ENVIROS

A REPORT BY ENVIROS CONSULTING LTD: NOVEMBER 2009

PROJECT TRANSFORM

MASS FLOW MODEL V1.12 ASSUMPTIONS

TODAY'S BUSINESS TOMORROW'S WORLD

Quality Control Sheet

Publication title	Model Assumptions
Project number	WA1070003
Volume number	Volume 1 of 1
Version	V1 12
Date	November 2009
File Reference	Mass Flow Model V1 12 Assumptions.Doc

Prepared under the management of:

Lorna Pannett – Project Manager

Directed, reviewed and approved by:

Andrew Howe – Project Director

Client Address:

Project Transform
Shire Hall
Warwick
CV34 4SA

Kalen Wood Programme Manager

Tel 01926 412628
Email kalenwood@warwickshire.gov.uk

Enviros Contact Details:

Enviros Consulting Ltd
Building D5
Culham Science Centre
Abingdon
Oxfordshire
OX14 3DB

Lorna Pannett, Commercial Manager

Tel 01865 408280
Fax 01865 407582
Email lorna.pannett@enviros.com
Web www.enviros.com

Enviros Consulting Limited is part of the Sinclair Knight Merz Group

Important Notice

Contents Page

FIGURES

1 Model Assumptions

Project Transform (a partnership of Coventry City Council, Solihull Metropolitan Borough Council and Warwickshire County Council) is proposing to procure a long term contract to treat and divert residual municipal waste from landfill. The procurement is both site and technology neutral and is seeking best value solutions to be proposed by the private sector.

This briefing note sets out the modelling assumptions used in the Project Transform Mass Flow Model version 1. These notes should be read in conjunction with the Excel Workbook 'PT Mass Flow v 1 12.xls'.

1.1 Waste Composition

1.1.1 Household collected waste (including bring sites)

For Coventry and the Warwickshire districts the waste composition analyses carried out by MEL and AEAT respectively have been used as the composition of residual waste. Figure 1 and Table 1 show the residual waste compositions for each authority.

Figure 1 Household kerbside collected residual waste composition

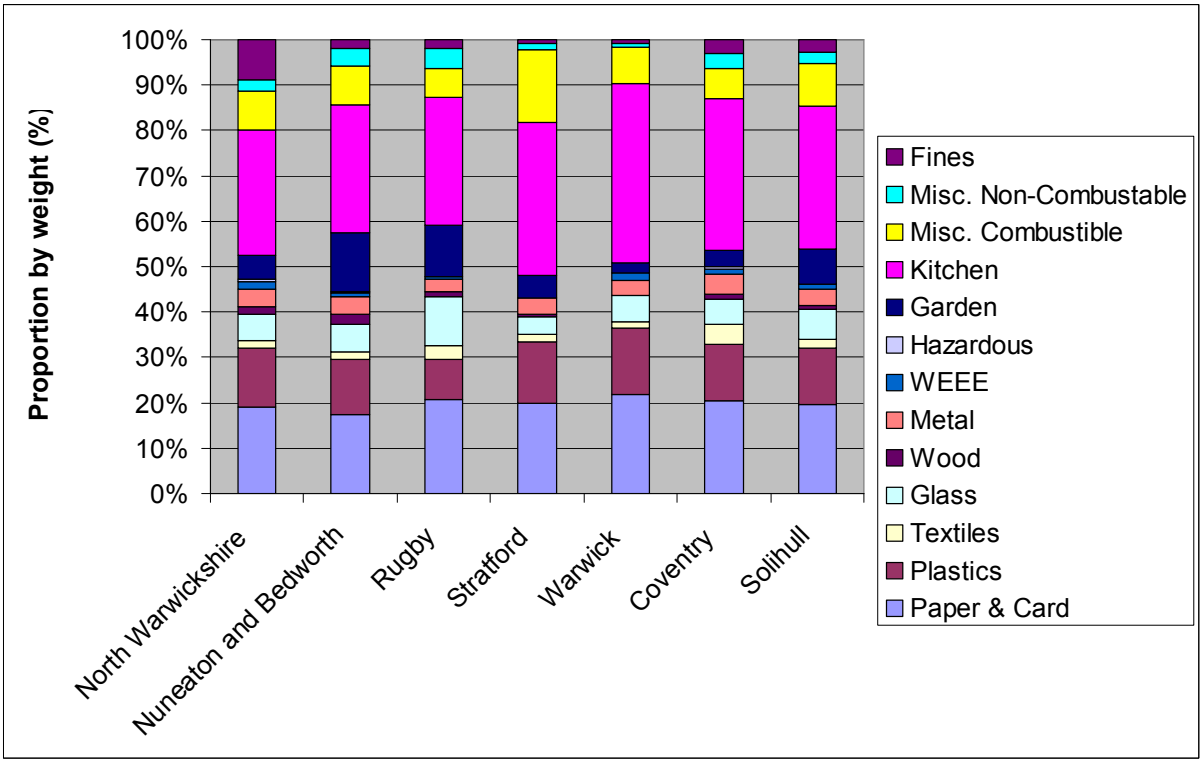


Table 1 Household kerbside collected residual waste composition

	North Warwickshire	Nuneaton and Bedworth	Rugby	Stratford	Warwick	Coventry	Solihull
Paper & Card	19.18%	17.27%	20.59%	19.79%	21.72%	20.58%	19.64%
Plastics	12.76%	12.38%	8.94%	13.65%	14.60%	12.23%	12.52%
Textiles	1.85%	1.66%	2.97%	1.62%	1.45%	4.42%	1.88%
Glass	5.81%	6.04%	10.84%	3.90%	5.76%	5.50%	6.45%
Wood	1.50%	2.08%	1.06%	0.43%	0.14%	1.11%	1.07%
Metal	4.04%	3.85%	2.79%	3.66%	3.40%	4.37%	3.55%
WEEE	1.43%	1.01%	0.60%	0.10%	1.45%	1.36%	0.93%
Hazardous	0.74%	0.14%	0.04%	0.05%	0.09%	0.45%	0.19%
Garden	5.18%	12.90%	11.30%	4.80%	2.27%	3.57%	7.54%
Kitchen	27.70%	28.37%	28.08%	33.82%	39.46%	33.46%	31.66%
Misc. Combustible	8.47%	8.50%	6.57%	15.98%	8.07%	6.71%	9.40%
Misc. Non-Combustable	2.39%	3.88%	4.24%	1.33%	0.68%	3.20%	2.54%
Fines	8.93%	1.91%	1.98%	0.86%	0.91%	3.04%	2.63%
TOTAL	100 %	100%	100%	100%	100%	100%	100%

Overall household collected waste arising composition has then been calculated by the model by combining the residual waste composition with actual tonnes collected for recycling and composting.

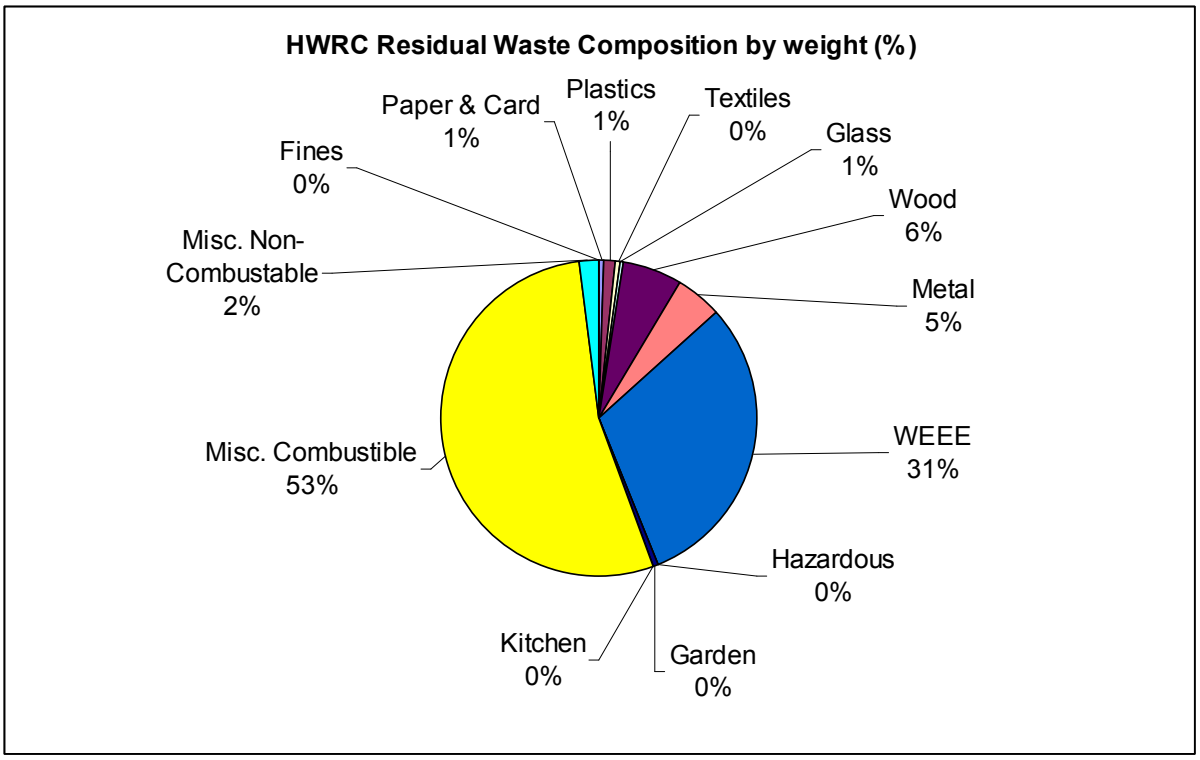
Solihull does not have a recent waste composition analysis upon which to base the model. In the OBC model it is understood that Solihull's composition was based on similar Warwickshire districts. It is unclear which districts these were. The ACORN profile for Solihull has been compared with that of Warwickshire and the average profile for the whole Warwickshire area is the best fit with the Solihull profile. Therefore, the average composition for Warwickshire will be used for Solihull in this model.

1.1.2 HWRC composition

Warwickshire have had a waste composition carried out for their HWRCs. However, the method used was based on visitor interception and as such is a composition for all HWRC waste and not residual waste. Due to the notoriously variable nature of HWRC waste it is our preference to model residual waste plus actual tonnes recycled. This reduces the risk of collecting 'negative' amounts of waste.

Therefore, the model uses the residual waste composition quoted in the NCAS report (Figure 2). This composition has a very high proportion of 'Miscellaneous Combustibles'. This category includes unsorted black bag waste.

Figure 2 HWRC Residual Waste Composition by weight (based on NACA report)



1.1.3 Street Sweepings, Commercial Waste

The compositions used are the same as those in the OBC model.

Table 2 Other waste stream compositions (% by weight)

	Bulky Waste	Gully Waste	Clinical Waste	Street Sweeps	Commercial Residual	Non-Hhld HWRC	Fly Tipping	Other Non-hhld (asbestos)
Paper & Card	0.60%	1.63%	0.00%	18.25%	41.10%	0.00%	5.40%	0.00%
Plastics	1.20%	0.00%	0.00%	11.85%	8.70%	0.00%	1.87%	0.00%
Textiles	0.30%	0.00%	0.00%	1.10%	1.60%	0.00%	1.90%	0.00%
Glass	0.50%	0.00%	0.00%	4.20%	4.10%	0.00%	1.90%	0.00%
Wood	6.00%	0.00%	0.00%	0.60%	0.60%	0.00%	9.30%	0.00%
Metal	4.70%	1.48%	0.00%	5.00%	5.00%	0.00%	5.61%	0.00%
WEEE	30.50%	0.00%	0.00%	0.10%	0.90%	0.00%	3.30%	0.00%
Hazardous	0.20%	0.00%	100.00%	0.15%	0.80%	0.00%	2.84%	100.00%
Garden	0.40%	25.15%	0.00%	23.00%	4.60%	0.00%	34.23%	0.00%
Kitchen	0.00%	0.00%	0.00%	8.95%	23.20%	0.00%	1.94%	0.00%
Misc. Combustible	53.60%	0.00%	0.00%	1.30%	7.20%	0.00%	16.38%	0.00%
Misc. Non-Combustable	2.00%	0.74%	0.00%	0.65%	0.80%	100.00%	9.52%	0.00%
Fines	0.00%	71.01%	0.00%	24.85%	1.40%	0.00%	5.81%	0.00%
TOTAL	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

1.2 Waste Arisings

The waste arisings used as the baseline for this model are 2008/09 figures. This is the most recent full year. The data was provided by the Councils as audited Waste Data Flow figures are not yet available.

Waste arisings are split by the model into the following categories:

- Domestic Waste (including: kerbside sort and commingled dry recycling; kitchen and garden waste collections; and residual waste collections)
- Bulky Collections
- Gully Waste
- Clinical Waste

- Street Sweeps
- HWRC Waste
- Non Household HWRC Waste
- Commercial Waste
- Other Non-Hhld Collected
- Other Non-Hhld Collected (Asbestos Collection)
- Fly Tipping

Solihull's fly tipped waste and other non-household waste is handled through their Moat Lane Transfer Station and all the tonnages relating to this waste are amalgamated by the model into the Bulky Waste stream.

Where a combined tonnage was reported for commingled collections in 2008/09 the split between materials has been based on:

- Coventry - proportions found in the residual waste.
- Stratford – recycling credit claims

Rugby have recently introduced a commingled collection but the 2008/09 figures provided tonnages for each material and not a combined tonnage.

1.3 Waste Growth

The model is very sensitive to waste growth assumptions. The inputs provided in this version of the model are based a rate of growth comprising an element of housing growth and a growth rate for waste per household per annum. The housing growth projections were as presented in the Regional Spatial Strategy. The projected growth in waste per household takes into account the expectation that the councils will be introducing waste minimisation activities and the likely recovery of the economy over the period of the model. This gives an overall combined growth for the whole area of approximately 0.75% as presented in the OBC. The benefit of using this methodology is that growth is linked to housing projections and therefore growth is proportionately distributed between areas.

An analysis of historic growth rates (Table 3) shows no clear trends and so these have not been used as the basis of future growth projections.

Table 3 Historic Growth Trend

Year	Coventry Total MSW Arisings	% Change	Solihull Total MSW Arisings	% Change	Warwickshire Total MSW Arisings	% Change
2003/4	183,700		96,000		296,800	
2004/5	190,000	3.40%	104,100	7.80%	315,200	5.80%
2005/6	181,500	-4.50%	101,400	-2.60%	313,700	-0.50%
2006/7	180,000	-0.80%	103,800	2.40%	316,400	0.90%
2007/8	172,340	-4.26%	100,474	-3.20%	303,773	-3.99%
2008/9	167,843	-2.61%	103,350	2.86%	294,777	-2.96%

Figure 1 shows the results of a waste growth sensitivity analysis. Figure 2 shows how the growth assumptions affect the inputs to Project Transform (based on the assumptions set out in this report). The scenarios modelled were:

- Waste growth in line with housing projections (with growth at the same rate beyond current RSS projections) plus high growth in waste per household per annum
- Waste growth in line with housing projections (with growth at the same rate beyond current RSS projections) plus 0% in waste per household per annum
- Waste growth in line with housing projections (with no growth beyond current RSS projections) plus low growth in waste per household per annum.
- The OBC model projections are also provided for comparison.

It should be noted that the rebasing exercise (ie updating the OBC assumptions with current waste arising data) has led to a drop in overall MSW arisings in 2008/09 of 50,000 tpa.

Figure 3 **Total Municipal Waste Arisings projected from 2008/09 to contract end in 2042/43**

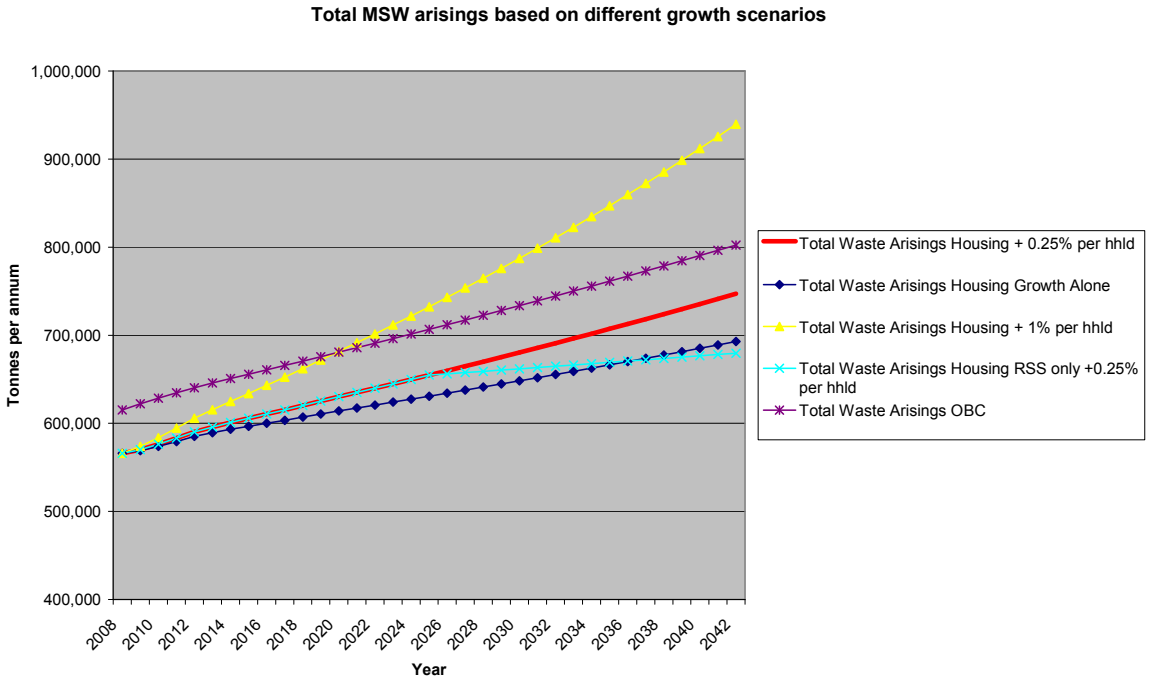
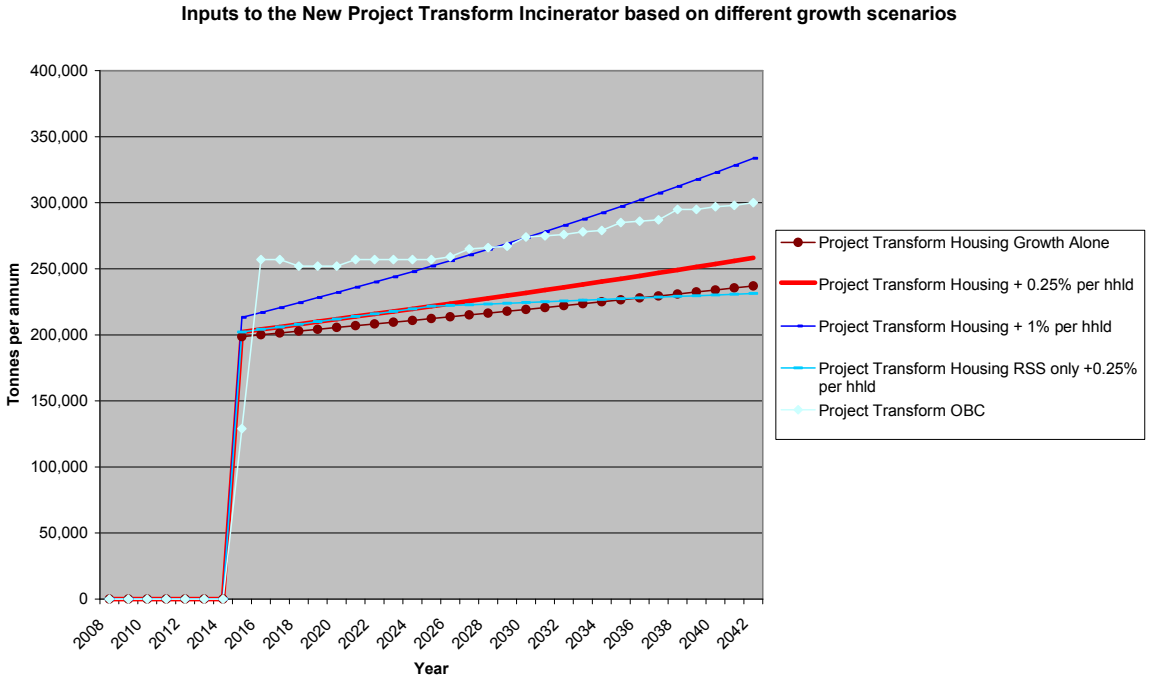


Figure 4 **Total Residual Waste Inputs to Project Transform Treatment Facility projected from 2015/16 to contract end in 2042/43**



1.4 Recycling and Composting Performance

The inputs spreadsheet provides details of the recycling and composting assumptions.

Recycling rates are calculated on the basis of three elements:

- Coverage – the number of households eligible to take part in the scheme. The default is 100%.
- Participation – the proportion of eligible households that actually take part in the scheme.
- Recognition – the proportion of each material that each householder actually recycles. For example does the householder rinse and recycle all of their glass jars or just those that are fully empty.

Participation and recognition rates have been calculated for the baseline year based on expert judgement and the actual tonnages of each material recycled in 2008/09. Participation and recognition rates have been adjusted so that the projected tonnages for 2008/09 calibrate with the actual recycled tonnages.

Where new schemes have been introduced the recognition and participation rates modelled are based on performance in existing schemes run by that authority and other authorities in the Project Transform area and on expert judgement.

Where an alternate weekly scheme is introduced participation rates are assumed to increase.

An overall recycling rate for the area of 55% is achieved by 2015.

The following schemes have been modelled.

Table 4 Dry Recyclate Schemes

WCA	Dry recyclables 2009 onwards	Container/System	Frequency	New schemes
Coventry	Paper, card and cardboard	44 l kerbside box Kerbside sort	fortnightly	Commenced in 2009 - commingled (240l wheeled bin) collection of plastic bottles, card, cardboard, cans, glass
Solihull	Glass and paper	2 x 55 l kerbside boxes Kerbside sort	fortnightly	Commenced in 2009 – comprehensive kerbside collection of paper, glass, cans, card, cardboard and plastic bottles.
North Warwickshire BC	Paper, cans, textiles, glass, foil	55 l kerbside box – kerbside sort	fortnightly	None
Nuneaton & Bedworth BC	Paper, card, cardboard, glass, mixed plastic, cans & aerosols, textiles, foli, batteries (household and car), engine oil	Multiple bags & 55l kerbside box Kerbside sort	weekly	None
Rugby BC	Paper, card, cardboard, glass, mixed plastic, cans, tetrapacks, foil, aerosols,	240 l wheeled bin Commingled	fortnightly	None
Stratford DC	Paper, card, cardboard, glass, plastic bottles (HDPE &PET), cans,	240 l wheeled bin Commingled	fortnightly	None
Warwick DC	Paper, card, cardboard, glass, plastic bottles (HDPE &PET), cans, textiles, batteries (household and car), engine oil	55 l kerbside box – and additional bags – kerbside sort	fortnightly	None

From 2015/16 all the Councils are modelled to be collecting mixed plastics.

Table 5 Biowaste Schemes

WCA	Biowaste	Container	Frequency	New Schemes
Coventry	Green garden	240 l wheeled bin	Fortnightly	Food waste phased in from 2015/16
Solihull	Green garden	240 l wheeled bin	Fortnightly	Food waste phased in from 2015/16
North Warwickshire BC	Green garden	240 l wheeled bin	Fortnightly	Food waste phased in from 2015/16
Nuneaton & Bedworth BC	Green garden	240 l wheeled bin	Fortnightly	Food waste phased in from 2015/16
Rugby BC	Green garden and food waste	240 l wheeled bin	Fortnightly	None
Stratford DC	Green garden and food waste	240 l wheeled bin	Fortnightly	None
Warwick DC	Green garden and food waste	240 l wheeled bin	Fortnightly	None

Table 6 Residual Waste Schemes

WCA	Container	Frequency	New Schemes
Coventry	240 l wheeled bin	Weekly	
Solihull	Black sacks	Weekly	Weekly 140 litre wheeled bin residual waste service is being rolled out from end of September and the borough will all be on the new service by early December 2009
North Warwickshire BC	240 l wheeled bin	Weekly	
Nuneaton & Bedworth BC	240 l wheeled bin	Weekly	Alternate weekly collection from 2015/16
Rugby BC	180 l wheeled bin	Fortnightly	
Stratford DC	240 l wheeled bin	Fortnightly	
Warwick DC	180 l wheeled bin	Fortnightly	

The following section summarises the performance assumptions made for each authority based on the schemes set out in Tables 4, 5 and 6. The model assumes that most improvements are phased in over a 5 year period. This reflects the fact that the dates and improvements being modelled are beyond the operational planning timeframes for the councils and exact start dates and scheme designs have not yet been confirmed. The modelled improvements are based on the current understanding of national and local policy drivers.

Table 7 North Warwickshire Borough Council participation and recognition rates

	2020/21	
	Participation	Recognition
Paper & Card	60%	80%
Plastics	40%	40%
Textiles	60%	26%
Glass	60%	83%
Metal	60%	54%
Garden	93%	90%
Kitchen	75%	82%

Table 7 sets out the participation and recognition rates which the mass flow model predicts that North Warwickshire will achieve by 2020. The participation rates are lower than the councils with alternate weekly collections due to the anticipated continuation of weekly residual waste collections. A gradual ramp up in performance is modelled from 2015/16 to 2020/21 when the food waste scheme is introduced assuming that promotion of the new scheme leads to increased interest in the recycling scheme. Plastics are introduced from 2015 to bring the District in line with the other councils.

Garden waste rates are based on existing scheme performance.

Kitchen waste participation is assumed to be slightly lower than seen in the authorities with alternate weekly collections or reduced residual bin size. However, recognition rates are assumed to be the same as other areas. The kitchen waste scheme is assumed to be a commingled collection with the garden waste and is phased in with performance improving over the first 5 years of the scheme.

Table 8 Nuneaton and Bedworth participation and recognition rates

	2020/21	
	Participation	Recognition
Paper & Card	80%	78%
Plastics	80%	50%
Textiles	80%	12%
Glass	80%	80%
Metal	80%	55%
Hazardous	80%	44%
Misc. Combustible	40%	2%
Garden	80%	85%
Kitchen	80%	82%

Table 8 sets out the participation and recognition rates which the mass flow model predicts that Nuneaton and Bedworth will achieve by 2020. A phased improvement in performance is modelled from 2015/16 to 2017/18 when an alternate weekly collection scheme is introduced and the food waste scheme is introduced assuming that reduced residual waste capacity and promotion of the new scheme leads to increased interest in the recycling scheme.

Garden waste rates are based on existing scheme performance.

Kitchen waste participation is assumed to be similar to the other authorities with alternate weekly collections or reduced residual bin size. The kitchen waste scheme is assumed to be a commingled collection with the garden waste and is phased in with performance improving for 5 years from 2015/16 when the scheme is introduced.

Table 9 Rugby participation and recognition rates

	2020/21	
	Participation	Recognition
Paper & Card	80%	85%
Plastics	80%	70%
Textiles	0%	0%
Glass	80%	85%
Metal	80%	70%
Hazardous	80%	1%
Garden	80%	88%
Kitchen	80%	82%

Table 9 sets out the participation and recognition rates which the mass flow model predicts that Rugby will achieve by 2020. Participation and recognition rates in the dry recyclate scheme are high due to the commingled alternate weekly collection. This scheme has been implemented during 2009 and performance is understood to have improved significantly in one year and this rate of improvement has been modelled.

Garden waste rates are based on existing scheme performance.

Kitchen waste participation is assumed to be similar to the other authorities with alternate weekly collections or reduced residual bin size. The kitchen waste scheme is assumed to be a commingled collection with the garden waste.

Table 10 Stratford participation and recognition rates

	2020/21	
	Participation	Recognition
Paper & Card	80%	85%
Plastics	80%	60%
Textiles	50%	5%
Glass	90%	91%
Metal	80%	70%
Hazardous	0%	0%
Garden	92%	99%
Kitchen	80%	82%

Table 10 sets out the participation and recognition rates which the mass flow model predicts that Stratford will achieve by 2020. Participation and recognition rates in the dry recyclate scheme are high due to the commingled alternate weekly collection. Glass and textiles are based on existing performance.

Garden waste rates are based on existing scheme performance.

Kitchen waste participation is assumed to be similar to the other authorities with alternate weekly collections or reduced residual bin size. The kitchen waste scheme is assumed to be a commingled collection with the garden waste.

Table 11 Warwick participation and recognition rates

	2020/21	
	Participation	Recognition
Paper & Card	80%	80%
Plastics	60%	60%
Textiles	50%	30%
Glass	80%	86%
Metal	70%	64%
Hazardous	10%	1%
Garden	60%	60%
Kitchen	80%	82%

Table 11 sets out the participation and recognition rates which the mass flow model predicts that Warwick will achieve by 2020. Participation and recognition rates in the dry recyclate scheme are based on the current performance of the commingled alternate weekly collection.

Garden and kitchen waste rates are based on existing scheme performance. At the present time no data is available as to the split between garden and kitchen waste in this scheme. The model for Warwick records both garden and kitchen waste as currently collected under the kitchen waste category.

Table 12 Solihull participation and recognition rates

	2020/21	
	Participation	Recognition
Paper & Card	80%	80%
Plastics	80%	60%
Textiles	10%	2%
Glass	80%	80%
Metal	80%	30%
Hazardous	0%	0%
Garden	85%	93%
Kitchen	80%	82%

Table 12 sets out the participation and recognition rates which the mass flow model predicts that Solihull will achieve by 2020. Recycling performance ramps up over the period 2009/10 to 2011/12 as the new scheme is introduced. Participation and recognition rates are based on Solihull council and waste contractor performance estimates. A gradual ramp up in performance is modelled from 2015/16 to 2020/21 when the food waste scheme is introduced assuming that promotion of the new scheme leads to increased interest in the recycling scheme. Mixed plastics are introduced from 2015 to bring the Council in line with the other councils.

Garden waste rates are based on existing scheme performance.

Kitchen waste participation is assumed to be similar to the other authorities with alternate weekly collections or reduced residual bin size. The kitchen waste scheme is assumed to be a commingled collection with the garden waste.

Table 13 Coventry participation and recognition rates

	2020/21	
	Participation	Recognition
Paper & Card	80%	80%
Plastics	75%	50%
Glass	75%	75%
Metal	75%	75%
Garden	90%	93%
Kitchen	70%	70%

Table 13 sets out the participation and recognition rates which the mass flow model predicts that Coventry will achieve by 2020. Participation and recognition rates are based on the introduction of the commingled collection scheme and continued weekly residual waste collections. A gradual ramp up in performance is modelled from 2010/11 to 2020/21 assuming that promotion of schemes and other measures (for example collection of mixed plastics) are implemented over this time to result in an overall performance under NI192 of 50%. Overall, performance is assumed to be approximately 5% lower than that achieved by Solihull as has historically been the case.

Garden waste rates are based on existing scheme performance.

Kitchen waste participation and recognition is assumed to be slightly lower than seen in the authorities with alternate weekly collections or reduced residual bin size. The kitchen waste scheme is assumed to be a commingled collection with the garden waste.

1.4.1 HWRC Recycling

An improvement of approximately 1000 tonnes per annum recycled in 2010/11 has been modelled for Solihull and Coventry. A further increase in 2015/16 is modelled assuming that materials from black bag waste and furniture are targeted. The performance achieved in 2020/21 is shown in Table 14.

An increase in recycling rate at Warwickshire's HWRC's is also modelled in 2010/11. This is based on encouraging householders to recycle materials currently included in black bag waste and recycling/reusing furniture. The increase modelled is approximately 1600 tonnes or an increase from 58% to 61%. The recycling rate at Warwickshire's site is already higher than that seen at Coventry and Solihull and so smaller improvements are modelled

Table 14 HWRC Material Capture Rates in 2020/21

Overall Capture	Solihull	Coventry	Warwickshire
Paper & Card	71%	68%	97%
Plastics	10%	5%	56%
Textiles	54%	5%	90%
Glass	73%	5%	88%
Wood	80%	80%	79%
Metal	80%	80%	81%
WEEE	20%	30%	32%
Hazardous	85%	0%	83%
Garden	98%	97%	99%
Misc. Combustible	20%	20%	10%
Misc. Non-Combustable	10%	10%	10%

1.4.2 Bring Sites

Solihull and Coventry both currently have extensive bring bank provision. It is anticipated that the tonnages collected at the bring banks will decrease with the introduction of more extensive kerbside schemes (See Tables 15 and 16). In particular glass capture is expected to decrease sharply.

Table 15 Solihull Bring Bank Material Capture Rates

Overall Capture	2008/09	2011/12
Paper & Card	14%	7%
Plastics	3%	1%
Textiles	17%	8%
Glass	26%	13%
Metal	6%	3%

Table 16 Coventry Bring Bank Material Capture Rates

Overall Capture	2008/09	2011/12
Paper & Card	9%	5%
Textiles	8%	8%
Glass	30%	15%

The Districts currently collect much lower tonnages through their bring sites and participation is expected to be less impacted.

1.5 Waste Destinations

Waste transfer stations are modelled as currently used. No additional transfer station capacity or use is included.

Waste has been modelled to Landfill and/or to the Coventry Energy from Waste from 2008/09. The proportions sent to each destination are based on information provided by the councils.

During the development of the Outline Business Case (OBC) a reference project based on the development of an Energy from Waste (EfW) plant located adjacent to the existing EfW plant in Coventry (the site) was proposed. Warwickshire are also proposing to send 35,000tpa to the proposed EfW in Staffordshire. Although the procurement process is technology neutral, the OBC reference project together with the Staffordshire EfW has been used as the basis of the Mass Flow Model.

From 2015 onwards household collected waste, HWRC residues and commercial waste is sent to the destinations set out in Table 17.

Table 17 Residual waste destinations from 2015/16

WCA/WDA	Household	HWRC	Commercial	Street Sweepings
Warwickshire		Coventry New EFW		
Coventry	Coventry New EFW	Coventry New EFW	Coventry New EFW	Coventry New EFW & landfill as at present
Solihull	Coventry New EFW	Coventry New EFW		Landfill
North Warwickshire BC	Staffs New EfW		Staffs New EfW	Landfill
Nuneaton & Bedworth BC	Staffs New Efw & Coventry New EfW		Staffs New Efw & Coventry New EfW	Landfill
Rugby BC	Coventry New EFW		Coventry New EFW	Landfill
Stratford DC	Coventry New EFW			Landfill
Warwick DC	Coventry New EFW			Landfill

The Coventry New EfW refers to the facility procured by Project Transform. Material may be handled by this contract but sent directly to landfill rather than through the EfW plant.

35,000 tpa residual waste from North Warwickshire and Nuneaton and Bedworth is assumed to go to the EfW plant in Staffordshire.

All MRF and Compost rejects are assumed to go to landfill rather than to the new facilities. This reflects the nature of these contracts between the Districts and facility operator. MRF rejects are assumed to be 5% of inputs.

All Clinical waste is assumed to go to Clinical waste incinerators.

1.6 EfW Assumptions

Table 18 sets out the performance assumptions that have been made about the 3 key EfW plants.

Table 18 EfW Assumptions

	Coventry Existing EfW	Staffordshire New EfW	Project Transform New EfW
Metal Capture (as % of metal treated)	0%	80%	80%
Bottom Ash Residual (as % of total treated)	20%	25%	25%
Bottom Ash Recycled (as % of bottom ash produced)	80%	95%	95%
Fly Ash Residual (as % of total treated)	5%	4%	4%
Front End Rejects (as % of total input)	0%[a]	5%	5%

[a] It is assumed that rejects from the Coventry plant are included in the tonnage recorded direct to landfill.

The Project Transform performance parameters are as per the current contract targets.

Registered Office:

Enviros Consulting Limited
Alberton House
St Mary's Parsonage
Manchester
M3 2WJ

Enviros Consulting Limited is part of the Sinclair Knight Merz Group

www.enviros.com