

Establishing Zero Waste Communities

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Kawasaki Business Forum
February 2014*



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CHANGING THE RULES

By-Laws & Regulations

1. Source Separation By-laws
2. Waste Generator Pays Principle

(a) to encourage and facilitate the maximum recycling practicable on the part of each and every household, business, apartment complex, industry, and institution within State of Penang;

(b) to establish, implement, and enforce minimum recycling-related practices and procedures to be applicable to all Waste Generators, Waste Haulers/Recyclable Collectors, and Materials Recovery Facilities/Recycling Facilities located within municipality; and

(c) to require onsite Source Separation by each and every Waste Generator within Penang Island Municipal Council and the Seberang Perai Municipal Council and to ensure that those Recyclable Materials that are Source Separated are recycled properly and kept separate from Solid Waste.

- MSW
 - Paper / paper products
 - Plastics
 - Metals
 - Glass
 - Organic Waste
- Organic Waste
 - Green Waste
 - Food waste
 - Animal Waste
 - Carcass
 - Dung
- E-waste
- C&D
 - Excavation waste / marine clay
 - Broken Glass
 - Wood
 - Concrete
 - Metal
 - Other Organic waste
 - Other Mixed Waste

Stakeholders

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- Domestic
 - Highrise
 - Kampung
 - Landed
- Institutional
 - Schools
 - Universities /Colleges
 - Hospitals
 - Government
- Industrial
- Commercial
 - Shoplots
 - Hotels / Inns / Guest Houses etc
 - Restaurants
 - Food Courts / Hawkers
- Centres
 - Markets
 - Farms
 - Turf Club
 - Others
- Recycling Business
 - Collectors
 - NGOs
 - CBOs
 - Schools
 - Other collectors
 - Traders
 - Processors
 - Convertors

WASTE GENERATOR PAYS PRINCIPLE

Proposed Mechanism for
Final Disposal of Commercial &
Industrial Waste

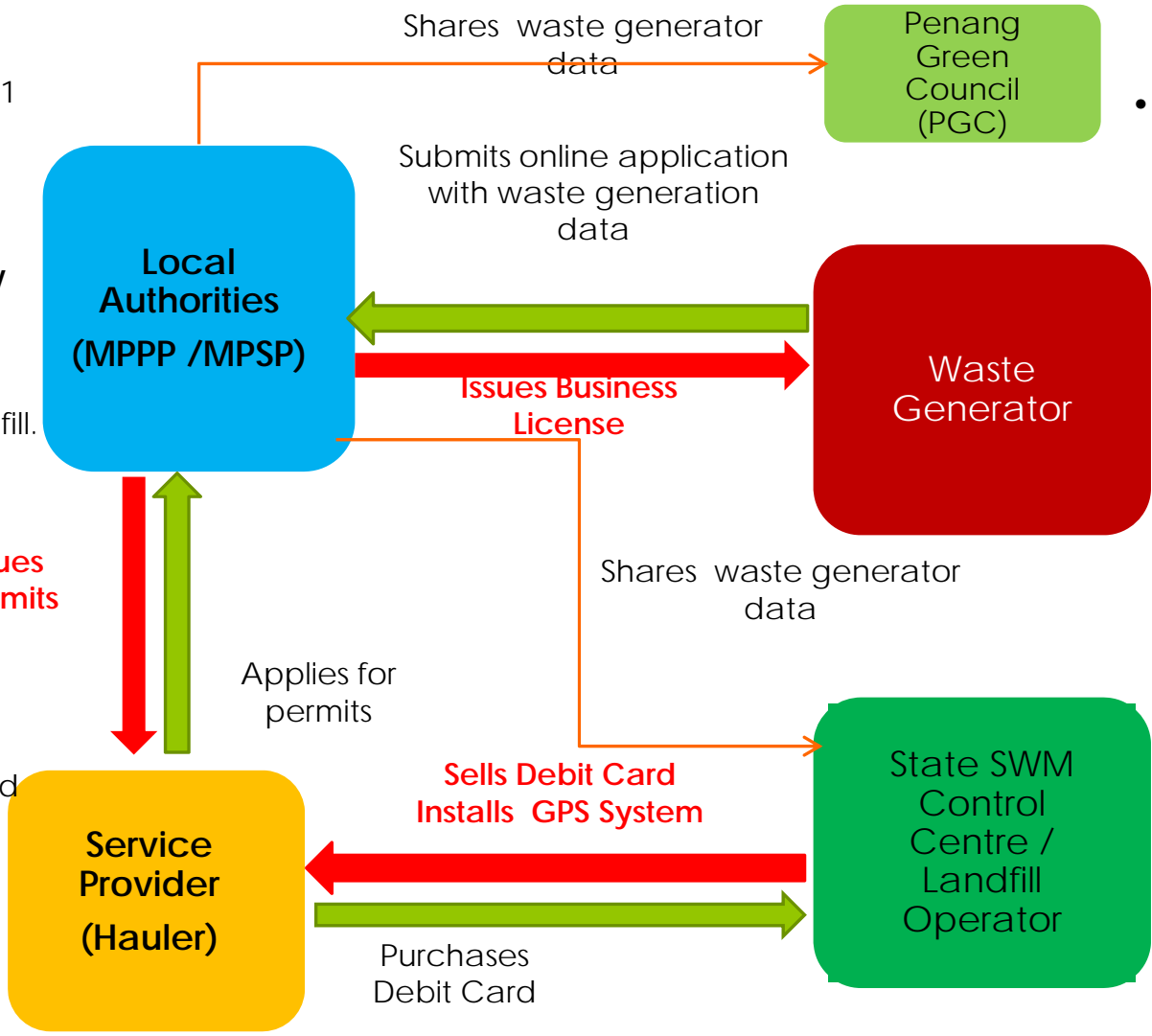
OBJECTIVES

1. Document and set up a database on the quantity and types of waste from the Commercial & Industrial sector at the landfill.
2. Monitor the proper disposal of such waste to curb illegal dumping from the Commercial & Industrial sector.
3. Provide a mechanism for the local authorities to implement the “generators pay principle” where waste generators will bear the cost of final disposal instead of the local authorities saving the costs of Solid Waste Management.

1. Save SWM final disposal costs
2. Income from issuance of permits
3. Additional income from tipping fees
4. Leverage on private sector to collect data for Commercial & Industrial database
5. Cost of GPS monitoring and tracking system borne and operated by private sector
6. Private sector to monitor illegal dumping of Commercial & Industrial waste.

FUNCTIONAL RELATIONSHIPS BETWEEN STAKEHOLDERS

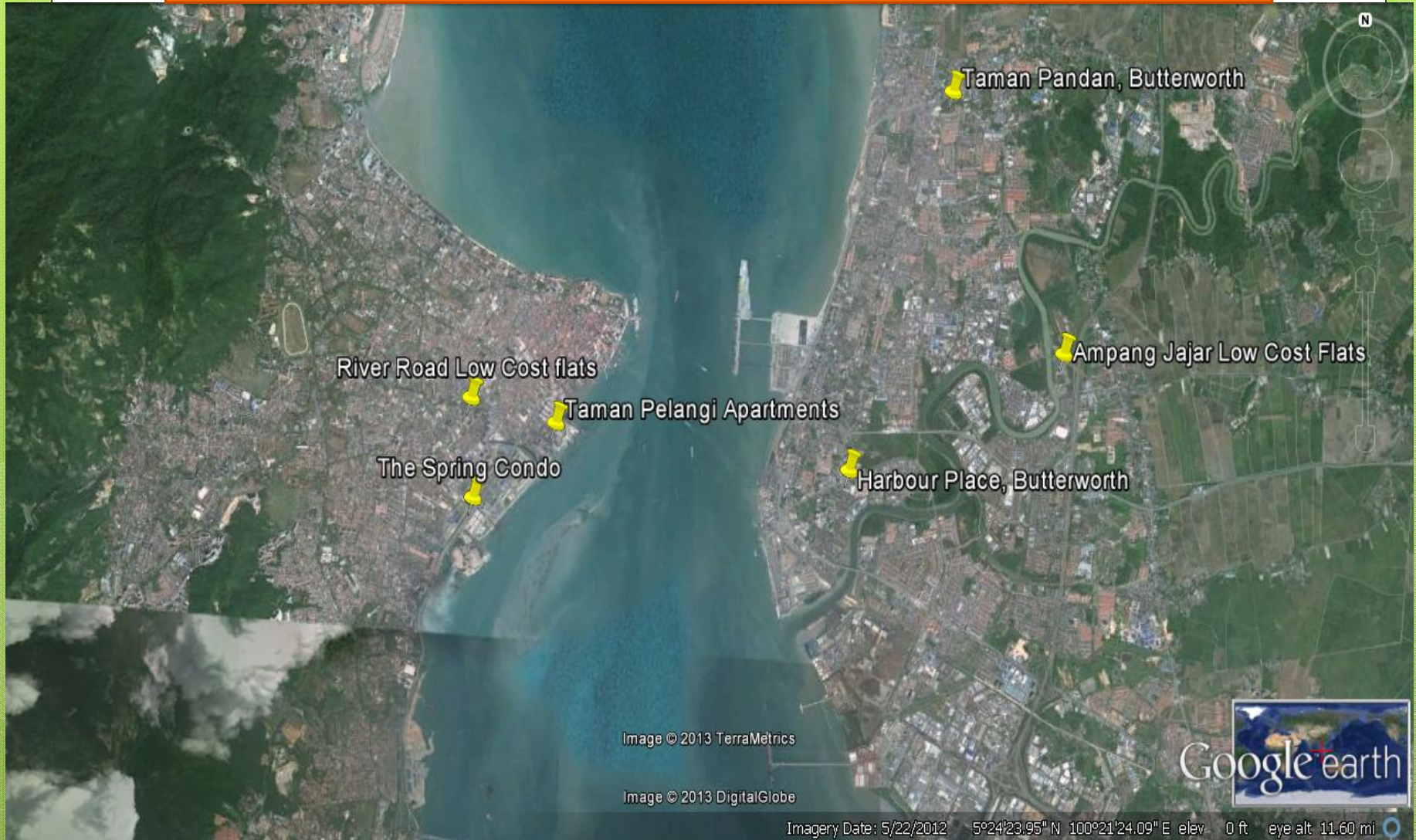
- Approves & Issues permits to hauler on per track basis (Min: 1 mth; Max: 1 yr)
- 4 plys - Hauler /Council/ WG/ LFO
- **Verify and countercheck yearly** amount and type of Commercial & Industrial waste disposed at the landfill.
- Renew WG yearly business license
- Applies for permits
- Purchase debit card
- Informs Waste Generator
- Install GPS system on trucks
- Returns copy of waste ticket to WG for verification



- Collate data for their "Zero Waste Network"
- Match make between generator & recycler
- Submits completed application online via Council's website
- Annual data update on business license renewal
- Issuance of ID card
- Sales of Debit card (Touch n Go system)
- Install GPS tracking device for haulers
- Issue waste tickets

Ground Implementation

UNEP/WORLD BANK Highrise Pilot Project Locations



Penang Island



River Road Low Cost Flats

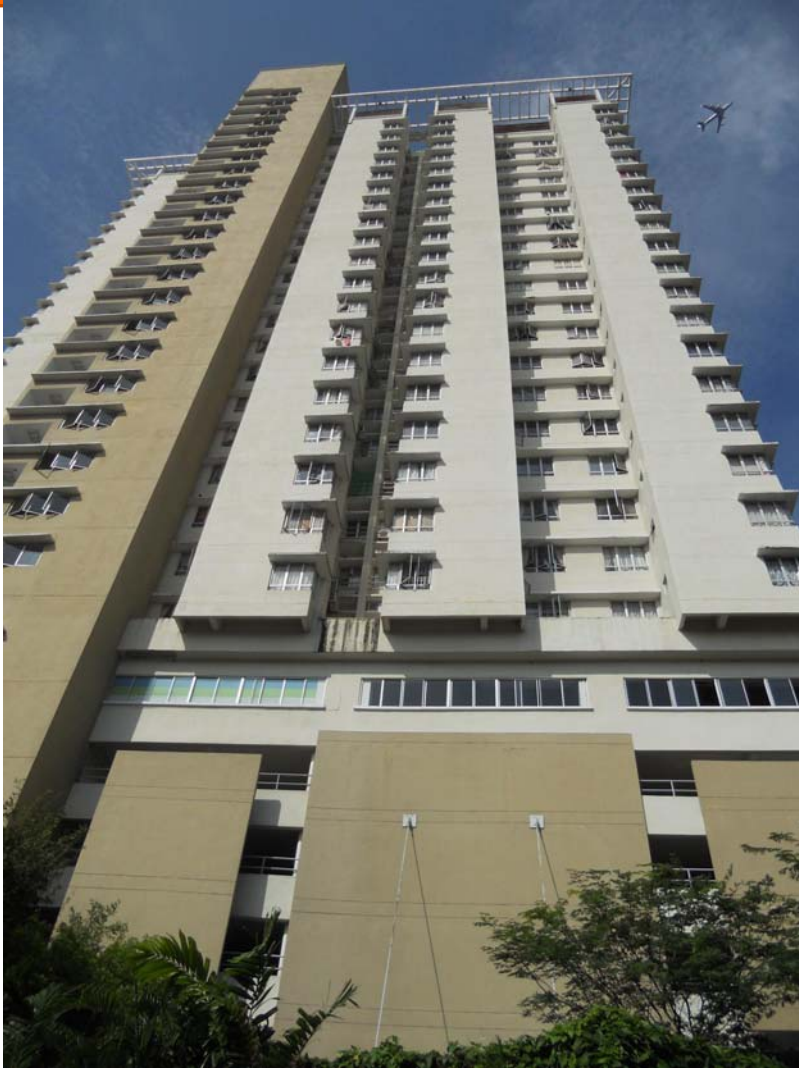


Taman Pelangi Medium Cost Apartments



Spring Condominium, Jelutong
Source: www.penangproperties.com

Seberang Perai



Park View Condo, Harbour Place, Butterworth



Ampangan Low Cost Flats



Taman Pandan , Butterworth
Source: propertyguru.com.my

Organic Waste Diversion Approach



1. Processing the food / kitchen waste on site with a food waste processing machine,
2. Diverting food / kitchen waste for community composting,
3. Diverting food / kitchen waste to an existing organic waste treatment facility and
4. A combination of methodologies (2) and (3).

Organic Waste Diversion Centres



Bagan Ajam Wet Market Food Waste Processing Plant



Taman Pelangi On-site Food Waste Processing Plant

Methodology

Design Element	Description
Objective	<ul style="list-style-type: none">Promote separation of waste at source and achieve both a high rate and good quality of separation by households, through the provision of adequate incentives at the neighbourhood level.
Operational level	<ul style="list-style-type: none">Highrise Management Committees (HMCs) would promote household-level waste separation.Outreach and mobilization to change residents' behaviour would be undertaken by each HMC, without external involvement.
Outputs	<ul style="list-style-type: none">High rate of source separation of recyclable, organic and hazardous waste by households.High quality of the source separated material.
Verification process	<ul style="list-style-type: none">Both quantity and quality scores would be assigned for food waste.The neighbourhood overall score (NOS) would be calculated based on the sum of individual quantity and quality scores.
Incentive payment	<ul style="list-style-type: none">The incentive to be paid to a HMC would be based on the NOS calculated by the PIU, up to the pre-determined maximum of the potential neighbourhood incentive (PNI).No incentive would be given to HMCs that do not achieve a certain minimum score (MS).Each HMC would decide for itself how to make use of the proceeds from incentive payments received as grants from the municipal government.
Timeline	<ul style="list-style-type: none">Program cycles of six months each, with two cycles every year.Within each cycle, an evaluation period would run for four months, from the second to the fifth months of the cycle

BUILDING ZERO WASTE COMMUNITIES

Premise on Penang Island

Landed Properties : 818
High Rise : 1,213
Shop lot : 48

Estimated Generation of Waste:

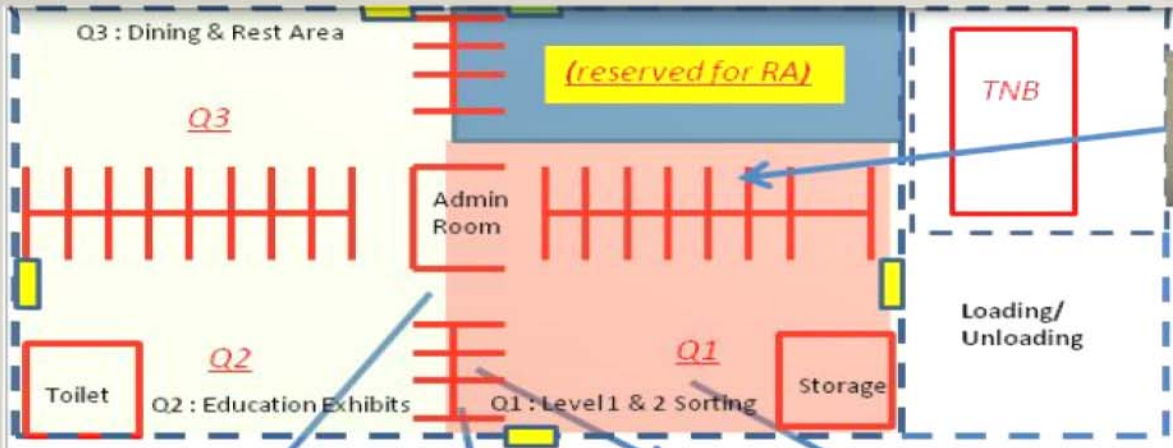
$2,031 \times 5 \times 1.1 \text{ kg} = 11.17 \text{ ton per day}$

Estimated Generation of Organic Waste: $33\% \times 11.17 \text{ ton} = 3.68 \text{ ton per day}$



BUILDING ZERO WASTE COMMUNITIES

Tzu Chi Community Recycling Centre



CD/Tape Dismantling

PC Refurbish



Registration



Tool



B/W sorting



Zero Waste Programme in Seberang Perai²⁰

Involved in Zero Waste Programme;

- Taman Bagan Lalang
- Permatang Nibong village
- Taman Tambun Indah
- Taman Keenways
- Taman Desa Damai
- Taman Putri Gunung
- Kampung Aman
- Taman Gemilang
- Taman Pandan

ZERO WASTE PROGRAMME (COMMUNITY)



Green Schools Award²²



2012- 53 schools
2013- 84 schools





Giving Talks on Composting At School





25/04/2013 12:2

BRIEFING ON SOAP PRODUCTION USING USED COOKING OIL



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Education & Awareness



Conclusion

- **Your Environment , Your Ownership**
- **Focus on the waste generator and not on the waste generated!**
- **Waste generators must pay!**

CHALLENGES

- ❖ Lack of technology and funding to promote and increase awareness to change people's behaviour

KEY SUCCESS FACTOR

- ❖ Education and awareness on cleanliness

OUTCOME

- ❖ **A CLEAN, BEAUTIFUL AND COMFORTABLE PLACE TO STAY, WORK AND INVESTMENT ATTRACTION**

TERIMA KASIH

