Zero Waste Fife

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Who We Are

- Fife Council
  - 11th largest in the UK
  - 3rd largest in Scotland
  - 375,000 people
  - 16,000 employees
  - Annual revenue budget approaching £1bn
- Sustainability Unit
  - £20 million turnover
  - 55 employees
  - £7 million external income
  - Zero Waste
  - Climate Change Mitigation
  - Waste Treatment and Disposal
  - Energy Generation and Supply
  - Climate Change and Zero Waste Consultancy

Zero Waste

Kerbside Recycling

Previous 3 Bin Kerbside Service

2 weekly x 240 L

Garden Waste

2 weekly x 140 L

Paper & Card

2 weekly x 240 L

Landfill Waste

New 4 Bin Kerbside Service

	Garden & Food Waste Recycling	Paper & Cardboard Recycling	All Cans & Plastic Packaging	Landfill Waste
Option A (East)	2 weekly 	2 weekly  140L		2 weekly  240L
Option B (Markinch)	2 weekly  240L	4 weekly  240L	4 weekly  240L	2 weekly  140L
Option C (West)	2 weekly  240L	2 weekly  140L	4 weekly  240L	2 weekly  240L

4 Bin Service Outcomes

Material	Result
Food Waste (kg/hh/wk)	1.7
Garden Waste (kg/hh/wk)	4.6
Paper & Card (kg/hh/wk)	2.3
Cans & Plastics(kg/hh/wk)	0.8
Landfill (kg/hh/wk)	4.3
Total (kg/hh/wk)	12.0
Recycling Rate	**64%**
Satisfaction Rate	93%

Waste Treatment & Disposal

Waste Treatment & Disposal

- Landfill 250,000 tonnes/yr of waste at 2 landfills
  - Including 10,000 tonnes/yr of asbestos
- Produce up to 20,000 tonnes/yr of PAS 100 green waste compost at 2 sites
- 40,000 tonne/yr AD plant due to open in summer 2013

Waste Treatment & Disposal

- Operate 2 MRFs for mixed skip waste
- Waste water treatment plant
- Recycle 55% of municipal waste, including
  - >20,000 tonnes of paper & card
  - >30,000 tonnes of green waste
  - 6,000 tonnes of cans & plastics
  - 8,000 tonnes of glass
  - 13,000 tonnes of wood
  - 3,000 tonnes of scrap

Organic Waste Treatment Review 2008

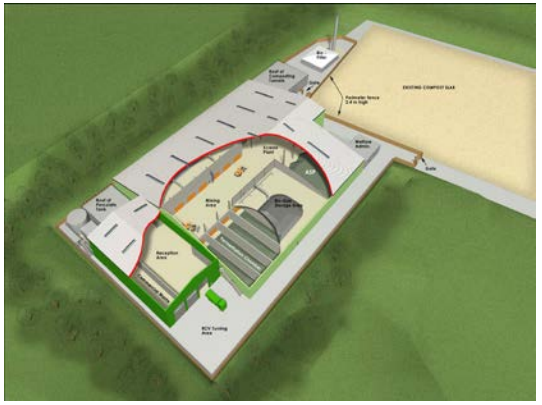
- Had just completed roll out of 3 bin system
- Recycling rate increased to 39%
- Commissioned a study into MBT of residual waste followed by AD of organic fraction
  - Too many risks and too much uncertainty
    - Emerging ZW policy
    - Limited uses for digestates
    - Cost

2009

- Commissioned further work on treatment of food waste, garden waste and sewage sludge
  - 2 site option
  - Evaluation of technology options, costs and benefits
- Began testing food waste collection options
  - Quickly took a view that co-mingled with garden waste was more sustainable
    - Financially
    - Environmentally
    - Also provides an additional renewable power feedstock

2010

- Further evaluation of AD options for treatment of co-mingled food and garden waste.
  - Dry AD clearly most appropriate
  - Indicative costs and benefits very attractive
  - Significant potential financial benefits of in house operation
  - Range of dry AD technology providers available
  - Reference plants visited
    - Appeared to do what they said on the tin
    - Nothing scary re plant operation
    - “Driest” systems have significant similarities with existing waste handling activities



Outcome of 2010 Evaluation

- Enough info to make a decision re technology, and scale
- Reasonable forecasts re costs and benefits
- Space available within PPC consented waste activity
- Grid connection and heat network
- Confidence in our ability to manage and operate a dry AD plant
- Reasonable forecast of anticipated green and food waste production
- Reasonable expectation of Prudential Borrowing if business case stacked up

Procurement

- Restricted Procedure
- Design and Build by contractor
- Operated by Council
- Contract based on ICME Red Book
- Supported by external technical consultants and Project Managers (SLR)
- Internal Finance, Legal, QS, Mechanical Engineering support

Key Dates

- First evaluation of options
  - 2008
- Start on site
  - April 2012
- Cold Commissioning
  - Late May 2013
- Hot Commissioning
  - Late June 2013
- Beneficial Use
  - October/November 2013
- Handover to Council
  - February/March 2014

Inputs & Outputs

- Development Budget
  - £15 million
- Feedstock
  - 40,000 tonnes food and garden waste
  - 3,000 tonnes Category 3 ABP waste
- Outputs
  - 1.4 MW electricity
  - 1.4 MW heat
    - Export to existing heat network
  - 18,000 tonnes PAS 100 compost
  - 5,000 tonnes liquid effluent

Lessons Learned

- Don’t underestimate the time it takes
- We did not think of everything
  - Adds to cost and time
- SEPA are supportive but permitting has taken a long time
- External PM support essential
- High quality resident engineer essential
- Provides a degree of confidence re tackling other large waste infrastructure projects

Renewable Power

- Heat and Power from Landfill Gas
- Heat and Power from AD Biogas
- Wind Turbines
- PV
- Heat Networks

Consultancy – Zero Waste

- Waste compositional analysis
- Process audit
- Advice on waste minimisation
- Advice on opportunities for recycling
- Advice on waste segregation and storage
- Project management of delivery of new services

Consultancy - Carbon & Climate Change

- **Audit**
  - Carbon Emissions Audits and Footprinting
  - Project and Programme ‘Carbon Emissions Impact Assessments’
  - Carbon Accounting systems
  - Whole Life Costing
- **Planning**
  - Policy development (including Environmental Management Systems)
  - Energy and Climate Change Strategies
  - Carbon Management Plans
  - Preparation of project business cases
- **Delivery Support**
  - Training groups and individuals
  - Promotions and marketing campaigns
  - Project management and delivery

Where Next?

- Residual Waste Treatment
- Review Options for Kerbside Improvements
- Expansion of Trading Activities
- Renewable Power Developments
- Heat Networks
- Consider New Delivery Model

Contact

Chris Ewing, Senior Manager (Sustainability)

07931 524436

chris.ewing@fife.gov.uk