“Waste and Urban Centres - Logistics Issues”
23rd April 2008, NEC-Birmingham

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Innovation Trade-offs

Markets for recyclate
Quality of product
Space/area
Public attitude
Planning
Consent

High tech ↔ “Green”

Hi-tech
Extensive
Intensive
The Resource Balancing Act

Logistics vs. Technology

Destory or Preserve

North
North West
South East
Midlands
Scotland
Wales
South West
The Carbon Competitors

- Landfiller
  - Long term
  - Handicaps
  - Planning Consents
  - Taxes
  - Better odds elsewhere
  - Early Faller

- Energy Boy
  - Traded Permits
  - Renewable targets
  - Import dependency on rivals
  - Rising logistics costs
  - High value prizes
  - Expensive Thoroughbred Regular Winner

- Composter
  - Low value prizes
  - Staying power
  - Plenty of local runners
  - Cheap setup
  - Soils directive
  - Stayer

- Recycler
  - EU targets
  - Energy trends
  - High value prizes
  - Traded Permits
  - Producer reuse
  - Good Value All Rounder
From Waste to Product …

Waste

Metals

Plastics

Fibres
Technology Complexity and Logistics (REL/FEL)

Payload

- 20 tonnes: Landfill or Mass Burn
- 15 tonnes: Glass only
- 10 tonnes: Paper/Card only
- 5 tonnes: Plastic only

Lifts/Distance

- 50
- 100
Commingled to Segregated by Postcode

Key:
- Card
- Glass
- Steel
- Plastic

Depot
Hotel
Fast
Food
A
B
Pub
Non-food
Retail
Food
Retail
C
Truck Route
Brighton & Hove MRF

Source: Veolia
Biomass Conversion Routes

Biomass

Storage, Transport, Pre-treatment

Thermo-chemical conversion
- Combustion
- Charcoal Production
- Pyrolysis
- Gasification

Physio-chemical conversion
- Pressing /extraction
- Esterification

Biological conversion
- Fermentation hydrolysis
- Anaerobic digestion

Solid fuel
- Boiler
- Heat

Liquid fuel
- Engine/gas turbine

Gaseous fuel
- Fuel Cell
- Transport fuels

Electricity
- Steam turbine
bio waste and Industrial waste delivery

lorry weigher

flat bunker screw mill magnetic separator

fe-metals

drying

foreign materials

food waste and fats delivery

pit bin

hydropulper hydrocyclone

inerts

buffer

thickener

suspension buffer

fresh air

Anaerobic compost to composting

surplus water to purification plant

process water buffer

centrifuge

biogas

hygienization

biogas to block - type electric power station

MATT MULL AD Process

digester gas compressor

water buffer
Biffa Enclosed Digester - Etwall
Central Bottling
Dolvas containing typical fruit and vegetable waste
Mixed Biowaste AD Plant in Sweden

Source: Greenfinch
The aerobic facility also encompasses a waste recycling centre (bulky wastes) on site.

View of tunnel wall

View of material prior to composting

Source: Lorien Engineering Solutions
Marchwood EFW 165,000 tpa

Source: Veolia
Cement Plant

Source: Buxton Lime Industries (UK)