2001 the State Government appointed 2 contractors to clean the sea under the supervision of the Council. Boats and nettings are used in carrying out the job. The frequency of sea cleaning is 4 times a week. Garbage collected is dumped at demarcated landing points and later collected by tippers to the Transfer Station.

Beach cleaning is incorporated in the sea cleaning programme. A separate contractor was appointed by the Council to carry out the job. The beach cleaning is carried out daily except Sunday.

**Table 4: Costs of Waste Collection**

| YEAR | MPPP (TON) | CONTRACTOR (TON) | PRIVATE (TON) | TOTAL DIS-POSED (TON) | AVERAGE @DAY (TON) | AMOUNT PAID |            | COST/TON (RM) |
|------|------------|------------------|---------------|-----------------------|--------------------|-------------|------------|---------------|
|      |            |                  |               |                       |                    | (RM)        | (RM)       |               |
| 1998 | 45,813     | 127,319          | 1,554         | 174,686               | 479                | 8,413,597   | 9,323,409  | 66.08         |
| 1999 | 47,580     | 127,715          | 2,778         | 178,073               | 487                | 9,860,719   | 10,227,267 | 73            |
| 2000 | 49,595     | 146,091          | 3,499         | 199,185               | 545                | 10,227,267  | 10,568,943 | 67.49         |
| 2001 | 44,656     | 146,310          | 8,912         | 199,878               | 547                | 10,568,943  | 10,568,943 | 69.9          |
| 2002 | 47,901.29  | 152,875.10       | 37,206.81     | 237,983.20            | 652                |             |            | 69.13         |

## 5.2 THE TRANSFER STATION

The Council has a transfer station located at Batu Maung, Southeast of the Island. It was built and operated by a private contractor appointed by the Council.

The Council pays the company RM660,000 per month basing on the formula  $A \times D \times R$ , as agreed upon.  $A$  = Average Daily Tonnage For The First Six Month Of Commencement Of Services,  $D$  = Days 30.42,  $R$  = Rate of RM 35.90 per ton.

On August 2001, Council had instructed all organic waste to be disposed at the Batu Maung Transfer Station. The Transfer Station opens daily from 6.30 am to 10.00 pm. However, the Council has the right to instruct the Transfer Station to be opened to the desired time. On festive seasons, the Transfer Station will operate 24 hours.

The Transfer Station occupies an area of 1,295 hectares inclusive of ingress and egress of vehicles, a weighbridge, an office, lorries parking bays and a jetty.

The weighbridge belongs to the Council and it is equipped with computers to record daily activities on site.

The Transfer Station provides 8 bays for garbage vehicles to dump the garbage into metal containers readily available. Each container could contain 12 to 15 tons of garbage.

Fully laden containers are transported onto barges by lorries. Each barge could load up 15 to 20 containers depending on the size of the barge. There are 4 barges operating currently.

Containers are taken to a sanitary landfill on the mainland via sea 22 nautical miles off Penang Island. Transportation by sea takes about 3 1/2 to 4 hours to reach the sanitary landfill depending on tides and current.

The containers are fully covered to avoid garbage falling into the sea due to strong winds at times.

The barges are designed in such manner that traps all leachate from the containers into the hull thus avoiding the pollution of sea. Leachate from the barges as well as from the Transfer Station are pumped into tanks and transported to the sanitary landfill for treatment. Vectors and odour control are being carried out through the operation.

### 5.3 THE LANDFILL

Presently the Council is using 2 landfills. The 2 landfill are :

1. Jelutong Landfill situated in outskirts of Georgetown City, Penang Island
2. Pulau Burong Landfill situated in mainland Seberang Perai

Jelutong Landfill - is not a sanitary landfill. It is basically a dumping ground. It has a land area of 20 hectares. Currently the landfill caters for non-organic waste only. The Council planned to upgrade the landfill to level 1 by the year 2004. The Council owns and operates the landfill. It was a reclaimed land that belonged to the State Government.

The Pulau Burong Sanitary Landfill – It is a level 3 sanitary landfill. A private company appointed by the State Government operates the sanitary landfill. It has an area of 66 hectares with an operational area of 33 hectares. Currently the operator is upgrading the landfill to level 4. It is expected to be at level 4 by the end of this year (2003)

The Penang Municipal Council bought a portion of the landfill from Seberang Perai Municipal Council and shared the landfill. A designated spot is reserved specially for garbage from Penang Municipal Council. Although Penang Municipal Council shares the ground with Seberang Perai Municipal Council, garbage from both council are not mixed.

The Pulau Burong landfill has a jetty to receive garbage from the Island of Penang but there is no weighbridge as weighing is being done at the Batu Maung Transfer Station. The sanitary landfill is of the Fukuoka Type known to be first of its kind outside Japan when it was constructed in August 2001. It is equipped with primary and secondary leachate treatment plant.

Since the sanitary landfill is by the sea, constant monitoring of sea pollution is being carried out. The monitoring is conducted by the Department of Environment, University of Science Malaysia and the company's lab.

The landfill handles about 1500 tons per day from both local councils. The life span of the landfill is expected to last for another 4 year with present 33 hectares. The Penang Municipal Council pays a tipping fee of RM32 per ton for industrial waste and RM27 per ton for domestic waste. An average of more than half a million ringgit is being paid monthly to the company.

#### **5.4 RECYCLING PROGRAMME**

Malaysia launched its first recycling programme in the early 80's with the caption "Guna Semula" which means REUSE. It was later changed in the early 90's to "Kitar Semula" which means RECYCLE.

##### *Waste Recycling Programme in Penang, Malaysia*

The solid waste management strategy of the State Government of Penang, Malaysia, revolves around Waste Recycling and Resource Recovery, a strategy which has been frequently announced by Y.B. Dato' Dr. Teng Hock Nan, the State Exco Member in charge of Local Government, Traffic Management, Information and Community Relations.

Waste Recycling in Penang and Malaysia dates back a long time – from the days of the "ting-ting botol man", the man who went house to house to collect bottles and metal containers.

When the Federal Ministry of Housing and Local Government, Malaysia, launched its first waste recycling campaign in 1993, the Penang State Government faithfully followed with a kerb-side recycling programme in Hillside, Tanjung Bungah.

In 2000, the Federal Ministry implemented the 3-coloured bin system – brown for glass, blue for paper and orange for plastic and metal. The Penang State Government followed in 2001.

In 2002, the Federal Ministry provided funds to local governments to build waste recycling collection centres. Penang was lucky to receive these funds and has built several centres.

On 12th October 2002, Y.A.B. Tan Sri Dr. Koh Tsu Koon, Chief Minister of Penang, launched Penang's Community Recycling Programme, after a 2-year pilot project proved successful.

Today, Penang's waste recycling and safe disposal programme includes (1) waste recycling of inorganic general waste, (2) safe disposal of hazardous waste, (3) composting of organic waste and (4) recycling and safe disposal of e-waste (electrical and electronic waste).

Like in other parts of the country, recycling and safe disposal of chemical and healthcare waste are supervised by the Department of Environment (DOE).

In Penang, the Chief Minister of Penang launched the recycling programme in 1993 as pilot projects in 2 housing areas. The programme started well but without a proper Public Private Partnerships for the Urban Environment (PPPUE) approach. The programme is still surviving but hardly living. The parties involved in the programme are the residents of the housing area, a recycling vendor and Penang Municipal Council.

Penang Municipal Council took a different approach. We got the NGOs and the public involved. The Council campaigned for more recycling vendors to register with the Council. The Council started with only 6 vendors, 4 from Penang itself and 2 from the capital city, Kuala Lumpur.

Today the Council has 28 vendors involved in the Penang Municipal Council recycling programme. The use of the vendor system is workable and sustainable. Through the system the Council is being kept free from the collection jobs and able

to concentrate more on the education and promotion part of it. It also creates a win-win situation to all parties involved.

The Council provides freedom for the public to choose whichever vendors they feel comfortable with to do the collection of recyclables.

Penang registered a **recycling rate of 8.25% in the Year 2003 but in 2004 leaped to 15.56%**, unofficial rates put this figures higher at up to 20% (based on estimated weight of recyclables by Itinerant Waste Buyers not captured by MPPP's survey) This higher than the national average of 3-5%.

The other approach used is through the involvement of Penang Environmental Working Group known as PEWOG. PEWOG is under the auspices of Penang Local Government Consultative Forum (PLGCF), which is directly under the authority of the State Government. This is a voluntary working group (LA 21 styled) that is actively involved in planning and implementing programmes with Penang Island Municipal Council.

Table 5: Recycling Tonnage from 1993 - 2004

| Year | Waste (metric tons) Per Year (A) | Waste (metric tons) per day (B) | Recycling Weights (Metric Tons) (C) | Total Waste Generated (Metric Tons) (A+C=D) | Recycling Rates % (C/D) |
|------|----------------------------------|---------------------------------|-------------------------------------|---|-------------------------|
| 1992 | 184,812                          | 505                             |                                     |   |                         |
| 1993 | 205,973                          | 564                             | 40.83                               | 206,013.83                                  | 0.02%                   |
| 1994 | 232,625                          | 637                             | 91.89                               | 232,716.89                                  | 0.04%                   |
| 1995 | 192,016                          | 526                             | 126.74                              | 192,142.74                                  | 0.07%                   |
| 1996 | 187,921                          | 515                             | 300.41                              | 188,221.41                                  | 0.16%                   |
| 1997 | 184,776                          | 506                             | 85.25                               | 184,861.25                                  | 0.05%                   |
| 1998 | 174,686                          | 479                             | 74.60                               | 174,760.60                                  | 0.04%                   |
| 1999 | 178,073                          | 487                             | 75.20                               | 178,148.20                                  | 0.04%                   |
| 2000 | 199,185                          | 545                             | 57.54                               | 199,242.54                                  | 0.03%                   |
| 2001 | 199,878                          | 547                             | 319.63                              | 200,197.63                                  | 0.16%                   |
| 2002 | 237,983                          | 652                             | 3,844.74                            | 241,827.74                                  | 1.59%                   |
| 2003 | 252,215                          | 691                             | 22,669.29                           | 274,884.29                                  | 8.25%                   |
| 2004 | 239,242                          | 655                             | 44,093.17                           | 283,335.17                                  | 15.56%                  |

To achieve this is no easy feat and different approaches were used to increase public awareness and education. The following approaches were employed.

**1. Direct Approach: (A package: Talks + Recycle Bin Supply)**

MPPP conducts its own campaign directly with the target group through talks, briefings and exhibitions.

Target groups are normally Schools, Higher Learning Institutions, Kindergarten, Organisations, Factories, Private Firms, Hospitals, Government Agencies, Associations, NGOs etc.

Target groups were taught in detail the Dos and Don'ts and what material can be recycled and what cannot be recycled

Public education campaigns were conducted through KAP (Knowledge, Attitude, Practice), 3 P (Passion, Patience, Patient) 3 R (Reduce, Reuse, Recycle)

AVA is widely used in this approach. Samples and displays are very essential to demonstrate what waste separation is all about.

More of motivating approach used during talks and briefing

**2. Vendors Approach:**

The Vendor System was introduced to the community to ensure a sustainable and more systematic collection. This System leaves a free hand for MPPP to focus on future planning, new strategies and other environmental programmes. There is little need for the local authority to focus on the collection issue as this is self sustaining.

24 companies are listed as recycling vendors presently. Vendors list in the form of a Recycling Directory is distributed to public / community normally after the talks

The Public are given the right to choose whichever company (vendor) they feel comfortable to work with .

**3. Networking Approach:**

a) Vendors Networking –

The Vendors Networking concept was introduced to all the listed vendors through workshops or meetings. Vendors are required to collect all kind of recyclables with no exceptions. They were introduced to each other during workshops or meetings

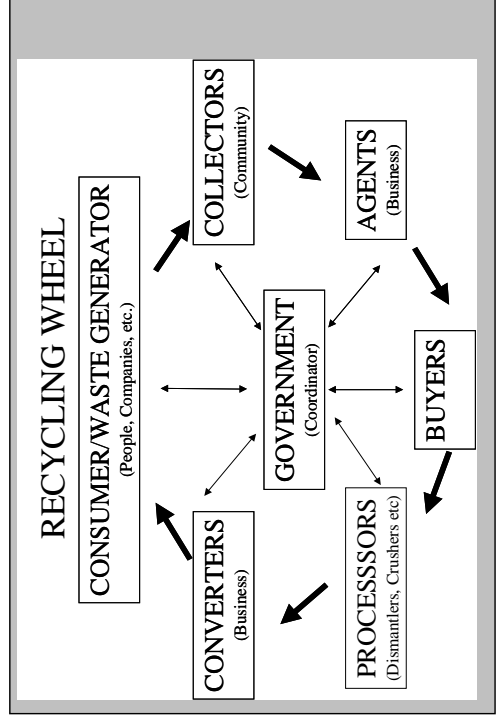
Vendors are required to state their preferences and speciality in the items they collect e.g. glass, plastic e-waste etc. Vendors are then able to either exchange their recyclables or trade with each other

b) Public - Private Networking:

Approach used is through a structure introduced by United Nation Development Programme (UNDP) which is known as PPPUE (Public Private Partnership for Urban Environment)

**c) PEWOG Networking:**

PEWOG was established under the Penang Local Government Consultative Forum (PLGCF) by the Penang State Government. Members of PEWOG – MPPP, MPSP, DOE, NGOs, Environmental Activists, CAP, MNS, National Poison Centre, Recycle Companies, and individuals. Strategies are planned and implemented through this networking taking into consideration the comments and demands by the public.



Dato Dr Ong Hean Tee, Chairman of PEWOG aptly summarizes the roles of the various stakeholders in the Recycling Wheel diagram above.

#### **6. PEWOG – A SMART PARTNERSHIP BETWEEN LOCAL GOVERNMENT, PRIVATE SECTOR & COMMUNITIES**

The Penang Environment Working Group (PEWOG) is a consultative, planning and coordinating environmental body set up by the State Local Government Committee of Penang, Malaysia.

PEWOG is a working group set up by the Penang Local Government Consultative Forum when the Forum was formed in Year 2000 by Y.B. Dato' Dr. Teng Hock Nan, State Executive Council Member and Chairman of the Local Government, Environment and Traffic Management Committee, State Government of Penang.

(The Committee was renamed the Local Government, Traffic Management, Information and Community Relations Committee after the country's General Elections in March 2004).

#### **6.1 PEWOG's Vision**

To be a contributing and internationally recognized environmental body.

#### **6.2 PEWOG's Mission**

To assist the Penang State Government and the Malaysian Federal Government to achieve a clean and safe living environment for the people of Penang and Malaysia.

#### **6.3 Objective**

To be a clearing house of environmental issues in the State of Penang, particularly in local government, environment, agriculture and eco-tourism.

#### **6.4 Working mode**

A consultative and cooperative tripartite (LA21) forum for community, government and private sector to work together on environmental matters concerning Penang, Malaysia and the World. PEWOG's projects are funded partially by the Penang State

Government with contributions from private sectors and volunteer efforts from its members. The Chairmanship is headed by Dato Dr Ong Hean Tee who is also currently the State Recycling Programme Coordinator.

#### **6.5 Membership**

PEWOG is made up of 25 and more individuals and bodies from the community, government and private sector in Penang.

Community members include:

1. Island Park Rukun Tetangga (Neighbourhood) Movement (RTIP)
2. Malaysian Nature Society (MNS), Penang Branch
3. Penang Inshore Fishermen's Welfare Association (PIFWA)
4. Consumers' Association of Penang (CAP)
5. Dalat International School
6. Green Lane Community Centre (GLCC)
7. Sahabat Alam Malaysia (SAM)
8. Individuals from the community.

Government members include:

1. Majlis Perbandaran Pulau Pinang (MPPP, Municipal Council of Penang Island)
2. Majlis Perbandaran Seberang Perai (MPSP, Municipal Council of Seberang Perai)
3. Jabatan Alam Sekitar (Department of Environment, DOE)
4. Jabatan Pengairan dan Saliran (Drainage & Irrigation Department, DID)
5. Pusat Racun Negara, Universiti Sains Malaysia (National Poisons Centre).

Private sector members include:

1. Ee Sheng Huat Sdn. Bhd.
2. Eurasia Express Sdn. Bhd.
3. Idaman Bersih Sdn. Bhd.
4. LHT Kitarsemula Sdn. Bhd.
5. Muda Holdings Bhd.
6. NKH Cartridges Trading
7. Pinang Resources Sdn. Bhd.
8. Sinaran Matahari (SIMA)
9. Alif Teknologi (M) Sdn. Bhd.

Ongoing and future programmes include the separation of wet and dry waste at household level and its collection, community composting as well as the establishments of community resource recovery centres. Penang is also the first State to publish a recycling guidebook as well as a manual for household composting. We are looking into **big scale commercial composting** to help remove around 40-50% of wet, organic waste from the waste stream.

10. Central Malaya Paper Sdn. Bhd.
11. Elizar Enviro Consult Sdn. Bhd.
12. OK Scrap Trading

#### International Linkages

1. Global Alliance for Incinerator Alternatives (GAIA)
2. Waste Not Asia.

They are seeking linkages to:

3. Health Care Without Harm (HCWH)
4. Toxic Links.

The Community Programme is coordinated by the Environment Working Group of the Penang Local Government Consultative Forum, under the patronage of the Penang Exco Committee on Local Government, Environment and Traffic Management.

The Recycling Programme in Penang has three phases:

- (1) Phase One: Pilot Project of the Community Recycling Programme and Awareness Campaign from 31st July 2001 to 30th July 2002 (one year)
- (2) Phase Two: Information Collection and Dissemination Programme from 31st July 2002 to 30th July 2003 (one year), and
- (3) Phase Three: Expansion of the Community Recycling Programme from 31st July 2003 to 31st December 2005 (two and a half years).

PEWOG has also organized awareness campaigns, seminars, workshops and exhibitions to promote recycling. Appreciation Certificates have also been awarded to recycling agents, organisations and individuals who are active in recycling in the State.

Through PEWOG's Awareness Campaign, about 150 communities and other bodies have started their recycling programmes with or without assistance from the government.

## **7. PRESENT SWM SCENARIO IN PENANG**

The following scenarios from the community, private sector and local authorities should be taken into account to provide an overall view of existing efforts and programmes:

### **7.1 Community**

- Active recycling in communities going on and growing with the participation of 175 communities such as RTs, RAs, JKKKs, NGOs, Institutions (such as schools, universities, hospitals), commercial bodies (such as private businesses, trading companies and factories) and Government agencies
- Penang registered a recycling rate of 15.5% (2004)
- Awareness of recycling among the public and willingness to recycle is high but the lack of infrastructure support and legislation causes a high level of frustration that verges on cynicism.
- Reliance on (the same group of) volunteers leaves community recycling programmes vulnerable to collapse
- Household composting efforts being promoted and have gained strong acceptance among the people of Penang

### **7.2 Private Sector**

- Strong recycling networks have been established for certain commodities such as paper and metal, however, other linkages need to be further strengthened to cover commodities such as plastic, glass, wood etc.
- Competition and under cutting exist among recycling agents and buyers
- Dell has introduced a Home PC Recycling Programme that offers take back of computers and peripherals. In conjunction with this, several permanent collection centers have been set up with the aid of the 2 local authorities.
- The sector is overwhelmingly commodities-oriented and prices are highly volatile often resulting in non-collection of certain recyclables when the price drops.
- A few far-sighted entrepreneurs are setting up resource recovery centers and working with shopping complex to offer rebates for parking for the collection of recyclables.
- There is adequate end-use market demand to support the recycling activities in Penang.
- Many MNCs have inbuilt into their management a proper and systematic waste disposal system, however, this does not hold true for many SMEs in Penang

### **7.3 Municipal**

- Local authorities are very effective solid waste managers
- Solid waste collection is privatized out to contractors
- The waste contractors are already exceeding the collection efficiency achieved by the concessionaires in the Central and Southern regions.
- Waste collection fees to the contractors have been raised only once in 10 years.
- At RM 27 per ton (RM 32 for industrial waste), the landfill cost is probably being subsidised.
- No costs for waste disposal and management are currently passed along to residents in the form of a direct fee;

- The Penang waste management system is in the process of modernization,
- Bulk waste and non-organic waste are dumped at the Jelutong Landfill. These consist of furniture, construction debris, refrigerators, other bulky appliances, bulk metals, trees etc
- All collected organic, domestic and industrial waste are transported to the Council's Marine Transfer Station at Batu Maung then transferred by barge to the Pulau Burung Sanitary Landfill
- The Pulau Burung Sanitary landfill is presently being upgraded from a Class III to a Class IV landfill with the addition of leachate treatment facilities.
- Lifespan of landfill is limited and diminishing rapidly.
- There is much difficulty in getting new site for landfill
- The Penang Island Municipal Council has initiated household hazardous waste collection points in several supermarkets and wet markets

## **8. DECIDING ON THE APPROPRIATE TECHNOLOGY**

There are various technologies and options available to solve the problem of municipal solid waste; however, these should not be treated as stand alone solutions but must be integrated with other factors that affects the overall situation of solid waste management.

Some primary considerations to look into in the process of decision-making are:

### **8.1 ISWM Hierarchy**

The ISWM hierarchy of source reduction, recycling, waste transformation and landfilling provides a general guide to solid waste management practices and should be adhered to. Selection of appropriate technologies should consider the programmes and activities that are already being implemented at each level of the hierarchy.

### **8.2 Appropriate Mix of different Technologies and Alternatives**

There is a wide variety of alternative programmes and technologies that are available for an Integrated Solid Waste Management. Some of the considerations to be taken into account in the choice of appropriate technologies that are :

1. Amount of waste generated
2. Recycling Rate
3. Amount of compostable waste
4. Amount of residual waste to landfill.
5. Environmental friendliness
6. Social acceptability

### **8.3 Flexibility of chosen technologies to meet future challenges and changing scenarios**

Selected ISWM technologies should also address future challenges and changing scenarios and also be flexible enough to adapt to them. Some of the important factors that need to be taken into serious consideration are:

1. Changes the composition of the waste stream such as the effect of recycling programmes and separation at source
2. Changes in the amount of the waste stream
3. Changes in the market situation of recyclable items such as prices of paper, metal etc
4. Changes in solid waste management technologies

### **8.4 Regular Monitoring and Evaluation**

Regular monitoring and evaluation is necessary to maintain a dynamic solid waste management system. This feature must be inherent in the systems so that timely changes can be made to the system to reflect the changes in the amount and type of waste, market volatility of recyclables and future changes in technology.

## 8.5 Other Influencing Factors

In order to provide a dynamic and more integrated solid waste management system for the State, factors that affect the community, private businesses and local authorities must be addressed. Further support to existing programmes and efforts need to be implemented to tie-in with the appropriate choice of technology. Some actions that need to be taken in the community, private business and municipal areas are:

### 8.5.1 Community Factors

- Practice the 3Rs in order to reduce waste
- Incorporate recycling activities as part of the activities for all RTs, RAs and JKJKs
- Introduce Community Composting Programmes as the next step following the success of the Household Composting Programmes. These will focus on housing estates, community gardens in multi-family dwellings (e.g. apartments and condos) and other institutions such as universities and schools with adequate space.
- Introduce waste separation at source in tandem with the Community Recycling Programmes to make resource recovery more efficient and effective
- Change attitudes and mindset of people to support the Government's programmes on recycling through continuous public awareness and education programmes
- Organize Training of Trainers' courses to recruit new "champions" and enlarge the pool of existing resource persons
- Encourage further outreach to the community to increase public awareness
- Consider providing incentives to communities practicing recycling since the Government saves money on transportation costs and tipping fees from waste diversion away from the landfill.

### 8.5.2 Private Sector Factors

- Establish new networks to meet future challenges
- Establish more drop off recycling programmes in shopping complexes
- Expand existing PC Recycling Programme into a Household Electronic and Electrical Appliances Collection Programme involving more private sector participation
- Provide incentives for private companies practicing recycling and installing environmental protection equipment
- Encourage private businesses to collect and purchase bulk items such as furniture and obsolete equipment
- Setup a mechanism to monitor highly volatile market prices of recyclable items
- Provide subsidies as a form of Government intervention in the case of sharp price drops of recyclables resulting in non-collection.
- Derive win-win solutions and reduce undercutting practices in order for recycling businesses to remain sustainable
- Introduce tax incentives for purchase of equipment for processing recyclables
- Provide soft loans to businesses involved in recycling and material recovery

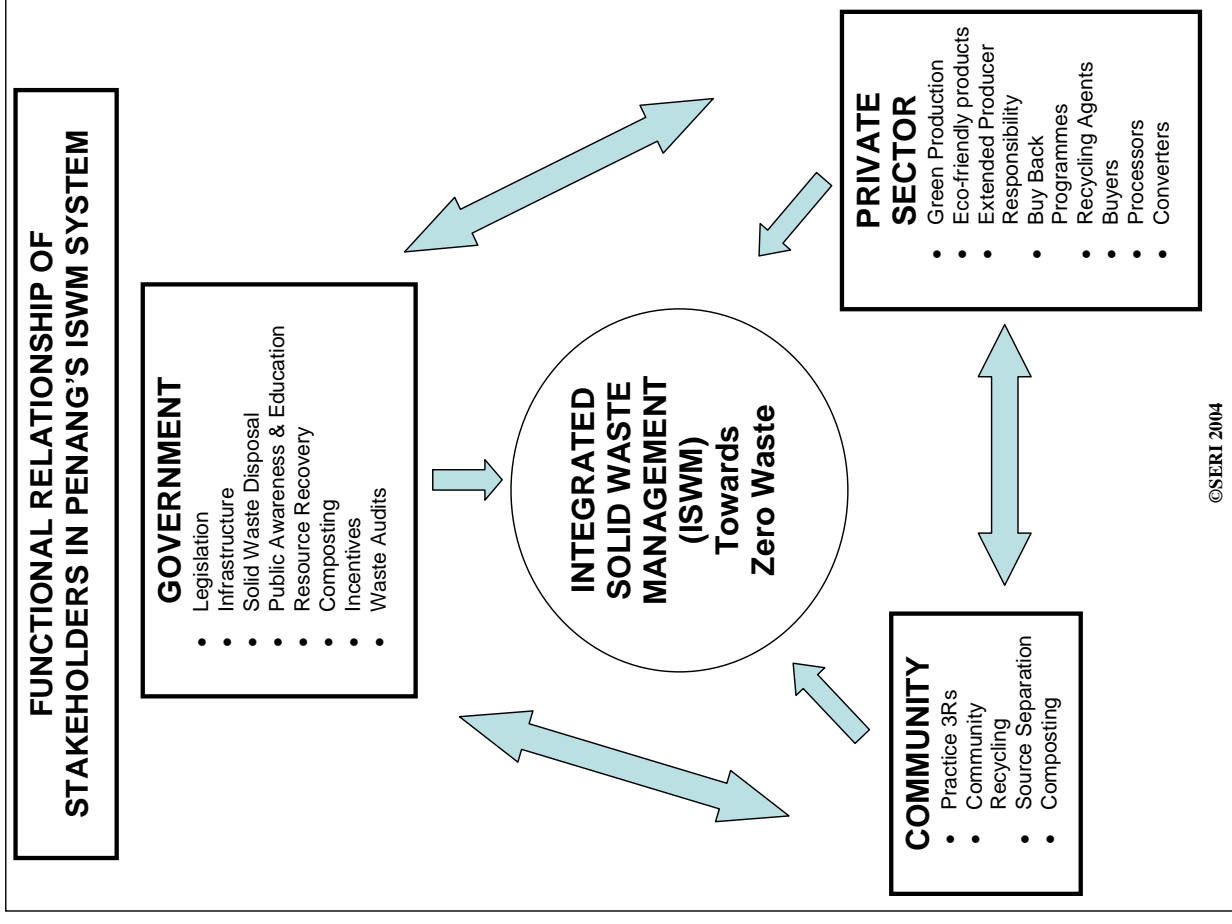
### 8.5.3 Municipal Factors

- Establish a sound legislative basis for waste minimization and management
- Infrastructure support for recycling is still lacking and needs to be further strengthened e.g. collection centres, collection of household hazardous materials etc.
- Expand present household hazardous waste collection points throughout Penang
- Set up a Hazardous Waste collection depot for other household hazardous items such as paints, oil, acids, aerosol cans, etc.
- Expand the present e-waste collection programme into Household electronic & Electrical Appliances (e.g. refrigerators, washing machines, TVs, toasters,

- electric ovens, radios etc) programme in collaboration with private recycling businesses
- Set up a mechanism for the collection of bulk furniture.
- Select appropriate technologies for material/ resource recovery and composting at the municipal level

The above-mentioned factors and action must be integrated with the primary concerns to promote material recovery and to extend the lifespan of the existing landfill when selecting the correct technological solution to the municipal solid waste problem.

The functional tripartite inter-relationships between the Government, Community and Private Sector and their primary roles towards achieving an Integrated Solid Waste Management System can be summarized in the chart below.



## **9. RECYCLING AS A VIBRANT ECONOMIC ACTIVITY IN PENANG**

### **HOUSEHOLD HAZARDOUS WASTE**

The State Government is particularly concerned about the safe disposal of household hazardous waste that is presently being dumped into the normal domestic waste bins and these will ultimately end up in the landfill. This will cause environmental pollution. The collection of household hazardous waste (fluorescent lamps, dry cell and mobile phone batteries and aerosol cans) by supermarkets, hypermarkets and shopping complexes, is the first of its kind in the country. This collection will be extended to wet markets that are under the purview of the Penang Island Municipal Council.

Each day, an estimated 10,000 tonnes of garbage (also known as Municipal waste) is produced and sent for disposal nationwide. The prevailing practice is still disposal in landfills while processing of solid waste before disposal is rarely performed in Malaysia. However, due to land scarcity, landfills are increasingly becoming an obsolete option and the government is looking at incineration as an alternative instead. If the wastes are processed or recycled, it can be taken out from the waste stream, which means less waste will end up in dumpsites or landfills. This translates not only to financial savings from waste disposal costs but also profits for those engaged in processing of the waste, in particular recycling activities.

Indeed, there are vast potentials in waste. This may come in the form of direct economic benefits, for instance, in sales receipts and profits for establishments engaged in the recycling business, wages paid to workers in these establishments and other "ripple effects" such as companies and people involved in collection, sorting and transportation of recyclables. According to a study in the US, recycling creates ten times more jobs than landfills! Indirect monetary benefits, meaning money saved from the costs of disposal and treatment of higher volumes of waste if recycling is not practised, can also be substantial.

More than that, the environmental and health benefits of recycling far outweigh the burdens of collection, processing and transportation of recycled materials. Both landfills and incinerators make for poor neighbours as they can potentially emit toxic chemicals known to cause health problems. Recycling, moreover, substantially reduces green house gases that cause global warming as well as preserves natural resources such as trees, energy and water.

It was the above considerations that spurred this investigation into the recycling industry in Penang. The purpose of this article is to document the economic activities generated by Penang's recycling and reuse industry and explore how its benefits can be maximised. As there is no secondary data available, the research is carried out through a rapid survey that involves the gathering of primary data from direct interviews and field visits. The findings of the rapid survey only provides a partial picture because the majority of the establishments are involved in the early stages of the recycling loop, i.e. collection and processing. The manufacturers that use these recovered materials to produce finished products are mostly located outside of Penang, which is beyond the coverage of this article.

The survey revealed that recycling could be a potentially viable business and income generator. The bigger players include regional agents who are acting on behalf of the producers of recyclable products. They may also act as traders who perform the middle-person role in marketing and logistics functions.

There are also small time operators who are functioning as backyard industries: buy back centres, wholesalers, collectors to the waste pickers, sorters and cleaners. In terms of location, they are scattered all over the state, with significant concentration in the Batu Maung area, industrial areas in Seberang Perai and in enclaves the inner city of George Town, such as in Armenian Street and Victoria Street.

Besides the strictly commercial undertakings, the economic dimensions of recycling are also manifested in numerous charitable causes. Penang is witness to various community organizations that are using recycling as a

means to raise funds for their activities, such as providing jobs for the disabled or giving free medical treatment to the needy. This, of course, is feasible only because labour cost can be taken out from the calculations when recycling for charity is carried out through volunteers. This article will, however, limit itself to discussing the potential economic benefits from recycling as a business concern.

The only solid waste composition survey available for Penang, which was carried out by JICA in 1995, showed that organic waste is the highest component of our waste stream with 44% being paper and cardboard (21%), followed by plastic and rubber (17%), glass & stone (6%), textile (4%), wood (4%), and metal (2.8%). Although the study is no longer very up to date, it gives us an idea of how much resources we could potentially recover if we process these wastes.

The discussion in this article is based on the above categorization. However, we would like to highlight another emerging waste category - 'e-waste', which is increasingly becoming significant in our modern daily living.

### **9.1 Paper**

Paper waste is the most heavily collected item in the waste stream. There are various types of waste paper collected, including double liner craft, pure white, old newspapers, old corrugated carton, mixed colour, paper cores, etc. Prices of the different types of paper vary according to their quality. For instance, pure white paper fetches RM0.60 - RM0.70 per kg, while mixed coloured paper is priced at RM0.15 to RM0.18 per kg. These are just indications of prices paid for waste paper delivered to the premise of the agent.

Waste paper is collected by scavengers, small agents, charity groups or municipal workers. They are then sold to an agent, who would process the waste paper before shipment. In Penang, there are only a handful of big agents. Usually, these agents have storage facilities and employ workers to do sorting and shredding in their plant. From our observations, the workers consist mostly of foreign nationals. Local elderly women are also taken on as part time sorters. One of the paper agents in Penang places open trucks in strategic locations, e.g. charity organization, hotels, factories and schools.

When the trucks are full, the load will be transported back to the plant. To attract the corporate sector, the agent also provides shredding machines for external use free of charge.

The wastepaper is packed into 500kg or 1-tonne bails. Once packed, they are delivered to paper mills for the pulping process whereby waste paper is mixed with water and agitated in a pulping vat to make a lush. Impurities like staples and binding materials are removed by screens. The recycled paper, rolled into jumbo reels are then delivered to consumers. The only paper manufacturer in Penang is Muda Paper Mills. The biggest paper mill that uses waste paper is Malaysian Newsprint Industries (MNI), located in Temerloh. Both are major paper manufacturers in Malaysia and invest heavily in R & D of recycling technologies. It takes 1.2 tonnes of waste paper to make 1.0 tonne of new paper. Most paper manufacturers face problems of low supply, i.e. there is simply not enough waste paper to recycle; so much so that waste paper has to be imported.

Unlike other paper mills, Muda Paper, which operates a 50-acre plant in Simpang Empat, is able to get 100% of its raw recyclable paper locally, as it has established a long history of networking with the local suppliers. It employs more than 420 workers and has a production capacity of 300,000 tonnes of recycled paper per year. According to Muda Paper, in terms of price, the recycled paper is quite competitive compared with paper produced from raw materials.

Besides paper mills, which are the key consumer of waste paper, there are also agents who deal with 'refurbishment' of waste paper boards. One of them is located at Batu Muang. Carton boxes and paperboards are reconverted to new products in customized sizes. Sources of the material come from used corrugated cartons boxes from supermarkets or factories. The agent would customize new carton boxes from the old boards, employing simple manual processes such as cutting, stapling, printing of new logos and packing. They are then sold locally to food/textile/stationery/electronic outlets.

## 9.2 Plastic

The general perception has been that plastics are the least recyclable products. After conducting visits to several recycling plants in Penang, our perceptions have somewhat changed. In fact, most plastics can be recycled in one way or another, though their prices are not comparable to that of paper and aluminum cans. Post consumer plastics include plastic bags, mineral water and soft drink bottles, polystyrene packaging and cups, plastic cutlery and plates, containers, shampoo and detergent bottles.

Presently, it is estimated that there are only 11-12 plastics recyclers in Penang. Plastic products are collected either from scavengers or through contractual waste collection from factory outlets. Plastics are either processed locally or bailed for export. The factories recycle an assortment of plastics, ranging from ABS plastics, Nylon, polyamide, PC, PE, PP, Poly(propylene oxide), PS, Styrene-acrylonitrile plastic and other plastics made from mixing different resins and other materials. These plastic recyclers are mainly located in Seberang Perai, with some larger operations in the Kulim Industrial area, which also obtain their post consumer plastics stock from Penang. A few other companies melt down the plastics such as PE and PP, and remanufacture them into lower grade plastic resins which are sent to China.

One particular company that operates in the Kulim area obtains its plastic scraps, especially LDPE, from scavengers in the municipal dumps. The owners, however, complain of not having enough feedstock for melting and are currently operating at only 50-60% capacity. They complain also of low quality and highly contaminated plastics from local sources. To supplement the inadequate local supply, they have been importing higher quality and less contaminated stock from Europe (odds and ends of supermarket bags). However, this practice was stopped when the Department of Environment (DOE) recently reclassified such feedstock as Scheduled Waste.

Ironically, while some plastics manufacturers have to import recyclable plastics, local plastic waste is shipped to foreign markets. One recycling plant in Batu Maung, for instance, which is supposedly the 'biggest player' and dealing with all kinds of plastics, has been exporting plastics to overseas markets. The volume processed per month ranges from 20 to 25 tonnes. The processes involved in this plant include sorting, removal of stickers, crushing,

and bailing, before transportation to the harbour and shipping to Thailand and Indonesia.

## 9.3 Glass bottles

Generally, glass is 100% recyclable. However, there are various types of glass products, the most common ones being glass bottles and flat glass. There is a low volume of glass material in the municipal waste stream because the glass is usually collected by waste pickers before the waste reaches the dumpsite. However, there are also recycling agents who contract with hotels, sport clubs, and supermarkets to collect glass bottles from them periodically. Even though physically glass bottles are 100% recyclable, some recyclers in Penang feel that it is not feasible as it incurs high costs in transportation and space for storage. These glass bottles need to be stored until a certain volume is reached before being returned to the producers, which are often located outside Penang. The key manufacturer that uses recyclable glass is KL Glass located in central Peninsular Malaysia.

There are also small traditional 'botol' shops, which have existed as small backyard industries in Penang for decades. They operate in junkyards and buy from scavengers or small time collectors. These operations involve sorting, washing, scraping off the labels, drying and packing in gunnysacks before the bottles are collected by agents for factories such as Carlsberg and Guinness Stout. Prices vary according to types of bottles and whether they are processed. For instance, for beer bottles, the buying price is RM0.05 per bottle; and selling price is RM0.15 after washing and pack. For sauce bottles, the buying price is RM0.15 and they are sold at RM0.40 after cleaning.

## 9.4 Metals, aluminium cans, tin containers, etc

Together with waste paper, aluminum products are one of the highest priced recyclables. The price paid to a collector can be as high as RM2.50 per kg. Although cans are 100% recyclable, the recycling technologies are only available overseas, where bauxite is available and where there is economy of scale. Hence the recyclables are being exported overseas. In turn, can manufacturers in Malaysia use imported aluminum coils as raw material.

Recycling of aluminum cans in Penang and Malaysia generally, are limited to collection, processing and export. The major players involved in this exercise include waste pickers, dumpsite collectors, small dealers, and overseas buyers. Post consumer aluminum waste may come from a network of collectors, dealers and traders. They usually get their supply from organized sourcing or from small time collectors.

There are also smaller collectors, concentrated in Victoria and Armenian Street, who depend on junkyard activities to source their materials. They buy aluminum cans, scrap metals, iron, copper, tap heads, pipes from individuals or scavengers. These metals are then sorted into various categories and sold to bigger agents, who will then sell to Malayawata. Other items such as biscuit tins and Milo tins are kept and sold to walk-in customers during festivals. Apart from metal and aluminium, these junkyard operators also deal with all sorts of other recyclable items, such as gunnysacks, wood, old clocks, small machine equipments, etc. Some of the products can even be customized according to specifications. These include wood planks, old doors, glass louvers and zinc roof, which are salvaged from house demolition/renovation. They are systematically displayed according to types.

### **9.5 E-waste**

Malaysia aims to be the IT hub for the region and in its effort to pursue this vision, the Government has embarked on a programme to encourage IT literacy among its people. Each household is encouraged to own at least a computer with the target of "one house one PC" to promote an IT culture. It is hoped that this will eventually boost up the number of skilled IT workers for Malaysia's future workforce. Penang's Chief Minister who chairs the Penang K-ICT (Knowledge Information And Communication Technology) Council has developed a K-ICT Masterplan to turn Penang into an I-Land (Intelligent Island). However, the Council is concerned about the safe disposal of computer and its peripherals. In addition to this, there are also other types of e-waste such as electronic equipment and home appliances to be dealt with. The influx of cheap short-lived electrical and electronic appliances has further aggravated the problem.

In order to address this issue, the Penang Island Municipal Council has commissioned a survey of e-waste (electronic waste comprising computer and peripherals, electrical appliances), and will be working out mechanisms for effective collection and safe disposal of these with the collaborative efforts from civil society and private enterprises.

E-waste encompasses a broad and growing range of electronic devices ranging from large household appliances such as refrigerators, air conditioners, hand-held cellular phones, personal stereos, and consumer electronics to computers. E-waste has become a problem of crisis proportions because of two primary characteristics: it is hazardous; it is generated at alarming rates due to obsolescence as technology progresses.

Discarded computers, televisions and other electronic devices are becoming a significant disposal problem in Penang. E-waste contains over 1,000 different substances, many of which are toxic, and create serious pollution upon disposal. With the advance in information and communication technology, electronic product life spans become increasingly shorter. New models of some electronic products are being produced every 3 months. There is a trend towards shorter useful lives of electronic equipment, particularly PCs and cell phones.

The main sources of e-waste found in Penang are OEMs, individuals, businesses, institutions, government and community. Presently, e-waste is mainly discarded as garbage and collected by the Municipal Councils. Large corporations and manufacturers of new equipment tend to have a much higher rate of electronic waste recycling than individuals and small businesses whereby most of the e-waste from the latter concerns would end up in the Pulau Burong landfill as there is presently no mechanism for recycling or safe disposal for community-generated e-waste. Existing collection/disposal systems are inappropriate and inadequate to handle these materials. Many facilities are unable to handle electronic waste due to constraints in space and handling problems.

At present, there are a number of firms, both on Penang Island and Seberang Perai, which are collecting and recycling e-waste. Smaller operations along Armenian Street and Victoria Street buy directly from customers for a minimal price and sell them to people who are looking for spare parts for repair work or to operations that refurbish computers for reuse. These are often collected in small quantities from individuals who either give them free of charge or for a token sum to the buyers. Such small operations are often not well organized and do not really dismantle or process e-waste for proper recycling.

Larger operations also exist on both the Island and Seberang Perai. They are better organized as they receive the e-waste stocks from factories. Many of these set-ups are also vendors of manufacturing firms in the Bayan Lepas Free Trade Zones. They are usually assured of a stable volume and quantity from OEMs, who either sell them their defective products or scraps from the manufacturing process. Vendors are engaged as contractors to scrap such items and not selling them as second-hand products. Such operations also accept electronic waste from other countries. These are then dismantled and separated into various parts and components, packed for resale locally or exported to other countries such as China and Indonesia. Operations are mainly manual with the aid of some machines.

There also exist well-organized vendors that collect computers from the community and even suppliers from overseas for refurbishment and resale. One particular example is Dell, which has started a voluntary "PC Recycling Programme" to collect e-waste. Under this programme, the public can call up Dell representatives to collect from households and offices upon request at zero costs. The PCs are then handed over to a company, which will dismantle and distribute the parts to other companies for reuse. Besides Dell, a few more companies have also voiced interest in collecting e-waste.

Perhaps it is time for Penang to emulate the example of the European Union, which is looking into passing a directive on Waste from Electrical and Electronic Equipment (WEEE), based on principle of "extended producers responsibilities", which demands take back of electronic equipment at the end of its life and bans the use of toxic heavy metals in its production.

The total amount of e-waste collected is shown in the table below:

| Company             | 2004          | 2005          | Total          |
|---------------------|---------------|---------------|----------------|
|                     | (kg)          |               |                |
| NKH e-Waste Trading | 22,521        | 44,673        | 67,194         |
| Dell                | 26,667        | 14,092        | 40,759         |
| <b>Total</b>        | <b>49,188</b> | <b>58,765</b> | <b>107,953</b> |

## 9.6 Old Clothes

When a society becomes richer economically, it is often reflected in the consumptive lifestyle of its people. Penang is one such case. This is manifested in the discarded fashion and clothing items, many of which are still usable and fairly new. Usually these old clothing are donated to charity homes. However, due to the high volume that these charity organizations have been receiving, they usually sell them to generate funds.

Our visit to old clothes recyclers has revealed that the unpretentious recycling of old clothes could actually be a viable business venture. There is a company which operates its plant in Perai, which is perhaps the only old clothing trader that is carrying out its operation as an "industrial" activity, it is perhaps the only 'factory' that deals in the trading of old clothes on a large scale. It operates using 6 to 7 lorries daily and employs 20 to 30 workers in its plants. Other clothing recyclers are mainly run as family businesses and sold in local markets.

They have a systematic collection system to collect old cloths from charity organizations and other collectors. The recyclable items are bought at a price (RM0.70 to RM0.80 per kg). The company also imports old clothing from Taiwan, Korea, Japan and Germany. The imported clothing is sorted together with the local ones by employing women workers from East Malaysia. Comparatively, the imported clothing fetch higher prices compared to local ones. Manual labour is used to separate the clothing according to type and quality. They are then packed in 50-kg and 100-kg balls and exported again to countries such as Indonesia, Thailand and Cambodia. Some of the better quality ones are sent to other states in Malaysia where the items will be sold in Pasar Malam or in bundle shops in rural areas. According to the boss, "As world population grows, proportionately, there will be more poor people

compared to rich people, so the old clothing business has a huge potential market”.

### **9.7 Kitchen/household appliances**

Second-hand kitchen or household appliances can usually be found in roadside stalls and flea markets in Lorong Kulit or Armenian Street. But large scale specialized shops or furniture warehouses are still new in Penang. We found out that there is at least one of these shops that function as an All-in-One second-hand household items warehouse in Penang. It is located in Victoria Street and deals with all kinds of household appliances such as kitchen utensils, mattress, and computer peripherals, precious antiques, fax machines, video recorder, wooden furniture, etc. It is not an exaggeration to say that one can equip a new industrial kitchen just by sourcing the necessary items from this shop. Its supply is mainly obtained through barter trade or cash transactions. Usually the items will be sent to them directly and this is how the cost of transportation is saved. Workers are employed to repair and refurbish some of the products before they are resold. The only problem faced by the operator is lack of space for storage.

#### **Issues arising**

The recycling activity in Penang is basically run in an open market system without any form of control or support. It is thus entirely a “survival of the fittest” business. There is no supporting mechanism or effort in coordination and networking either from the government or from the industry players themselves. As a result, there is a lot of overlap and unnecessary waste of resources stemming from unhealthy competition, lack of information, and weak infrastructure support.

The main sources of discarded material for recycling are presently from the industrial and household sectors. The industrial recyclable waste is well taken care of, i.e. firms often contract out their waste to specific vendors and the vendors enjoy a constant and steady supply of materials as frequency and quantity is often assured. There are a lot of bidders in this sector and it is often hard for new players to break into established networks. The second source is from households and communities. They are often unpredictable

and low in volume. Included in this category is the discarded material from the municipal waste stream but these are often highly contaminated and hard to access as much of it goes to the sanitary landfill at Pulau Burong.

Due to the unpredictable nature of the supply, many recyclers often resort to importing discards from other countries. This is often true for plastic and paper recycling industries where operations are always short of materials for recycling. It was reported that every month, 100 tonnes of plastics need to be imported for recycling. Similarly, Malaysia is importing 25,000 tonnes of old newspaper for recycling, but it was said that 60% of old newspaper ends up in landfills (NST, 12/8/03).

The importing of plastic waste has been banned by the DOE recently due to concerns over imported hazardous waste. Many plastic recycling operations have closed down and our interviews with major plastic recycling operations indicate that there are hardly any left in the KL region and only about 4-5 left in the country. There are, however, many traders who crush, compact and bale the plastics and then export them to countries like China, Indonesia and Thailand.

Another major issue affecting the recycling industry is the rising cost of labour. The recycling industry is labour-intensive, but due to the highly manual and tedious nature of the job, there are few locals who are willing to take it up. As such, most of the established recyclers have no choice but to employ foreign labourers. Labour is one of the major problems faced by the recycling industry. Although the application procedures for foreign labour has been relaxed to include a wider range of nationalities, responses from the recyclers and traders showed that they still face problems and delays in their application process.

Recycling technologies requires high capital investment. This is needed in both product development and processing technologies. Machinery is often expensive to import and different types of machinery are required for recycling of different types of plastics, for instance. Perhaps, if it is better consolidated and organized, i.e. if there are some form of mergers and sharing of resources, the industry can then operate as conglomerates and reap the benefits from the economy of scale.

## **10. CONCLUSION & LESSONS LEARNT**

The rapid study has revealed that there is indeed wealth in waste, if we know how to optimise it and if the above-mentioned problems can be resolved. In fact, the viability of the industry depends on how well the players and stakeholders can work in synergy. Networking is a crucial part of the recycling chain. The network loop comprises waste generators, collectors, agents, buyers and factories that perform the actual recycling. The recycling wheel will not function well if there is a break or disruption in this chain. Thus, some kind of mechanism needs to be established to ensure this chain is complete and runs efficiently. The recycling industry is an industry that is worth public support and private sector resource investments. The Government is crucial in providing the catalytic role in ensuring that the wheel runs smoothly.

Since landfills are no longer an option for future handling of wastes, there is an urgent need to look into various alternative technologies available. In charting the new strategies for the future solid waste management in Penang, the government needs to take resource conservation and long-term economic viability as two important criteria in its decisions. It should strive to create a win-win situation where all sectors could benefit from an integrated and coordinated mechanism. The government needs to seriously look into integrated and organized resource recovery technologies or facilities, as it is not only an option that could solve the waste management problem, but also contribute towards protection of environment and generation of economic opportunities. These support mechanisms could take many forms, such as provision of a centralized space for storage; logistics and infrastructure; enabling laws; as well as providing incentives to make sure that the recycling business is viable to all stakeholders in the components of the wheel.

Results indicated that the amount of recyclables diverted from the Sanitary Landfill jumped from **58 metric tons in 2000 to 44,094 metric tons in 2004**. The savings from this diversion is RM133 X 44,093 which is about **RM5.86 million (US\$1.54 million) in 2004**. This does not take into account the intangible benefits. The programme to reduce waste and divert waste to the landfill is sustainable as all the stakeholders are involved in the programme and not dependent only on the Government's efforts. Community awareness and involvement is a crucial factor to this self sustaining effort.

To further improve the diversion rate to the landfill, composting at household, community and municipal level is being planned. e-waste is also being collected by recycling agents and processors for resource recovery. The State Government is considering the establishment of resource recovery centres at the existing Transfer Station and Sanitary Landfill.

Other substantial results and intangible benefits include:

- o Complementing the Government's efforts to promote recycling and composting
- o No additional staff needed to be employed by Municipal Council
- o Active involvement of Neighbourhood Watch Groups
- o Formation a network of recycling agents and stakeholders in the recycling industry
- o Information and database on SWM in Penang started.
- o 1-stop reference point for people on SWM
- o Increased awareness of the citizens regarding recycling and composting
- o Employment creation through recycling and resource recovery.
- o Website: [www.pewog.org](http://www.pewog.org) created and maintained through private sector efforts.

The PPP model and the establishment of PEWOG to involve the various stakeholders is a low cost mechanism that is based on smart partnerships and win-win approach. The tripartite relationship between Government,

Community and Private Businesses puts equal emphasis on the importance of the roles and responsibilities of each partner. This model is sustainable and can be easily replicated at the local government level.

The Penang Municipal Council and PEWOG is continuing its efforts to improve the situation. The Solid Waste Management programme proposed for Penang is a strategy for further resource recovery utilizing Waste Management Centres that incorporate waste separation processes coupled with the recycling of inorganic waste, composting of organic waste at municipal level. This is works in tandem with the efforts for recycling and composting at community level. The will be a significant diversion of waste entering the landfill as recyclables and compost is taken away from the waste stream. The residue that finally enters the landfill will be as low as 15-20%. This prolongs the lifespan of the landfill from 4 - 6 years to longer.

The functional tripartite inter-relationships between the Government, Community and Private Sector and their primary roles towards achieving an Integrated Solid Waste Management System can be summarized in the chart below.

International agencies have also identified Penang Island for implementation of projects on Solid Waste Management:

- 2003/04 UNDP-PPPUE Public Private Partnerships in Community Waste Recycling and Waste Management.
- 2005 JICA Study on National Waste Minimization in Malaysia – Pilot Project for Local Recycling Network and Source Separation of Municipal Solid Waste in the Penang Municipal council (PP-II)
- 2005 Green Productivity Demonstration Program In Malaysia - Solid Waste Management and Greening of The Hotel Belt in Batu Ferringhi and Universiti Sains Malaysia, Penang

The Penang Island Municipal Council and State Government is very optimistic that its recycling programme will further grow and expand with the continuing

collaboration of community, civil society organisation, private sector and the Federal Government. Penang's SWM Strategy for waste minimization and diversion from its landfill are finally; Clean Production with the use of non-toxic, recyclable, biodegradable components in manufacturing and packaging of products, emphasize on Corporate Producer Responsibility; and Resource Recovery. The Recycling Wheel shown below shows role of the different players in the recycling process. The development of Penang's recycling network is based on this process of material flow and the different approaches are also developed around this model.

Resource Recovery would include waste separation at source composting of organic materials and removal of household hazardous waste from the waste stream. It is hoped that with the implementation of proper strategies, Penang will head towards "ZERO WASTE". We are not there yet but we are on our way!

## **APPENDIX**

### **CASE STUDY 1: ESH RESOURCE MANAGEMENT SDN BHD**

From waste picker to paper recycling giant - a personal success story

Since 14, Leslie Lim Yu Chin has vowed to become a successful entrepreneur. Leaving school was a natural choice for him and he has since held various jobs such as a hawker, waiter, furniture apprentice and popcorn seller. His sheer determination and involvement in the



business world at a very young age helped to pave the way for his success later. At the age of 18, while walking on the road one day, he discovered that rubbish was dumped at the roadside indiscriminately. That gave him an inspiration, he thought, "Why don't I turn the waste to money?" With this brilliant idea, he started to collect newspapers from house to house in Kuala Lumpur, using a small van. Later, he decided to move to Penang as he felt that Penang has a bigger potential market.

At a time when nobody talked about recycling, Mr. Lim was already a pioneer in this potentially lucrative but unknown territory. Today, at 38, Mr. Lim is the proud owner of ESH Resource Management Sdn Bhd., a major recycling trader in Penang. ESH has plants in Juru and Batu Maung, owns more than 20 trucks and lorries and employs more than 80 workers.

ESH Resource Management Sdn Bhd today, is a company that specializes in recyclable waste. They have been offering this service since 1985. Currently, they are based in Penang with their Head Office at Juru (mainland) and Branch Office at Batu Maung (island). They are also an ISO9001 certified company since 2003. They have been working together with many MNCs, SMIs, Governmental / Non-governmental agencies and individuals in the effort to promote "A Lifestyle of Recycling."



#### **CASE STUDIES:**

Case Study 1 : ESH Resource Management Sdn Bhd

Case Study 2: Hospital Lam Wah Ee

Case Study 3: ASE Electronics (M) Sdn Bhd

Case Study 4: Sekolah Menengah Kebangsaan Sungai Ara

Their philosophy is to provide reliable, confidential and professional service to their customers; having the flexibility of using small trucks, trailers and roll-off containers which allows them to accommodate the requirements of each individual customer.

The company accepts various grades of paper, plastics, metals, wood, textiles, glass, tin, aluminium cans, rubber, electrical and electronic scraps as well as other emerging recyclables. It provides handling and processing services for the recovery of all types of materials and resources.



ESH also provides waste management and recycling consultancy services such as collection, sorting, transportation, recycling and resource recovery and waste disposal. Services are also available to aid customers in disposing their unusable waste to the landfill is also available. This unique service comes as part of a total waste management solution to their customers.

ESH will also provide bins to customers upon request for recyclable items to make it hassle free for customers. Its ability to provide confidential and professional services in handling P&C (Private and Confidential) documents disposal has earned all round praises. The company also provides regulatory assistance, laboratory services, analytical support, project management and professional advice for recycling and resource recovery.

Recently, ESH has embarked on a very unique attempt to aid small time waste pickers and collectors at the community level by providing them with motorised tricycles so that they are able to collect recyclables in their neighbourhood to sell and generate some income.



## **CASE STUDY 2 – HOSPITAL LAM WAH EEE**

The idea of setting up a community health care centre in Penang was first mooted by a few Chinese community leaders in 1876 and a fund-raising campaign was subsequently launched. A traditional-style building was completed in 1883 on a plot of land about 10,600 sq. ft. at Muntri Street. This was known as the Lam Wah Ee Hospital. "Lam Wah" means "Chinese in the South" and "Ee" means "medicine".



After the War, another campaign was launched to collect donations for rebuilding as the traditional-style building in Muntri Street was destroyed by air raids during the War. In 1955, the present two-storey building was completed. The Beach Street branch was moved to Green Lane in order to benefit the people in the Jelutong and Green Lane areas. The Green Lane branch is situated on a piece of land donated to the Hospital by the British East India Company much earlier. This land is to become the site for the new hospital today.

The Lam Wah Ee Hospital at first relied upon the services of experienced traditional physicians or "sinsehs" who came from China. Later a system of examinations conducted by a committee of master "sinsehs" was introduced as a selection device to maintain standards and to encourage younger people to take up the study of traditional medicine. This system is still being practiced today.

The advent of Western medicine came about in 1983, a century later.

The CORE VALUES practices by the hospital are Caring for the patient, community and the environment.

Their recycling project started in 2003 with the following objectives:

1. To protect the environment.
2. To generate funds for staff welfare.  
e.g. - Terminally ill/Long term illness.  
- Death of staff.  
- Staff encounter with natural disasters such as flood/fire/landslides,  
etc.

A brief history of the events that brought them to the present stage of recycling activities is as follows

1997-2002 - Tzu Chi Buddhist Merit Society & Eden Handicap for paper and cardboard

Other staff from a few wards also practised recycling

1<sup>st</sup> Talk by Mr Donat Theseria and Ms Mylene Ooi on 18/06/2002

Recycling Committee formed on 28/06/2002

2<sup>nd</sup> talk on "Recycling" by Tuan Haji Zulkifli, Senior Health Inspector from MPPP, 22/10/02



The Recycling Project Committee was set up on 28 June 2002 with 19 Committee Members and their duties include:

Bimonthly meetings are held

All Committee Members take turns to do sorting and verifying

Sorting - Sort out the recyclable items according to their categories one day before the sale.

Verifying - Verify the weight of recyclable items.

RM30 penalty will be enforced upon any member who failed to serve on the day rostered for his/her duty. But if the member is able to find replacement to fulfill this duty, the RM30 penalty is waived.

The following items are collected by the hospital.

- Old Newspapers

- Books/Magazines/Loose Papers
- Cardboards
- Clear Plastic Bottles
- Coloured Plastic Bottles
- Drip Bottles
- Glass Bottles
- Tins/Cans /Cooking Oil Bottles
- Aluminium Cans
- Plastic Bags
- Wearable Old Clothes
- Old Car Batteries

Sources of these items come from hospitals and household recyclables brought in by the staff members. Upon receipt of the recyclables, they are being sorted out and verified.

Challenge trophies are also handed out for:

**Best Management** in categorising recyclable items collected

**Best Performance** in household recyclable items collected

**Highest Weight** in household recyclable items collected: -



Up till the end of 2004, the hospital has managed to recycle a total of 160,531kg and collected a revenue of RM 36, 289.49.

| Date          | Total Weight         | Sales              |
|---------------|----------------------|--------------------|
| July-Dec 2002 | 21,017.90 kg         | RM3,653.19         |
| Jan-Dec 2003  | 56,929.20 kg         | RM13,503.18        |
| Jan-Dec 2004  | 82,583.90 kg         | RM19,133.12        |
| <b>Total</b>  | <b>160,531.00 Kg</b> | <b>RM36,289.49</b> |

They believe that they have achieved the following:

- Fulfill our objectives
- Able to help more unfortunate staff
- Foster better relationship among wards and departments
- Able to motivate the whole hospital to participate in the recycling programme



### **CASE STUDY 3: ASE ELECTRONICS (M) SDN BHD**

ASE Malaysia established in 1991, provides a full range of IC packaging, testing and 'turnkey' services in one convenient location.

In March 1997, ASE Test Limited, the world's largest independent integrated Circuit Testing house acquired 100 % equity interest in ASE Malaysia.

ASE Malaysia serves a large customer base in the communications, computing, industrial and automotive markets.

Through highly automated manufacturing processes and state-of-the-art equipment, we have developed capabilities to assemble and test packages such as QFPs, TQFPs, BGAs, SOICs, SOJs, PDIPs and Flip Chip.

ASE Malaysia obtained ISO 9002 & QS 9000, certifications from NV Kema (Holland) in April 1993 & June 1998 respectively and ISO 14001 certification from SIRIM in October 1999. Revenue has grown from USD 1.5 million in 1992 to USD 302 million in 2004.

ASE has been recycling some of their discards as scraps since 1997.

#### ITEMS ALREADY BEEN RECYCLE UNDER VALUE SCRAP

- CARTON (BOX) - SINCE 1997
- TUBE - SINCE 2000
- TRAY - SINCE 2000
- COPPER - SINCE 1996
- DAMAGED UNIT / SCRAP (content gold wire) - SINCE 1996
- PAPER - SINCE 2000



Proper recycling activities were started at the 24 October 2002. ASE recycling committee was set up on 22nd January 2003 with 15 members. Up till now, members have increased to 26 members from every department.

The program was first launched at plant 1 on 05th February 2003 followed by plant 2 & plant 3. The concept of having one department with one recycle bin for recycle paper is a simple but yet effective. Their objective is to segregate the waste for recycle from the beginning. All office paper must be recycled, as this forms up to 40% of solid waste in ASE. The programme is under the responsibility of the ASE recycling programme committee members



#### Total Weight And Value Of Recyclables Collected 2003-2005

| Year            | Weight (kg)   | Value (RM)       |
|-----------------|---------------|------------------|
| 2003            | 16,118        | 6,384.40         |
| 2004            | 15,785        | 6,314.00         |
| 2005 (Jan-July) | 4,939         | 2,963.40         |
| <b>Total</b>    | <b>36,842</b> | <b>15,661.80</b> |

Staff of ASE is encouraged to bring in their recyclable items once a month. These are then sorted, weighed and sold to a recycling vendor. All proceeds go into the account of the recycling committee for environmental activities. They collected over RM15661.80 worth of recyclables weighing around 36.8 tonnes from 2003 -2005 (Jan-July).

The recycling team also makes its own recycling bins from old cardboard boxes. These are then painted green with a biodegradable organic paint made from plant dye. Such bins are placed in all offices for the collection of papers, newspapers and magazines.

In implementing the 1 Department, 1 recycling bin programme and also by going



as paperless to reduce the usage of paper, ASE has been able to achieve a 20% cost saving in paper. This is done by going online with their training requests and records, storing data electronically instead of hard copies and going online with their application process. They also provide paperless circulation of information by going online and this contributes towards a paperless office.



ASE has also a separate bay for the collection of scheduled waste. These are kept in a secured area and collected by Kualiti Alam who is the contractor for scheduled waste.

The Recycling Committee is as shown in the picture below.



#### **CASE STUDY 4: SEKOLAH MENENGAH KEBANGSAAN SG ARA**

Sekolah Kebangsaan Sungai Ara is one of the exemplary schools in Penang that has developed a very comprehensive and holistic programme to further improve the environment of the school.

##### **Vision**

The Vision is to transform the school into a beautiful garden school and to keep the environment clean and beautiful by practicing 3R (Reduce, Reuse & Recycle)



##### **Mission**

The Mission objectives of the school are:

- to transform the SMK Sungai Ara into a Garden School in response to the country's aspiration of becoming a Garden nation
- to carry out activities for the 3r Programmes (Reduce, Reuse, Recycle)
- to take care of the environment
- to win the chief Minister's Green Award

##### **Objectives and goals**

The Committee believes that the objectives and goals for fulfilling the mission can be achieved through gotong royong, Garden Beautification, Tree Planting Campaigns and Recycling Competitions, Clean and Cheerful classroom conditions.

Recycling is aimed at keeping the school clean and saving natural resources through the collection of recyclables that the school students and staff bring from home every last Friday of the month. These recyclables are faithfully weighed before a recycling agent collects them on the same day. this methods ensures that the school does not have to provide storage space for recyclables.

Reuse is being practiced to reduce the amount of fertilizer use through the practice of composting to produce organic fertilizer by suing all food and garden waste collected from the school canteen. This also prevents pollution of the environment and indiscriminate dumping of leftover food.



Another way is to reduce the amount of water and electricity consumption. This helps cut down the costs and the saving of natural resources. Stickers to save water and electricity are being placed at strategic places in the school to remind both staff and students to switch off the electricity after use and to make sure that water is not wasted by turning off taps and repairing leakages.



Chemical waste from the school science laboratories are being disposed off following strict guidelines set by the school.

Noise and air pollution is kept to a minimum by not allowing school buses to enter the school compound and also through the planting of more trees.

Publicity to arouse the awareness of the school staff and students of the objectives of keeping the environment clean, green and beautiful is by organizing awareness activities through out the year.

The following table shows the environmental issues, objectives and goals that the school organizing committee has devised for a holistic and comprehensive programme.

| No | Environmental Issues Addressed | Objectives                   | Goals   |
|----|--------------------------------|------------------------------|---|
| 1  | Paper Waste                    | Recycling & Reuse            | No wastage, reduce the amount of rubbish  |
| 2  | Canteen Waste                  | Reuse                        | Composting, reduce the amount of food waste                                       |
| 3  | Laboratory Waste               | Cleanliness                  | Toxic waste are separated, treated and disposed off safely                        |
| 4  | Electricity                    | Reduce                       | Cut down its usage and save natural resources                                     |
| 5  | Water                          | Reduce                       | Cut down its usage and save natural resources                                     |
| 7  | Toilet Cleanliness             | Cleanliness                  | Proper cleaning, prevent air pollution, clear blockages                           |
| 8  | School Ground Beautification   | Cleanliness & beautification | Plant more gardens and trees through gotong-royong                                |
| 9  | House keeping                  | Cleanliness                  | Gotong royong and recycling to keep classrooms clean                              |
| 10 | School buses                   | Cleanliness                  | No bus ins school compound to cut down on air and noise pollution                 |
| 11 | Odour                          | Cleanliness                  | No indiscriminate dumping of rubbish in school compound and keeping toilets clean |
| 12 | Soil erosion                   | No soil erosion              | Plant more gardens, trees and plants.   |

The amount of recyclables collect in year 2004 and 2005 are as listed in the table below.

| Items                    | Weight (kg) |
|--------------------------|-------------|
| Newspaper                | 3,709.00    |
| Cardboard                | 3,400.00    |
| Aluminum tins            | 13.70       |
| Other Metal tins         | 124.50      |
| Coloured Plastic Bottles | 65.00       |
| Clear Plastic Bottles    | 213.00      |
| Bottles                  | 321.00      |
| Total                    | 7,846.20    |

The School should be congratulated for its outstanding efforts in coming up with a very innovative and practical programme. Efforts have been taken to reduce the usage of electricity, water, printing paper, ink and chemicals. good records are being kept to monitor the usage of these items that are ultimately aimed at further financial savings for the school and prudent use o valuable resources.

Efforts on the collection of recyclables are very commendable and the participation from both the staff and students very encouraging. Such a programme will definitely inculcate the good habit of resource conservation and recycling among young people that is being nurtured in the school. The school is first to use the 4 compartment system for composting canteen and garden waste which is a very a new and bold attempt toward community composting.

The school has also done very well in terms of improving its gardens and landscape over the years. Good attempts have been made to plant ornamentals and fruit trees in the school compound, the once barren hill slopes have been rejuvenated with shrubs and ornamentals.

## INSTRUCTIONAL GUIDES

### COMPOSTING INSTRUCTIONS



This set of instructions is intended for laymen and is not meant to be a scientific discourse on composting. Its main objective is to give a general overview of the composting process and biology as well as to introduce the bin method for use in the average household. Households are encouraged to experiment, adapt and modify the various methods for their own use bearing in mind the few simple rules needed for composting. All composting systems will eventually produce compost. It is only the time taken for compost to be produced and quality that differs.



The 4 essential ingredients for composting to happen are:

#### **Browns + Greens + Air + Water**

"Browns" and "greens" are biodegradable organic matter which forms the main ingredients for composting.

"Browns" are dry woody material, such as dry leaves, twigs and sticks, saw dust etc. They are rich in carbon.

"Greens" are moist green materials such as vegetable scraps, fruit peelings and manure. Greens are rich in nitrogen.

Compost piles can also be supplemented with nitrogenous fertilizers to hasten the decomposition process.

The things that you can use at home for your composting bin are:

| <b>Type</b>  |  |
|--|--|
| <p>➤ Kitchen Waste</p> <p>These include:</p> <ul style="list-style-type: none"> <li>▪ Fruit and vegetable wastes - skins, peels, seeds, leaves, roots, corn cobs etc.</li> <li>▪ Entails, innards</li> <li>▪ Meat and diary products, egg shells</li> <li>▪ Leftover food – rice, curries, prawn shells, bones and other leftover cooked food etc</li> <li>▪ Tea bags, coffee grounds</li> </ul> | <p>➤ Newspaper and cardboard</p> <ul style="list-style-type: none"> <li>▪ Paper towels</li> <li>▪ Toilet paper</li> <li>▪ Tissue paper</li> <li>▪ Cardboard boxes</li> </ul> |
| <p>➤ Garden or Yard Waste</p> <ul style="list-style-type: none"> <li>▪ Grass clippings</li> <li>▪ Leaves</li> <li>▪ Weeds</li> <li>▪ Dry Leaves</li> <li>▪ Woody materials (twigs and branches)</li> <li>▪ Straw</li> <li>▪ Saw dust</li> <li>▪ Soil</li> </ul>  | <p>➤ Other Household Items</p> <ul style="list-style-type: none"> <li>▪ Other organic products</li> </ul>  |

**Materials**

- Empty Compost Bins
- Soil
- Kitchen Waste
- Shovel
- Water

**Method**

Lay a layer of gravel or stones at the bottom of the compost bin for aeration. Put a layer of soil (about 2 inches) on top of this. Put in the biodegradable

waste (greens), followed by browns. Remember to remove all inorganic materials like plastic. The finer you chop your materials the faster decomposition will take place.

- All biodegradable waste (greens) should be completely covered with a layer of browns to avoid vermin and animals such as flies, cockroaches, cats and dogs from digging up the food. Covering with browns also prevents odour.
- Do this everyday until the bin is full. Use the next compost bin when the first one is full.
- Your compost for the first bin will be ready in about 4-6 weeks' time (depending on type and quantity of your household waste), leave it to mature for about a week and then your compost can be used as fertilizer for plants, trees or lawn.
- You can use the bin again to bury your waste or use a new bin to continue. The contents must be kept moist at all times.

**Troubleshooting**

Compost piles using only biodegradable plant material usually do not stink or attract vermin. However, biodegradable material consisting of food scraps may pose a problem if not handled correctly. The most common problems and solutions are given below:

## SIMPLE 3Rs (Reduce, Reuse, Recycle) FOR THE HOME

### Reduce

#### *Buying Wisely*

- Do not go shopping without a shopping list; avoid impulse buying.
- Bring along your own grocery or shopping bags.
- Avoid buying items that are packaged in non-recyclable materials.
- Buy products with less packaging.
- Buy in bulk to reduce packaging as well as to save money.
- Avoid the temptation of requesting for new or extra plastic bags.
- Buy durable items that will last.
- Buy products that are refillable.
- Bring your own food containers (Tiffin carriers) when buying take-away food; avoid plastic bags and containers, and Styrofoam.

#### *Activities At Home*

- Avoid using disposable cutlery made of plastic and Styrofoam.
- Use reusable utensils instead of disposable ones.
- Use cloth instead of paper or tissue for cleaning.
- Minimize the use of disposable items that cannot be recycled; use cloth diapers, handkerchiefs and napkins instead.
- Do not cook more than you need; cook just sufficient food for meals.
- Store perishable food eg. bread, fruits in the refrigerator.
- Borrow, share and/or hire things that you only need occasionally.
- Share newspapers, magazines and books, if possible, to save costs and paper.
- Reduce junk mail by writing to companies and organizations to omit you from their mailing lists.
- Use rechargeable batteries that are more friendly to the environment.

#### Saving Energy & Natural Resources

##### *Electricity*

- Use the fan instead of air-conditioning whenever possible.
- Set air-conditioning to an appropriate temperature to avoid under cooling or over cooling.
- Seal all air leaks around windows and doors.
- Use energy saving bulbs whenever possible.
- Switch off lights and electrical appliances when not in use.
- Close the refrigerator door immediately after taking out necessary items.

##### *Water*

- Avoid using the hose to wash the car; use a pail instead.
- Clean floors with a mop instead of a water hose.
- Don't keep the tap running when brushing your teeth; use a cup instead.
- Install dual flush toilets to save water.
- Switch to low flow faucets and shower heads. Can save up to 50% of water used.
- Take a shower instead of a foam bath.
- Wash only with a full load when doing laundry.
- Check for faulty taps and pipes to prevent water leakage.
- Turn off the water tap tightly immediately after use.

| Problems                                     | Cause  | Solutions  |
|--|--|--|
| Compost pile stinks and attract flies        | Food scraps are exposed.                         | Cover food scraps with soil or browns or bury and mix it into the pile.            |
|  | Too wet or too much food scraps in pile.         | Add more soil or browns and turn pile.   |
| Pile infested with rodents and vermin        | Exposed food scraps or holes larger than ¼ inch. | Cover exposed food scraps. Use rodent proof bins or containers or traps and baits. |
| Composting process is slow or not composting | Too dry  | Add water until moist and mix thoroughly.  |
|  | Too much browns                                  | Add more greens or organic fertilizer or manure and mix thoroughly.                |

## Creative Reuse

- Reuse old Styrofoam boxes and old tin cans to store things or as plant pots.
- Reuse used glass and plastic containers as receptacles.
- Reuse old toothbrushes for cleaning around faucets, between bath tiles, etc.
- Save 'grey' water (water left from washing hands and plates) for washing floors, toilets and watering plants whenever possible.
- Use old supermarket plastic bags for shopping.
- Use old clothing as rags for cleaning.
- Donate old but usable clothes to the needy.
- Convert scrap paper into memo pads.
- Pass old textbooks, story books, and toys to others.
- Donate good quality but unwanted items to old folks' homes, charitable organizations, etc.
- Repair and recondition faulty electronic appliances to extend their useful lives.
- Clean and reuse ornaments for the next festive celebration.
- Clean and reuse washable cutlery and crockery for the next party.

## Recycle

- Buy green labelled products.
- Buy and use recycled products or products made of recycled material.
- Set aside boxes, containers and storage space for your household recyclable items.
- Bundle books, newspapers, magazines and cardboard for easier handling and storing.
- Keep your plastic ware to be recycled separately.
- Rinse your recyclable beverage containers to keep away pests and insects.
- To save space, crush or flatten plastic bottles and aluminium cans.
- Separate clear glass and coloured if possible. Be careful not to break them.
- Be creative and use your unwanted items for art and craft.
- Collect old newspapers, colourful magazines, wrapping paper, candy and gum wrappers to use as collage cards, gift-wrapping material and tags.
- Use both sides of printing paper.
- Participate in recycling programmes in your neighbourhood or office.
- Segregate recyclable items for collection by waste collectors.
- Electrical and electronic (E&E) items such as audio-visual equipment, household appliances, office equipment, computers and peripherals can be given away to dealers or electrical shops for refurbishing, spare parts or safe disposal.
- Contact recycling agents that collect E&E items.
- Keep batteries and fluorescent lamps separately for collection by the Municipal Council or place them in specially provided containers at wet markets or participating supermarkets that collect these items for safe disposal. These cannot be recycled.
- Bulk waste such as furniture and renovation waste can be taken away by the Municipal Council for safe disposal.
- Send your recyclables to the nearest recycling agent or center, charitable or community organization, etc.
- Arrange for your recyclables to be collected if you are unable to send them to a collection center.
- Compost your organic waste (food scraps, vegetable trimmings, garden clippings) wherever possible.

## RECYCLING TABLE

| MATERIALS THAT CAN BE RECYCLED  | MATERIALS THAT ARE DIFFICULT TO RECYCLE   |
|---|---|
| <b>PAPER</b><br>Newspapers, books, magazines, loose paper, cardboard, cartons.  | Glossy or waxed paper, carbon paper, ammonia paper, tissue paper, toilet paper, envelopes with plastic windows, dirty or oily paper, coffee and tea sachets, PVC wrapping.  |
| <b>PLASTIC</b><br>Plastic drinking bottles & ice-cream containers. Milk, water, juice, cosmetic, shampoo, dish and laundry detergent bottles, yoghurt and margarine tubs; cereal box liners, grocery, trash and retail bags, CDs, DVDs. | Styrofoam (polystyrene) boxes and cutlery, boxed drinks and beverage containers (containing plastic lining etc)<br>Toys (mixture of plastic and other materials).<br>Medicine tablet wrapping foil, coffee and tea sachets, PVC wrapping.   |
| <b>METAL</b><br>Aluminium soft drink cans, biscuit and milk tins, preserved food cans, scrap iron, brass, copper, etc.  |   |
| <b>GLASS</b><br>Clear (flint) glass, coloured glass (amber, blue, green).   | Bulbs, ceramic mugs, cups, jugs, mirrors, window panes.   |
| <b>CLOTH &amp; OLD CLOTHES</b><br>Clean usable clothes.   | Undergarments, dirty or torn clothes and dirty cloth.   |
|   | <b>OTHER MATERIALS</b>  |
|   | Aluminium foil, toothpaste tubes.<br>Batteries, handpone batteries, handphones, fluorescent tubes, etc.<br>Badly broken furniture, fans, lamps, mattresses, refrigerators, washing machines.<br>Computers, some inkjet cartridges, remanufactured or refilled toner cartridges, torn printer ribbons. |

***PRACTICE THE 3RS IN YOUR HOME TO SAVE MONEY, RESOURCES, ENERGY AND SAVE THE ENVIRONMENT!***



## **STARTING A RECYCLING COMMUNITY**

### **1. How to Start A Recycling Community**



1. Contact the community leaders from the JKKK, RT, RA or Taman residents. Convince the leaders that recycling is beneficial to the environment as well as the community.
2. Hold meetings or discussions with the leaders and residents to explore the idea and explain the programme in order to obtain support from them. Evenings and weekends are usually good times to hold such meetings.
3. Seek out allies or champions – it is important to identify key persons who are interested and willing to spend time and effort to promote recycling activities. They can act as catalysts to champion the cause in their own community.
4. Organize a recycling talk or training with the aid of the RT or RA committee or the Municipal Council.  
Get experts to give a talk on how to carry out waste separation.
5. After the talk, form a working committee from amongst the participants who are willing to oversee and coordinate the recycling programme.

### **2. Deciding on the Method**

1. After the initial rapport, you can start to plan out the details of the programme with the Committee. One of the critical areas is to determine the method of collection most suitable in your area.
2. There are basically two types of collection methods.

**A) Kerbside collection** - residents place their recyclables in front of their houses and these are collected by appointed members of the recycling committee or agent.

#### **Advantages:**

1. Residents do not need to go far to deposit their recyclable items.
2. No need to build a permanent collection place if recyclables are taken way on the collection day itself.

#### **Disadvantages:**

1. More effort needed for door-to-door collection.
2. May be stolen or taken away by outsiders if these are not collected on time.
3. Need a place for collection or storage if not collected by recycling agent on the same day.

**B) Drop-off centres**– residents drop off their recyclables at a designated area for collection.

#### **Advantages:**

- Saves on labour costs/time.
- No need of a permanent storage place for recyclables if all residents bring the recyclables on an appointed day and they are then taken away by recycling agent on the same day.
- If a storage facility is built then some sort of security has to be provided.
- Less chance of being stolen.

#### **Disadvantages:**

- Storage space needed if not collected by the recycling agent on the same day.
- It may be hard to identify a suitable place.
- Residents may not be free on the appointed day.



### **3. Organise a Recycling Day**

Organize and plan a Recycling Day - this means identifying suitable day to kick-start the recycling activities. Get your Recycling Committee to plan and designate duties to each person such as who should be responsible for:

- Publicity - distributing pamphlets, putting up banners.



- Sorting, tying, weighing & recording
- Contact the agent or collector to inform and remind him of the day and time for collection
- Accounting – a treasurer must be appointed to keep the accounts in proper order and to disburse the accounts according to the Committee's directives. He needs to check out the market prices of the recyclables and liaise with the buyer for payment.
- Security personnel - to ensure that the recyclables are not stolen from the storage facilities.

Prepare information pamphlets for distribution. Information such as the dos and don'ts of recycling, how to separate recyclables, frequency of collection, time and date, etc.

The main activities on recycling day are sorting, tying and weighing. Some cleaning may be needed to if tins bottles etc. are not rinsed beforehand. To attract participation, you can include other items in your programmes such as fun games, art competition, lucky draws, mini-concert etc.

Evaluate setbacks and weaknesses. In every projects there will be setbacks and weaknesses. These need to be taken note off by members of the Recycling Committee.

Modify the procedures to make the programme more efficient. Every community is different. Things that works for other communities need not necessarily work for your community. Adapt, modify and improve as you go along.

Determine with the committee what to do with the proceeds. Different communities have different opinions on what to do with the proceeds collected. Some communities may also offer to give the recyclables away to charitable organizations instead of selling them. Some examples of how the proceeds may be used are:

- Community development such as refurbishing the community hall, landscaping, build a children's library, etc.

- Pay workers who help to collect and sort the recyclables or for providing security. The recycling activity can actually provide job opportunities for the less fortunate individuals in your own community.
- Donate to charitable organizations
- A combination of the above

Whichever ways that the Recycling Committee choose to utilize the funds, you should always keep a record of your collections and proceeds.

Building trust and confidence in the community is key to greater support and success in the long run!

#### **4. Record Keeping**

Keep proper records of:

1. Time and date of collection
2. Weight each type of item collected eg. newspaper, cardboard, glass, plastic, old clothes, etc.
3. Keep a record of cash flow, containing information on:
  - Money paid out to buy recyclable items from community (if not collected free)
  - Money paid out to collectors, sorters or helpers (if any)
  - Money collected from the sale

A proper record can show the progress from month-to-month and year-to-year.

The Recycling Committee can produce colourful charts that summarizes the progress and achievements of the recycling programme. This is a good way to acknowledge and motivate the members/residents to work harder for common goals.

#### **6. Practical points to remember**

1. For publicity, prepare banners and hang them out one or two weeks before the collection day to remind people to bring out their recyclables.
2. Ensure that the collection is regular so that people make it a habitual practice to bring out their recyclables.
3. Ensure that the agent comes on the appointed time and day to collect the items so that people do not have to wait long.

4. Ensure that the community engages an agent that collects everything and not only specific items such as paper or aluminium cans and leaving uneconomic items behind.
5. Report regularly to the community the programme details. This will ensure that funds are not misused and that the community knows where the funds go to.
6. For publicity, prepare banners and hang them out one or two weeks before the collection day to remind people to bring out their recyclables.
7. Ensure that the collection is regular so that people make it a habitual practice to bring out their recyclables.
8. Ensure that the agent comes on the appointed time and day to collect the items so that people do not have to wait long.
9. Ensure that the community engages an agent that collects everything and not only specific items such as paper or aluminium cans and leaving uneconomic items behind.
10. Report regularly to the community the programme details. This will ensure that funds are not misused and that the community knows where the funds go to.

## APPENDIX 9

# PENANG ISLAND RECYCLING DIRECTORY



# PENANG ISLAND RECYCLING DIRECTORY

A Directory of Agents, Buyers &  
Recycling Communities,  
in Penang



September 2005

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## PREFACE

The JICA Study Team under the "National Waste Minimisation in Malaysia" wishes to acknowledge the efforts of the Penang Environment Working Group (PEWOG) for developing the first edition of recycling directory of recycling communities, agents and buyers in Penang entitled "THE RECYCLING WHEEL OF PENANG" in early 2005.

This compilation of recycling directory of recycling communities, agents and buyers is for Penang Island only. This directory is by no means exhaustive but will be continually updated from time to time as the network expands.

The JICA Study Team hopes that this edition will also benefit the different stakeholders involved in recycling activities in Penang.

For further information, please contact:

**Recycling Network Unit,  
Majlis Perbandaran Pulau Pinang  
Jalan Padang Kota Lama  
10200 Pulau Pinang  
Tel : 04 – 263 3000 Fax : 04 – 263 3036  
Email: [rnumppp@gmail.com](mailto:rnumppp@gmail.com)  
Website: [www.rnumppp.net](http://www.rnumppp.net)**

SEPTEMBER 2005

## RECYCLING AGENTS AND BUYERS

### CLOTHES

APAC Marketing  
13,14 Kaw Perindustrian Ringan  
Baling, 09100 Kedah  
H/P : 019-424 6860  
Contact : Mr. Alex Tai

Khoon Sun Trading / Recycle Centre  
88, Victoria Street  
10300 Pulau Pinang  
Tel : 261 9311  
H/P : 019 445 9511  
Also shoes/ bags

## E-WASTE

Asset & Material Management  
2005, Ting Perusahaan Satu,  
Perai Industrial Estate  
13600 Perai  
Tel : 04-399 1896  
Fax : 04-399 3221  
H/P : 016-418 8803  
Email : vignesh@amm-co.com  
Website : www.amm-co.com  
Contact : Mr. Vignesh

Century Surf Sdn Bhd  
22, Lintang Bering A,  
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Pulau Pinang  
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Email:solidkh@streamyx.com  
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Chung Heng Fatt Trading  
TBP 5657 Bagang Lallang  
13020 Butterworth Pulau  
Pinang  
Tel : 04-332 1022  
H/P : 012-578 7588  
Contact : Mr. Tan Chee Cheng

e.duc.com  
250 Lorong Kampung Melayu  
11500 Pulau Pinang  
H/P:016 483 9610  
Contact: The Managing  
Director

e.duc.com  
252 Jalan Sungai Bakap  
14120 Simpang Empat  
S Pulau Pinang  
H/P: 016 483 9610  
Contact: The Managing Director

E.N.S. Kuppusamy Chettiar /Shan  
Poonnam Metals Sdn Bhd  
42 & 44 Lorong IKS Juru 3  
Taman Perindustrian Ringan Juru  
14100 Bukit Tengah  
Tel : 04-508 4841  
Fax : 04-508 4843  
H/P : 012-488 2514  
Email : enshan@pd.jaring.my  
Contact : Mr. S. Selvakumar

EA Enviro Industries Sdn. Bhd  
No. 3 Lorong Perda Timur 6,  
Bandar Perda  
14000 Bukit Mertajam  
Tel : 04-621 2502  
Fax : 04-621 2506  
Contact : Mr. Calvin Yeo

Recycling Industries (M) Sdn Bhd  
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14000 Bukit Mertajam  
Tel : 04-5087573, 508 8573  
Fax : 508 5573  
H/P : 019-466 7656  
Email : steven@com.my  
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5

## E-WASTE

HMP Resources (M) Sdn Bhd  
2008 Jalan Perusahaan,  
Kaw MIEL  
Prai Industrial Park,  
13600 Prai, Pulau Pinang  
Tel : 04-397 3464  
Fax : 04-397 3473  
H/P: 012 495 9006  
Contact : En. Md. Alfee Ahmad

Induslink Marketing  
15 Pesiaran Pantai Jerjak 9  
11900 Bayan Lepas  
Pulau Pinang  
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H/P : 012-486 0778  
Email : syph@tm.net.my

Inter Venture Trading  
33, First Floor Jalan Helang  
Desa Permai Indah, Sg Dua  
11700 Pulau Pinang  
Tel : 04-657 8468  
Fax : 04-658 8468  
H/P : 017-570 8845  
Email : lim@int-venture.com.my  
Website : www.int-  
venture.com.my  
Contact : Mr. Lim Soong Leong

IRM Industries Sdn Bhd.  
37-H Jalan Batu Maung  
11960 Bayan Lepas,  
Pulau Pinang  
Tel : 04-626 2001, 626 528,  
626 2257  
Fax : 04-626 1007  
Contact :Mr. Goh

Mega Online Computer Marketing  
Sdn Bhd  
488B-06-02 Midlands Park Centre,  
Jalan Burma 10350 Pulau Pinang  
Tel : 04-226 4475  
Fax : 04-226 4502  
H/P : 019-446 9421  
Email : datari@pc.jaring.my  
Contact : Mr. Y. P. Kheng

Natural Arrangement Sdn Bhd  
5835 Mukim 12, Jalan Mahkamah  
DBD 11900 Bayan Lepas  
Tel : 04- 484 3233  
Fax : 04- 484 3232  
Email : na@nasbm.com  
Website: www.nasbm.com  
Contact : Ms Goh

NKH Trading  
86 Jalan Gajah, Tanjung Bungah  
11200 Pulau Pinang  
Tel: 04-891 2888  
Fax: 04-891 2887  
H/P : 019-449 0572  
Email : rosenyg@myjaring.net  
Contact : Ms. Rose Ng

Preference Trading Sdn Bhd  
79A Lorong Perindustrian Bukit  
Minyak 16  
Kaw Perindustrian Bkt Minyak  
14100 Seberang Perai Tengah,  
Pulau Pinang  
Tel : 04-507 6462, 04-508 6027/  
7112  
Fax : 04-507 6027  
H/P : 019-445 8313  
Email : prefer@tm.net.my  
Contact : Mr. Victor Chai C W

6

## E-WASTE

Rank Jaya Metals Sdn Bhd  
Plot 14, Bayan Lepas Industrial  
Estate,  
Phase 4, 11900 Pulau Pinang  
Tel : 04-645 6618/ 619/ 621  
Fax : 04-645 6616  
H/P : 04-438 8588  
Website : [www.rankjaya.com](http://www.rankjaya.com)  
Contact : Mr. Yeo

Smart Data Information  
Technologies  
92 Jalan Kota Permai,  
Taman Kota Permai,  
14000 Bukit Mertajam  
Tel : 04-501 2887 / 501 22886  
Fax : 04-501 2885  
H/P : 012 489 1187  
Email : [tcpp@pc.jaring.my](mailto:tcpp@pc.jaring.my)  
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Syarikat Veillasamy  
46 Lorong Mak Mandin 5/3, Pusat  
Perindustrian Ringan DRB  
13400 Mak Mandin  
Tel : 04-323 2996  
Fax : 04-324 4032  
H/P : 019-478 4032  
Contact : Mr. S. Veillasamy (Ravi)

## FURNITURE

Haji Othmuman Pilay dan Anak  
113 Jalan Masjid Kapitan Keling  
10200 Pulau Pinang  
Tel : 262 7955  
Old Furniture

Top Maple Enterprise  
Lot 439, 441, 442, 444, Sek 23,  
NED  
Victoria Street, 10300 Pulau  
Pinang  
Tel : 04-261 7660

Mei Tatt Antique Sdn Bhd  
8, Jalan Pintal Tali  
10100 Pulau Pinang  
Tel : 04-262 3610  
Fax: 262 3610  
H/P : 016 477 2399  
Contact : Mr Richard Lim

Fax : 04-261 7660  
H/P : 012-428 5771  
Contact : Mr. C S Chen  
Also F& B crockery/kitchenware

Vcan Collections  
113, Lebuh Noordin  
10300 Pulau Pinang  
Tel : 262 6557  
H/P : 012 466 8917  
Contact : Cheah Ewe Yeow

## GENERAL

A.N.R. Nallathambi Chettiar  
114 Lebuhr Armenian  
10200 Pulau Pinang  
Tel : 04-261 5392  
H/P : 016-470 6850  
Contact : Mr. M. Sandhiran

A.O.M.S. Ganapathy Chettiar  
174A Victoria Street  
10300 George Town, Pulau  
Pinang  
Tel : 04-261 3441  
Contact: Mr A. Kalidass

Abdul Aziz & Company  
Jelutong Dumpsite  
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Alif Teknologi (M) Sdn Bhd  
885 Taman Desa Melati  
09000 Kulim, Kedah  
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APAC Marketing  
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Baling, 09100 Kedah  
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BCV Corporation Sdn Bhd  
771-C Kg Nelayan, Teluk Kumbar  
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Century Surf Sdn Bhd  
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Pulau Pinang  
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Email:solidkh@streamyx.com  
Contact: Mr Ch ng KH

Eden Handicap Service Centre  
Bhd  
102E Lengkok Kampong Jawa  
Kawasan MIEI  
11900 Pulau Pinang  
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Contact : Ms. Peggy Lim

## GENERAL

ESH Resource Recovery Sdn  
Bhd  
Di belakang No. 324,  
Mk. 12, Jalan Bharu,  
Batu Maung, 11960 Bayan lepas,  
Pulau Pinang  
Tel : 04-626 5232  
Fax : 04-626 2501  
H/P : 012-438 9237  
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ESH Resource Recovery  
Sdn Bhd  
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Kg Juru,  
Juru 14000 Bukit Mertajam  
Tel : 04-507 9237  
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Family Thrift Store (Salvation  
Army)  
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Haardass Trading  
100 Lebuhr Victoria  
10300 George Town, Pulau  
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Kamatchi & Co  
151 Lebuhr Acheen  
10200 Pulau Pinang  
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H/P : 012 - 475 3543  
Contact : Mr Shamugam

Landcarve Enterprise  
610-P, Tanjung Bunga,  
11200 Pulau Pinang  
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LHT Kitarsemula Sdn. Bhd.  
2-2 Lintang Batu Maung,  
11960 Pulau Pinang  
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Fax: 6265840  
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Marimuthu Vision Enterprise  
322 Jalan Perak  
11600 Pulau Pinang  
H/P : 012 513 6880  
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Mohd Suhaimin Yusuff  
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Lama  
10470 Pulau Pinang  
H/P : 012-556 8507/  
016-400 8706  
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Yusuff

GENERAL

Natural Arrangement Sdn. Bhd.  
(Co. Reg. No.: 515873-H)  
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OK Scrap Trading  
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One Hundred & One Enterprise  
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Pinang Mutiara Enterprise  
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11000 Balik Pulau, Pulau Pinang  
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016 458 4465  
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pinangmutiara@yahoo.com  
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Arunasalam

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2398-C, Permatang Damar Laut  
11960 Bayan Lepas, Pulau  
Pinang  
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S.D. Vista Agency  
97 Weld Quay reclamation area  
Georgetown  
10300 Pulau Pinang  
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Pulau Pinang  
Tel : 04-642 2418  
H/P : 012-487 6481  
Contact : Mr. Sadadaven Joseph

11

GENERAL

Sempurna Jaya Enterprise  
16-E Jalan Seang Tek  
Georgetown  
10400 Pulau Pinang  
H/P : 016 455 2846  
Contact : Mr Jayaraj

SIMA Handicapped Recycling  
Centre  
16 Transfer Road, Pulau Pinang  
H/P : 012-428 6205  
Contact : Mr. Jonathan Shaw

Smarrk Trading  
205-H Mk12 Jalan Batu Maung  
11960 Pulau Pinang  
Tel : 04-626 6899  
H/P : 019-456 6599  
Contact : Mr. K S Too

SMS Vision Trading  
170 Jalan Kg Jawa Baru  
11900 Pulau Pinang  
H/P : 016 478 6965  
Contact : Mr Muniandy

Subramaniam Company  
7 Lebuhr Victoria  
10300 Pulau Pinang  
Tel : 04-261 3057

Syarikat Hin  
727B Jalan Sungai Dua  
11700 Pulau Pinang  
Tel: 658 7016  
H/P : 019 442 7878  
Contact: Mr Ong Nai Hin

Syarikat Narayanan  
151 Lebuhr Acheh  
10200 Pulau Pinang  
Tel : 04-261 3337 / 1622

Syarikat Pandiyan  
44 B Lebuhr victoria  
Georgetown  
10300 Pulau Pinang  
Tel : 04-261 3212  
Contact : Mr Pandiyan

Dumping Ground Scrap Centre  
T1, 1450 Jelutong Barat  
George Town  
11600 Pulau Pinang  
H/P : 012 448 8128  
Contact : Mr Mr Lim Kok Lay

VNPR Metal Recycling  
Sblh KR 267, Jalan Relau, Relau  
11900 Bayan Lepas  
Pulau Pinang  
H/P : 016 440 5559  
Contact : Mr A.R. Balan

12

## GUNNY SACKS

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8, Gat Leboh Prangin  
10300 Pulau Pinang  
Tel: 261 4621

AMV Pitchai Chettiar  
93 Leboh Armenian  
10200 Pulau Pinang  
Tel : 04-261 5392  
Contact :The Manager

13

## PAPER

Central Malaya Paper Sdn Bhd  
101D Lintang Kg Jawa,  
Kaw MIEL  
11900 Bayan Lepas  
Pulau Pinang  
Tel : 04-646 3415/ 16  
Fax : 04-646 3417  
Contact : Mr. Gan Hock Aun

Federal Packages Sdn Bhd  
391 Jalan Tasek  
14120 Simpang Empat, S,  
Pulau Pinang  
Tel : 04-588 6240  
Contact : Mr. Sim Jwee Peng

Gim Gim Enterprise  
449 Leboh Pantai  
Georgetown  
10300 Pulau Pinang

Harta Maintenance Sdn Bhd  
38-1-1 Pangsapuri Century  
Taman Batu Uban  
Jalan Pantai Jerjak Satu  
11700 Gelugor, Pulau Pinang  
Tel : 04-656 9209  
Fax : 04-656 2914  
H/P : 019-456 1606  
Email : harta@tm.net.my  
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984 Jalan Perusahaan,  
Kaw Perusahaan Perai  
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Fax : 04-398 4439  
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Contact : Mr. Chan Kok Tin

Lim Chin San Enterprise  
383 Leboh Pantai  
Georgetown  
10300 Pulau Pinang  
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Muda Paper Mills Sdn Bhd  
391 Jalan Tasek  
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Pinang  
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Fax : 04-588 7646

Murugan  
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Georgetown  
10200 Pulau Pinang  
Tel : 04-262 6054  
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**RUBBER**

Frangrace Rubber Tech Sdn Bhd  
 Plot 935 Lorong Makmur 13/1  
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 Lunas, 09600 Kedah  
 Tel : 04-484 1361  
 Fax : 04-484 5361  
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Plasticycle Industries S/B  
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 09000 Kulim  
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 Fax : 04-489 2414  
 H/P : 012-480 9689  
 Email : twbung@tm.net.my  
 Contact : Mr. Tan Khoon Chuah

Sunnyjaya Industries Sdn Bhd  
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 Bukit Minyak 14  
 Kaw. Perindustrian Bukit Minyak  
 14100 Seberang Perai  
 Tel: 04-507 3597 / 04-507 3604  
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 sunnypsb@yahoo.com  
 Contact: Mr Ong Teng Ngo

Tri Emmanuel Sdn Bhd  
 287 Block H, Mk 12  
 Jalan Batu Maung  
 11960 Pulau Pinang  
 Tel : 04-626 3550/ 1855  
 Fax : 04-626 4009  
 H/P : 012-469 9768  
 Contact : Mr. Sam Tan

YB Enterprise Sdn Bhd  
 Plot 98 & 99 Jalan Aman 2/2,  
 Kaw Industri Taman Makmur  
 09600 Lunas, Kedah  
 Tel : 04-484 525787  
 Fax : 04-484 2288  
 H/P : 012-402 7727  
 Email : yap@ybggroup.com  
 Contact : Mr. Yap Khoon Fatt

Angle Frontier Sdn Bhd  
 32 Lorong Seruling 5 Kawasan  
 Perusahaan Valdor  
 14200 Sungai Bakap  
 Seberang Perai Selatan Pulau  
 Pinang  
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 H/P : 012-492 6373  
 Email : anglefrontier@yahoo.com

BeautyPlas Industries  
 12A Lorong Teguh 1 Taman  
 Industri Teguh  
 Permatang Tinggi,  
 14000 Bukit Mertajam  
 Tel : 04-588 6168  
 Fax : 04-588 6194

Domic Industries Sdn Bhd  
 3677 Mk 9, Kampung Besar  
 Berapit, 14000 Bukit Mertajam  
 Tel : 04-539 9943  
 Fax : 04-530 4169  
 H/P : 019-445 0731  
 Email : limah@pc.iaring.my  
 Contact : Mr. Lim Ah Huat

EverLantern Trading Sdn Bhd  
 LBS 298 Jalan Kuala Ketil  
 08000 Sungai Petani, Kedah  
 Tel : 04-423 6689  
 H/P : 019-474 6859  
 Contact : Mr. Aw Chee Yee

SCRAP / METALS

**SCRAP / METALS**

AMK Palsamy Chettiar  
24 Lorong Toi Aka  
Georgetown  
10100 Pulau Pinang  
Tel : 04-262 2965  
Contact :

ARR Metals Trading  
141 Victoria Street  
10300 Pulau Pinang  
Tel : 04-264 5002  
Fax : 264 5141  
H/P : 012 485 8171  
Contact : Mr N. Rajoo

ARR Metals Trading  
9 Lorong Mak Mandin 5/1  
Kaw Perusahaan Mak Mandin  
13400 Butterworth  
Tel : 04-324 7133  
Fax : 04-324 8133  
H/P : 012 485 8171  
Contact : Mr N. Rajoo

B. Ganason  
147G Sungai Tiram  
11900 Bayan Lepas Pulau  
Pinang

Dhong Shen Scrap Trading  
97 Weld Quay  
Georgetown  
10300 Pulau Pinang  
H/P : 012 421 2810  
Contact : Mr Dion Tan

Gurusamy Chettiar  
126 Lebuhr Armenian  
Georgetown  
10200 Pulau Pinang  
H/P : 012 484 0227

Hong Kuan Metals Recycle Sdn  
Bhd  
925-D Jalan Relau  
11900 Bayan Lepas  
Tel : 04-643 4691

K Bala Metalis  
38 Lebuhr Victoria  
Georgetown  
10300 Pulau Pinang  
Tel : 04-263 7706  
H/P : 016 483 9743  
Contact : Mr Bala

LLS Metal  
214 Lebuhr Victoria  
Georgetown  
10300 Pulau Pinang  
Tel : 04-263 272  
Contact : Mr Thiagerajan

M Ramu Chettiar  
120A Lebuhr Victoria  
Georgetown  
10300 Pulau Pinang  
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SCRAP / METALS

Mr Muthu  
44, Lrg IKS Juru 3,  
Taman Perindustrian  
14100 Bukit Mertajam  
Tel : 04-5084841  
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P Muniandy Enterprise  
48 Lebuhr Macallum  
Georgetown  
10300 Pulau Pinang  
Tel : 04-262 4204  
H/P : 016-487 4370  
Contact : Dato P Muniandy

Patrick & Muniandy Enterprise  
120 B Lebuhr Victoria  
Georgetown  
10300 Pulau Pinang  
Tel : 04-264 4121  
Contact : Mr Patrick

RSE Metal Sdn Bhd  
126 Armenian Street  
Georgetown  
10200 Pulau Pinang  
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H/P : 012 484 0227  
Contact : Mr M Selvanathan

S.K.S. Metals  
9 Lebuhr Victoria 10300 Pulau  
Pinang  
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Sakaran Trading  
4-4-1 Desa Kolam Ikan,  
Jalan Kolam Ikan  
11900 Bayan Lepas Pulau Pinang  
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H/P : 012-487 6451  
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Sri Shan Enterprise  
68 Acheen Street  
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10200 Pulau Pinang  
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Contact : Mr Shan

Subramaniam Company  
7 Lebuhr Victoria  
10300 Pulau Pinang  
Tel : 04-261 3057

Sun Vee Enterprise  
672-4E Park Avenue Apt.  
Jln Waterfall 10350 Pulau Pinang  
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016-488 6881  
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Syarikat Kumaran  
3024 Permatang Pauh Road  
13400 Butterworth  
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H/P : 012-471 1196  
Contact : Mr. S. Thiban

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#### SCRAP / METALS

Syarikat Mani  
123 Jln Timah  
10150 Pulau Pinang  
Tel : 04-226 2599  
Fax : 04-227 6917  
H/P : 019-445 8967  
Contact : Mr. Muthu Rajoo

Veera Metals  
2 Lorong Mak Mandin 5/1  
Mak Mandin 13400 Butterworth

VMR Metal Recycling  
Sblh KR 267, Jalan Relau, Relau  
11900 Bayan Lepas  
Pulau Pinang  
H/P : 016 440 5559  
Contact : Mr A.R. Balan

#### WOOD

Paamah Store  
123 Jalan Timah  
10150 Pulau Pinang  
Tel : 04-227 5651  
Contact :The Manager

## RECYCLING COMMUNITIES

### CHURCHES

Bayan Baru Methodist Church  
28, Jalan Mahsuri, Bayan Baru  
11950 Pulau Pinang  
Tel: 6438672  
Email: pudren@tm.net.my  
Contact: Mrs Cheam

Charismatic Church of Penang  
136 Jln Sultan Azlan Shah  
11900 Pulau Pinang  
Tel: 6428727  
Fax: 6415095  
Email: ccopl@streamyx.com  
Contact: Mr Lim

Church of Risen Christ,  
60A Jalan Air Itam,  
11500 Pulau Pinang.  
Tel: 828 1025 (Stopped  
Recycling)  
Contact: Church Office

FGA Centre  
10 Jalan Air Itam,  
11500 Pulau Pinang.  
Tel: 8286100  
Email: fgacen@tm.net.my  
[http://www.geocities.com/Heartla  
nd/Bluffs/3165/](http://www.geocities.com/Heartla<br/>nd/Bluffs/3165/)  
Contact: Church Office

Georgetown Baptist Church,  
14 Jalan Larut  
10500 Pulau Pinang  
Tel: 228 8013  
Email: chanck@gpppg.org  
Contact: Mr Chan

Penang Baptist Church,  
224 Jalan Macalister  
10451 Pulau Pinang  
Tel: 228 9161  
Email: pbc1953@streamyx.com  
Contact: Church Office

Penang First Assembly of God,  
286 Jalan Macalister  
10450 Pulau Pinang  
Tel:229 6573  
Fax: 2296573  
Contact: Church Office

Penang Presbyterian Church,  
24A Lebuhr Codrington  
10350 Pulau Pinang  
Tel: 2263435  
Contact: Church Office

Sik Aun Baptist Church,  
8 Jalan Goh Guan Ho  
11400 Pulau Pinang  
Tel: 828 3304  
Contact: Church Office

Trinity Methodist Church,  
16 Jalan Mesjid Negeri  
11700 Pulau Pinang  
Tel: 828 7445  
Contact: Church Office

Wesley Methodist Church  
136 Jalan Burma,  
10050 Pulau Pinang  
Tel: 2263500/ 2270742/ 2279058  
Fax: 2295513  
Email: wmcpg@ppjaring.my  
Contact: Church Office

## HOSPITALS

Hospital Pantai Mutiara  
82, Jalan Tengah  
11900 Bayan Baru,  
P. Pinang  
Tel: 64333888  
Fax: 6432888  
Website: [www.pantai.com.my](http://www.pantai.com.my)

Island Hospital  
308 Macalister Road,  
10450 P. Pinang  
Tel: 2288222  
Fax: 2267989  
Email:  
hrdept@islandhospital.com  
Website: [www.islandhospital.com](http://www.islandhospital.com)  
Contact : Mr. David Wong

Lam Wah Ee Hospital  
Jalan Tan Sri Teh Ewe Lim  
11600 George Town, P. Pinang  
Tel: 6571888  
Fax: 6570940  
Website: [www.hw.com.my](http://www.hw.com.my)  
Contact: Ms Cheow Mcoy Chew

Loh Guan Lye Specialist Centre  
19 Jalan Logan  
10400 P. Pinang  
Tel: 2288501/ 2288902 /  
2214624  
Fax: 2280287 / 2290287  
Website: [www.lhguanlye.com](http://www.lhguanlye.com)

Mount Miriam Hospital  
23 Jalan Bulian, Fettes Park  
11200 Tanjung Bungah,  
Pulau Pinang  
Tel: 890-7044  
Fax: 226-3366  
Email: [mmiriam@tm.net.my](mailto:mmiriam@tm.net.my)

Penang Adventist Hospital  
65 Burma Road  
10350 Pulau Pinang  
Tel : 04-222 7200  
Fax : 04-226 3366  
Email :  
adventisthealth@pah.com.my  
Website: [www.pah.com.my](http://www.pah.com.my)

Tanjung Medical Centre  
473 Jalan Burma  
10350 Pulau Pinang  
Tel:04-2262323  
Fax: 04-2299008  
E-Mail:  
tanmed@tanjungmedical.com.my  
Website:  
[www.tanjungmedical.com.my](http://www.tanjungmedical.com.my)

## NGOS

Buddhist Tzu Chi Merit Society  
316, Jalan Macalister  
10350 Pulau Pinang  
Tel: 228 1013  
Fax: 226 1013  
Contact: En Teoh Ji Xuan

Friends of the Botanic Gardens  
Society  
673-A, Jalan Kebun Bunga  
10351 Pulau Pinang  
Tel: 227 9915  
Fax: 2279915H/P:  
Email: [botanika@tm.net.my](mailto:botanika@tm.net.my)  
Website:  
[www.surforever.com/botanika](http://www.surforever.com/botanika)  
Contact: Officer in charge

Lighthouse Drop-In Centre  
52K, Penang Road  
10000 Pulau Pinang  
Tel: 2638842  
Fax: 2283870  
Email: [light0503@hotmail.com](mailto:light0503@hotmail.com)  
Contact: Mr. Beleuebdiran  
Joseph

Malaysian Nature Society  
(Penang Branch)  
673-B, Jalan Kebun Bunga  
10350 Pulau Pinang  
Tel: 2273673  
H/P: 013 4537992  
Email: [kandakum@tm.net.my](mailto:kandakum@tm.net.my)  
Website:  
[www.geocities.com/mnspenang](http://www.geocities.com/mnspenang)  
Contact: Kanda Kumar

Penang Caring Dialysis Society  
204, Ground Floor, Wisma MCA  
Jalan Transfer  
10050 Pulau Pinang  
Tel: 2294142  
Fax: 2285149  
Contact: Puan Linda Moo

Persatuan Rumah Cahaya  
Harapan  
16, Jalan Burmah  
10350 Pulau Pinang  
H/P : 019 510 6066  
Contact : Ms Moo Siew Yoong

Persatuan Nam Hooi Wooi Koon  
463 Lebuhr Chulia  
11200 Pulau Pinang  
H/P: 013 481 7344  
Contact: En Chew Yoon Seng

Persatuan Pandu Puteri Pulau  
Pinang  
260 Jalan Air Itam  
10460 Pulau Pinang  
Tel: 2282566  
Fax: 2292099  
Contact : Puan Yeoh

Spastic Children's Association  
425, Jalan Mesjid Negeri  
11600 Pulau Pinang  
Tel: 6570160  
Fax: 6563066  
Email : [jmm@streamyx.com](mailto:jmm@streamyx.com)

St. Joseph's Home  
52-K Penang Road,  
10000 Pulau Pinang.  
Tel : 2635418  
Fax : 04- 263 5418  
Email: [sjoseph43@fm.net.my](mailto:sjoseph43@fm.net.my)  
<http://www.cybercare.org.my/home/stjoseph/html/about.htm>

## **JKKK**

JKKK Batu Ferringhi  
206-B Batu Ferringhi  
11000 Pulau Pinang  
Tel: 881 1199  
H/P: 016 4903543  
Email: [sherine50@yahoo.com](mailto:sherine50@yahoo.com)  
Contact: Pn Sherine Lim

## **RESIDENTS' ASSOCIATIONS**

Persatuan Penduduk Jermal  
Court

5 Jalan Bagan Jermal  
10250 Pulau Pinang  
H/P: 016 431 2138  
Contact : Mr Cheah Beng Sun

Persatuan Penduduk Kaw Kulit  
Lembu, Jln Samak  
389 -D Jalan Dato Kramat  
10150 Pulau Pinang  
H/P: 013 481 7344  
Contact: En Chew Yoon Seng

Persatuan Penduduk Taman  
Free School  
KJ-0-8 Taman Free School  
11600 Pulau Pinang  
Tel: 281 0085  
H/P: 012 450 7487  
Contact: En K Govindasamy

## RUKUN TETANGGA

KRT Batu Lanchang "A"  
25-4-6 Taman Sri Damai,  
Lintang Batu Lanchang  
11600 Pulau Pinang  
Tel: 6574554  
Contact: En Ramli b Din

KRT Batu Lanchang "B"  
35 Tingkat Jelutong  
11600 Pulau Pinang  
Tel: 6584755  
H/P: 016 4535538  
Contact: En Choong Khee Pin

KRT Hilir Sg Pinang  
25-L Pintasan Sg 4, Sg Pinang  
11600 Pulau Pinang  
Tel: 281 8499  
H/P: 012 477 0336  
Contact: En Ahmad Nasir b  
Yousoof

KRT Island Park  
25 Lebuhraya Tembaga  
11600 Pulau Pinang  
H/P: 019 4757911  
Email: [bskhoo@pl.larling.my](mailto:bskhoo@pl.larling.my)  
Contact: Khoo Teik Chye

KRT Jelutong Timur "B"  
38-H, Jalan Bukit Dumar  
11600 Pulau Pinang  
H/P: 013 422 9241  
Contact: En Abdul Rahman b  
Kadir

KRT Kawasan Midlands  
c/o 16, Solok Midlands  
10250 Pulau Pinang  
H/P: 016 451 641  
Contact : Mr Khoo Kuan Siew

KRT Masjid Negeri  
17 Taman Wu Lien Teh  
11600 Pulau Pinang  
Tel: 828 6316  
H/P: 012 4105010  
Contact: En Hamdan b Shaari

KRT Taman Guan Joo Seng  
17 Jalan Besi  
11600 Pulau Pinang  
Tel : 6564566  
Contact : Mr. M. Manasseh

Mt Erskine Recycling Centre  
(MPPP) Tingkat Erksine  
110470 Pulau Pinang  
Tel: 04-891 2888  
Fax: 04-891 2887  
H/P : 019-449 0572  
Email : [rosenyg@my.larling.net](mailto:rosenyg@my.larling.net)  
Contact : Ms. Rose Ng

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## SCHOOLS

Dalat International School  
Tanjung Bunga  
11200 Pulau Pinang  
Tel: 8992105  
Fax: 8902141  
Email: [office@dalat.org](mailto:office@dalat.org)  
Contact : Mr. Mccalary

School of Communication,  
Universiti Sains Malaysia,  
Universiti Sains Malaysia  
11800 Pulau Pinang  
Tel: 6586554  
H/P :

Contact :

SM (P) St George  
Jalan Macalister  
10450 Pulau Pinang  
Tel: 229 5855  
Fax: 229 5886

SM Laki-laki Methodist  
250 Jalan Air Itam  
10460 Pulau Pinang  
Tel: 2293986  
Fax: 2290494

SMJK ( C ) Sacred Heart  
Balik Pulau  
11000 Pulau Pinang  
Tel: 8668217  
Fax: 8668217  
Email: [leeh3036@tm.net.my](mailto:leeh3036@tm.net.my)  
Contact : Ms. Wong Choy Har

SMJK (C) Chung Hwa Confucian  
Pestiaran Tembaga  
11600 Pulau Pinang  
Tel: 6583414  
Fax: 6585662

SMK (P) Methodist  
42 Jalan Anson  
10400 Pulau Pinang  
Tel: 226 3073  
Fax: 227 7401

SMK Batu Maung  
D/A Sk Pmtg Damar Laut  
11950 Pulau Pinang  
Tel: 6266584  
Fax: 6265452

SMK Convent (M) Lebuah Light  
36 Lebuah Light  
10200 Pulau Pinang  
Tel: 2633894  
Fax: 2623594

SMK Convent Pulau Tikus  
Lorong Maktab  
10250 Pulau Pinang  
Tel: 2262677  
Fax: 2262677

SMK Georgetown  
Lorong Batu Lancang  
11600 Pulau Pinang  
Tel : 828 4884  
Fax : 829 5233

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SCHOOLS

SMK Hutchings  
Lebuh Farquhar  
10200 Pulau Pinang  
Tel : 261 1425  
Fax : 263 8172

SMK Jalan Damai  
Kampung Bahru  
14000 Pulau Pinang  
Tel: 5387267  
Fax: 5379796

SMK Padang Polo  
Jln Sepoy Lines  
10450 Pulau Pinang  
Tel: 2294327  
Fax: 2295475

SMK Perempuan Cina  
Jln Gottlieb  
10350 Pulau Pinang  
Tel: 2277124  
Fax: 2265636

SMK Sg Ara  
Sg Ara  
11900 Bayan Lepas  
Pulau Pinang  
Tel: 6434557  
Fax: 6441653  
H/P: 013 481 7344  
Contact: En Chew Yoon Seng

SRJK ( C ) Han Chiang  
Jln Lim Lean Teng  
11600 Pulau Pinang  
Tel: 2811242

SRJK ( C ) Heng Ee  
Jln Macalister  
10400 Pulau Pinang  
Tel: 226 0566

SRJK ( C ) Li Tek (B)  
Pengkalan Weld  
10300 Pulau Pinang  
Tel: 2627122

SRJK ( C ) Phor Tay  
Jln Bagan Jermal  
10250 Pulau Pinang  
Tel: 2275503

SRJK ( C ) Union  
Jln Burma  
10050 Pulau Pinang  
Tel: 2276324

SRJK Shan Wu  
Jalan LaSalle  
14000 Pulau Pinang  
Tel: 8282070

SRK Jalan Hamilton  
Jln Hamilton  
11600 Pulau Pinang  
Tel: 2824203  
Fax: 2824203

SRK Perempuan Island  
Jalan Sultan Ahmad Shah  
10050 Pulau Pinang  
Tel : 226 3402

SCHOOLS

SRK Sg Nibong  
Jln Sultan Azlan Shah  
11900 Pulau Pinang  
Tel: 6424678

SRK Sri Aman  
Jln K Melayu  
11500 Pulau Pinang  
Tel: 8287715

SRK St Xaviers  
Jalan Brother James  
10350 Pulau Pinang  
Tel: 2266993  
Fax : 04-229 0343

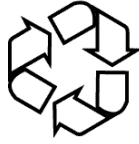
SRK Teluk Kumbar  
Bayan Lepas  
11920 Pulau Pinang  
Tel: 649 1952  
Fax: 6491 952

SRK Wellesley  
Jalan Sultan Ahmad Shah  
10050 Pulau Pinang  
Tel : 226 5843

## **WHY WE RECYCLE?**

We do recycling to:

- Preserve the natural environment
- Ensure a healthy and clean environment
- Prevent pollution
- Recover resources from discards
- Save costs and money
- Save trees
- Save energy
- Save waste disposal costs



For further information, please contact:

**Recycling Network Unit,  
Majlis Perbandaran Pulau Pinang  
Jalan Padang Kota Lama  
10200 Pulau Pinang  
Tel : 04 – 263 3000 Fax : 04 – 263 3036  
Email: [rnumppp@gmail.com](mailto:rnumppp@gmail.com)  
Website: [www.rnumppp.net](http://www.rnumppp.net)**



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Agency



# APPENDIX 10

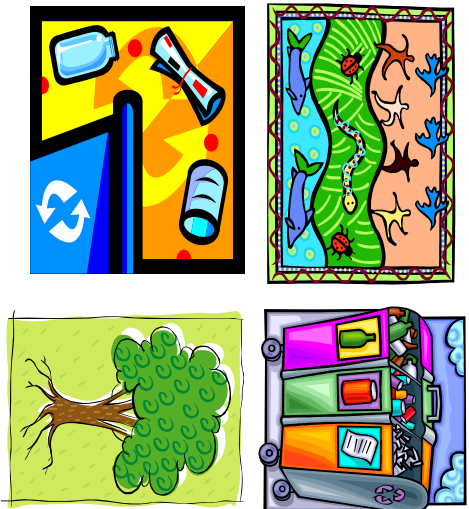
## MPSJ RECYCLING DIRECTORY





# DIREKTORI KITAR SEMULA

## MAJLIS PERBANDARAN SUBANG JAYA



Oktober 2005



**mpj**



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## Pendahuluan

Direktori ini adalah hasil usahasama oMajlis Perbandaran Subang Jaya (MPSJ), Kementerian Penumahan & Kerajaan Tempatan (KPKT), dan Japan International Cooperation Agency (JICA) dalam program pengurangan sampah di Malaysia. Ia bertujuan untuk meningkatkan pengetahuan dan hubungan pelbagai pihak dan agensi yang terlibat dengan aktiviti kitar semula.

Turut dimuatkan adalah panduan ringkas dan cara-cara mengitar semula. Antara maklumat yang boleh dikongsi bersama ialah kemudahan-kemudahan kitar semula yang terdapat di kawasan MPSJ seperti tong kitar semula, pusat kitar semula, dan pihak-pihak yang menjalankan aktiviti kitar semula.

Diharapkan direktori ini akan menjadi maklumat dan panduan berguna dalam menjalankan program kitar semula.

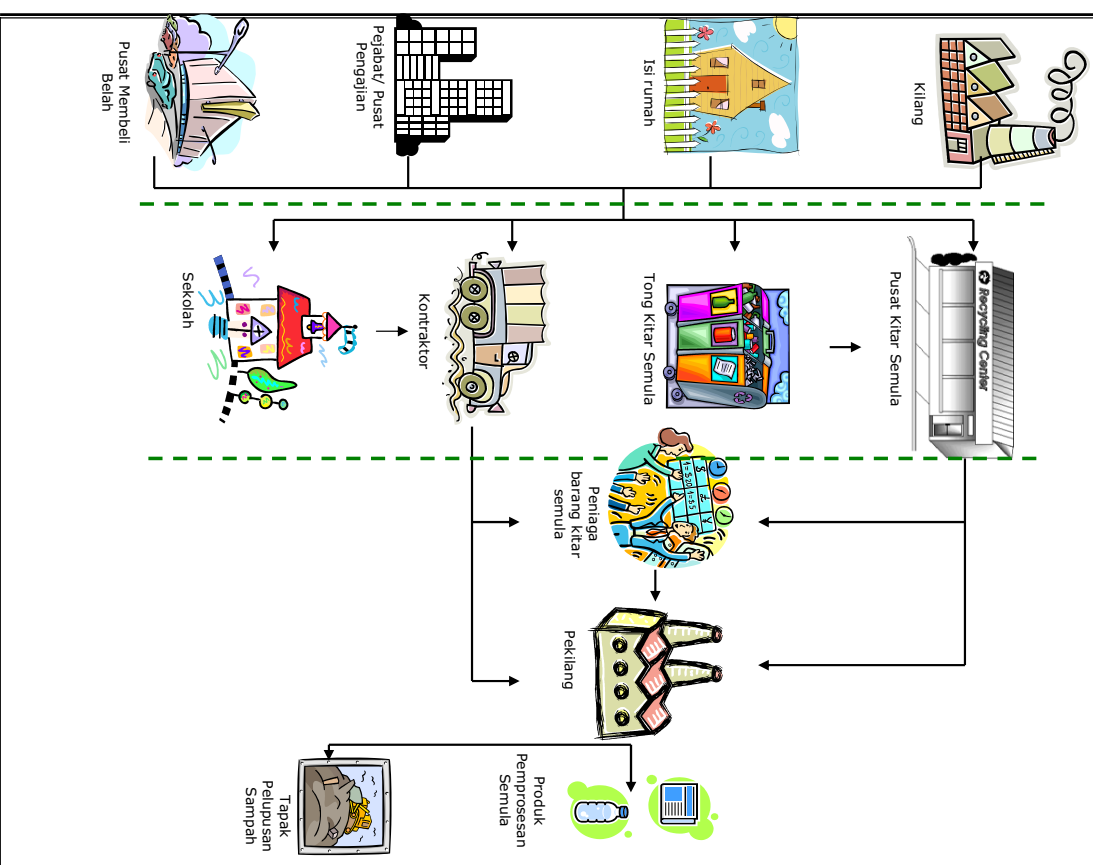
Sila layari laman web [www.rumpsi.net](http://www.rumpsi.net) bagi mendapatkan maklumat yang lebih terperinci mengenai aktiviti kitar semula di sekitar kawasan MPSJ.

Sekian, terima kasih.

Majlis Perbandaran Subang Jaya

### “FIKIR DAHULU SEBELUM BUANG”

## Carta Aliran Barang Yang Boleh Dikitar Semula



## 1.0 Kempen 3R

Pengurangan sampah atau "pengurangan penggunaan sumber", bermakna mengurangkan penggunaan dan pembuangan dan ia meliputi:

### 1.1 PENGURANGAN

Pengurangan dapat dilakukan dengan menghasilkan produk-produk yang tahan lama bagi membolehkan lama digunakan untuk tempoh masa yang panjang. Penggunaan produk yang masih berfungsi, selama yang mungkin dapat membantu ke arah pengurangan penghasilan sampah.

### 1.2 MENGGUNA SEMULA

Dengan membuat semula barangan yang rosak, menderma barangan yang tidak diingini lagi kepada pertubuhan amal dan kebajikan, atau menjual – turut membantu mengurangkan sampah. Mengguna semula produk adalah lebih baik daripada mengitar semula kerana barangan tersebut tidak perlu menjalani pemprosesan semula.

### 1.3 KITAR SEMULA

Kitar semula dikritikan sebagai mengubah semula bentuk bahan yang asalnya dianggap sampah atau bahan yang tiada nilai kepada produk atau bahan yang bernilai. Ia membawa banyak kebaikan kepada kita dari sudut alam sekitar, kewangan dan sosial. Kaca, logam, plastik, dan kertas merupakan bahan yang boleh dikitar semula dan diproses kepada bahan atau produk yang baru.

## 2.0 Mengapa Mengitar Semula?

Pada masa ini, MPSJ membelanjakan kira-kira 50% daripada hasil cukai takstranya untuk pengurusan sampah. Kitar semula adalah lebih murah dalam jangka masa panjang dibandingkan dengan pengurusan tapak pelupusan dan sistem pelupusan lain. Apabila program kitar semula menjadi lebih efisien, sampah yang akan dibuang akan berkurangan. Kitar semula membuka peluang pekerjaan lebih 5 kali ganda berbanding pelupusan sampah. Ia akan membuka peluang pekerjaan kepada jurutera, pakar mesin, kakitangan alam sekitar, pekerja am dan lain-lain. **Pendek kata, kitar semula meningkatkan taraf kebersihan dan kualiti hidup.**



Kitar semula adalah perlu bagi:

- Memelihara sumber-sumber semulajati
- Memastikan tahap kesihatan dan kebersihan terjamin
- Mengelakkan pencemaran kepada alam sekitar
- Membantaras penabangan hutan secara bertelusa
- Menjimatkan penggunaan tenaga asli
- Menjimatkan kos pengurusan bagi tapak pelupusan

## 3.0 Apa Yang Boleh Dikitar Semula?

|                  |   |
|------------------|---|
| Plastik          | <b>Boleh dikitar semula:</b><br>Semua jenis plastik berwarna dan tidak berwarna seperti beg membeli belah, botol minuman, botol air mineral, bekas makanan, botol bahan pencuci dan botol ubatan.<br><b>Tidak boleh dikitar semula:</b><br>Bekas cat, bekas bahan toksik, alatan makmal dan plastik, atau apa-apa bekas yang telah tercemar dengan sisa toksik, makanan, minyak, dan lain-lain. |
| Kaca             | <b>Boleh dikitar semula:</b><br>Semua jenis kaca berwarna dan tidak berwarna seperti botol minuman, bekas makanan, botol ubatan dan bahan kosmetik.<br><b>Tidak boleh dikitar semula:</b><br>Kristal, cermin, kaca tingkap, seramik, porselin, alatan makmal dan bekas bahan toksik, atau apa-apa bekas yang telah tercemar dengan sisa toksik, makanan, minyak, dan lain-lain.                 |
| Kertas           | <b>Boleh dikitar semula:</b><br>Semua jenis kertas berwarna dan tidak berwarna seperti suratkhabar, majalah, buku, kertas skrap (A4, A3 dan lain-lain), katalog, risalah, calendar, kad, sampul surat dan kotak.<br><b>Tidak boleh dikitar semula:</b><br>Kertas tisu, kertas karbon, kertas pengelap dan kertas yang kotor tercemar dengan bahan toksik, makanan, minyak, dan lain-lain.       |
| Besi / Aluminium | <b>Boleh dikitar semula:</b><br>Semua jenis bekas/tin aluminium dan besi seperti tin makanan dan minuman.<br><b>Tidak boleh dikitar semula:</b><br>Bekas cat, bekas bahan toksik, bekas bahan peletak dan bekas bahan peletak atau apa-apa bekas yang telah tercemar dengan sisa toksik, makanan, minyak, dan lain-lain.  |
| Lain-Lain        | Sisa elektronik (E-waste), pakaian, perabot, bateri, tayargeloh   |

## 4.0 Bagaimana Mengitar Semula?

Penyediaan tong kitar semula membolehkan proses pengasingan barangan kitar semula – kertas, kaca dan besi/aluminium/plastik. Perkara yang penting sekali ialah mengetahui apakah barangan yang boleh dan tidak boleh dikitar semula.

*Panduan untuk kitar semula:*

| Plastik   | Kaca  |
|---|---|
| <ul style="list-style-type: none"> <li>Tanggalkan penutup.</li> <li>Bersihkan dan keringkan botol atau beg plastik yang kotor.</li> <li>Masukkan ke dalam tong kitar semula berwarna jingga atau hantar ke pusat kitar semula.</li> </ul>                   | <ul style="list-style-type: none"> <li>Tanggalkan penutup, bahan plastik atau logam sambungan dan tapai.</li> <li>Bersihkan dan keringkan botol atau bekas kaca.</li> <li>Masukkan ke dalam tong kitar semula berwarna coklat atau hantar ke pusat kitar semula.</li> </ul> |
| Kertas  | Logam/Aluminium   |
| <ul style="list-style-type: none"> <li>Ikut suraktrahbar dan buku secara berasingan.</li> <li>Buka kotak kadkod, ratakannya dan ikat dengan kemas.</li> <li>Masukkan ke dalam tong kitar semula berwarna biru atau hantar ke pusat kitar semula.</li> </ul> | <ul style="list-style-type: none"> <li>Buang isi kandungan</li> <li>Bersihkan dan keringkan.</li> <li>Masukkan ke dalam tong kitar semula berwarna jingga atau hantar ke pusat kitar semula.</li> </ul>   |

## 5.0 Ke mana Boleh Anda Bawa Barangan Kitar Semula?

### 5.1 Tong Kitar Semula

Barangan kitar semula dalam kuantiti yang sedikit bolehlah dihantar ke lebih 150 tong kitar semula di pelbagai lokasi di seluruh MPSJ. Antara lokasi penempatan tong kitar semula MPSJ ialah di sekolah, stesen minyak, institusi keagamaan, kompleks membeli belah, kompleks kerjagaan, pusat amai dan kedaijikan, kawasan perumahan awam, dan lain-lain lagi (sila rujuk **Lampiran 1**, di muka surat 6 bagi lokasi penempatan tong kitar semula MPSJ).



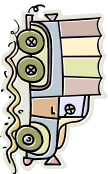
### 5.2 Pusat Kitar Semula

Barangan kitar semula dalam kuantiti yang banyak bolehlah dihantar ke pusat kitar semula yang bertampan (sila rujuk **Lampiran 2**, di muka surat 10 bagi lokasi Pusat Kitar Semula di kawasan MPSJ).



### 5.3 Kontraktor Kitar Semula

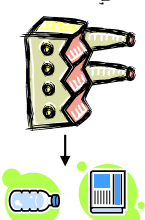
Terdapat individu atau organisasi yang menjadikan kitar semula sebagai suatu peluang perniagaan. Anda boleh menghubungi mereka bagi mendapatkan nilai terbaik bagi barangan kitar semula anda (sila rujuk **Lampiran 3**, di muka surat 15 bagi senarai pihak agensi yang terlibat dengan aktiviti kitar semula).



## 6.0 Produk Hasil Daripada Pemprosesan Semula

### Ke manakah barangan kitar semula yang dikumpul dibawa pergi?

Barangan kitar semula yang dikumpul oleh kontraktor akan diasingkan semula, dibersihkan, dan dijual kepada kilang pemprosesan yang akan memproses barangan tersebut menjadi suatu produk yang sama atau produk yang lain.



| Barangan Kitar Semula                            | Hasil Pemprosesan Semula   |
|--|--|
| Kertas   | Kertas baru, alat pembungkus, bahan penambat dan lain-lain                     |
| Kaca   | Bekas, penapis air, bahan perhiasan, bahan penambat, dan lain-lain             |
| Plastik<br>(HDPE, PET & lain-lain jenis plastik) | Bekas/ botol tahan panas, fiem, dulang, karpet, kain, baju, beg, dan lain-lain |
| Besi   | Produk besi  |
| Aluminium  | Bekas minuman  |
| Tayar  | Serdak getah, campuran tar   |
| Kayu   | Kayu/ papan penahan api, kertas  |
| Kain/ Baju                                       | Kain pengelap, didemakan   |
| Bateri   | Pengekstrakan semula merkuri oksida dan nikel kadnium                          |
| Sisa minyak                                      | Tapisan semula minyak pelincir kenderaan                                       |
| Perabot  | Perabot batu, papan penahan api  |
| Sisa keburutaman                                 | Kompos (baja)  |

## 7.0 Apa Yang Boleh Anda Sumbangkan?

Lakukan amalan kitar semula di rumah, tempat kerja dan di mana sahaja anda berada.

- Anda boleh mengadakan Program Kitar Semula anda sendiri, sama ada diperingkat pejabat atau diperingkat kejurangan kediaman anda.
- Anda boleh menghubungi MPSJ untuk mendapatkan nasihat, pandangan dan bantuan bagi menajayakan Program Kitar Semula anda.

Lampiran 1

**Lampiran 1 : Lokasi Penempatan Tong Kitar Semula MPSJ**

**Zon Subang Jaya**

| Lokasi Tong Kitar Semula   | Nama               | Telefon      |
|--|--------------------|--------------|
| <b>Pejabat Kerajaan</b>  |                    |              |
| Pejabat Tanah & Daerah Pelaling, Subang Jaya**                         | En. Jamil          | 03-8023 1304 |
| MPSJ, Persiaran Perpaduan, USJ 5                                       | En. Zaini          | 019-3610 605 |
| Balai Bomba, Jln SS 17/2, Subang Jaya**                                | En. Jamil          | 03-8023 1304 |
| Tentera Udara, No. 20, Skuadron Pangkalan Tentera Udara, Subang Jaya** | Leftanan Zahari    | 019-3586 739 |
| Pondok Polis USJ 8, USJ 8*   | En. Redzuan        | 019-2351 243 |
| Balai Polis Subang Jaya, Jln SS 17/2*                                  | En. Mohd Noor      | 03-5633 2222 |
| <b>Institusi Keagamaan</b>   |                    |              |
| Masjid Abu Bakar As-Siddiq, Jln SS 19/7A**                             | Hj. Ali            | 03-5634 2724 |
| Masjid Abu Bakar Al-Mukminun, Jln USJ 2/45**                           | Hj. Zamri          | 03-5694 4434 |
| Persatuan Buddha SS 13   | En. James Khoo     | 03-5634 181  |
| <b>Institusi Pendidikan/ Sekolah</b>                                   |                    |              |
| SK Seafield 3, Jln USJ 6/3   | Pn. Kasnawati      | 03-536 7437  |
| SK SS 17, Jln SS 19/1  | Pn. Hajjah Aminah  | 03-5636 5106 |
| SK USJ 20, Jln USJ 20/6E   | Pn. Radziah        | 03-8023 1860 |
| SK USJ 12, Jln USJ 12/1  | En. Zulkifli       | 03-5637 0081 |
| SK Subang Jaya, Jln SS14/5   | Pn. Maizatun Azura | 03-5633 9234 |
| SK SS 19, Jln SS 19/6  | Pn. Noranzah       | 03-5633 5487 |
| SRJK ( C ) Chee Wen, D/A Sek. Keb. SS 17                               | En. Chia Wang Hing | 03-5631 4703 |
| SRJK ( T ) Seafield, USJ 20/8  | Pn. R. Sumathy     | 03-8023 4548 |
| SMK USJ 4, Jln USJ 4/3   | Pn. Fiona          | 03-8024 6618 |
| SMK SS 17, Jln SS 17/1   | Pn. Rohayati       | 03-5633 8747 |
| SMK Seafield, Jln USJ 2/5  | Pn. Ung Lee Lee    | 03-5632 1301 |
| Sek. Ren. Islam Intergrasi Masjid Darul Ehsan, Jln SS 15/2E            | En. Fauzi          | 019-2145 634 |
| <b>Stesen Minyak</b>   |                    |              |
| Stesen Minyak BP SS 13, Persiaran Kewajipan**                          | En. Jamil          | 03-8023 1304 |
| Stesen Minyak Shell USJ 18, Persiaran Kewajipan**                      | En. Raja Sauffi    | 03-8024 8157 |
| Stesen Minyak Shell USJ 1, Jln Permai 2/1, Tmn Subang Permai**         | En. Jamil          | 03-8023 1304 |

**Lokasi Tong Kitar Semula**

| Lokasi Tong Kitar Semula                                   | Nama          | Telefon      |
|--|---------------|--------------|
| Stesen Minyak Shell USJ 4, Jln USJ 4/2**                   | En. Jamil     | 03-8023 1304 |
| Stesen Minyak Shell USJ 9, Lot 28957, USJ 9/3, Jln Bakti** | En. Jamil     | 03-8023 1304 |
| Stesen Minyak Shell SS 17, No. 3, Jln SS 17/1A**           | En. Jamil     | 03-8023 1304 |
| Stesen Minyak Shell SS 18, Jln Tujuan**                    | En. Jamil     | 03-8023 1304 |
| Stesen Minyak Shell Jln Kewajipan**                        | En. Jamil     | 03-8023 1304 |
| Stesen Minyak Caltex USJ 16                                | Pn. Fauziah   | 03-8024 6394 |
| Stesen Minyak Mobil Dwi Ikatlan Sdn Bhd                    | Pn. Shamsiah  | 03-8943 4939 |
| <b>Jawatankuasa Penduduk</b>                               |               |              |
| Zon 3-Goodyear Court 2*                                    | En. Rajesh    | 012-2692 177 |
| Zon 4-Dewan Orang Ramai, PJS 7/15*                         | En. Chang     | 016-3825 088 |
| Zon 5-Dewan Komuniti, Jln USJ 1/4C*                        | En. Kamarudin | 019-3482 806 |
| Zon 6-Balai Masyarakat, Taman Batu 3*                      | En. Aziz      | 019-2711 059 |
| Jln USJ 11/6, USJ 11 Subang Jaya                           | En. Eadon     | 012-3331844  |
| Jln SS 15/4c, USJ 15 Subang Jaya                           | En. Eadon     | 012-3331844  |
| Jln USJ 2/2b, USJ 2 Subang Jaya                            | En. Eadon     | 012-3331844  |
| <b>Lain-Lain</b>   |               |              |
| Subang Parade, No. 1, Jln SS 16/1**                        | En. Mike      | 03-7322 530  |
| Pusat Membeli Belah The Summit, Persiaran Kewajipan**      | En. Danny Yap | 03-8024 8886 |
| Pusat Membeli Belah Carrefour, Subang Jaya                 | En. Zaini     | 019-3610 605 |
| Goodyear Court, Persiaran Mulia**                          | En. Jamil     | 03-8023 1304 |

\* Tong kitar semula ini diselenggara oleh MPSJ dengan kulfpan 1 kali setahun

\*\* Tong kitar semula ini diselenggara oleh MPSJ dengan kulfpan 2 kali seminggu

**Zon Puchong**

| Lokasi Tong Kitar Semula                    | Nama               | Telefon      |
|---|--------------------|--------------|
| <b>Pejabat Kerajaan</b>                     |                    |              |
| Klinik Kesihatan Puchong, Bt 14*            | En. Salimi         | 03-8061 1814 |
| Balai Polis Puchong Jaya, Bdr Puchong Jaya* | En. Abdullah Saidi | 03-8075 2222 |
| Kuarters MPSJ**                             | En. Sulaiman       | 03-5512 4517 |
| <b>Institusi Pendidikan/ Sekolah</b>        |                    |              |
| SK Puchong Jaya, Bandar Puchong Jaya        | En. Khairuddin     | 03-8075 7734 |
| SK Seksyen 2, Bandar Kinara, Jln BK 3/8     | Pn. Azizah         | 018-2315 221 |
| SK Puchong Utama (1), Jln PU 12/1           | Pn. Rosliwati      | 03-8061 9240 |
| SK Puchong Utama 2, Jln PU 9/5              | Pn. Norhamzah      | 03-8060 8849 |

| Lokasi Tong Kitar Semula  | Nama              | Telefon      |
|---|-------------------|--------------|
| SRJK (T) Castelfield, Bt. 1 1/2, Jln Puchong                                    | En. Subramaniam   | 03-8061 1767 |
| SMK Seksyen 1, Bdr Kimrara  | En. Taufek        | 03-8070 4075 |
| SMK Seksyen 3 Bdr Kimrara, Jln Kimrara 5  | Pn. Susila        | 03-8075 7760 |
| SMK Puchong Jaya, Jln Tempua 3, Bdr. Puchong Jaya                               | Pn. NorHikmah     | 012-3774 491 |
| <b>Jawatankuasa Penduduk</b>  |                   |              |
| Pangsapuri Taman Kimrara, Seksyen 2, Jln TK 2/13**                              | En. Zaplan        | 016-3608 415 |
| Balai Masyarakat Puchong Perdana, No. 31 Jln Mawar 1-A, Taman Puchong Perdana** | En. Radin Mokhtar | 012-2286 111 |
| Dewan Puchong Jaya  | En. Zaini         | 019-3610 605 |
| Dewan Taman Kimrara Seksyen 1   | En. Zaini         | 019-3610 605 |
| Zon 9-Balai Raya Kuala Sg. Baru, Bt. 13, Jln Klang*                             | En. Zakaria       | 012-2211 256 |
| Zon 10-Dewan Masyarakat, Jln Sri Puchong 7, Tmn Sri Puchong*                    | En. Norizan       | 019-3200 925 |
| Zon 16- Balai Masyarakat, Taman Puchong Indah*                                  | Puan Faizah       | 03-8062 3725 |
| Zon 17- Lot Lepak Kereta, Taman Tasik Puchong Perdana*                          | En. Saifuddin     | 012-6742 750 |
| Zon 21- Dewan Masyarakat JKP Zon 13, Jln BP 2/2, Bukit Puchong*                 | En. Kamarulzaman  | 019-3804 803 |
| Zon 15- Lot 85, Lrg 2, Kg Seri Aman, Bt 13*                                     | En. Khairid       | 016-2523 996 |
| Zon 14- Pasaraya Mini Tekun Bersama, Lot Kedai, Jln 22, Tmn Bukit Kuchai Bt. 8* | En. Kusnin        | 019-3367 435 |
| Zon 13- Dewan Masyarakat, Tmn Kimrara Seksyen 1*                                | En. Ramely        | 013-3433 624 |
| <b>Lain-Lain</b>  |                   |              |
| Pusat Membeli Belah IOI, Puchong Jaya**   | Cik. Lee Yoke Han | 03-5882 8888 |
| Pusat Haven Youth, 17A Jln Kenari 17D, Bdr Baru Puchong Jaya**                  | Pn. Saiffah       | 03-8076 6804 |
| Kawasan Lapang Bernampiran TESCO  | En Eadon          | 012-3331 844 |
| Pasar Pagi Puchong Jaya   | En Eadon          | 012-3331 844 |
| Pasar Pagi Kimrara Seksyen 1  | En Eadon          | 012-3331 844 |

\* Tong kitar semula ini diselenggara oleh MPSJ dengan kutipan 1 kali sebulan

\*\* Tong kitar semula ini diselenggara oleh MPSJ dengan kutipan 2 kali seminggu

### Zon Seri Kembangan

| Lokasi Tong Kitar Semula | Nama      | Telefon      |
|--------------------------|-----------|--------------|
| Pejabat Kerajaan         |           |              |
| Stadium Tertutup Serdang | En. Zaini | 019-3610 606 |

| Lokasi Tong Kitar Semula   | Nama                | Telefon       |
|--|---------------------|---------------|
| Ibu Pejabat MARDI  | En. Mohd Zahir      | 03-8943 7051  |
| Institut Pertanian Serdang (Jabatan Pertanian)                         | Puan Norazmah       | 03-8948 6204  |
| Balai Bomba Seri Kembangan, Jln Raya Satu**                            | En. Rosnaldi        | 03-8941 6281  |
| Ibu Pejabat Balai Polis Pelaling Jaya Selatan, Taman Equine*           | Puan Nursuhaili     | 016-3968 585  |
| Pondok Polis Serdang, Taman Seri Serdang*                              |                     | 03-8948 2222  |
| Balai Polis Seri Kembangan, Jln Besar*                                 | En. Mohd Adnan      | 03-8948 6122  |
| Klinik Kesihatan Seri Kembangan, Tmn Muhibah Seri Kembangan*           | En. Abu Bakar       | 016-2858 1195 |
| <b>Institusi Pendidikan/ Sekolah</b>                                   |                     |               |
| Fakulti Teknologi & Sains Komputer, UPM**                              | En. Sulaiman        | 03-5512 4517  |
| Kolej Kediaman ke-13, UPM**  | En. Sulaiman        | 03-5512 4518  |
| Fakulti Ekologi Manusia, UPM**   | Prof. Madya Dr. Lai | 03-8948 6101  |
| Kolej Kediaman ke-10, UPM**  | En. Mohd Syukri     | ext. 3022     |
| SK Serdang, Uhiputra Pos Serdang, Seri Kembangan                       | En. Mohd Salim      | 03-8948 6582  |
| SK Taman Universiti, Tmn Universiti Indah, Seri Kembangan              | Pengetua            | 03-8943 1575  |
| SRJK (T) Serdang, Uhiputra Pos Serdang, Seri Kembangan                 | Pengetua            | 03-8948 4069  |
| SRJK (C) Serdang Baru 1, Seri Kembangan                                | Pengetua            | 03-8948 6644  |
| SMK Seri Indah, Tmn Seri Serdang, Seri Kembangan                       | Puan Hassannah      | 03-8943 4263  |
| <b>Jawatankuasa Penduduk</b>   |                     |               |
| Rumah Pangsa Mutiara Serdang, Jln SR 6/3, Serdang Raya                 | Cik Hana            | 03-89424223   |
| Zon 26-Dewan Masyarakat Taman Serdang Utama, Bukit Serdang Seksyen 14* | En Wong Len Kong    | 016-2801 290  |
| Zon 28- Dewan Orang Ramai KEMAS, Seksyen 6 & 7*                        | En. Kadir           | 019-9669 866  |
| Zon 29-Dewan MCA, Lot 1230, Jln 1/6, Taman Sg Besi Indah*              | En. Fong            | 012-3229 726  |
| Zon 22-Dewan Besar Seri Kembangan, Jln Besar*                          | En. Raymond         | 019-3366 382  |
| <b>Lain-Lain</b>   |                     |               |
| Kompleks Membeli Belah The Mines, Jln Dulang off Jln Balakong**        | En. Krishnan        | 03-8942 5010  |
| Grand Union, Jln Perusahaan 1**  | En. Peck Tan Bian   |               |
| Pasar Borong Selangor  | En. Jamaludin       | 03-8944 1735  |

\* Tong kitar semula ini diselenggara oleh MPSJ dengan kutipan 1 kali sebulan

\*\* Tong kitar semula ini diselenggara oleh MPSJ dengan kutipan 2 kali seminggu

## Lampiran 2: Lokasi Pusat Kitar Semula Di Kawasan MPSJ

| No | Agensi /Syarikat  | Waktu Operasi  | Barang kitar semula yang diambil |        |      |           |      |         |                 |           |  |
|----|---|--|----------------------------------|--------|------|-----------|------|---------|-----------------|-----------|--|
|    |   |  | Plastik                          | Kertas | Kaca | Aluminium | Besi | Pakaian | Sisa elektronik | Lain-lain |  |
| 1  | <b>Pusat Kitar Semula MPSJ</b><br>Persiaran Perpaduan, USJ 5, 47500 Subang Jaya<br>Tel: 03-80263183 Faks: 03-80245235<br>Hubungi: Unit Alam Sekitar, MPSJ<br>U/p : En. Mohd Hafiz | <ul style="list-style-type: none"> <li>Isnin – Jumaat<br/>(9.00 pg – 4.30 ptg)</li> <li>Ahad<br/>(8.30 pg – 11.30 pg)</li> </ul> | ✓                                | ✓      | ✓    | ✓         | ✓    |         |                 |           |  |
| 2  | <b>Pusat Kitar Semula USJ 9</b><br>USJ 9, 47500 Subang Jaya<br>Tel: 03-80231305 Faks: 03-80236493<br>Hubungi: Pengerusi JKP Zon 2<br>U/p : En. Gilbert                            | <ul style="list-style-type: none"> <li>Isnin, Rabu, Sabtu<br/>(2.00 ptg – 4.00 ptg)</li> </ul>                                   | ✓                                | ✓      | ✓    | ✓         | ✓    |         |                 |           |  |

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| No | Agensi /Syarikat  | Waktu Operasi   | Barang kitar semula yang diambil |        |      |           |      |         |                 |           |  |
|----|---|---|----------------------------------|--------|------|-----------|------|---------|-----------------|-----------|--|
|    |   |   | Plastik                          | Kertas | Kaca | Aluminium | Besi | Pakaian | Sisa elektronik | Lain-lain |  |
| 3  | <b>Pusat Kitar Semula Giant</b><br>Persiaran Subang Permai, USJ 1, 47500 Subang Jaya<br>Tel: 03-78805958 Faks: 03-78807977<br>Hubungi: TREES<br>U/p: Cik Leela                  | <ul style="list-style-type: none"> <li>Selasa – Ahad<br/>(12.00 tgh – 6.00 ptg)</li> </ul>  | ✓                                | ✓      | ✓    | ✓         | ✓    |         |                 |           |  |
| 4  | <b>Pusat Kitar Semula SS17</b><br>Jalan SS 17/2, SS 17, 47500 Subang Jaya<br>Tel: 03-80231304 Faks: 03-80236492<br>Hubungi: Truemax (M) Sdn Bhd<br>U/p : Cik Anies Marlina      | <ul style="list-style-type: none"> <li>Sabtu – Khamis<br/>(kecuali Jumaat)<br/>(9.00 pg – 7.00 ptg)</li> </ul>                    | ✓                                | ✓      | ✓    | ✓         | ✓    |         |                 |           |  |
| 5  | <b>Pusat Kitar Semula IOI</b><br>Pusat Membeli Belah IOI, Pusat Bandar Puchong<br>47100 Puchong<br>Tel: 03-4328888<br>Hubungi: Genting Sanyen Ind. Paper<br>U/p: En. Sivanandan | <ul style="list-style-type: none"> <li>Isnin – Sabtu<br/>(10.30 pg – 6.00 ptg)</li> <li>Ahad<br/>(10.30 pg – 4.00 ptg)</li> </ul> | ✓                                | ✓      | ✓    | ✓         | ✓    |         |                 |           |  |

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| No | Agensi /Syarikat  | Waktu Operasi   | Barang kitar semula yang diambil |        |      |           |      |         |                 |           |
|----|---|---|----------------------------------|--------|------|-----------|------|---------|-----------------|-----------|
|    |   |   | Plastik                          | Kertas | Kaca | Aluminium | Besi | Pakaian | Sisa elektronik | Lain-lain |
| 6  | <b>Pusat Kitar Semula The Mines</b><br>Jalan Dulang, The Mines Resort City<br>43300 Seri Kembangan<br>Tel: 03-89425010<br>Hubungi: Genting Sanyen Ind. Paper<br>U/p: Pn. Rose Warzuki                     | <ul style="list-style-type: none"> <li>Isnin – Sabtu<br/>(10.30 pg – 6.00 ptg)</li> <li>Ahad<br/>(10.30 pg – 4.00 ptg)</li> </ul> | ✓                                | ✓      | ✓    | ✓         | ✓    |         |                 |           |
| 7  | <b>Pusat Kitar Semula Sunway Pyramid</b><br>Bandar Sunway, 47500 Subang Jaya<br>Tel: 03-78748433 Faks: 03-78748615<br>Hp: 019-3610605<br>Hubungi: Alam Flora Sdn Bhd<br>U/p: Ahmad Rozaini Muhammad Rapee | <ul style="list-style-type: none"> <li>Setiap hari (kecuali Rabu &amp; Khamis)<br/>(10.00 pg – 5.00 ptg)</li> </ul>               | ✓                                | ✓      | ✓    | ✓         | ✓    |         |                 |           |

| No | Agensi /Syarikat   | Waktu Operasi   | Barang kitar semula yang diambil |        |      |           |      |         |                 |           |
|----|--|---|----------------------------------|--------|------|-----------|------|---------|-----------------|-----------|
|    |  |   | Plastik                          | Kertas | Kaca | Aluminium | Besi | Pakaian | Sisa elektronik | Lain-lain |
| 8  | <b>Pusat Kitar Semula Carrefour</b><br>No 3, Jln. SS16/1 Carrefour Subang Jaya<br>47500 Subang Jaya<br>Tel: 03-78748433 Faks: 03-78748615<br>Hp: 019-3610605<br>Hubungi: Alam Flora Sdn Bhd<br>U/p: En. Ahmad Rozaini Muhammad Rapee                                       | <ul style="list-style-type: none"> <li>Rabu – Ahad<br/>(10.00 pg – 5.00 ptg)</li> </ul>   | ✓                                | ✓      | ✓    | ✓         | ✓    |         |                 |           |
| 9  | <b>Pusat Kitar Semula Taman Tasik Wawasan</b><br>Persiaran Wawasan, Taman Tasik Wawasan<br>Pusat Bandar Puchong, 47100 Puchong<br>Hp: 012-2272625<br>Faks: 03-58917817<br>Hubungi: Pengerusi JKP Zon 20<br>U/p : En. William Chang Yong Hsi<br>E-mel: william@pd.jaring.my | <ul style="list-style-type: none"> <li>Setiap hari (kecuali Jumaat)<br/>(Pagi : 7.00 – 11.00)<br/>(Petang : 4.00 – 7.00)</li> </ul> | ✓                                | ✓      | ✓    | ✓         | ✓    |         |                 |           |

| No | Agensi /Syarikat  | Waktu Operasi   | Barang kitar semula yang diambil |        |      |           |      |         |                 |           |
|----|---|---|----------------------------------|--------|------|-----------|------|---------|-----------------|-----------|
|    |   |   | Plastik                          | Kertas | Kaca | Aluminium | Besi | Pakaian | Sisa elektronik | Lain-lain |
| 10 | <b>Pusat Kitar Semula USJ 1</b><br>Persiaran Subang Permai, USJ 1<br>47600 Subang Jaya<br>Hp: 019-3482806 Faks : 03-80236058<br>Hubungi : Pengerusi JKP Zon 5<br>U/p : En. Kamarudin<br>E-mel: kamarudinrasol@yahoo.com | <ul style="list-style-type: none"> <li>Isnin – Ahad<br/>(8.00 pg – 5.00 ptg)</li> </ul> | ✓                                | ✓      | ✓    | ✓         | ✓    |         |                 |           |

**Lampiran 3**

**Lampiran 3 : Senarai Pihak/ Agensi Yang Terlibat Dalam Kitar Semula**

**Kontraktor**

| No | Agensi /Syarikat   | Barang kitar semula yang diambil |        |      |           |      |         |                 |           | Catatan   |
|----|--|----------------------------------|--------|------|-----------|------|---------|-----------------|-----------|---|
|    |  | Plastik                          | Kertas | Kaca | Aluminium | Besi | Pakaian | Sisa elektronik | Lain-lain |   |
| 1  | <b>ABM Metal</b><br>S/B lot PT 32332 Jln Puchong BT 13<br>47100 Puchong<br>Hp: 012-2296367<br>Hubungi: En.R.Kanna    |                                  |        |      | ✓         | ✓    |         |                 |           | <ul style="list-style-type: none"> <li>Menyediakan pekhidmatan kutipan di pejabat</li> <li>Penghantaran individu terus ke premis adalah diterima</li> </ul>   |
| 2  | <b>Arasu Metal Work</b><br>Lot 3488A Bt 8 Jln Puchong<br>47100 Puchong<br>Hp: 016-2341464<br>Hubungi: En. Maniyarasu |                                  |        |      | ✓         | ✓    |         |                 |           | <ul style="list-style-type: none"> <li>Menyediakan pekhidmatan kutipan di pejabat dan rumah persendirian (kuantiti lebih 100kg)</li> <li>Penghantaran individu terus ke premis adalah diterima</li> </ul> |



| No | Agensi /Syarikat  | Barang kitar semula yang diambil |        |      |           |      |         |                 | Catatan  |
|----|---|----------------------------------|--------|------|-----------|------|---------|-----------------|--|
|    |   | Plastik                          | Kertas | Kaca | Aluminium | Besi | Pakaian | Sisa elektronik |  |
| 9  | <b>Indahirah Enterprise</b><br>11, Jln. Daun Payung 18/11 Seksyen 18<br>40200 Shah Alam<br>Tel: 03-51633554 Faks: 03-55123267<br>Hp: 017-3168312 / 017-6566011<br>Hubungi: En. Ahmad Jaafar | √                                | √      | √    | √         | √    | √       |                 | <ul style="list-style-type: none"> <li>Menyediakan perkhidmatan kutipan ke rumah bagi kuantiti barangan 200kg ke atas</li> </ul> |
| 10 | <b>JBSN Enterprise</b><br>No 43, Jln. Sungai Merbau 32/87, Kemuning Green Ville, Bukit Rimau, 40460 Shah Alam<br>Hp: 012-3186205 / 016-2317652<br>Hubungi: En. Selvam                       | √                                | √      |      | √         | √    |         |                 | <ul style="list-style-type: none"> <li>Menerima dan mengambil barangan dari pejabat dan orang persendirian</li> </ul>            |
| 11 | <b>Katharavayan Metal Sdn Bhd</b><br>No 9 Jln Taman Mawar, 47100 Puchong<br>Hp: 016-2458723<br>Hubungi: En. Kathavarayan  |                                  |        |      | √         | √    |         |                 | <ul style="list-style-type: none"> <li>Menerima barangan dari pejabat dan orang persendirian</li> </ul>                          |
| 12 | <b>Munusamy Metal Trading</b><br>No 7, Jln Taman Kandan, 47100 Puchong<br>Hp: 012-3958478<br>Hubungi: En. Munusamy  |                                  |        |      | √         | √    |         |                 | <ul style="list-style-type: none"> <li>Menerima barangan dari pejabat dan orang persendirian</li> </ul>                          |

| No | Agensi /Syarikat  | Barang kitar semula yang diambil |        |      |           |      |         |                 | Catatan   |
|----|---|----------------------------------|--------|------|-----------|------|---------|-----------------|---|
|    |   | Plastik                          | Kertas | Kaca | Aluminium | Besi | Pakaian | Sisa elektronik |   |
| 13 | <b>Octopus Recycling</b><br>44, Jln 10/152 Taman Perindustrian BT 6 Puchong, 58200 Kuala Lumpur<br>Tel: 03-77850418<br>Faks: 03-77854408<br>Hp: 012-3030436<br>Hubungi: En. Dick Wong<br>E-mel: octopus@sreamyx.com |                                  | √      |      |           |      |         | √               | -   |
| 14 | <b>Perniagaan Besi Jar Sdn Bhd</b><br>Lot 17681 Jln Kelang, Bt 13, 47100 Puchong<br>Tel: 03-80270391<br>Faks: 03-61402168<br>Hp: 012-3739635<br>Hubungi: En. Raja   |                                  |        |      | √         | √    |         |                 | -   |
| 15 | <b>Perniagaan Logam MKD</b><br>Lot 7467C-1 Kg Baru Bt 14, 47100 Puchong<br>Hp: 012-3656553<br>Hubungi: En. Muraly   |                                  |        |      | √         | √    |         |                 | <ul style="list-style-type: none"> <li>Menerima dan mengambil barangan dari pejabat dan orang persendirian</li> </ul> |

| No | Agensi /Syarikat  | Barang kitar semula yang diambil |        |      |           |      |         |                 | Catatan |   |
|----|---|----------------------------------|--------|------|-----------|------|---------|-----------------|---------|---|
|    |   | Plastik                          | Kertas | Kaca | Aluminium | Besi | Pakaian | Sisa elektronik |         | Lain-lain   |
| 16 | <b>Perniagaan Logam Peel</b><br>No A18, Jln TPP 5/2, Taman Industri Puchong,<br>Bt 12, 47100 Puchong<br>Hp: 019-3416478<br>Hubungi: En. Mohan                               |                                  |        |      | √         | √    |         |                 |         | -   |
| 17 | <b>Positive Recycle Industries</b><br>PO Box 25, Batu 12, 47100 Puchong<br>Tel: 03-80684439 Faks: 03-80684439<br>Hp: 019-2194138<br>Hubungi: En. Patrick Goh                | √                                | √      | √    | √         | √    | √       | √               | Perabot | <ul style="list-style-type: none"> <li>Menerima dan mengambil barangan dari pejabat dan orang persendirian</li> </ul> |
| 18 | <b>R.E.C Metal</b><br>Kg Baru Bt 14, 47100 Puchong<br>Hp: 016-6939712<br>Hubungi: En. Rajendran   |                                  |        |      | √         | √    |         |                 |         | <ul style="list-style-type: none"> <li>Menerima dan mengambil barangan dari orang persendirian</li> </ul>             |
| 19 | <b>Reach Eastern Resources Sdn Bhd</b><br>Lot 900 Bt 13 Jalan Klang, 47100 Puchong<br>Tel: 03-80681169 Faks: 03-80681169<br>Hubungi: En. Paramanath<br>E-mel: rer@tm.net.my |                                  |        |      | √         | √    |         |                 |         | <ul style="list-style-type: none"> <li>Menerima dan mengambil barangan dari pejabat dan orang persendirian</li> </ul> |

| No | Agensi /Syarikat  | Barang kitar semula yang diambil |        |      |           |      |         |                 | Catatan |   |
|----|---|----------------------------------|--------|------|-----------|------|---------|-----------------|---------|---|
|    |   | Plastik                          | Kertas | Kaca | Aluminium | Besi | Pakaian | Sisa elektronik |         | Lain-lain   |
| 20 | <b>Recycle Care Trading</b><br>7-2-8 Blok 7, Jln. 2/ 127<br>Happy Garden<br>58200 Kuala Lumpur<br>Hp: 012-3192877<br>Hubungi: En. Kelvin Leong                                |                                  | √      |      |           |      |         |                 |         | -   |
| 21 | <b>S.S.S.K Metal</b><br>Kg Baru Bt 14,<br>47100 Puchong<br>Hp: 019-2132865<br>Hubungi: En. Rajoo  |                                  |        |      | √         | √    |         |                 |         | <ul style="list-style-type: none"> <li>Menerima dan mengambil barangan dari pejabat dan orang persendirian</li> </ul>                 |
| 22 | <b>Saniplus Marketing</b><br>No 8, Jln. Industri 2, Bt 7<br>Bukit Kemuning, Seksyen 34,<br>40470 Shah Alam<br>Tel: 03-51227098<br>Faks: 03-51222176<br>Hubungi: En. Sam Cheah | √                                |        |      |           |      |         |                 |         | <ul style="list-style-type: none"> <li>Mengambil barangan dari pejabat dan orang persendirian jika kuantiti melebihi 1 tan</li> </ul> |

| No | Agensi /Syarikat  | Barang kitar semula yang diambil |        |      |           |      |         |                 | Catatan |  |
|----|---|----------------------------------|--------|------|-----------|------|---------|-----------------|---------|--|
|    |   | Plastik                          | Kertas | Kaca | Aluminium | Besi | Pakaian | Sisa elektronik |         | Lain-lain  |
| 23 | <b>Seng Hiap Metal Sdn Bhd</b><br>Lot 1297, Batu 7, Jln. Bukit Kemuning<br>Seksyen 34, 40470 Shah Alam<br>Tel: 03-51223402<br>Faks: 03-51222976<br>Hubungi: En. Fong Chee Chung<br>E-mel: senghiapmetal@myjaring.net<br>Laman web: www.henghiap.com | √                                | √      |      | √         | √    |         |                 |         | <ul style="list-style-type: none"> <li>• Menyediakan perkhidmatan kutipan di pejabat</li> <li>• Menerima barangan dari orang persendirian</li> </ul> |
| 24 | <b>Sunrise Paper Trading</b><br>98, Jln Kinrara, Tmn Kinrara<br>Batu 7, Jln Puchong, 47100 Puchong<br>Tel: 03-80705907<br>Faks: 03-80761582<br>Hubungi: En. Tong  |                                  |        | √    | √         | √    |         |                 |         | <ul style="list-style-type: none"> <li>• Menerima dan mengambil barangan dari pejabat sahaja</li> </ul>  |
| 25 | <b>Tetuan PSJ Maju Enterprise</b><br>No 167 Taman Sri Puchong, 47100 Puchong<br>Hp: 016-2555486<br>Hubungi: En. Palaniandy  |                                  |        |      | √         | √    |         |                 |         | -  |

| No | Agensi /Syarikat   | Barang kitar semula yang diambil |        |      |           |      |         |                 | Catatan |   |
|----|--|----------------------------------|--------|------|-----------|------|---------|-----------------|---------|---|
|    |  | Plastik                          | Kertas | Kaca | Aluminium | Besi | Pakaian | Sisa elektronik |         | Lain-lain   |
| 26 | <b>Truemax (M) Sdn Bhd</b><br>No 1, Jln. USJ 1/6B, 47620 Subang Jaya<br>Tel: 03-80231304 Faks: 03-80236492<br>Hubungi: Cik Anies Marlina<br>E-mel: truemaxmalaysia@myjaring.com                        | √                                | √      | √    | √         | √    |         |                 |         | <ul style="list-style-type: none"> <li>• Menerima dan mengambil barangan dari pejabat dan orang persendirian</li> </ul> |
| 27 | <b>Upper Matrix Depot Sdn Bhd</b><br>1917 (O), Bt. 7, Jln. Bukit Kemuning Kg. Jawa,<br>42450 Klang<br>Tel: 03-51210882 Faks: 03-51210882<br>Hubungi: En. Vincent Koh<br>E-mel: vincent@uppermatrix.com | √                                |        |      |           |      |         |                 |         | <ul style="list-style-type: none"> <li>• Menerima dan mengambil barangan dari pejabat dan orang persendirian</li> </ul> |
| 28 | <b>VMS Puchong Metal</b><br>No 179 Lot 3488A Bt 8, Jln Puchong<br>47100 Puchong<br>Tel: 03-80764097<br>Hubungi: En. Manivelan  |                                  |        |      | √         | √    |         |                 |         | -   |

**Pekilang**

| No | Agensi /Syarikat  | Barang kitar semula yang diambil |        |      |           |      |         |                 |           | Catatan   |
|----|---|----------------------------------|--------|------|-----------|------|---------|-----------------|-----------|---|
|    |   | Plastik                          | Kertas | Kaca | Aluminium | Besi | Pakaian | Sisa elektronik | Lain-lain |   |
| 1  | <b>Genting Sanyen Industrial Paper Sdn Bhd</b><br>Lot 7090 Mukim Tg. 12 PO Box 206, 42700 Banting<br>Tel: 03-31825066 / 03-77859281<br>Hp: 012-6638987<br>Hubungi: En. Azhar  |                                  | √      |      |           |      |         |                 |           | • Menerima barangan dari pejabat sahaja                               |
| 2  | <b>Global Compound Sdn Bhd</b><br>11, Jln. Sg. Keramat 5 Klang Utama, 42100 Klang<br>Tel: 03-32906636 Faks: 03-32906616<br>Hp: 016-6916036 / 012-3753344<br>Hubungi: En. Mohd Arif Abdullah / En. Fairuz Abd. Aziz<br>E-mel: maba03@tm.net.my | √                                |        |      |           |      |         |                 |           | • Menerima dan mengambil barangan dari pejabat sahaja                 |
| 3  | <b>Jeng Yuan Reclaimed Rubber Sdn Bhd</b><br>Lot 3, Lingkaran Sultan Hishamuddin Kaw. 20, PKNS Industrial Est. Selat Klang Utara, 42000 Port Klang<br>Tel: 03-31762602 Faks: 03-31761045<br>Hubungi: Cik Koh Siew Gun                         |                                  |        |      |           |      |         |                 | Getah     | • Menerima dan mengambil barangan getah dari kilang/ bengkel/ pejabat |

24

| No | Agensi /Syarikat  | Barang kitar semula yang diambil |        |      |           |      |         |                 |           | Catatan |
|----|---|----------------------------------|--------|------|-----------|------|---------|-----------------|-----------|---------|
|    |   | Plastik                          | Kertas | Kaca | Aluminium | Besi | Pakaian | Sisa elektronik | Lain-lain |         |
|    | E-mel: enquiry@jeng-yuan.com<br>Laman web: www.jeng-yuan.com  |                                  |        |      |           |      |         |                 |           |         |
| 4  | <b>Pau Mah Plastic Industries Sdn Bhd</b><br>No 10, Jln. TPP 6/7 Taman Perindustrian Puchong 47100 Puchong<br>Tel: 03-80622268 Faks: 03-80619701<br>Hubungi: En. Teh / Cik. Tey | √                                |        |      |           |      |         |                 |           | -       |
| 5  | <b>Preserve-IT Industries Sdn Bhd</b><br>Lot 10480, Jln. Kebun Nenas, 41000 Klang<br>Tel: 03-51618177 Faks: 03-51618176   | √                                |        |      |           |      |         |                 |           | -       |

25

## NGO

| No | Agensi /Syarikat   | Barang kitar semula yang diambil |        |      |           |      |         |                 | Catatan |  |
|----|--|----------------------------------|--------|------|-----------|------|---------|-----------------|---------|--|
|    |  | Plastik                          | Kertas | Kaca | Aluminium | Besi | Pakaian | Sisa elektronik |         | Lain-lain  |
| 1  | <b>Persatuan Buddha Tzu Chi Merit Malaysia (KL)</b><br>43-45C, 47-49C (tingkat 3),<br>Jln. SS25/2 Taman Bukit Emas,<br>47301 Petaling Jaya<br>Tel: 03-78809048<br>Faks: 03-78808158<br>E-mel: tcmal@po.jaring.my<br>Laman web: www.tzuchimalacca.com | √                                | √      | √    | √         | √    | √       | √               |         | <ul style="list-style-type: none"> <li>Menerima barangan yang dihantar kepada pusat kutipan mereka pada Ahad minggu ke 3 setiap bulan</li> </ul> |
| 2  | <b>Persatuan Buddha Subang Jaya</b><br>Lot 12593, Jln Kewajipan SS 13,<br>47500 Subang Jaya<br>Tel: 03-734 8181 / 03-7315299   |                                  | √      |      |           |      |         |                 |         | <ul style="list-style-type: none"> <li>Menerima dan mengambil barangan dari pejabat dan orang persendirian</li> </ul>                            |

26

| No | Agensi /Syarikat  | Barang kitar semula yang diambil |        |      |           |      |         |                 | Catatan |   |
|----|---|----------------------------------|--------|------|-----------|------|---------|-----------------|---------|---|
|    |   | Plastik                          | Kertas | Kaca | Aluminium | Besi | Pakaian | Sisa elektronik |         | Lain-lain   |
| 3  | <b>Persatuan Kebajikan Xin Phou Moon</b><br>No.11 Jalan Taming 12,<br>Taman Taming Jaya<br>43300 Balakong<br>Tel: 03-8962 3745 / 03-89623746<br>Faks: 03-89623748   | √                                | √      | √    | √         | √    | √       | √               | Perabot | <ul style="list-style-type: none"> <li>Menerima dan mengambil barangan dari pejabat dan orang persendirian</li> </ul>   |
| 4  | <b>Pertubuhan Amal Seri Sinar (NPO)</b><br>23, Jln. Mewah 3/3, Taman Perindustrian HATA<br>Pandan Mewah, 68000 Ampang<br>Tel: 03-42977022 Faks: 03-42979926<br>Hubungi: En. Eadon Ching Ten Song<br>E-mel: ching_bob@yahoo.com<br>Laman web: www.pass.my.diip.net | √                                | √      | √    | √         | √    | √       | √               | Perabot | <ul style="list-style-type: none"> <li>Menerima dan mengambil barangan dari pejabat dan orang persendirian</li> <li>Bagi barangan seperti perabot terpakai hendaklah dihantar sendiri ke premis mereka</li> </ul> |
| 5  | <b>Salvation Army</b><br>No. 30, Jln. TPP 1/12 Taman Industri Puchong, Bt 12<br>47100 Puchong<br>Tel: 03-8061 4757 / 03-80611278<br>Faks: 03-80618235   |                                  | √      | √    | √         | √    | √       | √               | Perabot | <ul style="list-style-type: none"> <li>Menerima dan mengumpul barangan dari pejabat dan orang persendirian</li> </ul>   |

27

| No | Agensi /Syarikat   | Barang kitar semula yang diambil |        |      |           |      |         |                 | Catatan |
|----|--|----------------------------------|--------|------|-----------|------|---------|-----------------|---------|
|    |  | Plastik                          | Kertas | Kaca | Aluminium | Besi | Pakaian | Sisa elektronik |         |
| 6  | <b>Treat Every Environment Special (TREES) Sdn Bhd</b><br>No 22, Lorong SS 23/6A SS23, Taman SEA<br>47400 Petaling Jaya<br>Tel: 03-78805958 Faks: 03-78807977<br>Hubungi: Cik. Leela Panikkar / Pn. Christa Hashim<br>E-mel: trees@pc.jaring.my<br>Laman web: www.trees.org.my | √                                | √      | √    |           |      | √       |                 |         |



Kementerian Perumahan & Kerajaan Tempatan (KPKT)

Japan International Cooperation Agency (JICA)

Majlis Perbandaran Subang Jaya (MPSJ)



**RECYCLING NETWORK UNIT**  
 Majlis Perbandaran Subang Jaya  
 Persiaran Perpaduan, USJ 5  
 47610 Subang Jaya  
 Tel: 03 - 8025 1749  
 Faks: 03 - 8023 7673  
 E-mel: [rmu@mpsji.gov.my](mailto:rmu@mpsji.gov.my)  
 Laman web: [www.rnumpsji.net](http://www.rnumpsji.net)

## APPENDIX 11

ECO-PACK IN MIRI;  
"3R FOR A BETTER TOMORROW"





## Credit Column

The EcoPack is an on-going project under the LA21 Solid Waste Reduction Sub-Committee in Miri. Version 2 (November) of this booklet was updated with the assistance of the Japan International Cooperation Agency (JICA) National Study on Waste Minimisation in Malaysia under the pilot project in Miri. Various inputs were provided notably by Miri City Council and the Natural Resource and Environmental Board Sarawak.

All photographs are provided by Miri City Council with the exception of the following:  
*Images: pages 19, 24 and 32*

Any queries regarding both text content and photographs should be directed to LA21 Officer, Miri City Council.

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Address: Miri City Council, Jalan Kingsway, 98000 Miri, Sarawak, Malaysia.



For A Better Tomorrow



Miri City Council



Miri Local Agenda 21



Ministry of Housing and  
Local Government



Japan International  
Cooperation Agency



November 2005, "3R – For a Better Tomorrow!"

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## Introduction

Hi! If you have a copy of this book...Congratulations! This is your first step towards making Miri the City of sustainable living.

EcoPack is an info-project designed to provide tips, easy to read information and contacts on urban sustainable lifestyle.

Easy to use and fun to read, this booklet will provide you with useful information on the current trend in Miri's municipal waste, on-going solid waste reduction programs and future plans.

It will also provide information and tips on reducing, reusing and recycling at home, in schools, organizations and even in your residential area.

We hope that we provided you with sufficient information to kick-start at healthier, cleaner and sustainable life-style!

In fact, if you have a 3R tip to share, just email or pick up the phone! The LA21 team welcomes contribution from everyone. After all, Local Agenda is all about the community, by the community, for the community! Our contact numbers and address is located at the back page of this booklet!

And if you feel like you want to share this book with your friends, you can download it from the internet at [www.miricouncil.gov.my/la21](http://www.miricouncil.gov.my/la21).

The EcoPack is a project of the LA21 Solid Waste Reduction Sub-Committee. This booklet is updated by Japanese Cooperation Agency (JICA), with input from Miri City Council (MCC), and Natural Resource and Environmental Board (NREB).

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## How to use this book ?

This book is loosely divided into the following categories:

### **Facts on Miri**

This section provides brief information on Miri's current trend in municipal domestic waste, basic landfill awareness, landfill composition and statistics.

### **The Typical Domestic Trash**

This section provides an analysis on the typical Miri municipal domestic trash. It provides suggestions on ways to '3R' your lifestyle.

### **Reduce, Reuse and Recycle**

This section provides more tips and solutions on 3R for specific materials. It also includes some information on do's and don'ts on recycling.

### **Contacts**

This section provides the contact addresses of the recyclers serving Miri, the locations of the 3R bins and collection centres.

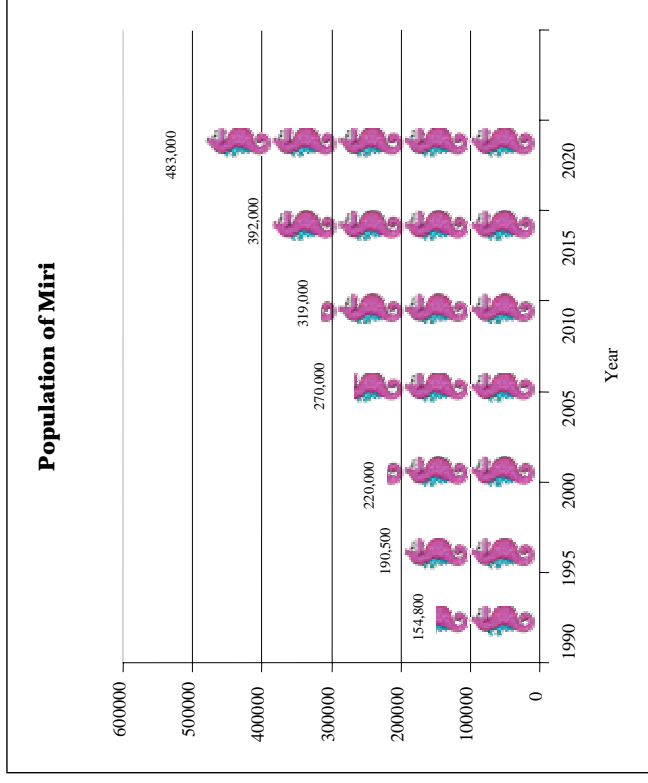
### **What others say:**

"Recycling is a good thing to do; it makes people feel good to do it. The thing I want to emphasize is the vast difference between recycling for the purpose of feeling good



and recycling for the purpose of solving the trash problem.” Barry Commoner, Orion Nature Quarterly, 1990

## Miri' is growing!



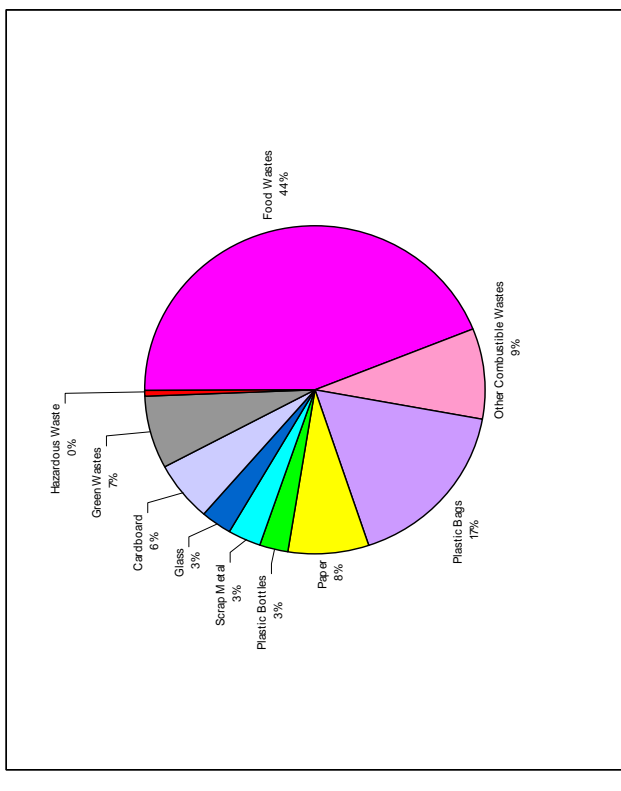
Miri obtained City status on May 2005, with the fast development pace in Miri, Do you know the population of Miri at the moment?

Censuses are done periodically to determine the population of Miri, demographics and other information such as ethnic distribution and urbanization.

The diagram above is the population of Miri during the census years of 1990 until 2020.

From 1990 to 2020, the average annual growth rate was 4.24%. It's like having a baby every 1 and a half hours!

## And what about Miri's waste?



Source: Sustainable Urban Development (SUD) Composition Survey, February 2001  
**Analysis of the composition of residual waste from residential areas (by weight)**

The Miri City Council estimate that around 130 tonnes of waste disposed daily at the landfill. This is equal to the weight to about 130 Proton Wiras! Imagine throwing away 130 Proton Wiras every day!\*

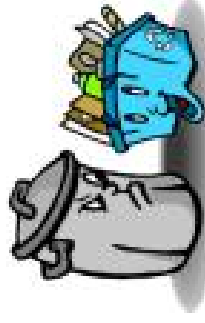
Currently, the council services a population of about 180000\*\* people. This averages to about 0.72 kg of waste products per person.

The diagram above is an estimate of the average domestic trash adopted from SUD survey, February 2001. And it isn't a surprise that 50% of the trash contents are food waste. These include kitchen waste, peels, vegetables and left overs! Paper products make up around 8% of your trash. These are newspapers, junk mail, bills and paper wrappers.

Go and have a look at your trash, use chart to check the composition of your trash.

\*Kerb weight of a Wira is around 975kg. Source: [http://www.proton-wira.co.uk/wira4\\_spec\\_technical.html](http://www.proton-wira.co.uk/wira4_spec_technical.html)

\*\*Some areas of Miri is current not under the services of the Miri City Council yet, hence a serving population which is less than the estimated population of Miri.



### **Landfills in Miri**

The current waste disposal methods in Miri are control tipping in a landfill with occasional covering materials used for capping. It is located at Mile 17, Lutong, Kuala Baram Road at Tudan Kuala Baram.

However, the landfill, nearing the end of its life at 22 years old, so a new one is being built at Sibuti, Subis. This new sanitary landfill will consist of a large tipping cell which has a liner system to prevent leachate from contacting the groundwater. It will also have a 'leachate treatment facility' where leachate will be treated before discharged\*\*

MCC estimates that the amount of waste generated is expected to increase by 10% in the next 5 years to 143 tons per day!

The new waste disposal facility will also include a temporary transfer station at Lambir Mile 8, which will provide facilities for transfer of the solid wastes from Miri to Sibuti. This new facility will be in operation early in 2003.

The future plan for the Sibuti sanitary landfill will include green waste composting, 3R recovery of building waste, sludge treatment and an incinerator for the recovery of energy from construction wood waste.

\*Leachate will be treated to meet DOE/NREB Effluent Standard B. For more information on the effluent, please contact the Miri City Council.

Abbrev:

DOE Department of Environment

NREB Natural Resource and environmental Board of Sarawak

MCC Miri City Council

### **What's in a typical landfill?**

We all know about its most noticeable characteristics: foul smell! But what else?

For a long time, industrial and domestic wastes have been regarded as a cheap land reclamation and landfill material. Some wastes are commonly high in hazardous chemicals and there are now many reports showing that soils derived from these wastes are also enriched with these chemicals. Some of the hazardous chemicals which could be present include:

Toxic Elements: Ozone, White Phosphorous, Halogens (Chlorine, Bromine and Iodine), heavy metals (Cadmium, Lead, Arsenic and elemental Mercury), cyanide, carbon

monoxide, nitrogen oxides, hydrogen halides, asbestos, inorganic phosphorous compounds and inorganic compounds of sulphur.



Lambir Transfer Station



Layout of sanitary landfill in Sibuti

Organic compounds: Alkane hydrocarbon, Alkene and alkyl hydrocarbons, Benzene and aromatic hydrocarbons (Toluene, Naphthalene and polycyclic hydrocarbon).

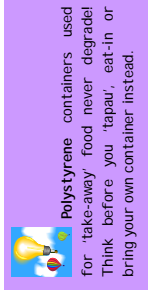
Oxygen containing organic compounds: ethylene and propylene oxides, alcohols, phenols, aldehydes and ketones, carboxylic acids, ethers and esters.

Organohalide pesticides: such as DDT, Aldrin, dieldrin, endrin, chlordane, heptachlor and isodrin.

Source: <http://brec.ozecol.org/news/current/landfill.html>

## Why do we need to bother?

Miri City Council can only help you treat your waste if you dispose of it properly. Even so, the volume of waste will soon exceed the capacity of proper waste treatment. Indiscriminate disposal of your waste will have impact on several aspects of your life.



**The environment:** This is the surrounding area, casual and illegal dumping will cause stresses to the environment which will lead to impacts on **your health**. Waste is ideal home stays for hazardous bacteria. And if waste is left untreated, we will have to treat ourselves. Ironically, this will lead to impacts on **Your Pocket**. Treatments are more expensive then prevention and conservation of the environment.

**So Think before you throw, Think before you buy.**

**What others say:** "We have found the sources of hazardous waste and they are us." US Environmental Protection Agency, booklet, "Everybody's Problem: Hazardous Waste," 1980.

**Now, let's talk about the typical domestic trash....**

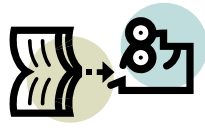
**Do you know why you do what you do?**

50% of home waste is food related, another 21% is contributed by paper. These are common items such as boxed juices, cereal cartons and other packaging materials. Most people are attracted to convenient packaging such as small juice boxes instead of larger economy size containers. Next time, think before you buy. Do you really need that packaging?

**Not! In most urban towns, the common 'forgotten' waste is the cigarette butts. It will take 10-12 years before it degrades!**

### *The flip side...*

In the beginning, there was recycling. The bins were distributed in 3 different colours in several locations; some did a wonderful job of segregating it only to realize that the big trucks that comes by your house do not care to separate them. Some didn't know why pizza boxes should not go into the blue bin. While others moved on with their routine. And now you say 3R again??



*Do you want to know the 'real' story of 3R in Miri so far?*

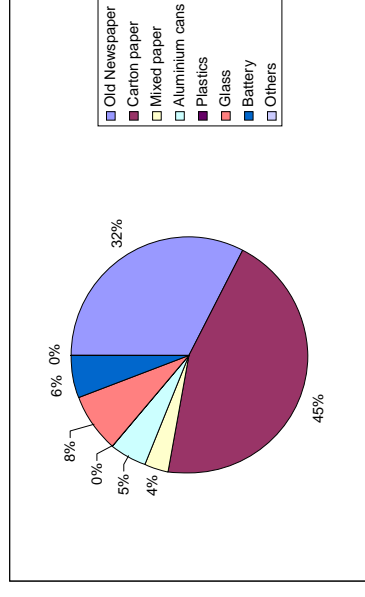
The Real story ...

The trash trucks do not collect your segregated materials. You will need to send them to the appropriate collection centres.

To date, there are about 58 sets of colour coded recycling bins in Miri. The locations of which can be found on the back page of this booklet. These bins were strategically located in schools, major residential areas, places of workshop etc. The 'car-taker' of the bins is required to report the weight of the goods received in categories. Registered recyclers are also required to do the same.

It seems that Miri is heading in the right direction! In addition to the placements of the 3R colour coded bins, MCC and the LA21 committee has also put into place 8 collection centres. These centres are operated by volunteers and proceeds will be used to sustain the operation of the collection centre. 4 of the centres managed by Rukun Tetangga (RT), 2 managed by Buddhist Tzu Chi Association (Krokok 5 and Bulatan Park Collection Centres).

For the year of 2004, the monthly average collections by agent are graphically represented below.



Source: Miri City Council, 2005

A total of 81% (old newspaper, carton and mixed paper) of the collected recyclable materials were paper while others were much as on a weight basis. It can be noted that plastic recycling is hardly happening in Miri in 2004.

### **Plastics/ Rubber/ Glass**

Interestingly, plastics and glass materials make up 22.8% of your trash. This is equal to about 30 tons of potentially recyclable materials disposed in the landfill daily!

### **Paper**

Despite a whopping success in paper based collection, 13.5% still escapes the recyclers. This is equivalent to 18 tons daily! If this is recovered and sold to the recyclers, it is potentially revenue of about RM540 a day! That's RM16, 000 a month!\*. Talk about 'filthy' rich! So, it seems that almost every category in your trash is recyclable. Food and wood wastes can be composted into fertilizers which would reduce the dependency on chemical fertilizers. Metals can be collected and sold as scrap metal.

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### Let's find out how we can do better...

- Figures are derived by using the resale value cost of carton paper at RM0.03/kg. And estimated daily waste disposal of 130 tons at the Kuala Baram Landfill.

## Reduce, Reuse and Recycle

ENVIRONMENTALISTS were it like a red flag, warning of doom and gloom if it is not practiced. Academicians use it to explain how we can ensure the survival of the human race for generations to come. Politicians use it like a platitude to assure the people of their good intentions. Even corporations are getting in on the act, claiming that all their projects support the concept. What are they talking about?

**Yes, you got it! Reduce, Reuse and Recycle. Simply put, it is using things differently that will still provide the same results.**

We all know this, learning it, reading this booklet and hearing it every day is one thing but **DOING it another!** It requires a whole new reason for changing something with which you are already familiar.

You see, you need a reason for everything right? Some do it for the extra income, for some it's their job, for others it's their passion for the environment whilst to some, it's a good way to get together and do something useful. Find what your reason is ... there's always one!

### What others say:

*"Recycling is a good thing to do. It makes people feel good to do it.*

*The thing I want to emphasize is the vast difference between recycling for the purpose of feeling good and recycling for the purpose of solving the trash problem." Barry Commoner, Orion Nature Quarterly, 1990*



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### 3R is not impossible! Reducing is easy

If this seems like a lot of work, don't despair—it doesn't have to be painful. Reducing waste is very economical, so people who are trying to save money are naturally reducing waste as well. SO, what are you waiting for? Read on for tips!

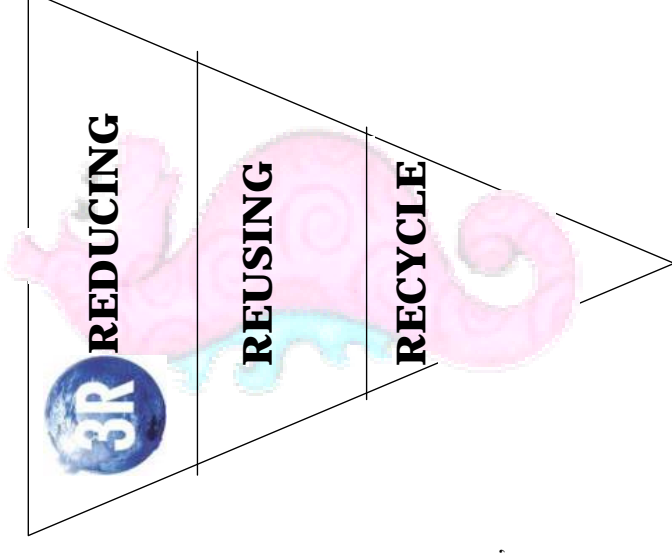
#### Reduce it-Don't lose it

Reducing is very economical too, not to mention earth friendly. Finding a new use for an item can be as simple as placing it in a charity sale for someone else to use. With a little creativity and practice, you will see new uses in more and more items. Some ideas to get you started:

- Give away or swap items you don't need
- Buy reusable products and avoid single-use items
- Reuse bags, boxes, paper and other items
- Borrow, rent or share things you use infrequently

#### Recycle the rest!

**Oh yes. Find out how we can all do our bit for the environment.**



## Let's start with PAPER

All coloured and non-coloured paper, newspaper, magazines, books, paper scraps, telephone books, catalogues, pamphlets, calendars, cards, envelopes, and carton boxes are recyclable. All paper items go into the **BLUE** recycling bin.

### However...these cannot be recycled:

- Hardcover books
- Milk cartons
- Plastic and wax paper
- Frozen food container
- Carbon paper
- Disposable diapers
- Pizza boxes or anything soiled with grease and/ or food waste
- Paper plates
- Facial or bathroom tissue
- Paper towels
- Soiled paper and food wraps

### Reduce excess paper at home

A good portion of what you throw in the garbage each day is paper. Much of the paper generated in our homes comes in the mail. Take action to reduce the amount of unwanted mail. **Benefits:** Recycling junk mail is okay, but reducing the flow of junk mail will conserve natural resources, save landfill space, and save you time and money.

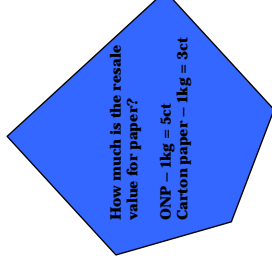
### Reduce packaging!

Reduce the amount of packaging by purchasing concentrates and diluting them with water in reusable containers. Avoid single-serving products in favor of larger serving or buying in bulk. Take your own reusable cloth bag so you don't need the plastic bags.

**Benefits:** Over-packaged products often cost more than less-packaged products. This means that you can save money when buying products with less packaging.

### More paper tips!

- Reduce paper waste. Use reusable gift bags, the comics section from newspapers or magazines to wrap gifts
- Email your holiday letters instead of cards
- Cut the covers off of old greeting cards for use as gift tags.
- Do you receive catalogs you don't want? Call the editor/ company or email to them! Take action!
- Try to consider the recyclability of a product before you purchase it



### Remember not to mix any soiled paper in the blue bins!

### PLASTIC, PLASTIC!

All coloured and non-coloured plastics such as: shopping bags, supermarket bags, plastic drink bottles, plastic mineral water bottles, plastic food containers, detergent containers and vitamin containers can be recycled. Plastic items go into the **ORANGE** recycling bin.

### However...these cannot be recycled:

- Any plastic container that is not a bottle, such as yogurt containers, margarine tubs and microwave food trays
- Plastic food trays
- Plastic bottles that have contained motor oil,

- Pesticides or other hazardous materials
- Styrofoam

Do not throw every piece of plastic material away. Some of them can be recycled. Check to see which normally on the back of bottles and containers indicate that they are recyclable.

Normally recyclable plastics will have letters next to the recycling symbol. These indicate what type of plastic it is. Read on to find out what they are!

### **Types of plastics used**

There are many types of plastic. Plastic must be sorted by type for recycling since each type melts at a different temperature. The plastics industry has developed identification codes to label different types of plastic. They are:

#### **Plastic #1: Polyethylene Terephthalate (PETE)**

Common uses: Soda bottles, cooking oil bottles. This is the most widely recycled plastic. Many recycling centre request that you remove the caps and flatten the bottles.

#### **Plastic #2: High Density Polyethylene (HDPE)**

Common uses: Detergent bottles, grocery bags.

#### **Plastic #3: Polyvinyl Chloride (PVC)**

Common uses: Plastic pipes, outdoor furniture, water bottles. Recycling centre almost never take #3 plastic.

#### **Plastic #4: Low Density Polyethylene (LDPE)**

Common uses: Dry cleaning bags, trash can liners, food storage containers.

#### **Plastic #5: Polypropylene**

Common uses: Aerosol caps., drinking straws. Recycling centre almost never take #5 plastic.

#### **Plastic #6: Polystyrene (PS)**

Common uses: Packaging pellets or “Styrofoam peanuts,” cups, plastic tableware, meat trays. Many shipping/ packaging stores will accept polystyrene peanuts and other packaging materials for reuse.



#### **Plastic #7: Other**

Common uses: Certain kinds of food containers and Tupperware

### **...more on plastics...**

TAPAU anyone? What about instants? Think before you do...

Officials of the National Institute of Health Sciences in Japan were cited as saying the polystyrene containers commonly used in the packaging of instant noodles and fresh foods in supermarket have been found to contain toxic substances known to disrupt the reproductive functions of animals and humans.

The story says the substances, grouped under the term “environmental hormones.” May contaminate food through absorption. The chemicals, which mimic hormones, are styrene polymers called styrene dimmer and styrene trimer.

Source: <http://www.mindfully.org/Pesticide/PolystyreneContainers-EDs.htm>



### **More tips:**

- Empty plastic liners from cereal boxes make good freezer bags or wax paper. Use for lunch bags also

- Many local packaging/ mailing stores accept Styrofoam peanuts for recycling. Call stores in your area to see if they offer these services
- Reuse your plastic bags for shopping. Or better still, refuse plastic bags. And use cloth bags. And use cloth bags instead!

### Having some problems with **PLASTIC** collection?

If you are having problems looking for plastic vendors to collect your plastic waste, don't despair call MCC at 085-421812 or 433501 ext 250, the public Services Section.

### ALUMINIUM Cans go Orange too

All types of aluminium and steel cans like drink cans and food cans are recyclable. These also go into the **ORANGE** recycling bin.

What happens to these cans?

Old aluminium is collected from the recycling bins.

Used cans are sorted and consolidated, then crushed for easy transportation to a recycling centre.

Old aluminium is then melted down to remove all contamination and convert the old aluminium into new products such as new cans. Recycling aluminium saves a lot of energy than recycling other materials, like paper. Excessive energy is used to dig up or mine bauxite (aluminium ore) and process it into aluminium. It's simpler to just melt down used cans.

### However...these cannot be recycled:

- Aerosol cans
- Solvent cans
- Paint cans
- Hangers
- Medical wastes or needles

- Oil filters

### AND GLASS

All coloured and clear glass, including drink bottles, food containers, vitamin bottles and cosmetic jars can be recycled. Glass goes into the **BROWN** recycling bin.

### The advantage of glass

Glass is 100% recyclable – it can be recycled indefinitely to make new glass. The glass recycled in a jam jar today can be a juice bottle next month, then a coffee jar, a milk bottle, and on forever.

**Here is something for you to do. See if you can spot the 'Not' in the picture above! The answer is at the bottom of this page.\***

Answer:

Of the 3 item (a mineral water plastic bottle, a glass bottle and a clear plastic food container) only one should go in the brown bin. The centre bottle is made of glass. The rest are plastics which should go into Orange bin. Be mindful of the materials you put in. know your colours.

### Nevertheless there are still restrictions...

Such glass cannot be recycled because it contains other materials that are unfortunately not recyclable. The following lists some of the common items:

- Ceramics
- Drinking glasses
- Window glass
- Mirrors
- Light bulbs

- Broken window and windscreen glass
- Heat treated glass e.g. Pyrex, Corning Ware, Vision Ware
- White opaque bottles
- Laboratory or medical glass
- Window glass, light bulbs, mirror glass, broken crockery, ovenproof glass or lab ware, drinking glasses, crystal ware, or any porcelain, ceramics, pottery, fluorescent light tube.

**What others say:**

(Upon signing of the Wilderness Act, 1964) "If future generations are to remember us with gratitude rather than contempt, we must leave them more than the miracles of technology. We must leave them a glimpse of the world as it was in the beginning, not just after we got through with it." – President Lyndon B. Johnson

**But wait...what must I know BEFORE selling the materials I collect?**

**QUANTITY CONSIDERATIONS**

Obtaining sufficient quantities of recyclables is important because vendors cannot always afford to handle and transport small amounts of material. The marketing potential of your recyclables can be improved if you cooperate with neighbouring businesses that generate the same types of materials.

**QUALITY CONSIDERATIONS**

The second key to selling recyclable materials is meeting the quality requirements. Quality refers to the extent to which the materials are clean, consistent, and contaminant-free. Your program should stress the important of minimizing contamination and collecting high-quality recyclables.

(Refer to Recycle Websites: <http://www.kitarsemula.com> for more info)

**So...what about composting?**

Recycling Paper, Plastics, Cans and Glass will help you tackle 39% of your trash contents. However, more can be done! About 55% of our trash contents can potentially be composed. If you have a backyard garden, making a home-made composting pit is easy!



**How to compost?**

It is the most economical way to reduce the amount of organic waste materials deposited at landfills while preserving the natural resources

**What is Compost?**

It is a natural way of recycling by returning vital nutrients contained in plant and animal material to the soil. Compost is the end product to decomposed organic material such as food, scraps, grass clippings, leaves and wood and brush chips.

**Benefits of compost**

- Lower the cost of waste disposal
- Saves money on fertilizers and garden supplies
- Reduce the frequency of watering your plants/ garden and thereby lower the water bill. Soil mixed with compost retains water better than regular soil, and
- Improves the soil structure and promotes healthy plant growth

**Compost Recipes**

Ingredients: Mixed yard trimmings, leftover food stuff and water.

Directions: Put mixed yard trimmings in a bin or pile. Add water as needed. Mix in food scraps and other materials generated.

Turn the pile or bin every 3-4 days, alternating brown and green material. Shred the materials where possible.



Prepare For Use: After 6-8 weeks, most of the material at the bottom of the pile or bin will become dark, rich sweet smelling soil. Sift or sort out large under composed materials. The rich soil is ready to be served to yard or garden.

### Using the Matured Compost

The compost is ready for use, when it is dark and crumbly with most of the original identity of the materials lost. Generally, the waste will be reduced to 60-70% its original volume.

### How do you use it?

Mix it with the earth before planting flower and vegetables; or use it as a mulch or top dressing around plants and trees to help retain moisture. It can also be used to smother weeds and prevent soil compaction!

### Or you can bag it up for sale!

The matured compost is available for sale to interested parties especially those involved in activities such as organic gardening, home gardening and horticulture. Matured compost will have its value of about RM15 for every 25 kg.

Source: Natural Resource and Environmental Board (NREB). For more information on uses of compost and other tips, give them a call or contact MCC with your list of queries!

### I want to do more!

#### Where do I begin!?: And How??:

Now, you know about paper, plastics, glass, cans and even composting. And you also know that there is an advantage in volume. You can consider storing the recyclables in your home before you drive to the nearest 3R bins or collection centres but the fuel you use will soon outweigh any benefits, to you (cost more money on fuel) and the environment (more emissions from the cars)!

#### So why not start a recycling program?

The next few chapters will provide you tips on how you can start your own program in your organization, in your community and in your school.

## RECYCLING IN MY ORGANIZATION

### Obtain Management Support

The first step in planning a collection program is to gain the support of top management. An enthusiastic recycling coordinator should be appointed. That person will need to work with individuals responsible for facilities management, materials handling, transportation, and procurement, as well as with vendors, contractors, employees, and the public.

### Form a Team



Many companies have found that forming a waste reduction team helps to ensure a successful program. This team will plan, implement, and manage the program. Certain key employees should be enlisted. For example, cleaning staff should be involved in creating the collection system, since they are involved in waste management and will be relied on to implement important aspects of the program.

### **Know Your Waste**

When determining what to collect, it is important to know what waste your company generates. The best way to determine this is to conduct a “waste assessment.” A waste assessment provides data that can be used to establish waste reduction and recycling goals and to monitor progress.



### **HOW DO I INVOLVE, EDUCATE, AND MOTIVATE EMPLOYEES?**

- Employee involvement, education, and motivation are critical to the success of your entire waste reduction programme. Employee education and programme promotion will be ongoing component of your recycling program, so plan and budget accordingly.
  - At the start of the programme, send a memo from senior management announcing the recycling program and requesting the involvement of all employees. The memo might encourage employees to volunteer to become members of the waste reduction team. Involving employees at the planning stage will give them a sense of ownership, making it more likely that they will support the programme

- Obtain feedback from employees. When setting up a collection programme, involve employees who work in production areas where materials will be recovered for recycling. They are already familiar with the manufacturing process and might have ideas about how to most successfully collect recyclable materials. It is also important to teach employees how to properly participate in recycling by providing simple and concise information on what to do
  - Employees must also be encouraged to participate on a regular basis. Employees will be more likely to participate enthusiastically if they understand the benefits of waste reduction and recycling, both for the company and for the environment. Ways to keep employees involved and interested include giving them feedback on program successes and having an awards program.

## **RECYCLING IN MY COMMUNITY**

- The first thing you need to consider is space. A Community centre is usually used to collect and reuse or recycle the old and useable things such as old cloth, toys, second hand books etc....
- Of course, you need to form a committee first
- You may want to provide different containers to collect and recycle the waste eg. Batteries, papers, Plastics, and glass bottles
- Try collaboration with a recycler to collect your materials
- Encourage segregation of garden waste and uncooked kitchen waste from normal household waste in order to do composting in your backyard
- Programs on 3R awareness and an education program can be discussed. These will help inculcate the habit for ‘not buying extra things if not necessary’
- Or organize a competition in collecting and recycling the potential recyclable waste like old newspaper
- Ask MCC or the LA21 Solid Waste Reduction Team to help you with the awareness programs, we’re always there to help!

Remember, a recycling program is a collective effort. Work as a team and you will get a more satisfying outcome. Why not courage other activities in your community centre such as dancing lessons?



## RECYCLING IN MY SCHOOL

These tips are more suited for teachers; however, if you are a student, discuss this with your teacher.

Successful program planning includes (1) appointing a recycling coordinator, (2) assembling a task force, (3) conducting a preliminary waste audit, (4) researching available markers, (5) developing a collection method, (6) revising procurement policies, and (7) developing an education program.

**RECYCLING COORDINATOR** The coordinator administers the overall program. To ensure program stability and continuity, the coordinator should be a permanent employee. This function should **NOT** be assigned as a student project. Coordinator's duties should be included in their job descriptions.

**TASK FORCE** The primary function of the task force is to assist the coordinator in developing the initial program; however, it can become a permanent advisory body. Task force members should represent: (1) **CUSTODIAL STAFF** experienced in trash removal, to offer practical guidance; (2) **ADMINISTRATIVE STAFF**, to ensure top-level support and participation incentives; (3) **TEACHERS**, to develop motivation techniques and an educational program; and (4) **STUDENTS**, to provide peer leadership.

**WASTE AUDIT** Planning begins with a waste audit to determine waste composition and volume; the point of origin; what portion could be recycled, re-used, reduced or eliminated; and what recyclable/ reusable materials could be substituted for materials currently in use.

**AVAILABLE MARKETS** Recyclable materials are marketed by collectors through brokers, intermediate processors, or end users.

**COLLECTION** In developing a collection system, the main points to consider are containers, a central storage area, personnel, and materials preparation. The central storage area should be clean, dry and free of fire hazards. If located outside, covered storage bins are necessary to prevent litter and protect quality.

If marketing requirements include materials preparation such as crushing or burling, consider further staffing requirements. Remember, maintaining good quality is essential for ensuring that the materials are marketable and for obtaining the highest price possible.

## EDUCATIONAL PROGRAM

- The task force should design an ongoing educational program to inform staff and students about the program, program goals, and the value of waste reduction and recycling. This could include an initial assembly; newspaper or newsletter articles; signs, posters and fliers, possibly designed by students as contest submissions; and incorporating waste reduction and recycling activities in lesson plans, such as a math class calculating the amount of waste generated before and after program implementation. This information can be used as a classroom exercise to determine the amount of waste diverted from the landfill.

Why not find out about the PALs Club (Pencipta Alam Sekitar) from the Natural Resources and Environmental Board? It offers RM500 launching grant for primary schools and RM1000 for secondary schools! Kick start your club now!

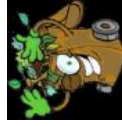
## What can MCC do for you?



MCC can help you with the following:

Provide recycle bins, provide construction advice on collection centres, identify recyclers information on 3R and provide efficient scavenging service.

**Do you know that MCC can also help you with the disposal of bulky or garden waste?**



For a minima fee of RM20, you can be assured that the waste is disposed of properly. Call 085-421812 or 433501 etx. 250\*.

Indiscriminate disposal of waste can lead to several social issues, so if you happen to suspect illegal waste dumping...CALL 421812. Note down any particulars that will help identify the culprit and take note of the location.

**Lets work together to create a better place, a better home. In fact, let MCC or LA21 Solid Waste Reduction Group know what they can do for you!**

\* The Public Service Department is located at the ground floor of the MCC multistory car park. The Solid Waste Reduction Group can be contacted via the MCC, look for the LA21 officer or coordinator.

## Location of 3R bins

### A. Schools

- 1 SK Anchi
- 2 SMK Merbau
- 3 SK Pendidikan Khas
- 4 SK Jalan Bintang
- 5 SK Pujut Corner
- 6 SK Pulau Melayu
- 7 SMK Luak Miri
- 8 SK Kampung Luak
- 9 SJK Tukau Miri
- 10 SK Temenggok Datuk Muip
- 11 SJK Chung Hua Bakam
- 12 SK Kampung Bakam
- 13 SK South
- 14 SK Tudan
- 15 SK Lambir Village
- 16 SK Riam Batu Dua
- 17 Tadika Sri Indah
- 18 Curtin University of Technology
- 19 Tadika Krokop
- 20 SMK Taman Tunku
- 21 SR Sri Mawar
- 22 Maktab Pengurusan Sarawak Miri
- 23 Pei Ming Middle School
- 24 SJK Chung San Riam
- 25 SJK Chung Hua Lutong
- 26 SK Lutong Miri
- 27 SJK Chung Hua Krokop
- 28 SJK Chung Hua Miri
- 29 SMK Baru
- 30 Riam Road Middle School
- 31 SK Agama (MIS) Miri
- 32 SM Teknik
- 33 SJK North
- 34 SK St. Columba
- 35 SRK St. Joseph
- 36 SMK Agama
- 37 SMK Lopeng
- 38 SMK Dato Permaisuri
- 39 SMK Lutong

### B. Hotels

- 45 Marriott Hotel
- 46 Park City Hotel

### C. Service Station

- 47 Kiat Siang Service Station

### D. Shopping Complex

- 48 M<sup>2</sup> Supermarket
- 49 Bintang Plaza
- 50 Boulevard Shopping Complex

### E. Place of Worship

- 50 Mei Ann Methodist Church

### F. NGO

- 51 Miri Bahat Community
- 52 Malaysia Red Crescent Society

### G. Government Department

- 52 Pustaka Miri

### H. Private Company

- 53 Nippon Oil Exploration (M) Ltd.
- 54 Pusat Bahasa Titian Jaya (Miri) S/B
- 55 SESCO
- 56 Sarawak SHELL Berhad
- 57 Miri Salam Jaya Sdn Bhd

- 40 SMK Riam
- 41 SMB St. Columba
- 42 SMB Chung Hua
- 43 Kolej TDT Haji Bujang
- 44 SM Sains

## Location of collection centre

1. Krokop 5
2. Krokop 10
3. Bulatan Park
4. Car Park Building
5. Lutong Town
6. Permy Jaya
7. Piasau Phase 2
8. Pujut 1B
9. Taman Tunku
10. Senadin



## List of Recycler in Miri



### Plastic



1. **Syabas Synergy Sdn. Bhd.**  
Lot 6325, Desa Lutong Industrial Estate, Lutong Baru, 98100 Lutong  
Tel: 085-420327 (Mr. Lau Khia Ning)

### Paper



2. **3R Enterprise**  
Lot 2511, Jalan Pujut Corner, 98000 Miri  
Tel: 085-472490 (Madam Lee/ Ms. Chua)

### Others

*Scraps iron / Aluminium can / copper / brass / alloy / lead / engine / computer*

3. **Wili Trading**  
Jalan Piasau Utara, Piasau Industrial Estate, 98007 Miri  
Tel: 085-655321 (Mr. Lim Kia Siang)

*Scraps metal / Aluminium can / battery*

4. **K. S. Metal (Miri) Sdn. Bhd.**  
Lot 104, Jalan Lutong, Kuala Baram, Baram Road, KM 1, 98100 Miri  
Tel: 085-427843 (Mr. Peter Lau)

5. **Rajawali Trading**

Lot 1327, Batu 5, Jalan Miri – Bintulu, 98000 Miri  
Tel: 085-422668 (Mr. Tan Haw Swee)

*Scrap metal*

6. **Ting's Metal Enterprise**  
Lot 1548, Block 3, Piasau Jaya, Industrial Estate  
Tel: 085-651755  
*Aluminium can / Battery*



**7. Chai Trading**

Lot 162, Brooke Road, 98000 Miri  
Tel: 012-8755330 (Mr. Chai)

*Scraps metal / old newspaper / glass bottle / Aluminium can*

**8. Eng Wei Trading**

Lot 944, Taman Tunku, 98000 Miri  
Tel: 085-612836 (Mr. Soon Eng Wei)

**9. Yong Teck Sin Scrap Metal Trading Company**

Lot 757, Lorong 9, Jalan Krokop, 98000 Miri  
Tel: 016-8716656

*Aluminium and glass*

**10. Lambir Distillery Sdn. Bhd.**

Lot 2899, Block 5, Taman Tunku Industrial Estate, 98000 Miri  
Tel: 085-616850 (Mr. Kong Hien Piaw)

*Aluminium can / scraps metal*

**11. Insan Pali**

Pujjut Lutong  
Tel: 085-658078

*Aluminium can / copper wire*

**12. Thomas Chua**

Lot 9899, Jalan Jade 3, Bumiko  
Tel: 016-8729823

*Scraps metal / Copper / Alloy / Aluminium can / Battery*

**13. Choon Sen Enterprise**

P.M.M. Box 317, Wakil Pos Mini Morsjaya, 98000 Miri  
Tel: 085-424351 / 019-8155665 (Mr. Chong Choon Sen)

**14. Malai Trading**

Long Seridan, Mile 4 Riam Road, 98000 Miri  
Tel: 085-617787

*Aluminium can / plastic / all paper / glass / old cloth / old furniture.....*

**15. Buddhist Tzu-Chi Merit Society Malaysia (Miri)**

Lot 1279, 2<sup>nd</sup> Floor, Centre Point Commercial, Jalan Melayu, 98000 Miri  
Tel: 085-419753 (Madam Sim Kim Lian)

## Conclusion

This is the end of the second series of the EcoPack. In summary, it covers the brief information of the growing needs of Miri population and its projection in the next 5 years.

It also has information on the current recyclable materials collected by vendors in Miri.

We also learnt that 50% of our trash at home consists of food waste which can be composted into fertilizer.

In fact, every category in our trash can be recycled, reduced or reused!



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## Think Beyond Recycling!

Be creative and find more uses of things which would otherwise be thrown away on first use. Try something different, or explore new products that would help reduce your waste.

Consider these few last tips:

- When taking photos, use 36-frame rolls, this reduces waste by 67% over using 12 frames. Better still go digital!
- Consider car pooling to save fuel and reduce emission
- Try rechargeable batteries instead
- And refuse those plastic bags when you're out shopping. Bring your own cloth bag instead!

That's it! Good luck in your first steps to a sustainable lifestyle!

## From the Solid Waste Reduction Group, "The Waste Busters"

Local Agenda 21, Miri

The Solid Waste Reduction Team welcomes all contribution to future updates of the EcoPack, solid waste reduction proposals, tips, solutions and new members! Contact us via the Miri City Council at 085-433501 and ask for the LA21 officer!

*"Earth provides enough to satisfy every man's need, but not every man's greed."*  
*Mohandas K Gandhi quoted in EF Schumacher, Small is Beautiful.*

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## What is Agenda 21?

A global action plan for sustainable development in the 21<sup>st</sup> century after a gathering by heads of state in Rio de Janeiro for the United Nations Summit in 1992. It is a program for the 21<sup>st</sup> century for local communities and local authorities to work together for a sustainable community and environment in their local areas. At the local level, a Local Agenda 21 program involves the formation of partnerships among the local people, local organizations (CBOs), NGOs, the private sector (business & industry) and local government (with the different agencies and departments) to jointly develop a local action plan that addresses the local needs and problems of their area.

## Local Agenda 21 Pilot Program Miri (2000-2002)

Miri is one of the four pilot project sites in this Malaysian LA21 program. Miri City Council, as the local authority is the implementing agency of the Local Agenda 21 Pilot Program in Miri.

## Local Agenda 21 Pilot Program Malaysia (2000-2002)

In late 1999 the Government of Malaysia commenced on a 2-year pilot program establish the Local Agenda 21 process at the local government level. This pilot program aims at promoting sustainable development at the local government level by creating and strengthening participation between local authorities and local communities and other stakeholders.

