Reducing the carbon footprint: Methodology for application of WRATE to monitor the carbon footprint (CO_2 eq.) for the VES Shropshire contract

Data collection, design, and development of a base scenario

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Prepared for Phil Lucas

Veolia Environmental Services (UK) Plc
Technology Department
154a, Pentonville Road
London
N1 9PE
Tel: +44 (0)207 833 6480
Fax: +44 (0)207 837 7489
Contact: Charlotte Walkington
Email: charlotte.walkington@veolia.co.uk

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1 – BACKGROUND

Veolia Environmental Services (VES) was awarded a 27 year waste management contract with Shropshire Waste Partnership (SWP) in 2007. The contract includes construction of a 90,000 tonnes/year energy recovery facility (ERF); the provision of Household Waste Recycling Centres and waste transfer stations, and an in-vessel composting facility; the introduction of a kerbside plastic bottle collection; and the increase of recycling rates to more than 50% by 2012. A base footprint model will be created for the integrated waste management system (IWMS) as currently existing for SWP that will examine the carbon footprint (CO_2 eq.). The intention is to utilise the Environment Agency's new life cycle assessment (LCA) tool WRATE (Waste and Resources Assessment Tool for the Environment) for this purpose.

2 – PROJECT CONTACTS

Main Contact:
Phil Lucas, Contract Performance Manager, Veolia ES Shropshire Ltd
Phil.Lucas@veolia.co.uk

Veolia ES Shropshire Ltd
Bolingbroke House
Vanguard Way
Battlefield Enterprise Park
Shrewsbury
Shropshire
SY1 3TG

WRATE Project Contacts :
Richard Kirkman, Head of Technology
Richard.Kirkman@veolia.co.uk

Charlotte Walkington, Environmental Analyst
Charlotte.Walkington@veolia.co.uk

Veolia Environmental Services (UK) Plc.
Veolia House
Technology Department
154a Pentonville Road
London
N1 9PE

3 – PROJECT OBJECTIVES

Veolia contracts with local authorities to provide integrated waste management services, and is the leading operator of long term PFI-type contracts in the UK. Veolia operates Birmingham, Hampshire, Nottinghamshire, Sheffield, SELCHP, and Tower Hamlets integrated contracts.

When tendering for new contracts Veolia is required to undertake environmental assessments of the service proposed. Previous tools that have been used for making environmental assessments include the 'Best Practicable Environmental Option' (BPEO) and more recently the 'Strategic Environmental Assessment' (SEA). WISARD is a life cycle assessment tool for waste management that can be used to develop models and look at the environmental impacts which make up part of these environmental assessments.

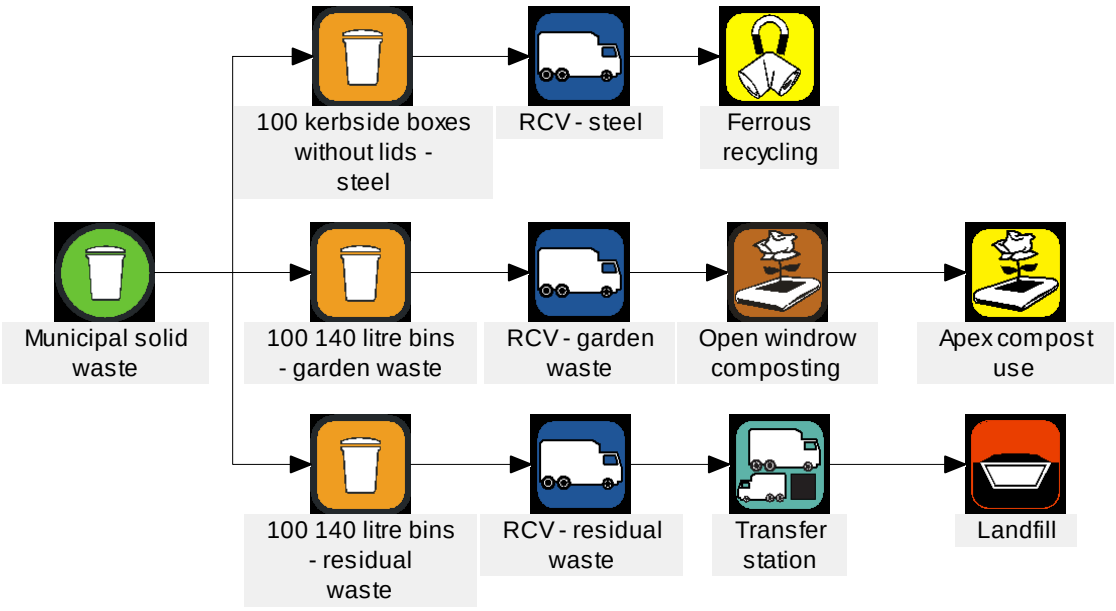
WRATE is the updated version of WISARD which can be used to evaluate the environmental impacts from waste management activities over the life cycle of the materials involved. This tool will be used to assess the carbon footprint of the existing waste strategy for Shropshire.

4 – SCOPE

VES will provide a WRATE model of the waste management solution currently existing for Shropshire County Council to allow assessment of the global warming potential (or carbon footprint). This model will be accompanied by a step-by-step statement of key assumptions made, any modifications made to the parameters defined in WRATE (e.g. process characteristics), and all other inputs. The assumptions regarding the final destinations for all process outputs will be clearly stated.

The waste flows will be modelled as demonstrated in Diagram 1.

Diagram 1 – Example scenario map



Where user-defined processes are used, full details of the assumptions and process characteristics applied together with their source will be provided. The pro-forma in Table 1 will be submitted with this data. Additional fields will be added as and when required. The assumptions of the end destinations for all process outputs will also be clearly stated.

Table 1 – Pro-forma for user-defined treatment process

Data Required	**Data**
Name of process	
Technology supplier	
Number of process lines	
Treatment capacity of each line (t/hr)	
Total treatment capacity (t/annum)	
Parasitic power load (MW)	
Thermal efficiency (%)	

Appropriate transport distances and vehicle types will be selected to reflect as closely as possible to the real situation. A summary of transport data will be provided set out in the pro-forma in Table 2.

Table 2 – Pro-forma for transport data

Solution Component	Data required
Transfer of residual waste from kerbside to transfer station (or direct to treatment facility if appropriate)	Number of vehicles to be used
	Vehicle type
	Number of traffic movements per hour, per day and per year
	Cumulative annual road distance
	Cumulative weekly road distance
Transfer of residual waste from transfer station to treatment facility(ies)	Number of vehicles to be used
	Vehicle type
	Number of traffic movements per hour, per day and per year
	Cumulative annual road distance
	Cumulative weekly road distance
Transfer of residual waste from HWRCs to treatment facility(ies)	Number of vehicles to be used
	Vehicle type
	Number of traffic movements per hour, per day and per year
	Cumulative annual road distance
	Cumulative weekly road distance
Transfer of recovered materials to point of recovery	Number of vehicles to be used
	Vehicle type
	Number of traffic movements per hour, per day and per year
	Cumulative annual road distance
	Cumulative weekly road distance
Transfer of treatment process residues to end disposal point/s	Number of vehicles to be used
	Vehicle type
	Number of traffic movements per hour, per day and per year
	Cumulative annual road distance
	Cumulative weekly road distance